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BEFORE THE

SUBCOMMITTEE ON ALCOHOLISM AND DRUG ABUSE

OF THE

COMMITTEE ON HUMAN RESOURCES

AND THE

SUBCOMMITTEE TO INVESTIGATE JUVENILE DELINQUENCY

OF THE

COMMITTEE ON THE JUDICIARY

UNITED STATES SENATE

NINETY-FIFTH CONGRESS

SECOND SESSION

ON

S. 2778

TO PROVIDE FOR INCREASED CRIMINAL PENALTIES FOR THE UNAUTHORIZED MANUFACTURE OR DISTRIBUTION OF PCP AND TO PROVIDE FOR PIPERIDINE REPORTING

JUNE 7 AND 21, 1978

Printed for the use of the Committee on Human Resources and the Committee on the Judiciary



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PHENCYCLIDINE (PCP OR ANGEL DUST)

WEDNESDAY, JUNE 7, 1978

U.S. SENATE, SUBCOMMITTEE ON ALCOHOLISM AND DRUG ABUSE OF THE COMMITTEE ON HUMAN RESOURCES, AND SUBCOMMITTEE TO INVESTIGATE JUVENILE DELINQUENCY OF THE COMMITTEE ON THE JUDICIARY,

Washington, D.C.

The subcommittees met, pursuant to notice, at 9:38 a.m. in room 4232, Dirksen Senate Office Building, Hon. William D. Hathaway (chairman, Subcommittee on Alcoholism and Drug Abuse) and Hon. John C. Culver (chairman, Subcommittee to Investigate Juvenile Delinquency) presiding.

Present: Senators Hathaway, Culver, and Hatch.

Staff present: Subcommittee on Alcoholism and Drug Abuse: John Doyle, counsel; Ellen Akst, associate counsel; Nancy Olson, professional staff member, Committee on Human Resources; and Sherri Kramer, minority research assistant. Subcommittee to Investigate Juvenile Delinquency: Stephen Rapp, staff director; Josephine Gittler, chief counsel; and Cliff Vaupel, assistant counsel.

STATEMENT OF HON. WILLIAM D. HATHAWAY, A U.S. SENATOR FROM MAINE

Senator HATHAWAY. This is a joint hearing of the Subcommittee on Alcoholism and Drug Abuse and the Subcommittee to Investigate Juvenile Delinquency. The purpose of this hearing is to explore a relatively new phenomenon in drug abuse, namely, the illicit use of legitimate chemicals. Our specific focus today will be on phencyclidine, commonly known as PCP, angel dust, killer weed, crystal, cadillac, cyclone, hog, and many other descriptive terms. It is even called DOA by some—this is police shorthand for "Dead on Arrival."

Regardless of what it is called, PCP is said to be a deadly, devastating drug, worse than anything else on the street. A glance at a magazine stand reveals numerous articles on PCP in a variety of magazines from Women's Day to Newsweek to Human Behavior. Newspapers and television programs have been drawing attention to PCP as well.

That PCP has become a national problem, as reflected by the media, is also supported by what little statistical information we have available. Use of PCP is growing in alarming proportions, especially among our Nation's youth. Federal officials estimate that nearly 7 million people, most of them from 12 to 25 years old, have tried this dangerous drug. Recent news reports indicate that last year alone, PCP sent at least 4,000 users to hospital emergency

rooms, took 100 lives, and was responsible for an untold number of strange, suicidal, or homicidal acts. Reported incidents include drowning in a shower, self-inflicted gunshot wounds, and other bizarre behavior.

PCP is a nonnarcotic, nonbarbiturate chemical agent. It is apparently easy to make from readily available legal chemicals. This drug is supposedly extremely toxic and can cause severe reactions with a single dose. Because of its widespread abuse and apparent potential for devastating effects, the Subcommittees on Alcoholism and Drug Abuse and Juvenile Delinquency believe that PCP warrants national attention.

Consequently, today we will focus on the nature and extent of the problem. We will hear about the effects and use of PCP from three young former users. We will also receive testimony regarding the history, incidence, clinical symptoms, treatment, and rehabilitation of PCP users. Further, we will have the benefit of testimony regarding the production and trafficking of PCP as well as law enforcement related to the drug. Witnesses addressing these issues include a PCP manufacturer, currently serving time in a Federal prison in California, as well as a policeman and an assistant U.S. attorney who has successfully prosecuted PCP offenses.

I am particularly pleased to have my distinguished colleague Senator John Culver here today to participate fully in this hearing. Senator Culver has had a longstanding interest in the problems posed by alcohol and drug abuse. Just recently, he held a field hearing in Iowa on alcohol and drug abuse education programs in schools, and joined with me in requesting that the Appropriations Committee increase funding for these important programs. Senator Culver's leadership was of critical importance in getting the Office of Juvenile Justice and Delinquency Prevention in the Law Enforcement Assistance Administration to focus on drug abuse as it relates to juvenile delinquency. It is a pleasure to hold this hearing in conjunction with the Subcommittee to Investigate Juvenile Delinquency, and I welcome Senator Culver's remarks.

STATEMENT OF HON. JOHN C. CULVER, A U.S. SENATOR FROM IOWA

Senator CULVER. Thank you very much, Senator Hathaway.

As chairman of the Subcommittee to Investigate Juvenile Delinquency, I want you to know how much we appreciate the opportunity to work together with you and your subcommittee on this important investigation of the use of PCP.

As you know, our subcommittee has the legislative responsibility for the Controlled Substances Act as well as oversight responsibility for the Drug Enforcement Administration.

Legislation has now been referred to our subcommittee which would increase the criminal penalties for the trafficking in PCP and regulate the distribution of one of the chemicals used in the production of PCP, and at our next joint hearing, which is scheduled for June 21, we will give specific attention to the proposals that have been recommended in the Senate and others that may be advanced in the days ahead.

Now today, we have called this hearing to try to get a clearer picture and understanding of this problem, not only of PCP's uses

and effects, but also the reasons why our system of controlling substances apparently is not working.

We will hear this morning from individuals who have bought PCP, who have trafficked in it, and who have manufactured it as well as those who have apprehended and prosecuted both the traffickers and the manufacturers.

Why is there so much of this drug on the street today? Why is its production so easy?

Why are not present laws and penalties more effectively deterring those who produce or sell it?

Is it possible to control the production by regulating the ingredient chemicals that are involved in PCP manufacturing?

These are a few of the questions that I believe need to be answered if we are going to develop an effective and reasonable response to a drug which, as Senator Hathaway has said, is taking an enormous toll among the young people of this country.

Thank you very much.

Senator HATHAWAY. Thank you very much, Senator Culver.

I would like to welcome also Senator Hatch who serves on both of the full committees and is the ranking member of my Subcommittee on Alcohol and Drug Abuse.

Senator Hatch.

STATEMENT OF HON. ORRIN G. HATCH, A U.S. SENATOR FROM UTAH

Senator HATCH. Thank you, Mr. Chairman.

I appreciate your comments and also the comments of my distinguished friend from Iowa, who does a great job, I think, with regard to the Subcommittee to Investigate Juvenile Delinquency.

It is difficult to get a true reading on the incidents of PCP use, however, because many users are able to control their use. For example, some people are able to simply put a joint down when they begin to suffer unpleasant side effects. It is quite likely then that the majority of PCP users go unrecognized and unrecorded and that recorded cases represent only a small fraction of the users. Furthermore, there is a very large number of users who get PCP inadvertently under another guise and they may well not be prepared for its side effects.

This has been a tremendous area of interest for me because, in my law practice prior to coming here to the Senate and in my church affiliation, I have worked with a number of young people who have had difficulty with many types of drug-related problems.

PCP is also illegally manufactured for use as a drug of abuse. It was first used as a street drug, called the "Peace Pill" in California in the midsixties. It failed to gain popularity at that time because it was available only in tablets and users could not adjust the dose or mitigate the adverse effects. However, by 1973, the street chemist learned how to convert PCP from the tablet form to a substance which could be smoked with leafy material, often parsley, or snorted and can also be injected.

Since then, it has of course been widely abused throughout the country as the distinguished chairman has said.

I am very interested in these hearings today, and I am certainly happy to participate with both Senators Hathaway and Culver who I think do a good job in this area.

Senator HATHAWAY. Thank you, Senator Hatch.

Our first three witnesses have agreed to testify before the subcommittees with the understanding that their real names would not be revealed and that they would not be photographed. I would ask that the representatives of the media please respect this request.

Now, would Norman, Donald, and John come to the witness table.

The names you are using, of course, are not your real names, and we will not ask you to reveal them. We would like to know what your ages are and what level of education you have received.

We will start with you, Donald.

STATEMENTS OF DONALD, NORMAN, AND JOHN

DONALD. I am 21 years old. I am a high school graduate.

Senator HATHAWAY. Are you currently employed?

DONALD. No, sir; I am not.

Senator HATHAWAY. Have you been employed since you got out of high school?

DONALD. Pardon me?

Senator HATHAWAY. Have you been employed since you got out of high school?

DONALD. Yes, sir; I have.

Senator HATHAWAY. What was your occupation or occupations?

DONALD. Custodian, photographic equipment technician for the Federal Government.

Senator HATHAWAY. Norman, what age are you?

NORMAN. I am 24 years old.

Senator HATHAWAY. How far did you go in school?

NORMAN. I completed high school.

Senator HATHAWAY. You are employed?

NORMAN. No; not before I went into the program.

Senator HATHAWAY. Have you been employed since you got out of high school?

NORMAN. Yes. I was just a painter, laborer, plus I was a jewelry salesman.

Senator HATHAWAY. John?

JOHN. I am 25, and I dropped out of high school in the 10th grade.

Senator HATHAWAY. What grade?

JOHN. Tenth grade, so I completed ninth grade.

Senator HATHAWAY. You have been working ever since?

JOHN. Well, I did work for a period of time. I worked for 4 years for the Safeway in various local stores. Right now, I am unemployed.

Senator HATHAWAY. You are working at the present time?

JOHN. No. Right now I am a resident at Second Genesis.

Senator HATHAWAY. You are a resident?

JOHN. Resident at Second Genesis, which is a drug rehabilitative program.

Senator HATHAWAY. Pull the mike closer to you. We will concentrate on one witness at a time.

How long have you been in treatment?

JOHN. Ten months now.

Senator HATHAWAY. Ten months?

JOHN. Yes.

Senator HATHAWAY. How did you happen to go into treatment?

JOHN. I found myself in a situation where I was confronted with either going to jail or decided to make a decision and do something about my position, and my involvement in drugs just increased as I found myself out of work, and I had no job, no money, and so I had to go to all these sources for money, and that was mostly involving illegal activity.

Senator HATHAWAY. When did you first start using drugs?

JOHN. When I was 16.

Senator HATHAWAY. What started you on it?

JOHN. I started with marihuana, and it didn't take long before I was heavily involved in narcotics. I had a lot of experience with "Peace Pills" back in the sixties and LSD, practically all drugs.

Senator HATHAWAY. Now, when did you start on Peace Pills, PCP?

JOHN. I was around 16. That is when they first came out, I first experienced them back then.

Senator HATHAWAY. Had you been on LSD before that?

JOHN. Yes; I had.

Senator HATHAWAY. Can you compare the two?

JOHN. Yes. LSD is a type of drug where it is more or less you can make a distinction between what is real and what is not real. At the time you have a lot of distortions in your mind, but distinction is sometime there between reality. But with PCP, it is hard to make that distinction, if you use it enough, you totally lose touch with all sense of what is real and what is not and what is happening to you at the time. You really believe it is happening and, you know, there is no distinction there.

Senator HATHAWAY. With LSD you know it is the real danger?

JOHN. In most cases, yes. There have been cases where people end up committing suicide or various other things.

Senator HATHAWAY. Can you tell us any experiences you had while you were on PCP?

JOHN. Well, when I use PCP, it gave me a feeling of importance, you know, kind of like a, I felt like I was the whole—the whole world was evolving around me. I was being called upon to do something, and I searching for something. I found myself in places that I really did not know how I got there, you know, in hotel rooms and executive suites, and I mean it was really bizarre experience. I think back on it now and I really have a hard time believing that it ever happened, but I know it did because I lived through it.

It was a more or less a feeling of a type of a masonic type of thing, where you feel like you are that important and you find yourself kind of withdrawing from everything that is real, and you live in a type of spiritualistic level, like everything is very symbolic, everything has double meanings and completely lose touch with yourself.

Senator HATHAWAY. Where did you get the PCP from in the first place?

JOHN. I usually obtained it from friends who were manufacturing it.

Senator HATHAWAY. What does it cost?

JOHN. It depends on who was distributing it.

Senator HATHAWAY. What would be the price range that you paid for it?

JOHN. It would run around $100 an ounce or about a $1,000 a pound, and that turnover, if you were to sell it, you could make a lot of money because it is very easy to dilute, or just taking a pound that is freshly made, you can add another pound of parsley to it and double the money, so it is very easy.

Senator HATHAWAY. What form did you get it?

JOHN. Usually it was on parsley. It was a liquid diluted and it was spread out on parsley and dried.

Senator HATHAWAY. What would you do, smoke it?

JOHN. Right, smoke it.

Senator HATHAWAY. Did you take it any other way than smoking it?

JOHN. I took peace pills also. I had friends who used it in liquid form, administering it through the eyes, like eye drops.

Senator HATHAWAY. What happened to them?

JOHN. One friend of mine almost went blind for using it.

Senator HATHAWAY. What does the pill look like?

JOHN. They look different, they are not all the same. They came in various colors and sizes. It was basically just a round pill.

Senator HATHAWAY. What quantity was being smoked in one pill?

JOHN. Well, it depends on the quality of it, and there are different degrees in how much it has been cut, with certain types of—if you take two hits off a joint, it was treated, you know, the parsley type, you would find yourself by the time you took the second hit, you would find yourself just obliterated, and then others, you have to smoke more, it depends on the quality.

Senator HATHAWAY. But the quantity would be much less than an ounce?

JOHN. Oh, definitely, yes; it would take a couple of pinches, just a very small amount.

Senator HATHAWAY. From that quantity, how long were you gone——

JOHN. Anywhere from 4 to 8 hours, it depends. It depends on the quality of the substance.

Senator HATHAWAY. Did you feel you had to have it after the effects wore off?

JOHN. No; I didn't have to have it, but it was so convenient to use and it was such a big release and escape that it was more or less a mental type of addiction. It wasn't on a physical level. There was no physical withdrawal, but mentally I would say I was addicted to the drug. I was using that drug to bring myself off of other drugs, narcotics, and what it does to you is it desensitizes you, and you are very insensitive to all types of senses and feelings, and you really—you could actually bust your head open and you wouldn't even know it until you came down. I never experienced any severe

accidents, but I had friends that did, and they weren't aware of having fallen or anything.

Senator HATHAWAY. What was some of the accidents that your friends experienced?

JOHN. Well, like breaking an arm and not even recognizing it was broken. It numbs your——

Senator HATHAWAY. How did you break your arm?

JOHN. By falling, you know, or by playing around with somebody, horsing around, just doing bizarre things, climbing in trees, it could happen in a——

Senator HATHAWAY. While you were on this drug, could you feel any pain, could you bang your head on the table and not feel it?

JOHN. Yes; you could do that. It kind of, like, numbs all the senses. And then again it depends on the quality of the drug. Some would not interfere with your senses that much, but others would completely numb you and your whole nervous system would be thrown out of whack, you would not feel anything.

Senator HATHAWAY. Senator Culver.

Senator CULVER. I have also heard that in addition to the numbing sensation that you have described, John, that PCP can also cause blackouts. Has this been an experience that any of you have had when you have used the drug?

Norman?

NORMAN. I experienced after I was smoking it for a while that I would lose my vision.

Senator CULVER. Did you completely lose your vision?

NORMAN. Yes; like my eyes would—I would go blind, completely black. And then I would just fall over. Well, my mind would be working, but I really could not even talk or see or anything. I thought I was dead for a while. All of a sudden it started wearing off after a period of about one-half hour, I guess.

Senator CULVER. This perception of being dead, did you describe that to other friends?

NORMAN. Yes. Everybody thought it was neat and cool and tried to smoke more drugs to get there too.

Senator CULVER. So they would try the drug to create the same experience?

NORMAN. Yes.

Senator CULVER. Why did you stop using PCP?

NORMAN. Well, I got arrested in Fairfax County, and I knew that I could not go on any further doing what I was doing because it was destroying my life. I found after I sat in jail for a couple of weeks I got a little straightened out, so I could see what it has done, and it sort of hurt me a lot and changed my life drastically, not the way I wanted it to go, but I was living in a drug dream world and that is what happened.

Senator CULVER. Why did you begin to use drugs? What primarily directed you toward experimenting with drugs the first time?

NORMAN. Well, I started out when I was about 14½, and I think it was just like the "in thing" to do, because all the other kids were just starting it too. I had an opportunity because these people were just giving it away, and so I just decided, I guess, to join the crowd. That is what I see now.

Senator CULVER. Were you interested in athletics?

NORMAN. Yes.

Senator CULVER. At that time?

NORMAN. Yes. I was pretty good athlete. I got medals for swimming and stuff like that. I was a good ballplayer.

Senator CULVER. Were you at all concerned about the health conditions of drug use on your athletics?

NORMAN. No.

Senator CULVER. Why weren't you concerned about how drugs might affect your ability to perform in sports?

NORMAN. Well, I did not really think it would hurt me, that was my opinion. But looking back I can see that it did because I drifted more and more away from doing sports and athletics and just wanted to get high instead.

Senator CULVER. Was it hard to stop using PCP? John spoke of not physical dependence, but more of psychological dependence, as I understand him. Was it hard for you to stop using PCP?

NORMAN. Yes. I even moved away from the area so I could stop using PCP. But when I came back after about 7 months, I went right back to it, OK, because I still had the feeling to go get high on PCP, plus I saw other people doing it too. That influenced me a lot. I wanted to go through the same feelings I did before.

Senator CULVER. We have heard reports of drowning, self-inflicted wounds, even homicide, and a feeling of grandeur making one believe he can walk on water or fly out of a window. We have heard about people going through glass doors and rolling in the glass impervious to the consequences. When you saw this happening, or heard about it happening to friends were you not at all frightened by what you might do under the influence of this drug?

NORMAN. Well, I just thought that was the way it affected the individual, and I was blinded to the way I was acting because I did some things that were stupid.

Senator CULVER. Can you speak up a little please, a little louder.

NORMAN. I saw some people like this one guy got really high, and he fell through a door, OK? This was not a glass door, it was a wooden door. He was standing right in the middle of the living room and jumped right through it and hurt his head real badly, and he did not know he was bleeding or cut or anything like that. It took him about an hour or more to even realize that he was even bleeding, and then he thought somebody clubbed him in the head. Then he wanted to go to the hospital in his bathrobe and slippers, and there was snow on the ground. He did not realize that either. He said I am going to go anyway. He did not feel any cold or anything like that. It is obvious he did not feel any pain. He was bleeding bad. He required stitches.

Senator CULVER. In spite of that, you felt that you would not have a bad trip? You felt that whatever its chemistry the way this drug impacted on you and worked in your system was different—that you could somehow avoid the same kind of problems, that these were just bizarre, odd exceptions?

NORMAN. No. I just do not think I did not care. I did not care about what happened to my body and what went on because I would be OK. I did not think anything like that could happen to me, although it did at one time.

Senator CULVER. Did you think poorly of yourself in the sense of being so dissatisfied with your relationship and family and school that it was just worth it to get outside that misery and take a trip—to seek an unreal situation because the real one was pretty uncomfortable?

NORMAN. Well, I think my parents always treated me right, I just got high, and I did not think they noticed it, but they did notice it, and they did see the change I was going through, but they told me about it, but I was not listening to them. I have not been living with my parents for a long time. When they would see me, one time I went home and I complained I was short of breath, and I was running around in circles in their dining room, and they took me to the hospital because I had smoked PCP earlier that day, and it had been like 6 hours beforehand, so the effects did not even wear off to that extent.

Senator CULVER. How long since you had smoked PCP?

NORMAN. At least 6 hours.

Senator CULVER. Have you noticed any lingering effects or incidents that you would attribute to your previous use of PCP that you now experience since you stopped using the drug?

NORMAN. Basically, no. But when I first stopped using it, I have not probably smoked PCP in 7 months, and when I first stopped using it, it was a little bit weird. I was a little spaced out and incoherent and talked in circles. But now I've reverted back to myself as being straight on. I have seen a lot of people that still after stopping smoking drugs for years, they cannot hold a conversation, and talk in circles and just do weird things.

Senator CULVER. Before you began to use PCP, was your attitude toward that particular drug different than toward marihuana or LSD or any other drug? Did you know much about its properties and its effects?

NORMAN. No, not really. The only thing I had, I felt different toward was alcohol. I started smoking and doing drugs when I was like 14. I did not start drinking until I was about 17 or 18.

Senator CULVER. Did your attitude change once you started using PCP?

NORMAN. Yes. I wanted to keep on smoking it. In fact, that was my drug of choice, because I started smoking PCP more than I did any other drug.

Senator CULVER. Because it was cheaper?

NORMAN. Partly that, but because the effect was a lot stronger. It is somewhat like LSD, but in a different way. LSD you get really uncontrollable, I feel, and with PCP you can smoke a little bit and get high and smoke a little bit more and get higher, and you can regulate how high you get depending on the quality. When I started using it, it was $55 an ounce, and now it has gone up anywhere from $125 to $150 an ounce. In comparison to marihuana, it is a lot more expensive.

Senator CULVER. If you knew before you began what you know now about the dangerous effects of PCP, do you think you would have begun to use it?

NORMAN. No. I can see where my involvement in drugs left me, where I feel as far behind from people my age who have led positive lifestyles of nondrug use, maintaining normal job and

working hours, they have wives, kids, houses, so I feel left behind. If I knew what I know now, I would not even touched it, no way.

Senator CULVER. Do you have any recommendations, Norman, for preventing use of PCP, particular among young people like yourself?

Do you think drug education programs in school can prevent PCP use?

NORMAN. No, I do not think so. It is so widespread now only stopping manufacturing and the chemicals that go into the drug I feel is the only way to do it because it is so readily available, you can probably go down the street 2 blocks away and get it.

Senator CULVER. How about young people talking about PCP to their peers—people like yourself who can testify to them as to the consequences of PCP use? Does that have any promise?

NORMAN. That would probably do some good. But it is all up to the individual whether he wants to go through it or not, because if they go through it and discover how bad it is, but it might take 9 years, like it did me, which was too long, OK, if they could get it right away, I am sure that their eyes would open.

Senator CULVER. You say control it at the source, do you mean restrict availability of chemicals that go into its manufacture?

NORMAN. Yes.

Senator CULVER. Are there any other recommendations you would have for us on how to deal with it, Donald or John?

DONALD. I think as far as peers of people that perhaps have used PCP, talking to people that are maybe at the age where they are thinking of using it, would be more effective than literature distributed throughout schools or whatever, schools talking to students, because the first thing that people would do would say their parents and school teachers who are talking to them was just—well, they would say they do not really know what they are talking about, and consequently they are not going to listen. I think maybe out of personal speaking engagements to people or else Federal subsidized television spots with people who have abused the drug and directing the message to people who are thinking about using it, that would probably have long effect.

Senator CULVER. Thank you.

Senator HATHAWAY. Senator Hatch.

Senator HATCH. Let me ask all three of you concerning your use of drugs—John, you indicated you started with marihuana. Norman and Don, can you tell us when you started on drugs and what was your first drug use?

DONALD. I started using drugs when I was 13.

Senator HATCH. What was the first drug that you used?

DONALD. Started with marihuana and alcohol.

Senator HATCH. How about you, Norman, did you start with marihuana also?

NORMAN. Yes.

SENATOR HATCH. Would you fellows agree that marihuana was the beginning of your drug use, that it led you into other drugs? Did you just feel you wanted to try other things because you enjoyed marihuana?

DONALD. I do not feel that marihuana led into other drug use. I feel that at least with me it was merely that curiosity about other

drugs, and partially peer pressure as far as other people using it, and it was a combination of the two.

Senator HATCH. What about the other two, do you feel marihuana contributed to your using and experimentation with other drugs or not?

JOHN. Well, I don't know now, I do not condone the use of marihuana, but I do not feel that it is really—that it plays an important role when you go on to other drugs. What it does do is the fact that it is illegal and the sources you have to get it from makes everything else available to you because most of the sources that deal with marihuana also deal with the other drugs, such as PCP and LSD. And the fact that it is there, and it is available to you, and your associates are using it too, it is pretty tempting and it is hard to resist it.

It does play a role in your going on to other things.

Senator HATCH. At least you had the experience of enjoying the use of drugs by using marihuana, and then does that not give you an incentive to make you get into other drugs?

JOHN. Yes; I think it all comes down to the individual how they feel about themselves because initially I started using drugs because I did not feel like I was part of anything, and I was pretty much alienated from everybody, and I alienated myself from society, so I started using drugs to be accepted by a group of people, but after initial encounter, it became more of an individual problem with me, the fact that I was running from my feelings and myself. I did not feel good about myself.

Senator HATCH. Your initial encounter was with marihuana in all three cases?

JOHN. Right.

Senator HATCH. I see.

Do you have anything to say about that, Norman? Do you think it caused you to try experimentation with other types of drugs, including PCP?

NORMAN. No; not really. I just think I wanted to get into a bigger kick.

Senator HATCH. You had one kick and you thought you would enjoy a bigger kick. Would that be a fair characterization?

NORMAN. Yes.

Senator HATCH. Let me ask you fellows this: What are some of the street names for this type of drug, for PCP?

NORMAN. Well, it is called "tea" when it is in powder form, No. 1. Just PCP and angel dust.

Senator HATCH. Any other names that you can come up with in your experience?

DONALD. Just angel dust and dust, killer weed, KW.

Senator HATCH. How would you compare PCP with other types of drugs you have used? You mentioned marihuana, PCP, what other types of drugs have you tried?

DONALD. Different types of hallucinogens, as far as LSD, mescaline, psilocybin, amphetamines, barbiturates, cocaine, methadone.

You are asking a comparison question?

Senator HATCH. Yes. Having used those different types of drugs, how would you compare PCP?

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DONALD. I would say PCP is, if you are using drugs—and I feel the majority of people do—as an escape from your personal problems of whatever is going on, PCP would be the fastest—fastest drugs to accomplish that with, as far as with how far away from reality that it will take you and quickness.

Senator HATCH. Do others take you away from reality though, and in essence accomplish the same purpose, but not as quickly?

DONALD. Yes.

Senator HATCH. Would you other fellows confirm that, did you feel the same way as Donald?

NORMAN. Yes. Since I have used a variety of drugs, basically all of them, except extensive use of heroin or anything like that, methadone, PCP is the most bizarre drug that I think I encountered because what it caused me to do and what I have seen it do to other people. It was totally different than what other drugs affected you as. You could very easily forget where you are, if you were swimming or something like that, you would just sink. People told me that I had to be pulled out—I'm a pretty good swimmer—people told me I had to be pulled out, like I had forgotten where I was, just started to sink in the water, and I was on the way to drowning or something like that and people did save me. That is why I feel it is a most bizarre thing.

Senator HATCH. Let me ask all three of you: Do you think television played any role in your beginning use or continuing use of drugs, the emphasis in television—the violence, the crime, and were you fellows chronic watchers of television?

NORMAN. I was not that chronic watcher of TV, but I did see a lot of programs on PCP because I was getting high too, I wanted to see what it was doing to people in different things. I was more amazed in people making all that money manufacturing it because it is so cheap to make, and yet they sell it for so much money—just let's go make up a batch and we will get a lot of money doing that.

Senator HATCH. Do you think those programs make PCP more alluring or that they actually educate you that it is a bad substance to use?

NORMAN. Well, I think in some ways more alluring, and some ways a bad drug to use. As I said earlier, you did not think it was going to happen to you.

Senator HATCH. Would you two fellows feel about the same way? Do you feel TV influenced you at all in the use of drugs one way or the other?

DONALD. I feel like a lot of TV shows on PCP, a good portion of what was shown in the programs is the type of thing I was talking about earlier, people would say they do not know what they are talking about—if you were watching a half hour television show and out of x amount of statements you hear five that you know are false, or you can tell they did not know what they were saying when they said it, you are just not going to listen to anything.

Senator HATCH. Do you think that was because the TV show was bad or because you were actually into the drugs and you felt——

DONALD. I'm sure a good part was my distortion about how I felt about the drug because I was using it at the time, so I had very positive viewpoints.

Senator HATCH. I want to compliment you three fellows for coming here today. It is not easy to submit yourself to a subcommittee, two subcommittees, and talk about the effects of these drugs and also to indicate to other young people in fact, people from all walks of life and ages, that this use of drugs may be harmful, not only to you but to them also. I am very pleased you have taken the time to do it and I wish you all well and I hope that you will continue to actively try and help others to stay away from drugs.

Thank you, Mr. Chairman.

Senator HATHAWAY. Thank you.

Let me ask you a couple more questions.

Did any of you notice any difference in your mental capacity after you had gone all the way through the experience that you got from PCP?

DONALD. Yes.

Senator HATHAWAY. Could you reason just as well as you did before? Did you have any memory lapses?

DONALD. In my experience, after using PCP, I constantly for a period of time, when I stopped using it, I would not be using the drug anymore, would be very spaced out. It can go—depending on how bad off it is, I've seen people that—in fact, myself at one time, I stopped, and I started using it again later, and the first time I stopped using it my comprehension was as far as—I could not really concentrate on anything as far as any type of school-type thing. The ability to sit down and, say, work out mathematical problems were—simple things like reading a book or anything could not be done because everything was very confused. You had a feeling like you had the mentality like a 3-year-old because at that point your thinking is so twisted up that that is really about the level that you function at. And I have seen a lot of people act like kindergarten—very heavy users of it, and like complete vegetables, who used to be really bright kids, and now mentally functioned—they cannot hold a conversation, they talk gibberish, and their voices slurred constantly, and as I say, that is about the way they function, mentally they are on the level of, say, 4-year-old or something.

Senator HATHAWAY. In your own case, did you get better after a while? Do you feel now you are back to what you were before you went on PCP?

DONALD. I feel that after a certain amount of time those side effects do go away, and I can say that for myself definitely. But other people I've seen it too, it completely goes away to no side effects whatsoever. That is not taking into account—well, some people I know are burned out, like I would have to really question after how long they stayed off if they would come back completely to what they used to be. I think probably after a certain point, you could only go back to normal only so far, there would be too much damage done.

Senator HATHAWAY. That is due to the fact that they had a more extended use of the drug than you?

DONALD. Yes.

Senator HATHAWAY. Norman and John, do you have any comments on that?

NORMAN. I had pretty extensive use. I used that drug almost everyday for a long period of time and ran around trying to get it all the time. That is what it basically involved around. I can see I am more attentive now after stopping using the drugs. I can read better, my voice is not slurred as it was, like I was totally drunk all the time, but with some people, like was said, you question whether they are going to return to normal or not.

Senator HATHAWAY. John.

JOHN. I have to agree. You do eventually regain your ability to concentrate on certain things, such as mathematical problems and your retention, your ability to retain things comes back. But initially, that takes a couple of months at least and it takes a lot of effort on each individual's part who wants to do it because the PCP is like a mind-altering drug, and I feel it actually changes your thinking patterns the way you feel about things, and you place less importance on reality and more importance on fantasy, and you really do not feel that things are that important, and to come back, kind of like getting in touch with what is real and not real again, it takes some time. But it can be done if the person wants to do it. It takes a lot of hard work, though.

Senator HATHAWAY. How would you evaluate the rehabilitation program that you are engaged in right now? Is that helping you?

JOHN. Yes. I feel it is very effective. I've never experienced anything like it in my life. I've never got through anything that is so hard or demanding at the same time, but I feel it is what I need.

Senator HATHAWAY. What are you doing in the program?

JOHN. Well, we have different levels in the program you are at, and we all live in the same house together, and it is the type of very structured and rigid type of environment where a lot of demands are placed on each individual and everyone has a specific job, and accountability is the key, and being responsible, just learning to be responsible for yourself, and it is a hard thing to do to grow up because most of us would not have been taking drugs if we were like developing normally. We just chose to stay at the level of about 3- or 4-year-olds, not wanting to be responsible for ourselves. That is what the program basically teaches you. You have to make a decision for yourself, and you are responsible for any position that you find yourself in in life.

Senator HATHAWAY. I asked about mental. What about physical disabilities?

JOHN. I was involved with so many different types of drugs, I do not know whether it was PCP or I do not know whether it was the heroin or methadone, but I feel that my nervous system is still—it is in the process of rejuvenating, I still feel very on edge, nervous at certain times. I guess this is part of being normal. I am not used to feeling all these things. It is like I am very sensitive to a lot of things, and it is all new to me.

Senator HATHAWAY. You cannot say that was PCP?

JOHN. No, I cannot directly attribute it to PCP.

Senator HATHAWAY. How about you, Norman? Any physical effects?

NORMAN. No, not that I can really say that were left over, except for when I was using the drug, I was really nervous and it kept me awake for long periods of time, like days at a time, but now my

nerves are, I guess, back in shape—I'm not always anxious or waiting for something——

Senator HATHAWAY. Sexual, sex drive, after—not while you were on the drug.

NORMAN. No.

Senator HATHAWAY. Donald?

DONALD. I think as far as not with me myself, but with people I've seen as far as eyesight, PCP does, with prolong use, have very notable effect on eyesight as far as your vision.

Senator HATHAWAY. You mean things are blurred?

DONALD. One friend of mine, he stopped using it, his vision was not blurred and he had good vision, but after he stopped using it, his vision was blurred for maybe a year or so afterwards. He had not used the drug for a year. It took that long before the condition cleared up.

Senator HATHAWAY. Thank you very much.

I want to thank all three of you for the excellent statements and for cooperating with the subcommittees. Thank you. I wish all three of you well in your recovery.

Senator HATHAWAY. Next, we have a panel composed of Mr. Steven E. Lerner, researcher and national consultant on PCP, and Dr. Sidney Shankman, executive director of Second Genesis.

We will print the full statement of both of you in the record. If you folks would summarize your statements, we would appreciate it.

Mr. Lerner, if you want to go first.

STATEMENT OF STEVEN E. LERNER,[1] COFOUNDER, LERNER, BURNS, LINDER & ASSOCIATES, SAN FRANCISCO, CALIF.; AND DR. SIDNEY SHANKMAN, EXECUTIVE DIRECTOR, SECOND GENESIS, INC.

Mr. LERNER. Mr. Chairman, members of the committee, ladies and gentlemen:

I appreciate this opportunity to share with you some of my group's thoughts regarding the abuse of phencyclidine by youth throughout the United States.

During 1974, while working in a federally funded drug research project, Dr. R. Stanley Burns and I came in contact with patients who had used phencyclidine, alone or in combination with other drugs. While providing emergency medical coverage at large rock music concerts, we encountered young people requiring treatment for unusual symptoms related to their use of phencyclidine. At this time, we also discovered several groups who by their history had used phencyclidine on a regular daily basis for as long as 5½ years.

From our experiences and subsequent study—including the review of medical records of patient's friends who had died from phencyclidine—we wrote "Phencyclidine: States of Acute Intoxication and Fatalities," published in the "Western Journal of Medicine" in 1975.[2] This article highlighted our early research findings on the "behavioral toxicity" of phencyclidine. In addition to this we have published 12 other papers on phencyclidine which at this time we would like to submit for the record. Included in these publica-

[1] See p. 97 for Mr. Lerner's prepared statement.
[2] See p. 302 for text of article.

tions is a chapter entitled "Phencyclidine Use Among Youth,"[3] to be published later this month by the National Institute on Drug Abuse that presents a comprehensive overview on phencyclidine abuse among youth.

In an attempt to learn more about the effects of long-term exposure to phencyclidine, we developed a research protocol. Users were invited to participate in a study which consisted of physical and neurological examinations, EEG's, EKG's, chest X-rays, clinical chemistries, complete toxicology, blood and urine screens for phencyclidine, psychological testing and clinical interviews.

As we began to receive requests from physicians and other health professionals for information related to our studies, we initiated a national consultation service.

Dr. Ronald L. Linder joined our research group as the demand for written information and prevention strategies increased. To date, we have received over 2,000 requests for information or services.

The growing popularity of phencyclidine throughout the United States parallels the early histories of LSD and marijuana. The initial passage of phencyclidine through the drug subculture in 1965 resulted in "bad reviews," attributed to the relatively limited drug experiences of users and the social climate. However, during the past 3 years, its popularity has rapidly increased among the now more experienced drug users and particularly among youth in their early teens.

Senator CULVER. Could you give us a ball park estimate of the number of users now? You say it dropped off and now it is back. Could you give us more specific citation of just what kind of numbers we are talking about?

Mr. LERNER. We just completed a study of 2,750 patients between the ages of 12 to 18 that were admitted to 97 treatment programs in 39 States. It turned out that 32 percent of the total group had tried phencyclidine, 20 percent were using it regularly 3 months prior to admission for treatment. The average age for the first use was 14.5 years. The average age for continued use was 14.8 years. From a chronic user study we did 3½ years ago, the average age of first use was 19.2 years and the average age of continued use was 20 to 21. So there has been a tremendous decrease in the age of initiation of first use. From some of our studies we have seen kids as young as 9, 10, and 11 that have initiated use of phencyclidine.

Senator CULVER. Do you have any figures that would give us a better idea of the extent of use? This sample that you are talking about includes only those who have come into the hospital.

Mr. LERNER. These were identified patients that were coming in specifically for treatment. It is really difficult to estimate the number of users. One of the problems that you get into is the Federal reporting system for phencyclidine. Specifically, there are two major data bases. The Drug Abuse Warning Network [DAWN], which is operative in 24 Standard Metropolitan Statistical Areas in selected hospitals, in-patient units, crisis center and medical examiners that report into the DAWN system. The difficulty with this data is that it is skewed. In California, for example, 51 of the 58 counties do not report to DAWN. The other major reporting system

[3] See p. 315 for text of article.

is the Client Oriented Data Aquisition Process, and this system has misclassified phencyclidine with the hallucinogens. This also includes LSD, muchrooms, mescaline, etc. There is no way of determining whether increases or decreases in this system are attributable to phencyclidine or other drugs. Because of this, the National Institute on Drug Abuse initiated a National Youth Polydrug Study which looked specifically at phencyclidine use among a youth population. However, it is really difficult to estimate from these data bases the number of phencyclidine users nationally. Certainly there has been a tremendous increase in deaths from phencyclidine use.

If you take a look at the deaths from phencyclidine between 1974, when the first deaths were reported in the literature to 1976, there were nine deaths. In Los Angeles County alone in 1976, there were actually 20 deaths. In 1977, there were 66 deaths. We are really taking a look at the tip of the iceburg. In hospital based studies that we have done, where we took a look at individuals who at the time had used PCP regularly for as long as 5½ years, it turned out a third of all of the emergency room admissions were chronic users of phencyclidine, something you would not predict.

When someone uses regularly over a long period of time, you would assume they would develop tolerance to certain affects of PCP. They do not, particularly when they are in situations where they are around water. They lose the ability to differentiate where their limbs are in a three dimensional plane or because they lose the ability to tell the difference between up and down, they drown as a result.

Senator CULVER. On that point, the deaths that you are talking about are a result of activities that the participants are involved in, and not the chemicals in the drug itself?

Mr. LERNER. We have seen them from both sides. There has been a controversy whether or not you could die from pharmacological overdose. We published a paper entitled "Phencyclidine Deaths" in the Journal of the American College of Emergency Physicians recently and it is now clear you can in fact die from true pharmacological overdose. If somebody takes a half gram or gram of material, you primarily die from respiratory arrest or they may die from seizure on top of seizure. You can die from true pharmacological overdose. I think most of the deaths we have seen, deaths from drowning, the deaths from not being able to respond appropriately to imminent danger. In a study of 30 chronic users, followed over a 4-month period, three of these have died from PCP and two by drowning, one by fire.

With the advent of polydrug abuse, the widespread experimental and long-term use of phencyclidine has expanded at an alarming rate. The large quantities of phencyclidine that have been recently confiscated by law enforcement officials in California alone, commensurate with the reported Drug Abuse Warning Network "mentions" and associated deaths, are convincing indicators of a serious drug problem. Of particular concern to the law enforcement community is the upsurge of phencyclidine related crimes, including rapes, child and wife abuse, and the carrying of weapons by users to protect themselves from their imagined enemies.

Phencyclidine was developed by Parke, Davis & Co. as a nonnarcotic, nonbarbiturate, intravenously administered anesthetic agent and marketed under the name Sernyl. Initial clinical studies on humans were begun in 1957. Doses of 0.25 mg/kg given intravenously produced anesthesia sufficient for minor and major surgery. Because the drug produced postanesthetic confusion and delirium of prolonged duration in some cases, clinical investigations were discontinued in 1965. In 1967, phencyclidine became commercially available under the trade name Sernylan for use in veterinary medicine.

Street preparations of phencyclidine have continuously changed by name, physical form, and purity. Many of these street names are regional while others are national in scope.

Phencyclidine is sold on the west coast by such labels as angel dust, cannabinol, crystal, PCP, and THC. In the Midwest, among its street names are DUST, TAC, and TIC. On the east coast, phencyclidine is sold as angel dust, erth, green, KW, and sheets. It has been identified in street samples sold under 46 different names, the most consistent misrepresentation being "THC."

The crystalline or granular powder form is found most frequently as crystal or angel dust, which usually contains 50 to 100 percent phencyclidine. Found under other names the purity drops to a range of 10 to 30 percent. Most tablets contain approximately 5 mg and tend to range from 1 to 6 mg. Leaf mixtures have been found to contain between 0.24 to 7.9 percent phencyclidine averaging 1 mg phencyclidine per 150 mg leaves.

Phencyclidine can be taken orally, by inhalation, insufflation, and by injection.

Phencyclidine was first seen illicitly in Los Angeles in 1965. Two years later it appeared in San Francisco under the guise of the "PeaCe Pill." By 1968, it was seen on the east coast as "Hog." The N-ethyl analog of phencyclidine, PCE, cyclohexamine appeared in 1969 in Los Angeles. Due to the "ripple effect" phencyclidine appeared in five States from California to Maine by 1972. The following year, it was seen in 17 States, including Texas. In 1974, the thiophene analog of phencyclidine, TCP was first identified in Hawaii. That same year, phencyclidine had spread into another four States including Indiana, Iowa, and Virginia. The use of phencyclidine had spread into Maryland, New Jersey, Utah, and 21 other States by 1976. During 1977, phencyclidine appeared in 29 States. Between 1972 and 1978, phencyclidine was identified in street samples received by merely one drug analysis program in California as being in 44 States.

Phencyclidine use at the time of the National Youth Polydrug study occurred primarily among the white suburban population. Phencyclidine is being added to an already existing pattern of multiple substance abuse. Two-thirds of those patients who ever tried phencyclidine used it at least weekly. Self-destructive behavior is also much more prevalent among the phencyclidine user compared with the nonuser. The phencyclidine users were also found to have a more extensive involvement in the criminal justice system and more dysfunction in the educational process.

The information needed for the preparation of phencyclidine was reported over 50 years ago. Piperidine and cyclohexanone are two of the major chemicals required for production.

Piperidine believed to be the most guarded reagent and the easiest to trace, remains available to illicit drug manufacturers willing to pay as much as $1,000 per kilogram for a nontraceable bottle. Illegal laboratories containing as much as $25 million in street value worth of phencyclidine have been discovered in various areas throughout the United States. The last major seizure in Los Angeles—1977—yielded 900 pounds of phencyclidine.

For $625 worth of chemicals an illicit manufacturer can net $225,000. Phencyclidine sold as angel dust is packaged in foil bindles and zip-lock baggies. In bulk form, it generally sells for $125 an ounce. The more common foil bindles sell for $10 and weigh approximately 1 gram. Tablets infrequently sell for $2 to $4 each. Liquid phencyclidine is generally a clear fluid found in 1-pint jars which sells for $300 to $1,100. In addition, phencyclidine has been used to adulterate commercially manufactured cigarettes by dipping them into liquid phencyclidine. These cigarettes are sold for as much as $20 each.

New problems have surfaced in communities in direct proportion to the frequency and regularity of phencyclidine abuse. Violent and bizarre behavior is seen in the home, in public places, and in schools, often disrupting education. Young people exhibit unexplained speech problems, memory loss, thinking disorders, personality changes, anxiety, severe depression, suicidal and homicidal tendencies.

An increasing number of young people appearing violent, bizarre, unresponsive, extremely confused, or acutely psychotic are seen in local emergency rooms. Police report erratic driving and inappropriate behavior following automobile accidents in individuals who have no evidence of alcohol or sedative-hypnotic ingestion. On toxicological examination only the isolated presence of phencyclidine is often discovered.

Young people who are observed to be highly intoxicated in public are often arrested for sale, possession, and being under the influence of phencyclidine. In addition, an increasing number of referrals by family, friends, and the criminal justice system are made to community drug abuse programs in an effort to deal with this new drug problem.

The following are typical cases that illustrate the problems seen in youth on phencyclidine.

CASE 1

A 15-year-old male was found by police in a field with no clothes on, hanging on a barb wire fence. He was disoriented and incoherent upon questioning. A physical examination revealed a confused, disoriented youth with inflamed eyes, bloody mouth with an upper incisor missing, multiple scratches on the trunk and scratches and lacerations of the extremities. Fluctuations in orientation were observed over the next 7 hours ranging from cooperative and alert to unarousable. Prior to being discharged, the patient stated that he "smoked some phencyclidine and got awfully stoned."

CASE 2

A 16-year-old female smoked "a crystal joint" while at school and began acting bizarre. School authorities notified her mother who brought her to a local hospital. On admission, she was dazed and unable to recall who gave her the drug or how much she had taken. Toxicology was positive for phencyclidine only.

CASE 3

During the summer, a youth gave a pool party while his parents were away on vacation. A 17-year-old female guest was discovered at the bottom of the swimming pool. Post mortem examination revealed no head or neck trauma and the isolated presence of phencyclidine in the urine.

The confusional state induced by phencyclidine is characterized by disorientation, agitation or excitement, and a "blank stare" appearance in a patient who is noncommunicative. These patients are grossly ataxic and exhibit horizontal and vertical nystagmus—jerky movements of the eyes—on testing. Muscle rigidity may be present.

In phencyclidine stupor or coma, the eyes may remain open, although the patient is unresponsive to deep pain. Spontaneous nystagmus, "purposeless" movements, facial grimacing, and muscle rigidity on stimulation are characteristic findings.

The most characteristic feature of the high dose oral ingestion is the prolonged recovery period marked by confusion, disorientation, agitation, anarthria, and intermittent somnolence; followed by depression, irritability, and emotional lability.

In our intensive study of 30 chronic users, 80 percent considered their first phencyclidine experience to be pleasant and wanted to take the drug again. They found it fun, exhilarating, and felt happy or euphoric. For many, it seemed to be a perfect escape or a dream world. Users also experienced a feeling of super strength and endurance. They used such descriptions as "powerful," "superior," "bursts of energy," "like God was with me and I could move mountains." There was a loss of inhibitions. These users reported difficulty in doing things; one had "to think about moving or talking." They said feeling restless and nervous usually occurred while using phencyclidine.

Tolerance to the effects of the drug appeared to develop. Initially, users would get "high" after two or three puffs on a phencyclidine joint, following a 1-week period of daily use they required one half to 1 joint. After smoking for a period of 2 to 6 weeks, most individuals used one or two joints at a time. Some users reported being able to smoke up to one-quarter gram of street purchased material at one sitting, following several months of regular daily use.

One of the most alarming concerns we have about phencyclidine is longtime effects we have seen with chronic users, and what I mean by chronic users is somebody has used PCP for at least 3 days per week for a period of 6 months or more. When they discontinue all use of the drug, we see difficulty with speech, with memory, with concentration. We see periods when they are bizarre,

violent, amnesia, and this may persist up to 4 or 5 years after they have discontinued all use of the drug.

Senator HATHAWAY. Comparable to LSD?

Mr. LERNER. No, it is not. You do not see the effect with LSD lasting as long. If you take a look at amphetamines, for example, somebody who is psychotic, you could put them on secured wards in a hospital where they do not have access to amphetamines, and within 7 days they are alert and oriented. They may be severely depressed as a result of postamphetamines depression but they are oriented. With phencyclidine it takes anywhere from 2 to 6 weeks of in-patient hospitalization before the individual starts to clear, for a small percentage of young people who become psychotic and it looks like they do not return to normal. It looks like they remain that way. Chronic users also report persistent problems, not only with memory and speech, but difficulty with the thinking process. And again, this is after long periods of abstinence. Users complain of stuttering and ability to speak and difficulty with articulation, and again this lasts for many years in some cases after they discontinue the use.

Another major concern is the violence that we are starting to see.

A large number of deaths have occurred in association with phencyclidine intoxication. One thing is drownings. A lot of times this may occur indirectly as a result of improper management by law enforcement personnel. One example was a young 17-year-old woman who was driving a car eradically and police pulled her over, and as they attempted to arrest her for driving under the influence, they also cited her for resisting arrest. She was intoxicated on phencyclidine. Rather than being taken to an emergency room for a medical clearance, she was taken directly to the jail facility. As part of the booking process, she was left unattended in a shower and drowned in 3 inches of water.

The majority of phencyclidine deaths have been asphyxia by drowning or trauma, circumstantial evidence suggesting that death was secondary to behavioral toxicity. Users often cannot perceive their limbs in relation to three dimensional space and cannot respond appropriately to imminent danger.

Other individuals have died from no apparent cause and the presence of phencyclidine in high concentrations constituted the only positive finding. The most probable cause of death in high dose phencyclidine intoxication is primary respiratory depression.

Many phencyclidine users report swimming while intoxicated because they experience unusual but pleasant sensations from the water.

Suicide by self-inflicted trauma or a massive oral overdose of phencyclidine occurred among chronic users who became moody or severely depressed. It is the chronic user who is usually in possession of large amounts of phencyclidine. They report that a chronic user will do almost anything to get the drug. Threatening behavior or violence has increasingly resulted in provoked homicide.

Phencyclidine deaths nationally appear to be on a dramatic increase. In Los Angeles alone, the coroner's office reported 20 phencyclidine related deaths in 1976 and 66 in 1977. There were three separate phencyclidine related murders in San Jose recently.

Nationally, phencyclidine use appears to be a serious new drug problem. Factors contributing to its increasing popularity include the users ability to control the dosage, an understanding of the immediate effects, and its availability.

Phencyclidine related problems have surfaced as tips of icebergs, the underlying causes hidden from public view. The problems emerge in the form of speech difficulties, memory loss, thinking disorders, personality changes, paranoia, severe depression, violence, accidents, suicides, and homicides.

In conclusion, the evidence currently available supports the assumption that if there is a solution to the problem of phencyclidine abuse, it is in part, better control of the primary chemical precursors.

Thank you.

Senator HATHAWAY. Thank you.

Dr. Shankman.

Dr. SHANKMAN. Mr. Chairman and members of the committee, I am the executive director of Second Genesis, a therapeutic community in which the three residents who appeared before you today are currently receiving rehabilitation. I am qualified as an adult psychiatrist and child and adolescent psychiatrist. Mr. Lerner addressed some of the historical events related to PCP and phencyclidine. If you look at the history, you will find drugs in general have been around for a long time. In the earliest recorded history in the seventh century before Christ, there is documentation that there had been drug abuse. As a matter of fact, in our own country, during the Civil War days, there was morphine addiction. It was about that time that the oriental laborers had come and introduced opiates; the hypodermic syringe was introduced shortly after that time; every carnival barker would claim his product could take care of all illnesses. Of course, when one would take it he was relieved. Morphine was an essential ingredient; it would mask the pain. As a matter of fact, when the Germans came out with heroin in 1901, the medical communities throughout the world were ecstatic because here was a chance to fight morphine addiction. We have learned what "replacement therapy" does. The reason I mention the history is that if we know in general that drugs have been around for such a long time, why now—why now does there seem to be such a concentration on drug abuse in kids? Today we focus on PCP, one of those drugs. In my opinion, one of the reasons is there is an emphasis on the availability of drugs. There is hardly a high school or junior high campus in this country where youngsters do not have access to drugs, as easily as you and I have access to cigarettes.

I am not just talking about the ghettoes of New York and Washington and Los Angeles. I am talking about such places as Arizona—even in small towns. These kids have access to drugs.

Another reason: In my opinion, we are hearing so much about drugs now. It is a dominant characteristic of contemporary life. We live in an age of chemicals. You have only to turn on the television, and Madison Avenue will lead one to believe that you were not "with it" unless you were actively involved in taking some kind of chemical.

In adolescents' search for chemicals, frequently, rebellion is one of the manifestations of his way of gaining some awareness or coming to terms with his own identity. Unfortunately, drugs are used for that purpose.

It is my opinion that there is in America in particular, something I refer to as "hedonistic lifestyles," something that I have come to label the American dilemma. So many parents in this country are determined that their children shall have everything that they did not have, that they deprive their children of something they did have—responsibility.

As a psychiatrist, I tell you, if you want to see a frightened child, show me an undisciplined one. You cannot expect any youngster, any young adult, to be independent and responsible without self discipline and a certain degree of responsibility. Now, why do youngsters turn to PCP, particularly in view of what Mr. Lerner has described about some of the dreadful and unpleasant effects, and some of the things you heard from users this morning, or ex-users?

One of the reasons that a novice user uses PCP is that he does not know what he is taking. It is absolutely fascinating—if you speak to the young population group, they are terribly afraid of narcotics, but they seem indifferent to PCP. And yet as a physician, the effects of PCP are far more frightening to me.

The adolescent age group are very much concerned about peer acceptance. Many of the families just are not familiar with the dangers of this drug.

Another reason kids are turning to PCP is the availability. As has been reported by Mr. Lerner's group and others, from $600, you can get something like $200,000 profit. Needless to say, with the people willing to produce it, there are even more people willing to take it.

What about those more familiar with PCP? Why would they turn to it?

One of the things about PCP is that you get a most unpredictable reaction. There is a tendency, we have found, with the users of PCP to forget some of the horrors that occurred when they were on it. The inexact nature of PCP for many users are the reasons they will turn to it.

Another reason people turn to PCP is that one gets immediate gratification.

Now, what are some of the dangers of PCP, particularly from a therapeutic and clinical point of view.

We have found, as others have, that individuals who are predisposed to schizophrenia are very susceptible to this drug.

One of the things that frightens me most about PCP is that it potentiates a central nervous system depressant. Now, it is unusual, certainly, in our experience, to find that a youngster will use PCP alone. He usually will use it along with alcohol, barbiturates, et cetera, all of which are central nervous system depressants. When he uses this drug, it is in and of itself horrendous—but when he uses it in combination with other drugs, he potentiates a central nervous system depressant.

One of the central dangers that has been mentioned by residents this morning is that one cannot distinguish fantasy from reality when under the influence of PCP.

One of the things that frightens me particularly about this drug is the high rate of deaths by accident and by violence. This is a drug that concerns me more by the behavior that it produces, rather than by the pharmacological effects of the drug itself.

I am less concerned about drug overdose. I am more concerned about the serious dangerous behavior that occurs when the individual is on the drugs because violent behavior is almost always seen.

As a physician, I raise the question: Why should you gentlemen, legislators, our country's leaders, be concerned and interested in this problem? I implore you to be concerned because, in my opinion, next to marihuana and alcohol, PCP is probably, to the most extent, one of the most dangerous drugs on the street today. It is a drug used to mask underlying depressions; and it is a drug about which people know very little. You should be interested because PCP is probably the most appealing drug to the younger population groups.

Users range in age between 15 and 25 years. In our program we find that about 20 years of age is the average age. This is a time in terms of psychological and emotional development that is the most vulnerable years, the most crucial state of life.

We have found that PCP, although used by primarily white males or affluent users, transcends all socioeconomic, ethnic, and any other lines. It is used by all.

The cost is something that should concern you, not only in economic terms, but in human values as well. It is a drug that is not only self-destructive, but one around which there is much societal disintegration as well; because PCP usage is a self-imposed problem, it is very hard to muster the general public to be sympathetic to a PCP user. Unlike cancer or retardation, which are not self-imposed problems, trying to get people to understand, to listen, to support helping these youngsters is a difficult task. But it is my experience, gentlemen, that it is as unwise medically as it is economically to ignore this problem, even though it is a self-imposed one.

We should be interested because PCP is a frightening model of what can happen when a potent drug is easily synthesized at low cost from easily available chemicals.

Mr. Lerner addressed some of the symptoms, and I will not go into all of those.

Regarding treatment—in the acute phase of treatment, whatever one's orientation must be, it is my opinion that it must be dealt with in a drug-crisis center or hospital emergency room. There are roughly three essential phases in that acute stage, and without belaboring the point, I would say there are about 5 days of violent psychotic behavior, about 5 days of restless behavior, followed by 4 to 5 days of improvement of thought disorder.

This varies from patient to patient.

One goes from a mild excitation to catatonic rigidity, to coma and stupor. During this acute phase, it is imperative that the individual be handled in an emergency room or some sort of similar medical facility.

Mr. Lerner gave you an example of what happens when people are unaware of that.

What happens after this acute phase? What about chronic users, chronic producers?

It is my belief that when one approaches drug usage in terms of therapy, you must think of drugs as a symptom of an underlying disorder. Drug abuse is a symptom of a problem. It is not the difficulty. A psychotic can use drugs, a neurotic can use drugs, a character disorder can use drugs, and so on. You must find out of what the drug usage is a symptom.

Second Genesis, is a therapeutic community. As its name implies, it is a program that offers a second chance to young men and women who have been involved in this negative lifestyle, and it offers them an opportunity to turn their lives around. It is a highly structured, nonpermissive, 24-hour-a-day residential treatment program. There are no chemicals used.

As I related to you in the history, we learned from history that replacing one drug with another has no purpose in long-term treatment.

There are cardinal rules. There is no violence or threats of violence in this program. It is a program that is based on the concept of self-help and the dignity of labor. Whether irresponsible behavior was a result of despair, sadness or even boredom—as you find among the more affluent—at Second Genesis we believe that irresponsible behavior is a vehicle of damage and self-destruction. There is a basic axiom in psychiatry: You never take something away unless you have something better with which to replace it. To say that drugs do not work, unfortunately, is not true. Drugs would not have been around throughout history if they served no purpose.

At Second Genesis, we replace drugs not with other drugs, but with a chance for a real "high." We provide an alternative to the self-destructive lifestyle.

In our program, and in programs such as ours, in the therapeutic community, we help others grow. We operate on the premise that choice, responsible choice, is the hallmark of freedom. We use the past in our therapy, both individual and group, not as a cesspool from which to borrow, but something from which we learn. Residents learn to make responsible choices and to accept the consequences of those choices.

An individual cannot become a responsible individual without self-discipline; these are things that these young men—such as those who appeared before you this morning—have learned.

In the phases of treatment, it is our belief that when a person first comes into any treatment facility a diagnosis is imperative; you have to understand what you are doing, because not everyone is a candidate for the therapeutic community. Once he comes to us, the first phase is the induction phase, which lasts 3 to 4 weeks. During this time, they are learning to conceptualize. There is a very careful screening process. There are staff meetings during which appropriate treatment plans—that include both individual and group therapy and family therapy—are determined. Phase I, which lasts about a year, places emphasis on life within the therapeutic community, and during this time, while they are getting

individual and group therapy, we specify work in depth, in reevaluating and setting up treatment plans.

After this period of time when the individual has reached this point, he enters phase II, which lasts about 8 months. It is during this phase of therapy—which we refer to as detoxification—in treatment that the individual must learn to live in the world outside, the one upon which he was previously parasitic. While he is living in the facility, he works outside, and/or goes to school. There is tremendous emphasis on occupational, vocational, and educational programs, all of which is in the service of rehabilitation. When he or she shows responsibility, he sets up his own bank account, exploring job skills and social skills. They then move into the final phase of the program, which is phase III.

During this time, they live out; they go to school or work out, and they come back to us for their group or individual treatment; during this time in their therapy they talk about the changes that they encounter during this phase of their growth. And when they have their confidence, they graduate.

The average length of stay is about 18 to 24 months.

Again, remember the population with whom we deal is primarily the character disorder, known to you gentlemen perhaps as the delinquent or incorrigible. You have to work with them in a special way because of the dynamics of their problem which I shall not go into at this time.

What about the success of this therapeutic approach?

Gentlemen, perhaps the best evidence of success was demonstrated before you this morning by the presence of these three men. I wish you could have seen them when they first came. They could not articulate a sentence; they were frightened; they were overwhelmed; they were nonproductive; they were involved in negative lifestyles, quite typical of the others who come to us in that state.

You have seen these young men emerging.

We have 151 graduates; among that number, we have rarely found a return to a negative lifestyle once they graduate. Recidivism—less than 10 percent.

How do you measure success and what are some of the measures of success?

A study was done by the Northern Virginia Community, by an independent study group, the Planning District Commission, who conducted an "at-random" review of the cases of individuals who left the program—whether at graduation or during the program. This was their conclusion. They used several variables to measure success: How long did these individuals remain drug-free once they went back into society? Were they involved in criminal behavior again? What was their employment record? They found that as long as an individual stayed in a program like this for at least 6 months, the program had substantial impact on these three variables that I mentioned to you. The longer one stayed, the more favorable the program was on his total rehabilitation.

What are some of the problems that one encounters in treatment, particularly with a PCP individual?

It is my experience that the worst problem with which one must contend is the denial of the parent. As parents, we frequently see our children as extensions of ourselves; whether it is out of guilt or

out of a sense of futility, we are afraid frequently to admit we have a problem because that means we have failed.

Let me give you one dramatic example of what happened.

I appeared as a guest at one of the most prestigious eastern schools. My host was chairman of the department of sociology at this school. At the end of the lecture, a party was given in my honor. My host asked whether I could speak to his son, not a long-haired hippie type, but a fine, handsome young man who was going to one of the other Ivy League schools.

While I was speaking to this youngster, he said he was writing a paper on drug abuse. I asked this youngster: "I am going to ask a question; you do not have to answer; but I feel you are on drugs."

"Are you?"

And this young man began to cry and he said, "yes." He was. At that time, he was experimenting and he was on PCP and some other drugs. I told him that I thought it would be advisable that one of us speak to his father. With reluctance, he let me speak with his dad, and I told him that his son had a difficulty; that I thought this young man should get help. The father, an educated man—one of the best known professionals in this country—turned on me as though I were a viper. "Who do you think you are? My kid does not have a problem. He is going to school. He is in college. He is not one of the 'hippies' you treat in your program."

I told him that I could understand his concern, but his kid was putting up a plea for help. Please help him.

About 6 months later, I received a letter, a rather sizable check to the Second Genesis program, a newspaper clipping, an obituary of a boy who died by drug overdose. A note, unsigned, from his father, that said, "Forgive me." I experienced no sense of satisfaction that I had warned him. It was only an incredible feeling of incredible waste. Here is an educated family, probably the type of family where kids would turn to PCP all because of ignorance and unwillingness to look at the problem. Parent denial is one of the greatest things we have to face.

Another problem we encounter is getting the individual to the appropriate treatment source, with the support of his family and, when necessary, the court. Again, I think this has to do with parental denial.

One of the greatest problems that one has in dealing with PCP is understanding that these individuals experience disturbances long after they stop taking the drug. They are subject to recurrent doubts of anxiety and depression and occasionally one might get sporadic outbreaks of violent behavior.

Gentlemen, I recommend to you these things:

First, the importance of drug education and awareness. Let me explain what I mean.

I wish sometimes they would put a moratorium on "drug education," for uninformed people to go into school to try to teach kids about drugs.

These kids—such as these who appeared this morning—are very knowledgeable. Ex-users can teach awareness of that part of this problem that is not so neat; they can convey the kind of thing that can happen.

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We have found that the best educators are our residents themselves. They went into the schools of northern Virginia, for example, and they spoke to the kids—when I, an adult professional goes in, students could care less about what I have to say. But when a kid—such as those who appeared before you today, who were on the basketball team, football team—points out to them it is not so "cool", and do not talk about the glamorous and excitement of PCP, but the other side, to help them understand what can help, the students find it very useful.

In appreciation, the kids of northern Virginia schools got together, put on a play, and all the proceeds went to the House. We would not accept any payment for that service. We felt this was "pay back" to the community.

Another recommendation I make to you is that treatment programs are essential, programs such as ours, and others. Retribution is not therapy. The problem with incarceration is that when you take these people out of society, you do not alter their behavior, and when they return to society, the rate of recidivism is in excess of 95 percent.

School systems need more structure. In this month's issue of The Washingtonian magazine there is a discussion of what is typical in the greater Metropolitan Washington area. People find classes boring, easy to skip, and there is not enough parental concern about student motivation.

The teacher is so overwhelmed, very little is done. As I told you before, if you want to see a frightened child, show me an undisciplined one. There has got to be some way that more structure can be introduced into the school system.

I think it is most important that we provide followup studies, evaluation programs such as ours, and others.

Senator CULVER. What do you mean by more structure in the school system?

Dr. SHANKMAN. If a kid skips class, there are very few sanctions which are imposed. If you read this article—in the Washingtonian—which I expect is very typical, the teachers feel the parents are not going to do anything anyway, and the teachers feel they have to be psychologists.

Many times in school systems they adhere to the "laissez-faire" policy—you cannot do anything anyway; why bother?

There are very little disciplinary actions that are imposed in schools on kids that skip. One of the things that we have is that if a youngster makes a choice, responsible or irresponsible, he should be held accountable for that choice. This is rarely done in the schools today. There is very little monitoring, and if you were to read this article, I think you would get a view of what is happening, and I suspect this is typical of other campuses throughout the United States.

Regarding these followup studies about which I spoke, they are the most costly of research studies because you are bound by the mandates of confidentiality and, because of that, it requires far greater involvement and therefore greater cost.

Gentlemen, it was not a psychologist, but a philosopher who said that if man has a "why" for which to live, he will find the "how."

At Second Genesis, we know the "why" that we must exist. Our program at Second Genesis merely provides us the "how."

Thank you.

Senator HATHAWAY. Thank you very much.

I gather that both of you would say that PCP is not an addictive drug physically; is that correct?

Mr. LERNER. Not physically addictive. I do not think there is any question about psychological dependence of the drug; users talk about craving the need and will really go out of their way to obtain the drug, really at any cost. In California it has even been introduced into the penal system where they will take commercially manufactured cigarettes and dip them in liquid phencyclidine and then take them in at visiting times.

Senator HATHAWAY. From a practical viewpoint, what difference does it make whether it is physical or psychological if they feel they have to have it?

Mr. LERNER. With the chronic users, they initially reported that one or two puffs on a joint would get them high, and after using it for a period of a week, they would need to smoke a half joint or a joint. As they continue to use it regularly, they would have to increase the amount of material they were using to maybe two or three joints. In the research that was done, 20 milligrams would render somebody unconscious for 45 minutes for minor or major surgery, so they are using a tremendous amount.

Dr. SHANKMAN. You are correct in that from a functional point of view, whether something is psychologically or physically addicting, it is still a very great problem with which you must contend. PCP is not addictive in the physical sense in that if you take the drug away, you get withdrawal system—it does not happen with PCP. It is of significance in terms of how you approach it medically.

But in answer to your question, your observation is quite correct that just because it is not physically addicting does not mean that psychological addiction is not a very serious problem.

In the literature which I told you about, this professor whose son died of a drug overdose, that was his argument, and when I pointed out his son was on PCP, he said: "It is not heroin." I think that has something to do with the fact that people—and as I stated earlier in the testimony, kids are not afraid of PCP; they do not know the side effects. Yet they are frightened of narcotics.

As the young men who appeared before you today, they are sophisticated in street terms of what is available and they have a way of blocking that out.

Educate the parents about negative, not positive effects of PCP.

Senator HATHAWAY. You have different treatment modalities for PCP than you would for LSD?

Dr. SHANKMAN. Again, we are concerned not with particular chemical that is used. We see the drug usage as a symptom of underlying disorder. However, in the approach which is in essence the same, whether it is an LSD user or a PCP user, you must keep in mind the side effects of the drugs.

For example, PCP causes long-lasting side effects in some of the difficulties that occur later, and you must keep this in mind during your therapeutic approach.

But in essence, a character disorder is a character disorder whether he uses LSD or PCP.

Senator HATHAWAY. You mentioned drug education. Again, I feel you are placing emphasis on peer-group education and not teacher education in the schools.

Have you had enough experience with that to know whether it is helpful or not? I am thinking that our general experience in the drug and alcohol education program is that they are of doubtful value.

Dr. SHANKMAN. It is my opinion, Senator, that it has less to do with the educating than it has to do with the educator. When these youngsters who are quite impressive go into the schools and they hold rap sessions with other people their age and they do not talk about the high they got or the bad high they got; that turns people off; but address some of the things that happened to them as a result of their behavior, not the effects of the drug—it has had enormous effect certainly from our experience in northern Virginia and Maryland.

If the educator is someone who knows what he is talking about and someone who is sensitive to the feelings—I do not mean to imply that adults just by virtue of being old, they are precluded from the education market; I just think the adolescent market, peer involvement and peer response is a very important factor.

Senator HATHAWAY. As far as age group is concerned, PCP is confined to about the same age group as other drugs?

Dr. SHANKMAN. No.

In our experience, we have found that PCP generally appeals to a much younger population group. Now, it is interesting, about 8 or 10 years ago, you could make distinctions among groups of users; for example, heroin, I have always found transcended all sorts of economic, racial, ethnic lines, as did marihuana. Amphetamines years ago, we have seen mostly affluent users. You did not find it in black ghettoes. Now, you find everyone using everything.

With PCP we have found, at least from our statistics—and Mr. Lerner can address what his experience has been—you generally find the rich, young and bored, users and as the more frequent users, young, white males.

Wealth is no protectorate, not with this crowd.

Senator HATHAWAY. What is the upper age limit?

Dr. SHANKMAN. We have found between 15 and 25 is about the range. I think that is the national range. In our group, the average age is about 21.

Senator HATHAWAY. In your suggestions, you mentioned drug education treatment programs as the most effective way is to get it at the source.

Dr. SHANKMAN. Of course. I did not emphasize that because Mr. Lerner had addressed that. I was making an additional recommendation. Without a doubt, that is probably the most important factor.

Senator HATHAWAY. Is it so easy that you can get the chemicals to make it yourself?

Dr. SHANKMAN. Yes. I think you will have people this afternoon who will be testifying on this. I am less knowledgeable about how

available these chemicals are. But it is my understanding that they are readily available, easily manufactured, and with great profit.

Mr. LERNER. To follow up on that, if you saw the interview we did for CBS' Sixty Minutes, they followed the Drug Enforcement Administration's seizure of a laboratory in the Michigan area. The $200 investment in chemicals yielded $200,000 in profits.

In Los Angeles, currently, for approximately 625 dollars' worth of chemicals, you could make 225,000 dollars' worth of PCP, and there are several recipes for $1,000 you can purchase on the street; if you can read, you can make phencyclidine, and they are not experienced chemists in smaller operations.

Senator HATHAWAY. Thank you.

Senator Culver?

Senator CULVER. On these education programs, when you are talking about utilization of peer group activities of various kinds, how advanced are we now currently in our training programs in schools?

For example, it is not likely that you can orchestrate the kind of strategy that will bring the kind of young men who are here into an incredible number of school situations no matter how gifted and committed they were.

Are we doing anything with candid films and documentaries? Are we getting away from the charts that put everybody to sleep? Are we trying more realistic methods which reach young people in ways that will interest them?

Dr. SHANKMAN. I would be reluctant to present myself as an authority on what is happening in the schools today. I know what our involvement in the schools are and I know what I suggest to the school system in terms of education, coming from the perspective of child and adolescent psychiatrists who deal with kids who happen to be going to schools.

It is my opinion and impression that in the schools today they are feeling so overwhelmed by so many other topics that drug education seems to go by the wayside. Unfortunately, if some of the examples in the curriculum that I have seen are indicative or what are used in other school systems, it would bore me to tears, and I suspect the kids find it equally distasteful—not distasteful, but less informative.

I feel there is so much to be done. I feel if we pooled our resources, the educator, the psychiatrist, and such, and come into something and take into advisement the greatest group of experts of all, such as those who appeared before us, these three young men this morning, that type, in advising and reaching the school system, you would have a more effective education program.

Senator CULVER. You have been involved in what has apparently proven to be a very successful effort at rehabilitation in this field, but I am just a little surprised that you haven't been involved in more communication and coordination with those involved with other parts of this problem.

For example, to come to a Senate hearing and say we ought to have better types of education, but I have not had a chance to talk to any educators about this—I do not understand it. I cannot imagine a meeting you would go to any time during a year on this

subject that would not properly have educational participation and involvement.

Dr. SHANKMAN. Yes. I do not mean to imply that there is not communication between educators and therapists. I just feel that many times—and, again, this is conjecture, because I do not know—but I suspect in many school programs, in setting up their programs, they do not take into advisement some of the expertise they have in the community.

I can assure you, Mr. Culver, reticence is not my strong point, and neither is subtlety. I express my views. I feel there is more that should be stressed, and I would hope those setting up the curriculum would take this into advisement.

Senator CULVER. You have not seen a representative sample of the kind of thing that is being used in schools today. For example, we could make a phone call today, I assume, and get a pretty good indication by the end of the day just what is available, if anything, in terms of films in this area.

Mr. LERNER. For PCP specifically there are only two films available on PCP and both of those are recent productions.

Senator CULVER. Do they use peers talking to peers?

Mr. LERNER. In the film, "The PCP Story," Dr. Stan Burns and I talk about our experience——

Senator CULVER. You are not a peer.

Mr. LERNER. There are a number of chronic users in the film that talk about their experiences and highlight some of the problems.

Senator CULVER. All I am saying is you have said it is a great idea to have these young people go in and be living testimony to the dangers of drug abuse; to say, "Look at me; I am a living example." You have all said that. That is dynamite. You have testified that the educational materials that they are using do not work, that as far as you know they bore them, that they are no good.

My simple question is: Has anybody hired a good public relations firm to put one of these young men in a realistic rap setting and film them for several weeks and see if they cannot get a good documentary to put it on the compulsory show list around America?

Can we get there from here? Is that possible?

Let's cut through some of this nonsense. These poor kids cannot do it on their own. I know what it is like to go to 12 cities. Are we using films this way? If not, why don't you pick up the phone and say we ought to do it? Why don't you be the catalyst?

Mr. LERNER. Senator, I think the two films that are available are being used that way. They have just come out——

Senator CULVER. Are those films the ones we are talking about, where young persons are sitting there talking straight on about the effects of this drug?

Mr. LERNER. Straight on and candid. You see them under the influence of the drug and see——

Senator CULVER. You see them talking afterward about the consequences and their life and all of that?

Mr. LERNER. They are always chronically intoxicated; you do not see them drug-free in "The PCP Story."

Senator CULVER. If you do not see them drug-free, you do not see them the way we saw them here today.

Mr. LERNER. Correct.

Senator CULVER. Then you do not have what we are talking about.

Mr. LERNER. You certainly do not have people who are drug-free, no. It is not available.

Dr. SHANKMAN. Mr. Culver, I am delighted to hear of your enthusiasm about having this done. I can assure you that our program which is geared to treatment, is more than anxious to cooperate, and perhaps you as a legislator can make some political impact far greater than I as a treater can do in terms of suggesting this. I am suggesting it to you. You are a leader of the country, not I.

Senator CULVER. You are the expert on this, and I happen to be on five committees—one of which is focusing on this problem.

I do not think any of us are going to advance the cause by laying off a major problem and responsibility on anybody else. Senators are not any smarter the day after they are elected than the day before.

I tell you one thing, if I spent my whole life in one area, I would like to think I would have been taking the initiative on a little better coordination in attacking this problem.

Now, I will be delighted to work with you on this. I will be delighted to start it.

The thing that frustrates me is, we come in here with this narrow departmental perspective and splintered approach to these things, and we keep saying, education is important; the materials we are using now are trash; and we keep saying it is a lot better to use this approach. All I am trying to say is, have you ever tried to film this approach so we can have some real effect and impact? It is a simple question.

Mr. LERNER. Senator, for my group, we have published more——

Senator CULVER. You say "yes." Then I say, describe the film, and you say, it isn't the same thing you said it was. In your film the young persons are high on PCP, but you do not have them after they sober up, after they have gone through the program, to the point where they are in a condition to really talk about what they have experienced.

What does it look like when you started to change your life and what does that mean? What are the more positive rewards and satisfactions that you are experiencing as a result of that effort, that serious conversion and the restoration of a meaningful, satisfying lifestyle? What are the positive characteristics? You do not have that on film yet as far as you know.

I say if you do not have it on film, get it on film, if you think that is the thing that works best; get it out.

I do not have any other questions, Mr. Chairman.

I do have some to submit to the record that I would like to have you respond to in writing.

Senator HATHAWAY. Gentlemen, thank you very much.

Senator CULVER. Our next witness is Mr. Gus Tsavalas. He is an inmate at the Federal Correctional Center at California, where he is serving a 3-year sentence for manufacturing PCP.

Mr. Tsavalas is currently cooperating with the Drug Enforcement Agency on a large-scale PCP investigation and he has volunteered to testify and is before us this morning concerning his knowledge of the PCP trade. Since Mr. Tsavalas is assisting DEA in an ongoing investigation, DEA has requested that Mr. Tsavalas' face not be photographed. I would ask that the members of the media honor this request.

Before we begin, Mr. Tsavalas, I want to assure you that under the Constitution and the rules of the committee, you have certain rights, and I want to make sure that you have been apprised of those rights.

Mr. TSAVALAS. Yes, I have.

Senator CULVER. You know that you have the right to be accompanied by a lawyer if you so desire?

Mr. TSAVALAS. Yes, I do.

Senator CULVER. And, secondly, under the fifth amendment, you have the right to not answer any question that you feel might tend to incriminate you.

Have these rights been explained to you?

Mr. TSAVALAS. Yes, they have.

Senator CULVER. For the record, then, Mr. Tsavalas, you are appearing here this morning voluntarily?

Mr. TSAVALAS. Yes, I am.

Senator CULVER. And you understand that you have the right to be accompanied by an attorney, if you desire?

Mr. TSAVALAS. I do.

Senator CULVER. And you voluntarily waived that right?

Mr. TSAVALAS. I have.

Senator CULVER. You also understand the fifth amendment with regard to self incrimination?

Mr. TSAVALAS. Yes.

Senator CULVER. In that case, would you please stand and raise your right hand and be sworn.

Do you swear, Mr. Tsavalas, that the testimony you are about to give is the truth, the whole truth and nothing but the truth, so help you God?

Mr. TSAVALAS. I do.

STATEMENT OF GUS TSAVALAS, INMATE AT THE FEDERAL CORRECTIONAL CENTER AT CALIFORNIA

Senator CULVER. Mr. Tsavalas, in November 1976, you pled guilty to manufacturing PCP, is that correct?

Mr. TSAVALAS. That is correct.

Senator CULVER. And you are now serving a 3-year sentence for that crime?

Mr. TSAVALAS. That's correct.

Senator CULVER. Did you have any previous criminal record prior to this conviction?

Mr. TSAVALAS. No, none whatsoever.

Senator CULVER. Can you tell us how you first became involved with PCP?

Mr. TSAVALAS. In 1969, I got involved with it socially through the music business. I was in the music business at the time and got involved with a crowd that was using it, just introducing it. It

initially started on the social level—parties, other social functions—and it was at the time beginning to filter into the music business.

Senator CULVER. When did you first begin to manufacture PCP?

Mr. TSAVALAS. In 1974.

Senator CULVER. To manufacture PCP, you had to, of course, obtain certain chemicals, is that correct?

Mr. TSAVALAS. Yes.

Senator CULVER. What are these chemicals?

Mr. TSAVALAS. There are varying formulas or recipes, or whatever you care to call them. From what I understand there are various standard chemicals that are readily available or were readily available until recently in California—piperidine, cyclohexanone, sodium cyanide, sodium bisulphite. There are also two distinct formulas for making the same product. One eliminates an involved stage by simply buying an already prepared chemical called phenyl magnesium bromide. There are about seven or eight chemicals.

Senator CULVER. Which, of the ones you have mentioned, in your judgment are essential to the manufacture of PCP?

Mr. TSAVALAS. Well, they are all essential, but I would say piperidine is probably the most essential.

Senator CULVER. How do you spell that?

Mr. TSAVALAS. P-i-p-e-r-i-d-i-n-e.

Senator CULVER. How difficult is it to obtain these chemicals now on the market?

Mr. TSAVALAS. In the open market? Well, depending on the quantity that you are interested in. Naturally, larger quantities are more difficult to obtain; smaller quantities are available, either through the black market or through various retail chemical houses that deal with universities and colleges—that's small quantities. Large quantities can be gotten through forging of or setting up of a phony company and going to a wholesale chemical house.

Senator CULVER. Piperidine is for the manufacture of rubber, isn't it?

Mr. TSAVALAS. To my understanding, it is for the manufacture of rubber and also has a lot to do with fiberglass and plastics, and so consequently you could——

Senator CULVER. So you could have a bogus company that purported to be in that business and try to order it.

Mr. TSAVALAS. A boat manufacturer, for example—making fiberglass boats.

Senator CULVER. Did any of the legitimate chemical firms attempt to learn what you intended to use these chemicals for?

Mr. TSAVALAS. No, their only interest was in finding out if I had a company so that they could sell it to me on a wholesale level rather than sending me to a retailer.

Senator CULVER. So they were really trying to move the stuff and they really didn't have any concern about the legitimacy of your operation particularly?

Mr. TSAVALAS. Well, in some of the places I purchased some of these products from, they were even asking me if I wanted other items.

Senator CULVER. Which happened to be in your recipe?

Mr. TSAVALAS. Yes.

Senator CULVER. Have you ever found it necessary to use any subterfuge to purchase these chemicals?

Mr. TSAVALAS. Myself personally, no. I have known of subterfuge that was used, anywhere from bribing a shipping clerk to send a 5-gallon drum out the back door, or a 55-gallon drum out the back door, and paying for it but giving him a little bonus; to setting up, as I mentioned before, a bogus company that would be a front for getting larger quantities of the precursors that are needed.

Senator CULVER. You are aware that there has been legislation introduced requiring reporting of sales of one of these chemicals, doubling the punishment upon conviction for manufacturing and trafficking. In your opinion, would legislation that required the purchaser of certain of the chemical precursors of PCP, to produce some positive identification, to establish the legitimacy of their operation, and to state what they intended to do with these chemicals, make it more difficult, to manufacture PCP, significantly restrain the traffic in this substance?

Mr. TSAVALAS. Yes, I would say it definitely would, because most of your manufacturers are what we generally called "weekend cookers."

Senator CULVER. Weekend cookers?

Mr. TSAVALAS. Yes, because it is such a relatively simple recipe, a relatively simple formula, virtually anybody that gets their hands on it can make it. It would definitely eliminate those people, because they would not be able to purchase the chemicals or have any kind of elaborate false front, a phoney front. It would not cut everyone out altogether, but it definitely would be effective in eliminating most of your weekend cookers, which I would say probably are the majority in the manufacturing end of it.

Senator CULVER. Thank you. Senator Hathaway?

Senator HATHAWAY. Mr. Tsavalas, you say it is a relatively simple recipe. Is it easy to make?

Mr. TSAVALAS. Oh, yes, sir, very simple.

Senator HATHAWAY. Can you describe it briefly?

Mr. TSAVALAS. Well, it is basically mixing the ingredients that I mentioned earlier in proper order and proper quantities—and you can use things like ordinary kitchen equipment—corn cookers, porcelain pots, glassware, virtually anything, even to the point of using plastic garbage cans to mix the stuff in. It can be done by anyone; I am not a chemist. I just picked up a piece of paper, read it, and did it—it's that simple.

Senator HATHAWAY. It's just like a recipe in a cookbook.

Mr. TSAVALAS. Exactly, even simpler.

Senator HATHAWAY. How long does it take?

Mr. TSAVALAS. Well, depending on the quantity, it can take anywhere from a half a day to a couple of weeks, simply because there are two basic stages to making it, and one requires drying the PCC, which is not quite PCP as yet—and that is what takes time. But once that is done, then you can make 50 pounds in 2 hours.

Senator HATHAWAY. I see. Where did you do your cooking?

Mr. TSAVALAS. Well, garages; looked for a house that was kind of away from things—but I have known of people who have gone to great lengths to go find a place that may have 100 acres on it and

be away from anybody, or even go get a motor home and go out in the middle of the desert. I know of those instances. A lot of people generally look for areas that are away from population, because there is a definite odor.

Senator HATHAWAY. I see. So it could be detected fairly easily?

Mr. TSAVALAS. Oh, yes, absolutely—you can't escape the odor.

Senator HATHAWAY. What does it smell like?

Mr. TSAVALAS. Something licorice possibly—and you have a definite ether odor, because ether is one of the ingredients.

Senator HATHAWAY. And how did you distribute it after you cooked it?

Mr. TSAVALAS. Well, I wasn't particularly involved in the distribution of it, but I do know generally how the product was distributed. It was depending on the form of the finished product. If it were tableted, it was put into—I am not sure whether you are familiar with seal-a-meal packages, heat-seal things for storing foods? It was put into packages like that; they would seal it to keep the odor from getting out, in approximately 10,000 tablets per package, and boxed and shipped across the country to different States by either car or by train and on a few occasions I know of by plane—in millions of tablets. I know of States that it has gone into—it has gone into Michigan, it has gone to Oregon, it has gone to Washington, Colorado. I had nothing to do with that particular end of it.

Senator HATHAWAY. You just cooked it up and somebody else took it over from there.

Mr. TSAVALAS. Yes.

Senator HATHAWAY. What was your profit margin?

Mr. TSAVALAS. Well, I can give you a general profit margin on the overall picture.

Senator HATHAWAY. Sure.

Mr. TSAVALAS. Again depending on the quantity. You can make approximately 50 pounds of PCP for an overall cost—and I am being a little bit on the heavy side—of about $5,000 or $6,000, this is about 2 years ago, so I am sure prices have gone up since. At the time the wholesale price PCP was selling for approximately $5,000 a pound. Now, I would have to distinguish—there are different forms or different end products. You have got angel dust which people are most familiar with, this is the PCP on mint leaves; you have got what they commonly call salt, which is the actual finished product almost like a powdered milk substance that you derive the liquid from to put on angel dust, and you use for making tablets. When I say approximately $5,000 a pound, I am talking about the salt product. The tablets were selling on a wholesale scale of 9 cents apiece in quantities of 100,000 and over. And the cost of making them was incidental; when you talk about 1 pound of salt, it will make approximately 50 pounds of tablets.

Senator HATHAWAY. And tablets were 9 cents each?

Mr. TSAVALAS. Yes.

Senator HATHAWAY. You don't know what each tablet would cost, would you?

Mr. TSAVALAS. I couldn't break that down.

Senator HATHAWAY. It would be less than 1 cent.

Mr. TSAVALAS. Absolutely. The retail cost I heard went up as high as $1 per tablet. That was what they called a——

Senator HATHAWAY. It was a tremendous profit margin.

Mr. TSAVALAS. Oh, absolutely. Even in the salt product there was a tremendous profit margin. When you think that $5,000 or $6,000 will bring you 50 pounds at a low price of $5,000 a pound.

Senator HATHAWAY. How about the dangers to the producer?

Mr. TSAVALAS. There are dangers. I know of situations where people went literally up in flames, simply because of not taking the proper precautions. Ventilation is very important—so, consequently, that is why they look for areas that are wide-open and away from the general population. The effects other than that on the physical being are very bad.

Senator HATHAWAY. Smelling the fumes.

Mr. TSAVALAS. Oh, absolutely. I can't say that it is a definite aftereffect, but since I got involved with it, my eyes have really gone bad on me; I have never had occasion to use glasses or anything else, and I could see the deterioration in a period of a year. I don't know whether an ophthalmologist would agree with me about it, but that is my own personal opinion of it.

Senator HATHAWAY. Thank you very much, Mr. Tsavalas.

Senator CULVER. You mentioned, Mr. Tsavalas, that you started using this socially in the sixties when you were associated with the music industry.

Mr. TSAVALAS. Yes.

Senator CULVER. Did you continue to use it over the years?

Mr. TSAVALAS. Yes, I did. The more I got involved in it, the more I got involved in it, if you understand what I mean.

Senator CULVER. How much did you use? I mean did you use it three times a week for more than 6 months?

Mr. TSAVALAS. More than 6 months definitely. I guess I am more fortunate than most in that I have always been able to stop when I felt myself going too far. I did use it for—over years, but always to a point where I could slow down, back off a little bit, and look at myself to see where I was.

Senator CULVER. You would carefully regulate the dosage, so you were able to slow down?

Mr. TSAVALAS. Yes. I guess that is just something that is like a built-in shutoff mechanism, and I could just stop for awhile.

Senator CULVER. Did you have bad trips?

Mr. TSAVALAS. Yes. Initially it was very euphoric; initially it does give you a kind of a mild hallucinogenic release, but you do get paranoid, you do get some strange ideas about what reality is. For instance, I was definitely convinced once that someone had changed the steering wheel on my car, and I couldn't get convinced that that wasn't the case—simple things like that.

Senator CULVER. Did it affect you days after you had used it?

Mr. TSAVALAS. Yes, your hangover is definitely there for quite a length of time, even in the limited quantities that I consumed.

Senator CULVER. Are you able to get it now in jail?

Mr. TSAVALAS. No, and I don't want it.

Senator CULVER. Do you feel that you have got a psychological dependency?

Mr. TSAVALAS. No.

Senator CULVER. Is it available in the jail?

Mr. TSAVALAS. No—not that I know of anyway.

Senator CULVER. From what you say, a teenager wouldn't have really much difficulty obtaining the chemicals necessary to make PCP.

Mr. TSAVALAS. I would say at this stage, in the kind of quantity that they would be making, they would have a very easy time of it.

Senator CULVER. What kind of money were you making a year when you were really producing PCP? And did you go into it full-time and set aside other activities?

Mr. TSAVALAS. For a while, it wasn't full time; then it got to be full time, yes.

Senator CULVER. What kind of money were you making?

Mr. TSAVALAS. Well, it was given to me in dribs and drabs, you know, $1,000 here, $2,000 there. I would say over a period of 2 years I made approximately $30,000, to $40,000.

Senator CULVER. Have you ever experienced a situation in which the chemical supply firm that you were dealing with may have suspected that you were actually involved in the manufacture illegally of this PCP and that they then raised their prices?

Mr. TSAVALAS. Yes, oh, yes. I have run into situations where—for instance, sodium bisulphite, which is a food preservative, was sold at one price if you went in and bought let's say a couple of ounces of it, but if you wanted to buy 5 pounds of it or 10 pounds of it, all of a sudden the price got exorbitant to where the price of 5 pounds was more than you would pay for a 100 pounds from another legitimate chemical house or a larger size chemical house.

Senator CULVER. And, finally, what different forms of PCP did you produce?

Mr. TSAVALAS. Tablets and salt.

Senator CULVER. Spread on parsley?

Mr. TSAVALAS. No, that part I never got into, although I was present when it was being made. Basically, you have got the basic formula which is the salt, that is what the other finished products are manufactured from; you can make tablets directly with the salt.

Once you get beyond that you have to go through further chemical processes to make the concentrate—actually create a liquid concentrate from the salt, and put that onto your mint leaves; also, as was mentioned earlier, the dipping of cigarette into the liquid. The salt is your basis; that is where everything comes from. Some other forms require additional chemical reactions.

But basically you have tablets, you have salt, you have angel dust, you have crystal which is liquid concentrate solidified again, and also used to sprinkle in cigarettes and smoked—but in very small quantities, because it is very potent.

Senator CULVER. Thank you very much.

Senator HATHAWAY. Thank you.

Mr. TSAVALAS. Thank you.

Senator CULVER. I want to thank you, too, for your appearance here, and, as was noted earlier, you have cooperated with the Drug Enforcement Agency on major PCP investigations and made a number of other efforts to rehabilitate yourself, and I commend you for your sincere efforts in this regard and wish you well.

Mr. TSAVALAS. Thank you very much.

STATEMENTS OF RONALD MELLISH, ASSISTANT U.S. ATTORNEY, DETROIT, MICH.; AND MICHAEL GUY, SERGEANT, ADMINISTRATIVE NARCOTICS DIVISION, LOS ANGELES POLICE DEPARTMENT [1]

Senator CULVER. Our next witnesses will appear as a panel. I wonder if they could come up at this time, Sgt. Michael Guy and Mr. Ronald Mellish.

It is a pleasure to welcome you both this morning to our hearing—Sgt. Michael Guy of the Administrative Narcotics Division of the Los Angeles Police Department, and Mr. Ronald Mellish, who is the assistant U.S. attorney in Detroit, Mich. They are both here today to testify concerning the problems that PCP creates for the police and the prosecutors.

In the interest of time, gentlemen, I wonder if you could both make brief opening statements, if you would, and we will put your full statements in the record, then we could proceed directly to questions.

So who would like to begin—Mr. Mellish?

Mr. MELLISH. Fine, sir. By way of background, I am a former special agent of the Federal Bureau of Investigation; I served in that capacity for 6 years. I was an assistant prosecutor in Ann Arbor, Mich., for 2 years; and prosecuted narcotics cases at the State level. And then for the past 2 years I have been an assistant U.S. attorney in Michigan, prosecuting primarily narcotics cases with investigation by the Drug Enforcement Administration.

Today I am testifying in the interests of the Department of Justice but I am testifying with respect to my professional experience as a trial attorney, and thus my statement does not reflect Department of Justice policy.

That concludes my opening statement. If there are any questions, I would be glad to answer them.

Senator CULVER. Sergeant Guy.

Sergeant GUY. Mr. Chairman, on behalf of Chief Gates and the Los Angeles Police Department, I welcome the opportunity to come and talk to you this morning about a problem that we recognize in Los Angeles as probably the single greatest narcotics or drug problem that we have currently in the city. We have submitted to you some information in a report dealing with a statistical breakdown on what is occurring in Los Angeles, and I would just like to emphasize a few things about that particular aspect.

We started experiencing a major problem with the drug in 1974. And we at that time seized in the neighborhood of a quarter of a million individual dosage units of PCP. The following year the figure jumped to over 8 million. And we have currently seized in excess of 6 million dosage units through the month of May 1978.

Senator CULVER. Excuse me, what do you define as a "dosage unit"?

Sergeant GUY. One joint, a sufficient quantity for a snort, or one hypodermic quantity to be used by the user—a single individual unit.

We estimate it will go easily over the 12 million figure for 1978. That is just in the city of Los Angeles.

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[1] See p. 100 for Sgt. Guy's prepared statement.

If you look at the three major agencies in Los Angeles County who are involved in enforcement, the seizure figures for 1977 add up to 55 million units that were seized by law enforcement agencies. Our arrests are three, four times what they were the year before. We are now arresting in the neighborhood of 2,500 to 3,000 people per year for being under the influence, sale, or possession—and these figures are doubling, tripling, every year.

As Mr. Lerner mentioned earlier, overdose deaths are increasing. In 1976 there were some 20 overdose deaths directly related to the drug; the following year the figure jumped to 66.

There is a different thing occurring with this particular drug in that most of the overdose deaths are not attributed to the drug itself, but they are what Steve refers to as behavioral toxicity—the drownings and this type of thing, walking across freeways, stopping cars on freeways, et cetera.

The drug is producing a tremendous problem for law enforcement because the individual who is under the influence of this drug is extremely difficult to deal with. The drug eliminates, the person does not perceive of pain; therefore, it is very difficult for them to be controlled. Our traditional control holds that are taught at the police academy and by law enforcement agencies have been proven to be totally ineffective. It is not uncommon to find that it takes five or six policemen to control one individual under the influence of this drug. We are finding individuals who are breaking handcuffs behind them; they have sufficient strength, the drug does produce an increase in strength, and as a result of this they are actually snapping handcuffs. We had an incident at one of our high schools in Los Angeles where it took five male adult teachers to control one small female student. This is, again, a commonplace situation.

We are constantly looking into the problem of different type of control holds to see what will work with the individual who is under the influence of this, and have not come up with any successful method at this point.

Another problem it is creating for law enforcement is the laboratory, which has been discussed. We have found some 35 or 36, laboratories in the city of Los Angeles in the last 3 or 4 years. In 1977 there were 17, and we have had 10 so far in 1978. About half of these we encounter are as the result of an explosion; the other half are part of a narcotics investigation.

The chemicals that go into the production of this are very volatile, very combustible. They also produce toxic, deadly gases. It might be of interest to you that two of the chemicals that go into it are the same chemicals that were used in California at San Quentin in the gas chamber. And that is sodium cyanide and hydrochloric acid—potassium cyanide and hydrochloric acid. They do not go into the production at the same time, but they are part of the ingredients of the drug phencyclidine.

We did encounter a laboratory here recently where the people, the chemists, the cooker had placed a box of potassium cyanide on the table and on the ledge right above that he put a bottle of hydrochloric acid just sitting right on the edge, the idea being that if narcotics officers would come in and accidentally knock this

over, the hydrochloric acid would spill into the potassium cyanide, which produces a deadly gas. Fortunately this did not occur.

Senator CULVER. How was he going to get out of the room?

Sergeant. GUY. Pardon?

Senator CULVER. How was our friend, the cooker, going to get out of the room in time?

Sergeant. GUY. Well, he won't. He is hoping that since he knows it's there, he will not knock it over, I would think. You see, most of the time they are not there—present during cooking—because it does produce, again, very toxic gases. We had one incident in Los Angeles where the cooker was aware of the fact that it did produce these toxic gases, so he taped up the doors and the windows of his room—did an excellent job, the room was almost air-tight. And several hours later he was dead. It does produce a very noticeable smell.

Again, emphasizing the dealings with the individual, I could cite many, many examples where it took five, six, or seven policemen in order to control the individual. So it is creating tremendous problems in this area.

[The following was received for the record:]

ADDITIONAL INFORMATION REQUESTED BY THE U.S. SENATE SUBCOMMITTEES ON JUVENILE DELINQUENCY, ALCOHOLISM AND DRUG ABUSE

1. Is PCP distributed through the same trafficking networks as other drugs? How does it differ?

Phencyclidine (PCP) is not distributed through the same trafficking networks as other drugs. Since the drug is manufactured in the United States, it is not necessary to hook in with the traditional smuggling networks from Europe, South America, or Mexico. Due to the readily available chemicals and formulas, amateur chemists are producing the drug domestically and traditional trafficking networks are not needed. The majority of the laboratories in the Los Angeles area are operated by these inexperienced chemists.

2. Is it hard to bust a laboratory operation if you don't catch the amateur chemists in the act of producing the drug?

The Uniform Control Substance Act of the State of California makes it a felony, under Schedule III, to possess PCP. It also makes it a felony to possess piperidine and cyclohexanone with intent to manufacture.

In a laboratory setting, prosecution under above may be very difficult. If the seizure of the lab occurs before the final product is produced, it is unlikely that successful prosecution will result since the offender does not possess PCP.

It can be extremely difficult to prove intent to manufacture. Generally, it is required that the formula be seized during the investigation. In many instances, the formula is destroyed or lost during a fire and explosion. In any event, prosecution of illicit lab cases are extremely difficult.

3. Are the users of PCP harder to subdue and arrest than other offenders? Are you familiar with any specific examples where this was the case?

PCP users are extremely hard to subdue and arrest while under the influence. PCP is an anesthetic agent which causes the individual not to perceive pain. PCP also appears to increase a person's strength above normal. Since it is also an amnesic, many times a person does not know what he is doing. By adding all of these elements together, it is easy to see that a person under the influence would be difficult to handle. Specific cases where officers have had difficulty in subduing suspects have been cited in previous testimony.

4. How available is PCP?

A. Where is it usually sold?

B. Is it a social drug (take in a group) or a drug one takes by himself?

PCP is readily available in all areas of Los Angeles. The average age of users has dropped to the junior high school level in many areas. Reports indicate that PCP is more popular than marijuana in many schools. It is sold most anywhere, on street corners, playgrounds, drive-in movies, or school.

PCP is not a drug that can be identified as a social drug from the standpoint that it is not always taken in a group, nor is it a drug that is always taken while the user is by himself. It will be used in whatever manner the user chooses to use it.

5. As an officer who works in schools and with young people, what have you found to be the attitude about PCP among:

A. Young people?

B. Teachers and school officials?

C. Parents?

The attitude young people have about PCP is different than most other drugs. Many users believe that the drug can be dangerous, but they would use the drug again if the opportunity presented itself. They accept the fact that problems may result for other people but it won't happen to them.

Teachers and school officials have little, if any knowledge of PCP. They are not aware of the dangers or the problems that students under the influence may cause for them on the campus.

Likewise, parents have no knowledge of PCP. It appears that many of them have a "head in the sand" attitude, believing that the problem could not affect them.

6. Have you found that the use or distribution of PCP is treated seriously enough by:

A. Police departments?

B. Prosecutors?

C. Courts?

D. Parole and probation officers?

The PCP problem has been treated seriously by law enforcement in the Los Angeles area for several years. The Los Angeles Police Department, the Los Angeles Sheriff's Department, and the Drug Enforcement Administration have specifically assigned squads to deal with the manufacture of PCP. The Los Angeles Police Department began an 8-hour PCP School in June, 1978, to educate officers in the identification of users and laboratories.

Prosecutors and the courts have taken a soft line approach to PCP. It can be clearly shown the manufacturers of PCP do not go to prison. This is not to say that they never go, but it is a rare situation when a conviction results in a prison sentence.

7. What has happened to the price of PCP in the Los Angeles area in the last 5 years? To what would you attribute the price trend?

The price of PCP from the manufacturer to the user has increased considerably in the last few years. The percentage of profit based on the initial investment is greater with PCP than any other narcotic or drug. Some manufacturers realize as much as 1,500 percent profit.

8. Is the recipe for PCP easy to come by? How much does it cost?

The formula for PCP can easily be purchased. Intelligence information indicates that a price as high as $2,500 has been paid for the formula. The average price for the formula is $700 to $1,000.

Senator CULVER. Thank you, Sergeant Guy. Mr. Mellish, do you want to just hit the highlights of the PCP experience in Detroit, as Sergeant Guy has done in terms of Los Angeles, and what the trend lines are?

Mr. MELLISH. It's my information and belief according to the Drug Enforcement Administration in Detroit, that PCP abuse is more severe than heroin at this point in time, and it is getting worse—it is my information and belief. It is the most abused controlled substance. It is readily available, as has been previously discussed in prior testimony in this hearing—in junior high schools, high schools, and colleges. Predominantly in the Detroit area it has been used in the past by white suburbanites, but recently it is moving into the black urban areas as well; blacks are getting into both manufacturing and distribution—it is my information and belief. I would suggest that the danger posed to the community because of this widespread use and manufacturing is twofold: one, because of the physiological effects it has on the individual; and, second, because, as Sergeant Guy mentioned, the explosive nature of the laboratories. In fact, in each and every

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laboratory situation, the DEA has a chemist go out and specifically survey the situation to make sure that adjoining dwellings do not blow up when the lab is finally taken down.

Senator CULVER. How many cases of this PCP have you prosecuted, Mr. Mellish?

Mr. MELLISH. I have prosecuted three major laboratory cases, and I have had a number of others; I have been involved in a number of others regarding the distribution of PCP.

Senator CULVER. It's my understanding that one of the cases involved a situation where some of the ingredients for PCP were actually being supplied by teachers, is that correct?

Mr. MELLISH. That's correct.

Senator CULVER. Could you describe that case for us?

Mr. MELLISH. In that case, an individual who was a science teacher in a high school was obtaining the precursors for PCP, at least some of them, from a local chemical firm. He obtained some of them personally from such firm, and also ordered some of the chemicals and the glassware sent to the school, which were delivered—in fact, I know that one piece of glassware that is utilized in the laboratory situation, the clandestine laboratory manufacture of PCP, was delivered personally to the high school.

And the way the case was cracked, so to speak, was through the precursor liaison program established by DEA. There was an individual at the chemical scientific firm who had a list of precursors for certain controlled substances, and he alerted the DEA, and subsequently surveillance determined that this man was buying the precursors and then taking them over, either from the school or from the place of purchase, to this house which was located in a residential neighborhood—and that is where the laboratory was eventually set up and produced PCP.

Senator CULVER. Thank you. Senator Hathaway?

Senator HATHAWAY. I suppose—California has a statute requiring the reporting of sales of one of the chemical ingredients, piperidine I guess it is. Do you think that statute is tough enough for you?

Sergeant. GUY. Yes, sir, there is a statute that makes it mandatory that the seller of piperidine report the sale of such to the State of California. However, the problem with the section is that reporting is required within 30 days. Well, some reports 30 days after it has been sold—the cookers have already produced maybe hundreds and hundreds of pounds of phencyclidine.

Also, there is no teeth in it, if you will, if it is violated, that there can be anything done about it. As a result, there is just really no penalty.

Senator HATHAWAY. So the statute isn't much good to you.

Sergeant. GUY. Not really—plus the reporting is done poorly—a person could say he was Santa Claus and their address was the North Pole. There would be nothing done about it from that standpoint since it is not mandatory that reporting and identification be verified. We find that most of the purchases are made by cash rather than by company check—and nobody makes any inquiry as to legitimacy of the purchase.

Senator HATHAWAY. And what about possession of any one of these ingredients—that wouldn't be a crime either, would it?

Sergeant. GUY. In California, possession of piperidine and cyclohexanone, together with intent to manufacture, is a felony. However, we must prove intent to manufacture, and that is extremely difficult.

Senator HATHAWAY. I would think so.

Sergeant. GUY. We have to have a formula or something to show intent.

Senator HATHAWAY. And the same thing in Michigan?

Mr. MELLISH. Yes, sir. And under prosecution by the Federal statute.

Senator HATHAWAY. What do you really need to make your prosecutions more successful?

Mr. MELLISH. Well, we need as much documentary evidence—hard, physical, tangible evidence that we can show to a jury or a judge to show the intent, to demonstrate the intent, to create the reasonable inference that the individual was going to engage in the manufacture of phencyclidine.

Senator HATHAWAY. You need tougher laws also, I presume.

Mr. MELLISH. Yes.

Senator HATHAWAY. Like what?

Mr. MELLISH. Well, such as the one that is presently proposed.

Senator HATHAWAY. Fine, thank you. Thank you both.

Senator CULVER. On behalf of the Juvenile Delinquency Subcommittee, I would like to thank both you gentlemen, as well as the other witnesses who were here this morning. We may possibly have some additional questions—perhaps we can send them to you, for our record, to further develop some of these points that are particularly within your area of experience and competence, so if we do that we would be grateful for your answering those for us.

Mr. MELLISH. Feel free to do so.

Senator CULVER. Thank you very much.

Senator HATHAWAY. I want to join with Senator Culver in thanking you and all of the other witnesses for your good testimony and answers to questions, and we may have some questions in writing to submit to you.

We are going to continue with these hearings, both subcommittees, so we will take a recess now until June 21, at which time we will have some Federal officials testify with respect to this problem.

[The subcommittees adjourned at 12:08 p.m.]

PHENCYCLIDINE (PCP OR ANGEL DUST)

WEDNESDAY, JUNE 21, 1978

U.S. SENATE, SUBCOMMITTEE ON ALCOHOLISM AND DRUG ABUSE OF THE COMMITTEE ON HUMAN RESOURCES AND SUBCOMMITTEE TO INVESTIGATE DELINQUENCY OF THE COMMITTEE ON THE JUDICIARY,

Washington, D.C.

The subcommittees met, pursuant to recess, at 9:40 a.m. in room 2228, Dirksen Senate Office Building, Senator William D. Hathaway (chairman of the Subcommittee on Alcoholism and Drug Abuse) and Senator John C. Culver (chairman of the Subcommittee to Investigate Juvenile Delinquency) presiding.

Present: Senators Hathaway and Culver.

Staff present: Subcommittee on Alcoholism and Drug Abuse: John Doyle, counsel; Ellen Akst, associate counsel; Nancy Olson, professional staff member, Committee on Human Resources; and Sherri Kramer, minority research assistant. Subcommittee to Investigate Juvenile Delinquency: Stephen Rapp, staff director; Josephine Gittler, chief counsel; and Cliff Vaupel, assistant counsel.

STATEMENT OF HON. WILLIAM D. HATHAWAY, A U.S. SENATOR FROM MAINE

Senator HATHAWAY. The hearing will come to order.

This is the second of two joint hearings of the Subcommittee on Alcoholism and Drug Abuse and the Subcommittee to Investigate Juvenile Delinquency to consider phencyclidine, commonly known as PCP or angel dust.

Two weeks ago we heard from three former PCP users who testified about the dangers of PCP and how easily one can obtain the drug.

We learned from a convicted PCP manufacturer, who is currently serving time in Federal prison, about the ease with which PCP is made; and the enormous profit that can be realized with a small investment.

Other witnesses testified about the widespread and growing use of PCP, especially among our Nation's young people. They cited the bizarre and violent behavior which can be attributed to the use of this drug.

The message of each witness was very clear: PCP is a deadly and devastating drug which must be controlled.

Controlling PCP is more difficult than controlling most abused drugs, however, because it is composed of readily available licit chemicals which are used for legitimate industrial purposes.

The purpose of our hearing today is to identify how we can put a stop to the abuse of PCP and similar substances.

We will hear from administration witnesses about current efforts with respect to prevention and education, treatment, and rehabilitation. We will also receive testimony regarding law enforcement activities related to PCP.

In particular, we will consider S. 2778, the PCP Criminal Laws and Procedures Act of 1978, introduced by our distinguished colleague, Senator Lloyd Bentsen, who will testify this morning.

Finally, we will have the benefit of testimony regarding the experience in controlling PCP in the State of California, which has enacted legislation for this purpose.

Once again, I am pleased to hold this hearing in conjunction with the Subcommittee to Investigate Juvenile Delinquency, chaired by my able colleague, Senator John Culver. Senator Culver and I have worked together on alcohol and drug abuse issues in the past.

His leadership with respect to the PCP problem has been extremely valuable.

John, do you have any opening remarks you would like to make?

STATEMENT OF HON. JOHN C. CULVER, A U.S. SENATOR FROM IOWA

Senator CULVER. Thank you, Senator Hathaway.

I do have an opening statement which I would like to make at this time.

We heard testimony 2 weeks ago about the spreading use of PCP, one of the most dangerous and destructive drugs ever to appear on the streets.

Today's hearing will focus on meaningful ways to reduce the tragic toll that the drug is taking.

We know that finding answers will not be easy, because PCP alone is itself only a symptom of deeper societal problems—the breakdown of families, the disintegration of close-knit and supportive communities, and a popular tolerance in America of taking drugs for various maladies.

Of course, we must continue our efforts to deal with these problems. But short of that, we have to consider specific measures to reduce the demand and supply of this vicious drug.

Today we will be receiving testimony about drug education and prevention programs and will be discussing methods for making them more effective in reaching and being utilized by young people.

I am particularly concerned about the need for improved education programs.

In addition, we will hear proposals, such as Senator Bentsen's, for controlling PCP by making it more difficult to obtain the ingredient chemicals.

Reducing PCP abuse will not be easy, but I believe that we must take every responsible and effective step necessary to save the young people of this country from the deadly effects of this substance.

I look forward to hearing today's testimony.

Senator HATHAWAY. Our first group is a panel of witnesses, consisting of: Dr. Peter Bourne, special assistant to the President and former director of the Office of Drug Abuse Policy; Dr. Robert DuPont, Director of the National Institute on Drug Abuse; and Dr. Helen Nowlis, Director of the Alcohol and Drug Abuse Education program of the Office of Education.

All of your statements will be put in the record in their entirety, so if you will summarize them that will be fine.

STATEMENT OF A PANEL, CONSISTING OF: PETER G. BOURNE, M.D., SPECIAL ASSISTANT TO THE PRESIDENT FOR HEALTH ISSUES;[1] ROBERT L. DuPONT, M.D., DIRECTOR, NATIONAL INSTITUTE ON DRUG ABUSE, ALCOHOL, DRUG ABUSE, AND MENTAL HEALTH ADMINISTRATION, PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE;[2] AND HELEN H. NOWLIS, M.D., DIRECTOR, ALCOHOL AND DRUG ABUSE EDUCATION PROGRAM, BUREAU OF ELEMENTARY AND SECONDARY EDUCATION, U.S. OFFICE OF EDUCATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE[3]

Dr. BOURNE. Thank you, Mr. Chairman.

I am happy to be here this morning to talk briefly about what the Federal Government has been doing in this area and about our current perspective on this problem.

We do see PCP as a serious problem in this country, and we have been looking at it in some detail over the last year.

We are concerned not only about PCP, but also about the fact that a synthesized drug is so widely accepted, when previously it had no marketability in the drug-abusing subculture. This acceptance sets a precedent for other synthesized drugs.

PCP is just one of thousands of drugs that potentially could be synthesized and abused. The fact that a drug created from purely chemical sources, such as this, which did not previously have acceptance in the drug community, is somewhat alarming when one considers that many other drugs might similarly be manufactured and become just as acceptable in the drug-using community.

The question, I think, is what is an appropriate response.

I believe we have learned from our past experience that sometimes we have a tendency to overreact to some of these drugs, which then turn out to be of a fad nature. At times we rush in and increase the penalties or take measures that are not necessarily appropriate.

We are deeply concerned about PCP. Last year in excess of 100 people died from this drug.

However, I think it is worth pointing out that this represents less than 2 percent of all the drug-related deaths in the country. The number of deaths from PCP was one-fourth the number that died from aspirin. And the number of people who went to emergency rooms around the country with PCP-related problems was less than 2 percent of the total number who went with drug abuse-related problems.

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[1] See p. 103 for Dr. Bourne's prepared statement.
[2] See p. 105 for Dr. DuPont's prepared statement.
[3] See p. 110 for Dr. Nowlis prepared statement.

The question then is, What is an appropriate response?

We have had an interagency committee looking at a whole series of options over the last year.

PCP itself has been changed from schedule III to schedule II, and we are similarly rescheduling two of the precursors of PCP.

Senator HATHAWAY. What does it mean to reschedule from schedule III to schedule II?

Dr. BOURNE. Psychoactive drugs are scheduled under the Controlled Substances Act in a series of schedules from I to V.

The restrictions controlling the prescription and use of those drugs is determined by the schedule in which the drugs are placed.

In some ways, I think this is a way to signal the Federal Government's concern about a drug, as much as to use the controls to actually restrict its prescription.

But I think one of the key issues with PCP is to make our response a measured one that expresses appropriate concern, without overreacting and developing hysteria about it and without doing anything that would draw undue publicity to the drug and thus increase its use.

I think our well-intentioned efforts in the past with regard to some other drugs, such as LSD, have in fact ended up causing the drug to be used more widely than it would have been had the publicity and concern by the Federal Government not been so great.

Our desire with regard to PCP is to reach the people who use it and make sure they understand that there are serious risks involved. Hopefully this will discourage usage and at the same time avoid the widespread publicity which might serve only to promote the drug.

At the same time, we want to strengthen the hand of law enforcement agencies so that they can deal with the drug effectively and control the supply and sources.

Senator HATHAWAY. Aren't there other things we can do without undue publicity?

Dr. BOURNE. I think so. We feel that the rescheduling falls into that category.

Senator HATHAWAY. Rescheduling will do what to it now? If it is in schedule II, what will that mean?

Dr. BOURNE. It puts controls on the storage, limitations, and prescription of the drugs, and on the manner in which they can be utilized and distributed. So it makes it much harder to obtain the drugs.

On the other hand, it is possible to go to other substances just as easily. There is a limit to what one can accomplish by rescheduling.

Senator HATHAWAY. So you wouldn't say now that it is very difficult for anyone to get the ingredients, or substitutes?

Dr. BOURNE. That's right.

We have made it a little more difficult by the rescheduling. But I think to look at rescheduling as a solution to the problem is inappropriate, because there are other sources.

You also pay a price when you reschedule drugs.

Although it is limited, PCP does have a legitimate use. It is used as an animal tranquilizer by veterinarians. Apparently it is very effective.

I think that we do not want to go so far in our concern to restrict the elicit use of PCP that we place an intolerable burden on veterinarians who are using it legitimately.

At the same time, one of the precursors, piperidine, has very widespread medical use. Again, we do not want to put an inordinate burden on manufacturers or physicians who are using other drugs derived from these precursors for legitimate medical purposes.

I think we have to balance the burden that we impose on manufacturers and on the medical community against the risk from PCP itself.

Senator HATHAWAY. If they are for legitimate medical purposes, then you have a doctor or a member of the medical profession who is able to get the drugs. So it seems to me that it could be fairly easily controlled by the standard medical procedure for dispensing prescriptions.

Doesn't a doctor have to have a number so that he can be identified?

Dr. BOURNE. Only with the controlled substances—not with prescribing antibiotics, for instance.

What we are doing is taking this drug out and putting it in a very special category.

However, compelling manufacturers to comply with rescheduling requirements increases their costs because special safety precautions are necessary in the manufacturing process.

We will be increasing the cost to the consumer of these legitimate drugs as a result of the rescheduling since the manufacturers will simply pass it on to the consumer.

I am not saying that rescheduling and the steps that are being considered are not appropriate. It is just that we have to be aware that a price is paid, and we have to balance the merits against the cost.

Senator HATHAWAY. What if you move it to schedule I?

Dr. BOURNE. This, in effect, precludes the use of the drug entirely. Schedule I is reserved for those drugs that are considered to have no medical use.

That is appropriate, perhaps, with some of the potential precursors of abused drugs. But where there are legitimate medical uses, it would not be appropriate to put the drug in schedule I.

Heroin, for instance, is in schedule I. Morphine is in schedule II, because morphine has legitimate medical uses, although the difference of abuse potential between morphine and heroin is not that great.

Senator HATHAWAY. This drug has been out since about 1972, and here it is 1978. Can you tell me why the Government has done nothing more about it than it has done to date?

Dr. BOURNE. It has actually been around longer than that. It was around in the early sixties and received relatively little attention.

I think there was a feeling during those early years that perhaps it would go away. In fact, during those early years, it did not gain very much acceptance in the drug-using community.

The increase has been slow and steady. In the last 2 years, it has increased fairly significantly.

I think that we have been following it very closely. We have been collecting data and looking at a variety of different alternatives. The rescheduling decisions have come out of those studies.

But, again, we were concerned about a rational and appropriate response and did not want to overreact to the apparent concern over the drug.

There was some possibility that PCP might turn out to be a fad, and that the use might rise suddenly and then decline. So far that has not been the case, but it may still happen that it will follow a natural course.

This has occurred with other drugs. The use of LSD went down somewhat spontaneously. The use of methaqualone, which was widely abused, has decreased of its own accord.

Unless we can be sure that what we do at the Federal level is going to influence dramatically the use of a drug, I don't see any point in passing laws or changing regulations.

Senator HATHAWAY. To make it tougher to get is certainly going to affect the use of the drug isn't it?

Dr. BOURNE. Yes.

Senator HATHAWAY. I agree with you that education and other programs are probably not going to be very effective. They have not been yet that I know of. Only certain isolated programs have, especially where they were peer group education programs.

But generally it seems to me that the most effective methods with respect to drugs have been to just make them inaccessible in one way or another.

Dr. BOURNE. Yes; I agree with that.

Senator HATHAWAY. It seems as if you can do that without any undue publicity.

Dr. BOURNE. Yes; that was our thinking behind the rescheduling. We felt that this would serve not only to restrict the availability somewhat, but it would also send out an important symbolic message as to the concern we attached to this drug and its abuse—without going too far and without overreacting.

We have also tried to launch—and Dr. DuPont can address this in more detail—a relatively low-key education advisory campaign. This would be aimed specifically at people who are likely to use this drug and who will be vulnerable, but would avoid a massive publicity effort which would draw attention to it among people who might not otherwise consider using it.

Senator HATHAWAY. What are your estimates now on how many are using it?

Dr. BOURNE. These figures are somewhat uncertain, but the best estimate is that 7 million people have used the drug.

Senator HATHAWAY. How many are frequent and how many have just used it and never gone back, and so forth? Do you have those figures?

Dr. DUPONT. I will submit what data we have for the record, Senator Hathaway.

Basically, the vast majority have only used it occasionally. The number of heavy regular users of PCP is still relatively small but growing.

Senator HATHAWAY. Like what?

Dr. DUPONT. I estimate that fewer than 1 million people have used PCP as many as 10 times in the country. Thus 6 of the 7 million users are people who have used the drug only a few times.

Senator HATHAWAY. How does that compare with the use of other drugs?

Dr. DUPONT. It is a very different pattern from marihuana, for example, where there is much more of a concentration of heavy use. A far higher percentage of marihuana users continue to use it very heavily.

I don't want my testimony to imply in any way that we are not concerned about the heavy use of PCP because the heavy use end—although it is still the smaller part of the total spectrum—is increasing.

It is filled with so much pathology and so many problems, that it is a very great concern. To say that a million people may have used PCP as many as 10 times is to talk about a very serious problem.

Senator HATHAWAY. Would that be as serious as LSD was at its height?

Dr. DUPONT. In many ways it is more serious.

LSD was almost never used regularly. It has, in fact, the effect that if you take more and more of it, it has less and less effect. So the user gets almost no effect from regular use.

For practical purposes there never was a daily use pattern with LSD.

PCP is in a class by itself in terms of danger to the user and to the society.

Senator HATHAWAY. Senator Culver?

Senator CULVER. Dr. Bourne, in your statement, I notice that you make mention of the fact that this PCP Action Coordinating Council has recommended to the National Institute on Drug Abuse that it develop educational materials, including letters to treatment programs, emergency rooms, fact sheets for professionals and lay persons, prepare public service spots, and hold a conference of professionals to discuss incidence and prevalence.

In view of the fact that this drug is such a major problem among young people, I was interested in what appears to be a lack of recommended actions that are specifically targeted at young people.

Could you speak to that point? Obviously, television reaches them in certain ways.

Dr. BOURNE. Our efforts with this education program were to target it, not on young people in general, but primarily on those who will be most vulnerable. We hope to penetrate the drug-using network, so that the word would spread among those who were most likely to use this drug.

That is why the letters were aimed at drug treatment facilities and emergency rooms—those who will be dealing on a regular basis with people who are already using drugs. Robert Blake, the actor, has done some television spots for us.

We felt that he would perhaps have special credibility with young people who might be potential users of PCP. But I think that we were particularly concerned about avoiding the mistakes of the past. We did not want a massive program that was indiscrimi-

nately targeted toward young people in the country which would, in effect, end up advertising the drug and making it sound attractive to people who would not otherwise consider using it.

So it was an attempt to use a scalpel, rather than a meat axe, in dealing with this problem and reaching the people we felt were most vulnerable.

Senator CULVER. One of the things that they testified to in our previous hearing was that peer group visitations by former users, who can speak to the tragic consequences of abuse as a result of this drug, have the most credible and effective educational impact on young people.

They testified that educational films that are available are ineffectual.

But I was interested, if peer group visits are so valuable, why we don't film them and have that available in the schools to present.

Obviously, these four kids can only get to a few high schools a year if they are working at it seriously.

What about it? What is your assessment of the quality of educational films? How sophisticated are they?

I remember when I was a schoolboy that there was no greater bore and everybody fell asleep. You had to go and see them. But they lacked imagination and creative quality in any intelligent sense.

They are like training films in the military.

Do we have anything better than that?

Dr. BOURNE. I think some are good, and some are terrible or worse.

Senator CULVER. Do you have any serious people looking at that with all your councils coordinating this and coordinating that? Do we really have some qualified and gifted people who are giving some serious intellectual effort to that enterprise?

Dr. BOURNE. Dr. DuPont and Dr. Nowlis can address this in more detail than I can, but we have devoted an enormous amount of effort in looking at this issue.

I think one of the problems is that films have a certain impersonality to them. You can have former users on film, but their credibility in an educational movie is enormously weaker than if you have those people there in person to talk about their personal experience and answer questions.

I think there is a feeling that if the source is credible, what they say will carry more weight than if it is just a Government official lecturing. This is the reason we used Robert Blake in our television spots.

Senator CULVER. What about closed circuit television? What is the capability in the high schools? You could have young persons systematically go around the country to central places where their comments could be broadcasted to the schools in the area.

You could hit more, because you don't hit enough. You don't make enough impact with three or four on a road show going to two high schools in Virginia and talking about it for 10 years. With all due respect, that is not going to make much difference when you are talking about 7 million people playing with the stuff.

Dr. BOURNE. I think there is a limit to what one can do to reduce the use of the drug—just by talking about it. Although we are very

concerned about the adverse effects on the health of a small number of people, we are only talking about 100 deaths a year out of 1 million regular users. This is a very small number of people actually getting into difficulties.

So the ability of a former user to convince people that they should avoid the drug merely because he/she had problems, has limited value.

I think we have to do it, and I think it will help to some extent; but I think our expectations of what it will achieve should not be too high.

Senator CULVER. I understand from your statement that you are now ready to react, and that we should stand back and wait for the results and not overreact.

But I am just not entirely clear as to what precisely you are planning to do that has not been done before. You have made the change from schedule III to schedule II but PCP is still available. This doesn't get to the problem; the problem is not diversion of the legal product so scheduling makes no difference.

What reason do you have to believe that your other efforts will be successful?

Dr. BOURNE. I think the educational activities, the rescheduling, and the continuing provision of treatment for people who do get into difficulties are appropriate levels of response for the Federal Government at the present time.

I think that there is a limit to what we can realistically do. Even on the law enforcement side, there is certainly a limit to what the Federal Government can do.

In many ways, the enforcement activities have to be at a State or local level to deal with the supplies of this drug. And it is really a question of setting our priorities between PCP and other drugs.

Obviously, one is very concerned for the people who get into difficulties—who either die, need treatment, or have other problems.

On the other hand, I would like to stress again that the number of people who die from PCP represents less than 2 percent of the people who die from all drugs.

I think that we have to be sure that the other 98 percent of drug deaths get an appropriate portion of our attention, and that we don't disproportionately focus on this 2 percent of the problem.

Senator CULVER. I don't think anyone is worried about that. But 100 dead are just as dead as the others. When you are dead, you are dead.

Dr. BOURNE. That's right.

Senator CULVER. This is cavalier. To say it is 1 percent or 2 percent. If your kid comes screaming through the glass window, rolls in the broken glass and bleeds to death, that would certainly concern you.

I have a daughter who was operated on yesterday morning. It is not related in any way to this, but as far as I was concerned, I wasn't interested in what the global statistics were on people lying on a table the same hour.

It was a relatively minor operation, but I was more interested in the outcome of that particular situation than any other I could immediately think of at 9 o'clock yesterday morning.

So we are talking about something happening to real people in our society. I think it is important.

I have never seen anybody so worn out successfully dealing with these problems that they don't have time to look at the 2 percent.

We are just talking about whether when you do address this problem you bring to bear all the appropriate and relevant resources, whether you have in a serious-minded way exhausted every rational approach to it, or whether you are saying let's not overreact and just lay back and this too shall pass. They will get high on something else next month, so don't worry.

In effect you are saying to us, "You fellows are new to this and you see it for the first time, and you are getting a little excited. They were dingy on something else 6 months ago. We didn't do anything and only 400 died."

What are you there for? No wonder we have taxpayers' revolts.

I think you should be just a little bit more interested.

What about the Bentsen bill? What do you think about Senator Bentsen's idea? What does the administration think; you are special assistant to the President. That bill has been kicking around for a long time. What is your official view on it?

Dr. BOURNE. We share the concern about the drug. I don't want to imply that we have not been very concerned about PCP. We have, and we have been for a year. We have been looking at it very closely.

Senator CULVER. You say for a year. It has been a major drug problem since 1972.

Its use reached epidemic proportions in some parts of the country 2½ years ago.

Since 1975, according to your testimony, PCP mentions in the DAWN system have tripled.

So you got interested in it a year ago. Why has it taken so long for the Government to react?

You got interested in it a year ago. Frankly it seems a little lame.

I agree with you. I don't think passing laws is all the answer, but I am a little concerned about your cavalier attitude.

What about the Bentsen bill?

Dr. BOURNE. We share the sentiment behind the bill and the desire to do something about the problem.

Senator CULVER. Around here we don't vote on sentiment. We have to say yes or no. Are you for or against the bill?

Dr. BOURNE. We don't support it at the present time in the present form.

Senator CULVER. You don't?

Dr. BOURNE. No; I don't think that increasing the penalties will significantly solve the problem. I think it potentially imposes some restrictions, as presently written, that will be onerous to the industry and to the legitimate uses of some of these substances.

Senator CULVER. There isn't any restriction ever imposed on industry that they don't officially say is onerous.

That doesn't come as a new revelation to you, does it? Everything is onerous to them.

The fact that we exist is onerous to them, unless we are passing a subsidy to benefit them.

Dr. BOURNE. Some of their objections are legitimate and some are not. I think that you have to assess whether, in fact, their complaints are legitimate.

Senator CULVER. I understand that the major producers aren't even objecting to the Bentsen bill. That, as a matter of fact, they aren't. They have some concerns about whether or not this is just a nose under the tent, that it will usher in an era of increased regulation. They may be nervous about that, but on this particular bill, I understand that the major drug companies are not that concerned about it.

It seems ironical to me that the President's group on drug abuse will be defending the industry's concern when it hasn't even been expressed.

Dr. BOURNE. It is not so much the industry's concern. I think as much as anything, we are concerned about the consumer who would benefit from the use of drugs derived from these precursors and whose use would be affected if the cost to the consumer goes up and if physicians are less willing to prescribe these drugs because of the special restrictions placed on them.

I think we are concerned about the consumer as much as the industry.

Some of the drugs derived from these precursors have very legitimate medical uses, and we don't in any way want to infringe on the right of the American people to get adequate medical care.

I have some concern about just passing laws in the drug area, merely for the sake of passing laws. I think if we can't have some confidence that this legislation is going to have some significant impact on the PCP problem, then there is no point in passing the legislation.

Senator CULVER. You make this sound like such an invaluable substance.

Dr. BOURNE. No.

Senator CULVER. It is used in rubber and plastics. Those are the only substances that it goes into aren't they?

You make it sound like it is a Laetrile dispute.

Dr. BOURNE. You are talking now about the drug itself. However, the bill places controls on certain precursors, from which are derived other drugs that have direct medical benefits.

I think that we are willing to consider some changes in the bill that would make it more acceptable to us. But in the present form, we have some real concern that this legislation is not going to demonstrably impact the problem.

The Federal law enforcement agencies are stretched extremely thin at the present time. And unless we feel that this law is going to substantially help them to do the job more effectively, I don't think it helps our credibility in the drug field. It does no good to have increased penalties if we are not able to enforce them and if we are not able to show that the law, in fact, helped to deal with the problem.

Mr. RAPP. Dr. Bourne, you seem to be indicating that piperidine, this substance which Senator Bentsen would like to control, is used in pharmaceuticals.

We have talked to the American Pharmaceutical Association, and they indicate it is not used directly in pharmaceuticals. It is a substance that is used basically for curing rubber.

The industry—Reilly Tar & Chemical Co. and Abbott Laboratories, the only producers—seem to think it is fair and proper to provide a reporting system for it.

As I understand, the DEA is in favor of this bill with some minor modifications. Their testimony has been cleared by the Justice Department and has apparently cleared OMB.

What I really don't understand is the basis of your opposition. This bill would crack down on the one chemical that is critical to the production of PCP and thus it offers us some hope for reducing the supply of this really deadly substance.

Dr. BOURNE. We would be willing to talk about some modifications in it, but I have reservations at the present time that passing this legislation would significantly impact the PCP problem.

Senator CULVER. What about reporting? You talk about the law-enforcement burden; and this is largely self-enforcing, isn't it?

We don't have law-enforcement capability to police and monitor the U.S. taxpayers and they comply. We do a spot check at best, but the success of that system and its efficacy is really based on voluntary compliance.

We had testimony here from a PCP manufacturer doing time in the penitentiary, of his going in to a dealer and buying some of these precursors.

In specific response to my question, he said that when the dealer learned that they were going to use it for illicit purposes, the price went up.

That is how arrogant this group is. They know there is something happening.

Now if they have to report and have to ask for some bona fide identification, if they have to have some routine evidence of the most superficial nature that this is at least purportedly going to some legitimate business purpose, isn't that going to have some salutary consequences in terms of the current flow and availability of this substance?

I know it is not going to be any utopian answer, but isn't that going to be an improvement?

Dr. BOURNE. That is one possibility. It is also possible that you will just drive the price up even further, and that this drug which is easily made will still be available.

Senator CULVER. You were here before talking about the heroin out of Mexico. You said that one of the best things that ever happened was that the price has gone up and it is pricing people out of the market.

Put it up. Why not at least drive it up so that it isn't as easily available to some poor kids dirt cheap.

If it takes 100 bucks to get high, you may figure out some less offensive way to go on a trip—go for a hike or ride a bike or do something.

Don't we want to price it out of the market?

Dr. BOURNE. If the rise in price is accompanied by a real reduction in availability, yes; that is true.

But I am not a chemist, and I don't know how easy it is to manufacture these substances from other equally available sources.

I gather that tends to be true. These substances, despite all the restrictions you try to impose on them, can be made from other sources so easily that you wouldn't necessarily change the availability of PCP that much by imposing these additional restrictions.

I don't think the answer is really in on this. I think that potentially it might work. The decision has to be whether it is worth trying and whether the potential burdens that would be imposed on industry, or the restrictions on the availability of legitimate medical substances which would be incurred are balanced by a reduction in the availability of PCP.

I don't think anybody knows the answer to that question.

If it works out, that is fine.

I think, in such a case, legislation like this would be extremely valuable.

My personal judgment is that I have some serious question about whether this particular legislation would, in fact, result in a reduction in the availability of PCP.

Senator CULVER. Don't you think the simple thing of reporting those sales, requiring an ID, would send a little bit of a nervous shock wave through the whole transaction process?

Whether we ever have one cop on the beat enforcing it, it has to be relatively useful, given the absence of anything going on today.

Dr. BOURNE. That is the same reasoning we used in rescheduling the other precursors. That was our thinking on that issue.

I think maybe there is some truth there, but I don't think that we know for sure. A lot of it is symbolic, as you point out. That may be the most valuable part of it, rather than feeling there will be an absolute and real effect.

Senator HATHAWAY. In the field of drug abuse, in general, has anything ever worked outside of just making the drug less available and people less able to obtain it?

I don't know of any prevention or education program you could point to that you could say this has worked, and we have stopped people from using such and such a drug as a result of that.

I don't know of any. Do you know of some?

Dr. BOURNE. Treatment programs are important in terms of treating the people who have already become casualties. However, in terms of reducing the numbers of new consumers, I think you are correct.

Senator HATHAWAY. Why don't we just forget about these other programs. We are wasting an awful lot of money.

This is true of alcohol education as well. I know we just got through authorizing the Alcohol Education Act and renewing it, but I am very skeptical about the results.

In the first place, I don't think we have any evaluation of any of these programs anyway.

We should just concentrate our efforts on making these drugs less available.

The reason we had heroin drop down is not that the price went up; we stopped it from coming into the country.

And I presume that is true of almost any drug you could name.

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There may be some isolated instances where you could scare people out of using the drug.

We have one simple one like nicotine. We tried to scare the people, because of cancer and emphysema. And I understand the per capita consumption of cigarettes is going up.

You could mention almost every drug on the market.

All the education programs—television and films, in school and with the peer group—just don't seem to work.

So let's concentrate our efforts on just keeping drugs off the market. What if it does cost manufacturers a few more bucks, or the general public, because they are the consumers and they are ultimately going to pay for it. They are all going to be better off as a result of paying a few extra dollars for the legitimate use of some of these chemicals whose illegitimate use is going to destroy human beings.

Maybe the Bentsen bill is the best way to do that. We could modify it to make it stronger.

Certainly, as Senator Culver has suggested, a reporting system is bound to work.

It is the same thing as we have in the State of Maine, and I think Iowa too, with respect to buying guns. Every person who buys a gun has to sign and give his name, age, and so forth. Then there would be a record the police could go to and find out that on such and such a date so and so bought a certain chemical.

In that way, I think any person who is going to buy it for illegal use is going to think twice if he has to simply put down his name and where he is going to use the ingredients.

That should not be too costly should it, Dr. Bourne?

Dr. BOURNE. No.

As you know, I share your skepticism about some of our education and prevention programs.

On the other hand, I think there is some merit in continuing to look for some kind of strategy that would be effective in that area. Some of what we do does seem to work to some extent.

It is a question of allocating our resources appropriately between treatment and education and preventing and controlling the supply.

We do put a substantial effort into controlling supply. And I think it reflects the appropriate priorities that we have established between the different strategies.

Senator HATHAWAY. Do we have any evaluation on any education program that is in existence?

Dr. BOURNE. The other people on the panel here are in a better position to answer that.

Senator HATHAWAY. Anybody can join in.

Dr. DUPONT. Could I suggest a way of keeping this issue in perspective?

I got involved in a very serious way in the drug abuse field in the early 1970's. At that time there was tremendous skepticism about law enforcement, as you probably remember.

The feeling then was that all the effort we had put into supply reduction had not bought us freedom from the heroin and other drug plagues. There was a widespread feeling that the law enforcement effort was in disarray and a general lack of support.

In fact, one of the reasons the whole drug abuse treatment buildup occurred in the early 1970's was the cynicism about law enforcement.

There is a kind of pendulum swing on the issue of what works and what does not work. Almost a fashion.

Right now it seems to me that the pendulum has swung back to support law enforcement and the skepticism about treatment and prevention. This is partly because law-enforcement programs are demonstrably effective. This administration can claim substantial credit for this, particularly for the new activities in Mexico. We have learned that both supply reduction and demand reduction work and that we are not well served by following fads in public opinion.

Let me just look at the same data that you looked at in a different way so as to suggest another way to think about it.

We have about 42 million Americans who have used marihuana at least once. About 9 million have used it more than 100 times. These are the people who have had substantial exposure to marihuana.

Everybody in the society, particularly young people, experience marihuana as available.

And yet a very large number of people don't use it; 180 million Americans have never used marihuana, for example. And more than 210 million have not had a substantial exposure to this available drug.

There are factors that lead not only to their decision not to use, other than availability, but also their decision not to continue to use on a regular basis. This is even more true, of course, with phencyclidine.

If we take the 12- to 17-year-olds in the Nation, 94 percent have never used phencyclidine.

To attribute all the societal forces—and I think they are very complex—to a particular prevention program would be a mistake.

But to say that our people-oriented prevention programs are ineffective, I think, is to overstate the case.

We are very concerned about that 6 percent who have used PCP; and the fact that this figure doubled in 1 year is, of course, the source for legislative alarm. But the facts still need to be put into proper perspective.

I think that when we talk about prevention programs and treatment programs, in particular, we are talking about programs that have been demonstrated to reduce—not eliminate but reduce—illicit drug use among program participants. Exaggerated claims for success and exaggerated assessments of failures were the problem with law enforcement in the early years of this decade. We got cynical about law enforcement because it wasn't eliminating our heroin problem. But law enforcement can and did reduce the problem. Imagine the scope of the heroin, or the PCP, or the marihuana problem without supply reduction efforts.

That is the perspective that follows from trying to reduce rather than trying to eliminate the drug problem. We need more of this balance. This is one of the points that Dr. Bourne was making. We need to balance the programs we have and to try not to put all of

our eggs in one basket. To emphasize either the supply reduction or the demand reduction program exclusively is a mistake.

The fact is that there are very good evaluations of both prevention programs and treatment programs aimed at reducing illicit drug use, particularly if they are targeted at the high risk segments of the population.

Those programs aimed at the total population are less effective in general and much harder to evaluate. If you take a drug abuse prevention film—and Senator Culver was talking about this—and go to an entire high school you must realize that roughly 94 percent of the youths have never used PCP which you are trying to discourage them from using. You are "educating" everybody. If only 2 percent of that 94 percent are turned on or stimulated, as Dr. Bourne said, to try PCP as a result of seeing that film and 20 percent of the users are discouraged from further use of PCP, you will still have a net increase in the population as a whole. These are tough odds to beat.

Young people are using cigarettes and young woman are using these at a very much increased rate. This is occuring at the same time that the decreased tar and nicotine is associated among smokers with higher total numbers of cigarettes consumed per day. These two factors go a long way to explain the rise over recent years in per capita consumption of cigarettes.

But we have also had an enormous public health success in reducing smoking among men over the age of 40 and 50. These are the people who are the most vulnerable to the negative health effects of smoking.

We now have 30 million former smokers in the United States, whereas when the Surgeon General's first report came out there were only 5 million.

So to say that our antismoking program has been a failure is not the whole story.

It is partially a failure. It has failed to stop use by young people, particularly young women. That is a real failure. But overall, the societal effect has been rather good, particularly where the health effects were the worst.

I hope this overview has helped to put this in perspective.

Senator HATHAWAY. If you had to say that the program itself had gotten people from 40 and on to quit—they are also the ones who are seeing their friends dying from lung cancer. And that may have more of an effect on them than all the education.

Dr. DUPONT. I have to believe that they were seeing that before. There was something about the public reaction and the visibility of these deaths. Before the Surgeon General's report, I just don't think the deaths related to smoking were visible. Smokers had an easier time not making the connection between the deaths and smoking. This is what we are trying to do now with PCP.

Part of the problem with phencyclidine is that it has ridden on the coattails of marihuana in the drug-using scene. It is consumed like marihuana. Because youth, and the population in general, has taken an increasingly—and I think very distressingly—permissive attitude toward the use of marihuana, phencyclidine has had an easy road. This has encouraged the current very high levels of use of PCP.

One of our primary objectives is to drive a wedge between pot and PCP.

I think we are having some measure of success in that effort.

Basically, we are saying PCP is not "just a new smoke." PCP is not just a slightly stronger marihuana.

That will have an effect on many people who have not used PCP and some casual users. It will not have an effect on many of the hardcore, dedicated PCP users who are usually quite disturbed in many ways.

So we will need to do more than just drive that wedge between pot and PCP. We will need to provide treatment and rehabilitation and other programs for those people who are most seriously affected.

For many young people, the campaign that we have gotten going will help. I give great credit to the media for this. We are now getting across the idea that PCP is different. It is not like marihuana.

Senator HATHAWAY. What are you doing? You say you are trying to drive a wedge. What kind of a campaign do you have going?

Dr. DUPONT. The "Baretta" campaign, for example, the TV spot that Dr. Bourne talked about. Robert Blake says that PCP is a snake that will kill you. In addition, we have quite literally spread PCP pamplets all across the country. The yellow one that you have before you is an example that has gone out to all the drug education programs and the treatment programs and most of the schools in the country. We have sent new information to all the medical examiners, all the community mental health centers, and all the drug abuse treatment programs in the country.

In the last year there has been a major effort by NIDA and DEA to get across the idea that this is a serious problem and to provide people with the knowledge necessary to respond to it.

For example, before we sent this new information out, many of the country's medical examiners did not know to look among drowning, burn, and accident victims for PCP use. So they were underreporting PCP related deaths in their own communities.

I don't want to overstate what this new effort will do. The fact is that PCP is a cheap and very powerful drug.

What Dr. Bourne said is correct. The prospects are, I think, rather gloomy for this drug. But we can do something, and I think we are doing a good bit more than we were before.

Senator HATHAWAY. Can you submit the evaluation of this program for us to look at?

Dr. DUPONT. Yes; I would be happy to.

[The material supplied follows:]

EVALUATIONS OF PREVENTION PROGRAMS

SELECTED EXAMPLES OF COMPLETED STUDIES

An evaluation of the Gloucester Drug Abuse Prevention Model (A NIDA prevention grant/contract, 1977) found that this prevention program mobilized community interest and support for youth through the involvement of key representatives of the educational system, the law enforcement system, the social service system, and local talented craftsmen. As a result, youth in this prevention program developed more positive attitudes of themselves, of their communities, and reduced their use of drugs.

Project PACT, a NIDA school-based project designed to increase positive personal interactions between teachers and students, raised self-esteem of students participating in "Rap counseling," lowered the rate of school absenteeism for those in the prevention program, and resulted in significant gains in school achievement scores in those classes taught by participating teachers.

Carney's (1972) evaluation of an "affective education: program in the Coronado School System (California) found that students participating in "values clarification" courses had less initial use of drugs such as alcohol and marijuana than did control students. These results replicated across several schools and grades.

A review conducted by the Prevention Branch of 35 drug abuse prevention education projects found that 70% of the prevention programs using the newer prevention strategies such as values clarification courses, classes in decision making, life skills curricula, and peer tutoring showed positive effects on one or more drug specific measures of program outcome, e.g. self-reported drug use, institutional records of drug use, intentions to use drugs in the future, attitudes toward drugs, drug knowledge, academic grades or school attendance. Only 29% of these programs showed some negative outcome, e.g., increased intention to use drugs in the future.

Project SPARK (New York City): The Nation's largest school-based drug abuse prevention program (strategies include drug education, intervention through group and individual counseling, training of a peer leadership cadre, home visits, parent workshops, parent/child group sessions, community involvement, curriculum development, meaningful alternative activities, and in-service training for teachers). An evaluation of this program by Geomet (SAODAP Contract 1974) found that in comparison to controls, students in the experimental group had less school absenses, fewer number of drug related referrals, fewer number of disciplinary actions and better grades.

Port Washington (New York): An alternative drug prevention program offered to junior high youth the opportunity to develop video productions that creatively addressed the problems they encounter in their life. An evaluation by Gurgin (Under a NIDA grant, 1977) reports that in comparison to controls, students participating in the program demonstrated an increased sense of personal worth, reduced their proclivity to use drugs (e.g. intentions, attitudes, experimental behavior), evidenced positive patterns of social and personal growth, had fewer incidents of drug-related deviant behavior, increased positive behaviors within the classroom (sense of independence, self-confidence, sense of responsibility), had improved academic performance (e.g., grades, and grade point averages).

Project PRIDE (Florida, 1975): Is a drug abuse prevention program for youth that utilizes peer counseling as a prevention strategy.

This peer counseling program was designed as a supportive program to complement and supplement existing guidance programs in the schools, and to take advantage of the positive influences young people have on each other. For the study, selected student volunteers from twelve junior and senior high schools were trained in the counseling process which involved skills in reflective listening, information and referral, and problem solving.

Peer counselling was then made available to youth through a "rap room" within the schools participating in the project. An evaluation of the project (Samuels and Samuels, 1975) found peer counselors and counselees involved in the program for at least one month and selected for testing (144) showed greater positive change in their attitudes toward self than a matched control group (144) who were not in the program. Of the 121 teachers interviewed, 96 percent reported observable benefits for the students as a result of peer counseling. Improved communication between teacher and student was indicated by 93 percent of the teachers. Other areas of improvement also observed by the teachers included greater involvement with studies, independent assignment completion, being outgoing toward fellow students, and greater confidence in difficult situations.

The Ombudsman Program (Charlotte, N.C., 1977) has been primarily designed for the students of the elementary and high school levels. In general, students are involved in a semester-long Ombudsman class where they learn about themselves, about communications, decision-making, and about helping relationships.

Through these learning processes, they not only are encouraged to help themselves, but others as well in their schools and communities. That is, students involved in these classes are encouraged to become "Ombudsmen" themselves or "Ombudsmen" in their communities. In addition, the Ombudsman instructors are encouraged to work closely with the principals, guidance counselors, homeroom teachers, or other health teachers in the schools where the program is implemented. An evaluation of the project (Kim, 1977) reports that program participants (in comparison to controls) evidenced positive changes in six (of ten) drug-use related

psycho-social areas: self-acceptance, sense of well-being, cognition of self-understanding, coping ability, parent/child relationships, and positive social attitudes. In addition, preliminary findings indicate that students (fifth grade in particular) participating in this prevention program tended to report less use of a wide variety of licit and illicit drugs to include cigarette smoking, phencyclidine and marijuana.

SELECTED EXAMPLES OF SIGNIFICANT ON-GOING EVALUATIONS

An evaluation of the State of Georgia's "Life Skills" prevention program. Under a NIDA grant, Research for Better Schools will evaluate the "Georgia Life Skills for Mental Health Program". The Life Skills Program is being developed by the Office of Prevention within the Division of Mental Health/Mental Retardation in the State of Georgia in conjunction with the Georgia State Educational Agency.

The program will be implemented through the community mental health center and will enlist the support of the State Board of Education and local school districts. The program will present the opportunity for learning basic intrapersonal and interpersonal skills which help in handling stress, responding to major life decisions, and forming more satisfying interpersonal relations. These skills are basically the same skills that many mental health helpers use and teach when they work with people in temporary crisis. The distinctive intent of this program is to teach these skills as an educational experience (preventative) rather than as a therapeutic experience (curative). As a result, program recipients should be better prepared to take responsibility for their lives without recourse to drugs and alcohol.

Research for Better Schools (NIDA grantee) will assess the process by which the Georgia Life Skills Program is implemented and the outcome of the program on its participants (students and teachers). The overall objectives of this project are: (1) To perform an intensive and rigorous process evaluation of the Life Skills Program that will: describe and assess the implementation of the Life Skills Program plan; provide ongoing feedback to program staff as the basis for conceptual and operational programmatic changes; and, establish a context for interpretation of the outcome evaluation. (2) To perform an intensive and rigorous outcome evaluation of the Life Skills Program that will: assess the effect of the program on participating teachers; and, assess the effect of the program on participating students.

An Evaluation of the State of Nevada's Drug Abuse Prevention Program. Under a NIDA grant, the University of Nevada will conduct a longitudinal evaluation (three year) of Nevada's Drug Abuse Prevention program that has been in existence for six years in the Nevada schools. Nevada offers a drug abuse prevention curricula (grades 5–9) that focuses upon decision-making related to substance abuse, coping with peer pressure and the influences of advertising, and promotion of responsibility to self and to others. For the evaluation, a sample of 15,000 students who are in grades 5, 7 and 9 will be selected for participation in the three-year evaluation project. This sample population will consist of an experimental group and a control group. The experimental group will consist of those students who will be participating in the Nevada Drug Abuse Prevention Program during 1977. The control group will consist of students who have not participated in the Drug Abuse Prevention Program during the same time period.

Both groups will be tested at seven different time intervals during the three-year project period and compared on measures of drug use, intention to use drugs, self-concept, and decision-making skills. Comparisons will also be made utilizing socio-economic status, ethnic background and sex.

Evaluation of Project Propinquity. Under a NIDA grant, Dr. Fred Crawford of Emory University will measure the effectiveness of Atlanta's Project Propinquity. Based at Smith High School and at several street academies, the Atlanta program brings together representatives of all the agencies designed to help young people such as the schools, the juvenile court system, the health department, welfare agencies and the police. The Atlanta programs operate under an umbrella agency called Exodus.

Some 500 young people with problems are grouped together at school in "family units" of ten centered around a counselor. The counselor is available around the clock when the students need help.

The Propinquity Program takes students who are not succeeding and gives them the assurance and support they need.

The evaluation of the project seeks to determine if this project is cost-effective. Measures include data from students (demographic, attitudinal, drug-use levels), counselors, and teachers. Cost data relevant to the program's operation is being provided by the project. In general, the study will show the actual dollar cost of all the social services provided to the student and will record what happens to that student as a result of the program.

TREATMENT EVALUATION

There have been a number of significant research findings that have positively impacted on prevention and treatment activities.

(1) The use of the antagonist naltrexone has been shown to be highly effective in a prison work release program. Since naltrexone blocks the effects of heroin, this study demonstrated that a county could allow ex-heroin addicts to participate in a work-release program knowing that they were "protected" from the use of heroin. The work release programs have proven to be successful and it is a major advantage to be able to allow ex-heroin addicts to become part of this rehabilitative effort.

(2) NIDA researchers have demonstrated that approximately one-third of clients in treatment suffer from depression. It has further been shown that treatment of these individuals with anti-depressant therapy has a positive effect on the treatment of their drug abuse problem.

(3) The VA cooperative study has demonstrated the effectiveness of LAAM and methadone in the treatment of drug addiction. It also provided additional information on the relative efficacy of various dosing regimens.

It was shown, for example, that while LAAM and methadone did not differ greatly in the number of patients remaining in treatment, those clients taking LAAM were significantly more drug free than those on methadone.

(4) Another study had demonstrated that the problems seen with methadone detoxification are primarily pharmacological and not psychological in nature. This has allowed for increased understanding and optimization of methadone detoxification procedures.

(5) Family therapy with heroin addicts has been shown to be effective in the treatment of drug abuse. The results of this study indicated that brief, structural family therapy, when compared to non-family (methadone) treatment significantly increased the number of days free from heroin, other illegal drugs, and alcohol. This work is presently being extended.

(6) The Drug Abuse Reporting Program (DARP) commenced in 1969, and during its admission and in treatment data collection phases, collected data on over 44,000 individual clients entering Federally funded treatment programs for drug abuse related problems. Follow-up studies have been conducted on admissions to DARP treatment programs for the years 1969–71 (cohort 1) and 1971–72 (cohort 2), and are currently being conducted on admissions during the years 1972–73 (cohort 3). The data has shown positive correlations between treatment by methadone maintenance, drug free outpatient and therapeutic communities and increases in post treatment employment, decreases in post treatment criminal behavior and very significant decreases in post treatment drug use.

Dr. DuPont. Both treatment programs and prevention programs are part of the demand reduction effort.

Senator Hathaway. Particularly prevention.

Is this on PCP itself?

Dr. DuPont. No; our prevention evaluations relate to illicit drug use in general. I don't know about focusing on specific drugs.

From the demand reduction point of view, we focus on drug consumption altogether, rather than taking one particular drug or another.

The supply reduction folks can target much better on specific drugs. We are more concerned with drug taking and the effect it has on one's lifestyle.

Senator Hathaway. Is this one program or a lot of programs?

Dr. DuPont. Many quite different programs, which we categorize as information, education, alternatives, and early intervention.

In general, the findings have been quite supportive—both for treatment and for prevention—not in terms of their solving the problem, but in terms of reducing illicit drug use.

There is continuing drug use among a minority of the program participants, but there is clear evidence of reduction of illicit drug use, which is the objective after all, in the majority.

Once we get a program in place and it is working—and Dr. Nowlis can talk about this too—I think, in general, the evaluations have been positive.

Senator HATHAWAY. Dr. Nowlis?

Dr. NOWLIS. Of course, our program is a relatively small program. It makes the assumption that we are dealing with complex behavior which varies from place to place and group to group and that whatever we design has to be appropriate for that group.

So we don't take one thing, like peer counseling or alternate schools, individual strategies, but we look at patterns of things that a given community can do.

In general, if that is designed with the needs of that community in mind and an understanding of their particular problems, they get very dramatic reductions—not only in alcohol and drug abuse—destructive alcohol and drug use—but also in other kinds of destructive behaviors.

It is very difficult to do a classic nationwide evaluation, because the assumption behind most of those evaluations is that there is a single problem, and you are testing the effect of a single intervention.

But when you look at a pattern of interventions in a given community, there are very dramatic reductions.

Senator HATHAWAY. Thank you.

Peter, I interrupted your statement at some point. Did you say all you wanted to say, or do you want to finish something?

Dr. BOURNE. I would like to just come back to the issue of the specific legislation for a minute.

We have some reservations. We are still having discussions with the Department of Commerce, HEW, and others.

If we could submit in writing a more detailed position on the specific legislation, I would like to do that.

Senator HATHAWAY. That would be fine.

[The material supplied follows:]

THE WHITE HOUSE,
Washington, August 17, 1978.

Hon. PAUL G. RODGERS,
Chairman, Subcommittee on Health and Environment,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to your request for the views of the Administration regarding the "PCP Criminal Laws and Procedures Act of 1978" as it was passed by the Senate last month. Although as we note below there are some agreed upon concerns relating to the legislation, we support its enactment in the hope that it will provide a useful tool in dealing with the serious PCP problem we now face.

We would first like to thank the members of Congress for this opportunity to work with you in your efforts to find ways to cope with the very serious problems PCP is causing the people of the United States today. I feel strongly that this type of joint effort has been most useful during the past 18 months and look forward to continuing such cooperation and coordination.

Concern about the dangers presented by PCP use has been rising rapidly throughout the Administration and the Congress, especially during the past year. We began some time ago to take measures in the law enforcement, health, and education and prevention areas to combat the abuse of this substance. We realize, however, that there is a need to go even further in our efforts, and we support the efforts of the Congress in drafting legislation on this issue.

As you know, on August 11, 1978, representatives (see enclosed list) from the Drug Policy Office, OMB, Department of Justice, Department of Health, Education, and Welfare, Senate and House of Representatives met to discuss the proposed PCP Criminal Laws and Procedures Act of 1978 as it passed the Senate. The purpose of

the meeting was to reach agreement on the key provisions of this legislation. Since your staff was unable to attend, let me take this opportunity to relate the discussions and agreements which took place at this meeting.

Questions were raised as to the effectiveness of increasing the penalties for the manufacture and trafficking of PCP, in light of the fact that judges are not now imposing the maximum sentences available to them. However, it was agreed that such increases will not be detrimental to the enforcement effort and may actually alert judges to the seriousness of the PCP issue; therefore, it was decided that increased penalties were appropriate. This should be combined with an education program to further inform judges and prosecutors about the seriousness of the PCP problem.

Questions were also posed concerning the advisability of raising the penalties for PCP alone. There was strong belief that, as a general rule, penalties should not be set on a drug-by-drug basis. Further, there was concern that penalties for scheduled PCP analogues should parallel those for PCP, since their characteristics and manufacture are similar. Therefore, in an attempt to deal quickly with the PCP problem, it was agreed that the pending legislation should include increased penalties for PCP and its scheduled analogues. It was further agreed that increased penalties for all non-narcotic drugs in Schedules I and II should be considered in the future, probably in conjunction with the expiration of the Controlled Substances Act next year.

The participants also discussed the piperidine reporting requirements contained in the legislation. There was some concern voiced by the group as to the effectiveness of the requirements for reporting piperidine transfers since, theft, diversion, falsification of identification or laboratory synthesis could supply piperidine for PCP manufacture. Even if piperidine were completely cut off from PCP manufacturers, there is the probability that illicit manufacturers will switch to any of the more than 30 chemicals which could be substituted for piperidine to make PCP-like drugs. Four or five psychoactive analogues having pharmacological effects similar to PCP have been found on the street already; most PCP analogues are not currently scheduled. There was general agreement that controls on piperidine would probably affect small manufacturers of PCP, thought now to be the major source of supply of the drug, but are unlikely to have a great impact on larger, more organized manufacturers.

Regarding the regulatory impact on legitimate commerce, the Justice Department indicated that its initial estimate of 73 work years and $3,654,000 for implementing the reporting requirements was based on the original version of the proposed bill. Although it was indicated that the cost to Justice would be somewhat lower under the version which passed the Senate, there was still some concern expressed over the cost and administrative burden such reporting requirements might place on both government and industry. There was additional concern over the potential negative impact the requirements might have on legitimate researchers. It was recognized that this step could lead to attempts in the future to control the great variety of common chemicals (other than immediate precursors) which are used in illicit drug manufacture.

All present agreed that there were some problems with the bill; however, all concurred that, in lieu of a better approach, the bill would provide a starting point for attempting to deal legislatively with the PCP problem. It was further recommended that the sunset provision be reduced from three years to two, since the effectiveness of this approach could be reevaluated by that time, and that the impact of the bill be carefully scrutinized.

With these considerations in mind and with the amendments described above, the Administration supports this bill as an additional step towards attempting to control the PCP problem. We look forward to continuing to work with the Congress and the affected agencies to develop better means of enforcing existing laws and to continue to search for other measures to more effectively prevent the illicit manufacture and sale of PCP and its analogues. Likewise, we will look to the Congress for aid in informing judicial officers of the need to impose adequate sentences upon those convicted of illicit drug manufacturing and trafficking.

I appreciate the opportunity to comment on this bill and to work with you to combat this and all forms of drug abuse.

Sincerely,

LEE I. DOGOLOFF,
Associate Director,
Domestic Policy Staff.

Meeting, August 11, 1978, Room 263

Louisa Schien (Senator Hathaway).
Ellen Akst (Senator Hathaway).
Elliott Brown (Congressman Gilman).
Joseph P. Byzoatowski (DEA).
Bob Carlstrom (OMB).
Richard Carro (House Select Committee on Narcotics).
Howard McClain (DEA).
Clifford Naeve (Senator Bentsen).
Jack Perkins (Department of Justice).
Steve Rapp (Senator Culver).
Paul Spiegel (HEW).
Howard Wallach (Select Committee).
Bob Stutman (DEA).
Robert Willette (NIDA).
Ansis Helmansis (FDA).
Lee Dogoloff (Drug policy staff).
Bob Angarola (Drug policy staff).
Danielle Dunning (Drug policy staff).
Mazie Pope (Drug policy staff).
Sibyl Halper (Drug policy staff).

[Memorandum for the File]

THE WHITE HOUSE,
Washington, August 16, 1978.

From: Lee I. Dogoloff.
Subject: PCP meeting—August 11, 1978.

Representatives (see attached list) from the Drug Policy Office, OMB, Departments of Justice and HEW, and the U.S. Senate and House of Representatives met to discuss the proposed PCP Criminal Laws and Procedures Act of 1978 as it passed the Senate. The purpose of the meeting was to reach agreement on the key provisions of this legislation.

Questions were raised as to the effectiveness of raising the penalties for the manufacture and trafficking of PCP. Since judges are not now imposing the maximum sentences available to them, there is some question as to what effect increasing those maximums might have. However, since such increases will not be detrimental and may actually signal to the judges the seriousness of the PCP issue, it was decided that increased penalties were appropriate.

Questions were also raised concerning the advisability of raising the penalties for PCP alone. There was strong belief that, as a general rule, penalties should not be set on a drug-by-drug basis. Further, there was concern that penalties for scheduled PCP analogues should parallel those for PCP, since their characteristics and manufacture are similar. Therefore, in an attempt to deal quickly with the PCP problem, it was agreed that the pending legislation should include increased penalties for PCP and its scheduled analogues. It was further agreed that increased penalties for all non-narcotic drugs in Schedules I and II should be considered in the future, probably in conjunction with the expiration of the Controlled Substances Act next year.

Additional concern was expressed regarding the piperidine reporting requirements. There is some question of how effective the reporting of piperidine can be, since theft, diversion, falsification of identification or laboratory synthesis could supply piperidine for PCP manufacture. Even if piperidine were completely cut off from PCP manufacturers, there is concern that they will switch to any of the more than 30 chemicals which could be substituted for piperidine to make PCP-like drugs. Four or five psychoactive analogues having pharmacological effects similar to PCP have been found on the street already; most PCP analogues are not currently scheduled. There was general agreement that controls on piperidine would probably affect small manufacturers of PCP, but are unlikely to have a great impact on larger, more organized manufacturers.

The Department of Justice indicated that its original estimate of 73 work years and $3,654,000 for implementing the reporting requirements was based on the original version of the proposed bill and would be somewhat lower under the version which passed the Senate. There was concern expressed over the cost and burden which such reporting requirements might place on both government and industry. In addition, such reporting requirements might impact negatively on legitimate researchers and lead to attempts to control the great variety of common

chemicals (other than immediate precursors) which are used in illicit drug manufacture.

All present agreed that there were some problems with the bill; however, all agreed that, in lieu of a better approach, the bill would provide a starting point for attempting to deal legislatively with the PCP problem. It was further agreed to reduce the sunset provision from three years to two, and to carefully scrutinize the impact of the bill.

The following were assigned as follow-up activities:

1. HEW (Helmanis) will consult with Dr. Czechowicz and the Bureau of Veterinary Medicine to ascertain whether alternatives to PCP exist so it can be rescheduled into Schedule I.

2. DEA (Stutman) will provide an updated estimate of costs involved in implementing the piperidine report requirements.

3. Lee Dogoloff agreed to contact Congressman Rogers to discuss today's meeting.

Phencyclydine (PCP) is a fairly new drug on the national drug abuse scene. Although it enjoyed some popularity in the late 60's, its use was restricted to narrow geographic areas and age groups (e.g. the Flower Children of the Haight Asbury). Consequently, such use was not reflected in national statistics.

Within the past two years, prevalence of PCP as a separate substance within the hallucinogen category has grown sufficiently that national data can be collected and reported. Beginning with 1976, the National Survey on Drug Abuse reported Lifetime Prevalence for the three age groups as summarized below:

[In percent]

	Ever used		
	1976	1977	1976–77 change
	(1)	(2)	(3)
Youth, age 12–17	3.0	5.7	SS
Young adults, age 18–25	9.5	13.9	SS
Older adults, age 26 plus	.7	1.1	NS

SS = Significant at 0.01 level; NS = Not significant.

Prevalence of PCP used by the national sample is so recent that data on current or heavy or long term use are not available.

Senator HATHAWAY. Do you all agree that if you could just keep the ingredient off the market, we are better off? But you don't agree that we should drop the prevention or education programs?

Dr. DUPONT. That was the statement of yours that moved me into action, Senator.

Dr. NOWLIS. I think it is extremely important to recognize the fact that young people use drugs—whatever the drug may be—for a reason. As long as the reason remains—as, for instance, to demonstrate that one is strong enough to take risks—the particular substance is not so important as the status and reinforcement they get from their peer group.

If you eliminate one drug completely, they will start in on another one.

As Dr. Bourne and Dr. DuPont have both said, there are thousands of drugs available.

Senator HATHAWAY. Are there thousands available; is that literally true?

Dr. BOURNE. There is the drug demerol, which is a synthetic narcotic and which is used like morphine. Just in the chemical family related to that one drug, there are 4,000 potential drugs that could be made.

That is relating only to the chemical drug substance, demerol and that family of substances.

So the total number of potential drugs which can be addicting or abused is absolutely enormous. Many of them have never been made. But chemically it is quite possible to make these substances.

Senator HATHAWAY. So you are saying it would be just impossible to keep them all off the market.

Dr. BOURNE. I think so; yes.

I think if you set out to do with all of the substances, what we are trying to do with PCP, it would be absolutely impossible.

It may be a useful strategy to just deal with them one by one as they arise and become abused, but I think that we should not delude ourselves into thinking that by dealing with one, we won't end up facing many more down the road.

Senator HATHAWAY. Thank you.

I don't have any more questions, and I don't know whether Senator Culver is coming back or not. Perhaps staff has a question for you.

Mr. RAPP. I have a question for Dr. DuPont.

I have your statement of October 30 on PCP which you issued at a conference of the American Public Health Association.

At that time you said you were assigning top priority to PCP and announced a number of actions you were taking.

What concerned me was a particular part of the statement in the third paragraph:

"While the Institute's drug alert systems are not reporting high levels of use" * * *

I was interested in that because of the fact that we did have all this testimony 2 weeks ago of this drug becoming a major problem in 1972 and reaching epidemic proportions, as Senator Culver has said, 2½ years ago in some parts of the country, including suburbs of Washington and some areas of the west coast.

But yet somehow the DAWN network didn't seem to be feeding in this information.

I wonder if this is a problem with the DAWN network. Does there need to be improvement, or is it just a reflection of the fact that the PCP use is spotty?

Dr. DUPONT. That was a very serious problem, and it continues to be a problem.

Phencyclidine is unique in the extent to which it masquerades or hides its identity, in terms of our data systems and in terms of even the users' knowledge of what he is using. PCP has many different names, of course, and is sold and used in many quite different ways.

I have talked to many phencyclidine users who swear that angel dust is something different from hog, for example, or different yet again from PCP. What they are talking about is that phencyclidine comes in different forms. But as far as I can understand, it is the same drug. This is not so different from alcohol drinkers who claim very different effects from beer and vodka, even though the active drug in both is alcohol.

That confusion poses an enormous complication in terms of our reporting systems. This is particularly true when, for example,

medical examiners are not looking for phencyclidine, which was the case before we sent out the recent alert.

They simply did not know where to look or how to look. They were not aware that PCP was a major problem. That is one of the reasons we alerted them to this.

You are probably familiar with the situation in the District of Columbia at St. Elizabeth's Hospital where there was a very low level of awareness before Dr. Luisada got interested in PCP psychosis.

He found, that 160 out of 800 acute psychiatric admissions in 1 year from one area of the city were for phencyclidine psychosis. This is an enormous percentage.

One year after he published that finding, a reporter called up the doctor in charge of the psychiatric unit at the D.C. General Hospital which feeds most of the patients to St. Elizabeth's from this area of the city, and asked him whether he considered phencyclidine to be a big problem. The answer was "no," because D.C. General was still sending PCP patients over as "acute schizophrenia" and not identifying the problem for what it was. This occured even after this city had had all this publicity and Dr. Luisada had done his very valuable scientific work. The referral source was still writing the patient off as an acute schizophrenic reactions on the admission forms.

That kind of underreporting is, I think, unique for PCP use.

The same thing happened in the Phoenix House program in New York. When I got in touch with Dr. Mitchell Rosenthal last year and asked him whether phencyclidine was a problem, he said "no," it was not but that he would look into it.

He found out that PCP use was being reported under "Other" on their admissions forms. They did not have a special category for phencyclidine. In fact, 20 to 30 percent of Phoenix House admissions were primarily for phencyclidine use. But he didn't even know that until I called him.

In our NIDA CODAP form, phencyclidine is reported under "hallucinogens." That is a very peculiar position to put the drug in, and it made it difficult for us to identify the extent of the problem. Dr. Rosenthal was not alone in overlooking the PCP problem.

Mr. RAPP. You have clearly described a substantial problem. We have heard all sorts of very good testimony about the need to respond in effective ways to drug epidemics. But if you don't know what is happening it is hard to respond.

For instance, as I understand it, the DAWN program is keyed into emergency rooms. For that to work there has to be knowledge by the people in the emergency rooms about PCP effects. If a person seems to be schizophrenic, then they are going to think it is schizophrenia unless they are familiar with PCP.

Dr. DUPONT. Or it is a drowning, and they never identify it, for example.

Mr. RAPP. What of other methods?

We have had some contact with these drug analysis programs around the country where young people send drugs for analysis.

I know G. D. Searle Co. in Chicago sponsors one. Pharmchem in California is another, though it is presently burried by all the Paraquat samples.

When we have talked to these people, they have reported enormous quantities of PCP coming in. The people who sent it in thought it was marijuana; or THC; or LSD; but the stuff was PCP.

Dr. DuPont. That is right.

Mr. Rapp. Is there any effort to incorporate some of the data that is coming in from these labs?

Dr. DuPont. Yes, there is; and we are doing that now.

We are also using another source that we have found to be surprisingly effective. We are now monitoring the media for reports about specific new drug problems.

The media attention given to drugs seems to be a sensitive barometer of the extent of the problem.

Just last week I was made aware of the problem with pentazazine and pyrobenzamine—two drugs that we thought had a very low level of abusability. They are having a big problem with these drugs in Chicago.

That was brought to my attention by a television reporter from Chicago. It is a good example of use of the media as a way of identifying a serious new problem. That particular epidemic does appear to be fairly localized in Chicago, but it is a concern. So we are using both the methods you are talking about: Strict sample labs and the media.

However, I must emphasize that the extent of this masquerading issue is unique to phencyclidine. That has not happened with the other drugs we have been dealing with.

Mr. Rapp. I have one question, that Senator Culver was quite interested in, for Dr. Nowlis about the effectiveness of peer counseling.

I understand your program essentially amounts to about five resource centers around the country. People come in and receive training and assistance and reach out to a thousand school systems out of the Nation's 16,000 school systems.

That is one-sixteenth that you have been able to get to. Of course the resources of your program are very small.

But have you considered, in the direction that you give to people at the resource centers, peer counseling as a method of reaching young people—bringing forth those who have used PCP and have stopped using it, like the group that we had here 2 weeks ago.

Dr. Nowlis. What we do is to ask each school or community to look at its problems and its resources and the human resources and skills that it has available and then select from as many as 28 different possible responses 1, 2, 5, or 8. The average number that they build into the programs is 10. Many of them include peer counseling.

For instance, in our data base right now—and that can only follow a team for a 1- to 2-year period—we have 147 peer counseling programs.

We also use that as a sort of research basis, because there is peer counseling and there is peer counseling.

Because of the close relationship between the teams and their programs and the centers, via the technical assistance that the centers continue to supply to the teams, it is possible to identify what kinds of peer counseling with what kinds of training and for what age groups relating to what age groups are effective.

It is going to take a while to get that out.

But peer counseling is one of the very popular techniques.

When it is in place and when it is effective, it is a vehicle to respond to something that comes up in the community—as, for instance, the introduction of PCP.

Mr. RAPP. As I understand it, NIDA has responsibility for developing educational materials and prevention materials.

In your view, are you getting enough prevention materials and education materials to do the job? Is there any way that there can be improvements in cooperation between NIDA and your office?

Dr. NOWLIS. We work very closely with the prevention branch of NIDA, with the NIDA clearinghouse, and with the prevention branch of NIAAA and the NIAAA clearinghouse.

We do use those materials. We make them available as tools for teams to incorporate into their action plans. But we throw our net much, much wider.

There are many good things that have been developed in the private sector.

Also, we find, as our teams get down the road 2 or 3 years into action, that we can feed their successes back into the system.

So we have a very rich resource.

Mr. RAPP. One thing still bothers us—and bothers everyone that looks at this particular problem.

We are doing all of this. Your program, I know, has limited resources and everyone has limited resources. But why aren't these things effective? Why do we see the use of PCP, in terms of the deaths it causes, triple in the course of the years?

Efforts are being made. What is wrong with them? What can be done to improve them? What is going to be done differently in the future which offers us some promise that this drug is not going to continue to expand into all parts of the country and age groups?

Dr. NOWLIS. I think we have to be very careful when we say it is not working.

Are we concluding that on the basis of national statistics? Are we basing it on how many communities across the country? What is the size of the sample? Is it a general population sample, or is it a targeted population sample?

We don't pretend—it would be ridiculous to pretend—with our program, which is really basically a developmental program, that we can have, with $2 million a year, a major national impact. But we can demonstrate impact on the schools in which we have our programs. We hope that will encourage other schools.

One of the things, for instance, that we do is, once we have a cluster of schools operating successfully, through technical assistance and training of trainers, we train them so that they have their own training capacity and can reach all the other schools in the district.

For instance, in Dallas, Tex., which is the model where we tested this, they now have teams in 42 junior and senior high schools and some elementary schools, and by the end of the next academic year we will have them in all 62 elementary schools and total saturation of the system.

It is a model. I think with limited resources we have been able to spread it fairly widely. But certainly, as I say, with 1,000 school

systems out of the tremendous number and with a major emphasis on elementary- and secondary-age students we cannot expect to have a major impact on national trends and statistics.

I think it should be remembered that most of the data that we have would suggest that the major drug problems are in the 18- to 26-year-old age group.

It is not as easy to reach them as it is to reach a captive audience.

We hope what we are doing at the elementary and secondary education level, in terms of basic generic prevention, will have some impact on what young people do when they leave school.

Mr. RAPP. Thank you.

Dr. DUPONT. May I make one brief comment before we end, Senator.

I appreciate the sense of impatience that you all have about how slow we move and how late we came to realize the seriousness of the PCP problem. But we would not be as far along as we are now without the intervention of Dr. Bourne and the ODAP office.

Literally in a meeting that we have every 2 weeks with the heads of the various programs we review problems that we share and concerns that we have.

One of the major issues that we dealt with in the last year in this group was phencyclidine.

It was at that meeting that Mr. Bensinger and DEA were given the lead for PCP. I think they have done an excellent job of coordinating what response we have. This committee has been sensitive to the need for that kind of overall governmental coordination from the White House.

I would feel remiss if I did not emphasize that what we have achieved in this area and many others has depended very heavily on that coordination. I sincerely hope we do not lose it.

Senator HATHAWAY. Thank you all very much.

Our next witness is Senator Lloyd Bentsen from Texas.

On March 22, Senator Bentsen introduced S. 2778 to increase criminal penalties for PCP trafficking and require reporting of transfers of the chemical piperidine, which is an essential PCP ingredient.

Lloyd, it is a pleasure to have you with us this morning.

STATEMENT OF HON. LLOYD BENTSEN, A U.S. SENATOR FROM TEXAS

Senator BENTSEN. Thank you very much, Mr. Chairman. I appreciate the opportunity to testify before you.

Senator HATHAWAY. We appreciate your interest in this problem.

I am glad to see that you have 29 cosponsors to your bill, none of which are Senator Culver or myself, but we will be glad to join with you.

Senator BENTSEN. I look forward to that.

Senator HATHAWAY. And we may offer some amendments in the course of the markup.

Senator BENTSEN. That would be fine.

I would say with the support of the two chairmen of these two subcommittees that we are a long way down the road toward enactment of this piece of legislation.

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I am accompanied by my staff member, Dr. Lewis Watts, who has done a great deal of study on this issue.

I introduced S. 2778 on March 22 to try to help stem the illegal tide of PCP that we find sweeping over the schools and streets and playgrounds of our country.

The legislation, as you say, has attracted some 29 cosponsors. With you and Senator Culver that will be 31. So we are almost a third of the way down the road.

I think it merits your sympathetic attention. I don't pretend it is going to eliminate all the traffic in PCP, but I think it is going to be a very major step in slowing it down.

I would further submit that if S. 2778 is enacted into law, it is going to deter the casual dealers in dementia who provide most of the street drugs, help drive up the prices, and hopefully reduce the demand accordingly.

At this stage of the game, Mr. Chairman, the horrors of PCP have been very well publicized. The use of the drug is so well documented that there is really very little requirement for me to delineate the dimensions of this problem.

Suffice it to say that in 1977 we had over 100 deaths attributed to the use of PCP, with most of the victims succumbing to the strange dissociation-disorientation effects exerted by the drug on the user's mind.

People die from PCP not so much from overdose but by jumping off buildings, bridges, down elevator shafts, or by drowning.

A typical example is a case of a young man in Los Angeles who leaped from a second story window while he was under the influence of PCP. He crashed through a wooden fence prior to striking the ground. He got up, undressed, went back upstairs, and then dove to his death from a balcony window.

While we have relatively reliable figures on the numbers of deaths attributable to PCP abuse, there is no firm evidence available on the number of minds that have been warped beyond repair by this readily available and easily manufactured animal tranquilizer.

As Mr. Lerner recently testified, and as the employees of any hospital psychiatric ward would verify, PCP is capable of inducing extreme psychotic behavior in users.

Clearly, Mr. Chairman, we have an urgent requirement to devote our best efforts to the control of PCP abuse—not only because PCP is dangerous per se but because it could also well be the harbinger of a wholly new generation of entirely synthetic manmade drugs that contain elements not normally found in nature.

Unlike cocaine, morphine, or opium, PCP does not have to be grown abroad; it does not have to be refined and smuggled into this country; we don't have to be out there trying to intercept boats coming in on the Florida Keys. It is here.

Unlike LSD and related semisynthetic drugs having complex molecular architecture, PCP can be produced cheaply and in abundance by anyone with perverse instincts out to make a fast buck.

As a result, we have heard testimony from Mr. Tsavalas that making PCP is as easy as following a cookbook recipe. There is, admittedly, a danger of explosion in the manufacturing process; but even that does not deter the determined illicit manufacturer.

Mr. Chairman, I would like to sketch out a little scenario for you.

Let us assume, just for the sake of argument, that someone in this room wanted to make a fast buck and decided to go into the PCP business. What would it take?

It would take about $600—not too big an obstacle. He or she would need some primitive equipment and a place to manufacture—a cellar, a garage, or a van would all do. Then the entrepreneur would go to a chemical supply house with cash in hand and order the ingredients.

They would order a little cyclohexanone, a little phenylmagnesiumhalide, and a little piperidine.

Assuming that the purchaser pays cash, there would be no questions asked and the sale could not be traced.

Now the person has almost everything he needs to turn a $600 investment into PCP that would have a street value of approximately $100,000.

PCP can be sold for as little as $1 for 5 milligrams.

We now have a street situation in which, for the price of a school lunch, a child can buy enough PCP to blow his mind for 5 hours, or possibly forever.

But piperidine, the third essential chemical in the manufacture of PCP, is produced in small quantities. It represents only one-millionth of 1 percent of the U.S. chemical production. It has only one major legitimate commercial use—curing rubber.

There is little reason why someone who is not in the business of curing rubber should be purchasing PCP from a chemical supply house. On the contrary, there is every reason to believe that a person making a cash purchase of piperidine is bent on the illegal manufacture of PCP.

S. 2778 is drafted to attack the PCP manufacturing process at its Achilles heel—the unquestioned access to piperidine.

The legislation I have introduced would require the purchaser to identify himself at the time of purchase and then that the transaction be registered with the DEA.

I am not suggesting a licensing procedure. I don't envision interfering with the normal flow of chemicals throughout our economy. I have no intention of creating a cumbersome Federal bureaucracy—and we are not.

We are simply proposing that those who go to a chemical supply company, in person or by mail, to purchase piperidine should be required to present positive identification and that the transaction be registered and turned in to the DEA.

Since many of those currently making such purchases are engaged in the illegal manufacture of PCP, it is reasonable to assume, I think, that they would be reluctant to identify themselves and have the transaction registered with the DEA.

Mr. Chairman, PCP is dynamite. It can do to the brain what TNT can do to a building.

We do not permit people to come in off the street and purchase dynamite in this country. It makes no sense for us to permit individuals to purchase, without even the requirement for identification, all the necessary ingredients for PCP.

S. 2778 provides for not only the positive identification of piperidine purchasers, but it also includes increased criminal sanctions against those trafficking in PCP.

The legislation would have three primary benefits.

It would give law-enforcement authorities urgently needed information on the purchasers of piperidine—people who are either curing rubber legally or destroying young minds illegally.

The requirement for registration upon purchase of piperidine would deter weekend profiteers from obtaining an essential raw material used in the PCP manufacturing process.

Finally, by providing legal procedures for the purchase of piperidine, we would give drug enforcement officials an added weapon to use in prosecuting illegal PCP producers.

Mr. Chairman, this bill, as you state, now has the support of 31 Members of the Senate, drug control agencies of 14 States, and has received favorable comments from the Federal Drug Enforcement Administration.

I certainly hope that it merits the support of your subcommittees.

I appreciate very much the opportunity to present my case for this piece of legislation.

Senator HATHAWAY. Thank you very much, Senator Bentsen.

Under the terms of your legislation, the chemical supply company would be required to keep a record, I presume, of what ID was shown, as well as the name of the person; and that is it?

Senator BENTSEN. I would let the Attorney General set up the specifics on that.

Senator HATHAWAY. Wouldn't it be a violation if a chemical company did not have that? Is that your intent?

Senator BENTSEN. That is correct. They would be subject to penalties if they did not do it.

Senator HATHAWAY. I think that is a good idea.

What got you interested in this?

Senator BENTSEN. Frankly, reading some of the stories and hearing some of the stories on the radio of what has happened to some of the children in the Washington area. There has been an incredible increase in the use of angel dust or PCP on the schoolgrounds of Washington.

There are all kinds of kids getting into serious trouble and having mental disorders resulting from it. Many of them are permanently impaired.

Senator HATHAWAY. I think this is an excellent approach to it.

Dr. Peter Bourne indicated that there were literally thousands of chemicals on the market at the present time that people could get ahold of, and that is one of the problems we have.

Senator BENTSEN. There are a number of analogs that we have in this situation, but we don't have the kind of evidence yet as to the permanent damage that we have on PCP.

We may have to move on those later, but I think we have such a solid case here. We have been able to rifle in on one chemical ingredient that is produced in this country in a very limited amount for a very specific purpose. And when it is used otherwise, the obvious conclusion is that it is being used for PCP.

Senator HATHAWAY. Of course, you would approve the same procedure if we found out that other drugs had the same effect on people.

Senator BENTSEN. If they are that easily controlled, I certainly would.

But I would defer to the wisdom of this subcommittee, because you have a long history of your concern and interest in this kind of drug abuse—both of the subcommittees do. You have stressed education and trying to find ways to deter the use.

Senator HATHAWAY. Do we have any other similar legislation?

Senator BENTSEN. No; not on this. This is the only one.

Senator HATHAWAY. In this field or in other fields?

I know we have it, for example, with respect to gun control.

In certain States, my own for example, you have to sign your name so they can identify anybody who purchases a gun. That is open to the police to check those records.

Senator BENTSEN. Of course, I had reference to the purchase of explosives—dynamite and that type of thing.

Senator HATHAWAY. They are required to sign up.

Senator BENTSEN. Right.

Senator HATHAWAY. But not in the drug field, that I know of?

Senator BENTSEN. No; I am not familiar with any other.

Senator HATHAWAY. Senator, thank you very much. We certainly appreciate your contribution and your testimony.

Senator BENTSEN. Thank you.

Senator HATHAWAY. Our next witnesses will consist of a panel: Mr. Peter Bensinger, Administrator of DEA; Howard McClain, chief of DEA's Regulatory Control Division; Alice Kruegel, forensic chemist of DEA's Special Research and Testing Laboratory; and Dick Rottinger, special agent for Newark, N.J.

Peter, it is a pleasure to see you again.

I understand that you have a prepared statement. It will be made a part of the record; and if you can summarize it, that will be fine.

STATEMENTS OF A PANEL: CONSISTING OF PETER B. BENSINGER, ADMINISTRATOR; DICK ROTTINGER, SPECIAL AGENT, NEWARK, N.J.; DR. ALICE KRUEGEL, FORENSIC CHEMIST, SPECIAL RESEARCH AND TESTING LABORATORY; AND HOWARD McCLAIN, CHIEF, REGULATORY CONTROL DIVISION, ALL OF THE DRUG ENFORCEMENT ADMINISTRATION, U.S. DEPARTMENT OF JUSTICE

Mr. BENSINGER. Thank you, Mr. Chairman. It is a pleasure to be here.

I want to commend you and Senator Culver for holding these hearings—the second on PCP.

I want to express my appreciation also for your recognition and inclusion in this panel of, I think, some of the most knowledgeable individuals in this field.

On my right, Dick Rottinger, as you indicate, is a special agent. He is a senior criminal investigator in the Newark office. He has been the coordinator for DEA of our clandestine lab and precursor programs there and has firsthand experience in the success, or lack of success, with both voluntary compliance and normal, or at least

existing, programs and procedures for the control of this, I think, dangerous and very serious drug problem.

Dr. Alice Kruegel is a senior forensic chemist who has had 8 years with DEA, and its predecessor organizations, and has a doctorate in organic chemistry. She is with our special testing program and is quite familiar with the ingredients. You can see here some of the molecules displayed of PCP, their precursors and analogues.

Howard McClain is the chief of our regulatory control division in the office of Compliance and Regulatory Affairs. He has been a registered pharmacist.

I would like to summarize, if I could, Mr. Chairman, my official statement.[1]

I think Senator Bentsen described the lab operation very accurately. It is a very low cost to get into kind of a business. It does not require a degree, by any shape of the imagination, in chemistry. It does not require a large bankroll; you can do it from $500 to $1,500. It is a process which is generally operated in a home or a garage or some farmhouse. The equipment needed includes a trash can, ovens, vacuum, filtering equipment, kitchen utensils, and some glassware.

On the scale of operation—and these are all clandestine operations for PCP—there are a few pounds per batch. But a couple of pounds of PCP can run into the tens and hundreds of thousands of dollars.

The operations, obviously, do not employ the type of quality control procedures that would normally be associated with any type of drug. They are usually dirty.

The results of PCP use have been described previously. I would underscore those descriptions by saying that the reactions that individuals can have from using PCP are highly unpredictable, and can cause schizophrenic reaction. The incidence of people drowning or tearing out physical parts of their and other people's bodies are very, very dangerous reactions.

One of the methods by which the DEA moved in concert with the coordinating committee which Dr. Bourne directed to be set up was to increase our level of liaison with the chemical industry.

You should know that one-third of all the illicit lab cases we have made have come from information developed from this precursor liaison program with legitimate chemical manufacturers. But some manufacturers are not cooperating. Many are.

The number of PCP labs seized during 1977 increased 42 percent over the previous year.

If you can look at this chart, you will see on the far left that PCP lab seizures were greater than our laboratory seizures of any other type of dangerous drug. They were double the number, in fact, of both amphetamines and methaqualone, hashish, LSD, and all other hallucinogenics put together—64 total.

The number of individuals arrested totaled 349 in the last year, and that is an increase from 250 the year before.

Senator HATHAWAY. Has that had a deterrent effect?

Mr. BENSINGER. I am afraid it has not had as strong a deterrent effect as it should; because while the arrests have gone up, curious-

[1] See p. 112 for Mr. Bensinger's prepared statement.

ly, the sentencing has decreased from an average of 35 months for a penalty in 1976 to 24.9 months in 1977.

I believe Senator Bentsen's bill should definitely be supported, and the Department of Justice supports this view.

We feel the change in penalties are important, in fines, and the inclusion of mandatory reporting from piperidine is also a very important step.

The Department of Justice has proposed communication with the Chairman of the Judiciary Committee on this bill.

There is an expression that the Attorney General made during the course of the regulation. One is to provide for legitimate chemical companies who are in the process of regularly providing for the manufacture of rubber to have different reporting relationships and requirements than some other chemical companies. We would be happy to explore with your committee, as would the Department, a possible amendment to the bill.

But with that minor reservation, the Department—and certainly I personally and our agency—supports that enactment.

I think Dr. Bourne's view, and certainly he has to consider not only the Department of Justice but HEW and Commerce. When he formally submits his formal communication to you, I am sure he will take into consideration our input, as well as the input from those other departments.

One of the major problems in the PCP enforcement program, of course, is in dealing not simply with the sentencing but the availability of the raw material.

Two precursors of PCP were put on schedule II on May 17 for the first time ever since the Controlled Substances Act went into effect. This will now be a requirement for the precursors, PCC and phenylcyclohexylamine, to be placed and reported and for violations of the Controlled Substances Act.

In fact, it will be enforced if individuals are not proceeding with the appropriate procedures for those two precursors.

Senator HATHAWAY. Do you know what the appropriate procedure is? What does putting these on schedule II do?

Mr. BENSINGER. Howard McClain is the chief of our regulatory division. He can describe it in detail.

I would like Dick Rottinger, who is the criminal investigator, to describe how his operation would differ with both the control of the analogs and precursors.

Mr. MCCLAIN. Putting the drugs in schedule II only means that, first of all, we can set quotas on production. We determine, by way of quotas, how much of each chemical in schedule I or schedule II can be produced each year.

Senator HATHAWAY. How much can be produced or marketed?

Mr. MCCLAIN. How much can be produced.

Senator HATHAWAY. I see.

Mr. MCCLAIN. For drugs that have no medicinal use, we would have to make a determination as to what industrial uses would be satisifed. Then we would set a quota based on that.

As of now, a good example is a chemical that is in schedule I called 2,5-dimethoxyamphetamine. It is an hallucinogen that is used by Polaroid Corp.

It is synthesized, and we determine how much can be made. We base that on what they say their needs are.

But they have very strict security, which is checked out by DEA.

In other words, the two main controls are the security provisions and the quota.

Senator HATHAWAY. That is all you could do with schedule II is just control the amount that is being produced?

Mr. MCCLAIN. At this point, the penalties for trafficking are the same for schedule II or schedule III or schedule I for nonnarcotic substances.

Senator HATHAWAY. That is illegal trafficking.

Mr. MCCLAIN. Right.

Mr. BENSINGER. But records have to be kept, inventory levels can be audited, and administrative, civil, and criminal penalties can follow for violations which now presently are not able to be investigated, pursued, and brought to bear if they are not in the schedule.

Senator HATHAWAY. If the only legitimate purpose is to make synthetic rubber, why isn't that fairly easy to control? I don't imagine there are too many manufacturers of that.

Mr. BENSINGER. I don't think that is the problem. Right now anybody can buy——

Senator HATHAWAY. Why don't we just say that the only ones who can get it are legitimate makers of synthetic rubber. It should not be very difficult to provide identification that you are a synthetic rubber manufacturer.

Mr. BENSINGER. I think that is what Senator Bentsen's bill will do.

Senator HATHAWAY. You could make it even more restrictive by saying not only should you show identification but you have to be a manufacturer of synthetic rubber because that is the only legitimate use we know of this particular chemical.

Mr. BENSINGER. It may be that there are other legitimate processes.

Senator HATHAWAY. Somebody mentioned a tranquilizer for animals. So perhaps we should allow a veterinarian to procure it.

Mr. BENSINGER. I think if we work at it from the exception—In the industry in the United States, we have had chemical companies and research scientists who can develop a wide variety of ingredients that can be used for a wide variety of different processes. Right now piperidine—93 percent is used for rubber. It may be that someone can find other legitimate uses.

I think Senator Bentsen's bill does say that we want people who are going to be buying this particular chemical ingredient to identify themselves, have the record kept, and then provide the Drug Enforcement Administration with the authority to, in fact, see if the eventual manufacturing and distribution is or is not in violation of the law.

This would not restrict the basic development of research or utilization of chemical and synthetic products for legitimate use.

I will try to summarize, if I can, Mr. Chairman, and then call on Dick Rottinger to talk about the differences he sees as a result of piperidine being a mandatory reporting requirement, as well as the analogs and others being included in the precursor and schedule program.

We feel that providing piperidine or a requirement of providing identification would impose upon the sellers of precursors the requirement of maintaining records for reporting.

We believe the sentencing structure for PCP violators should reflect the emphasis we are placing on the abuse of PCP abuse programs.

I have, in fact, established a PCP special action office in DEA and have set what we call a GEODEP indicator, which is a class 1 through 4, just for PCP to bring to the attention of the field the importance of making these kinds of cases.

We think the Congress, and certainly the Senate, has taken the lead in focusing on the problem that PCP has wrought. It is serious. I think it needs attention, not only from the investigative and administrative resources within our own agency but with legislation and reporting requirements as well.

Dick, perhaps you could add in your own perspective of a criminal investigator the benefits that you see from the changes that are recommended.

Mr. ROTTINGER. I am currently assigned to the Newark district office, and I am one of four agents in that State that work exclusively with the legitimate sector—the large chemical manufacturing concerns, the wholesaler, the repackager, right on down to the retail distributor of chemicals, solvents, precursor chemicals, and the like.

The program that we now have in existence and have had for approximately 10 years we refer to as the precursor control program.

We have had occasion to sit down with our chemists here in Washington and in the different regional laboratories and develop a list of chemicals. These can be not only solvents but immediate precursor chemicals that have application in the synthesis of any of the controlled dangerous substances.

We have formulated a list of these chemicals. We then go out and provide to the manufacturing chemist, the wholesaler, the retailer, and the repackager this list.

The list is broken down in such a way that somebody at the retail level and somebody at the wholesale level, upon receiving an order of precursor chemicals for innocuous items, in conjunction with one another, might show him, and in turn us, that the individual ordering of these items would be indicative of the manufacture of a single controlled dangerous substance.

I think to date the precursor control program that we have has been our best investigative lead, working up to the point where we might effect the seizure of an illicit or clandestine laboratory.

I think some of the pitfalls that we might want to discuss would be that the program is strictly a liaison; it is not regulatory in nature.

We can go out and request of these companies and solicit their cooperation, as we have done. In a lot of the larger companies, we receive excellent cooperation. In some of the other companies, we receive no cooperation whatsoever.

I think perhaps with the bill that is being introduced, with respect to piperidine as an immediate precursor chemical for PCP, it will give us the avenue to identify those individuals who are

acquiring a chemical that we feel has only the application in the synthesis of phencyclidine.

I have worked with the program for approximately 6 years—I guess the last 2½ to 3 years almost exclusively with the identification, and hopefully the immobilization, of clandestine laboratories.

With respect to piperidine, I have not monitored or effected any control deliveries of any piperidine that I know have gone into the legitimate industry or the legitimate sector.

Of all the lab seizures effected and all the seizures on the street—whether they be purchase of evidence by a local, State, or Federal officer or a seizure of an illicit laboratory——

The chemicals are readily available—the chemicals on hand at the laboratory sites. There are no controls on the sale. There is currently not a monitoring program. Anybody can acquire these chemicals in any quantity.

I had occasion to work on investigations where individuals——

We spoke earlier of the smaller laboratory—the unsophisticated laboratory. An individual can currently walk into a chemical warehouse and acquire all of the chemicals necessary for the manufacture of any of the controlled dangerous substances and not be subjected to any monitoring procedure.

Senator HATHAWAY. What additional laws do you think you need to help you?

Mr. BENSINGER. For PCP, the current offense for criminal penalties is a 5-year penalty at the maximum level with fines of $15,000. The subsequent offenses are double that.

What we think we need—and Senator Bentsen's bill, I think, does it—is provide a significant penalty and provide for violations in recordkeeping in which companies would not be able to set up a false front, or so-called drug houses, that were really specializing in nothing but providing angel dust to the youth of this country.

We think the provision for piperidine inclusion, on a recordkeeping basis, is critical. We think through our own administrative processes with FDA and HEW, that the two analogs—PHP and PCE—in fact, can be controlled under existing procedures. That is underway.

PCE and PHP we expect will be controlled jointly with HEW by June 30, the end of this month.

I spoke to Secretary Califano's special assistant about that this morning, as well as yesterday. They have been working closely with our people and FDA for some time on that matter.

Senator HATHAWAY. You notice how effective Senator Culver and I have been already. Neither one of our States has a clandestine laboratory. [Laughter.]

Or maybe they are so clandestine we haven't been able to find them yet.

Mr. BENSINGER. It could be that or it could be that your interest in this is broader than the boundaries of just one State. And I think you are to be commended for that particular perspective.

Senator HATHAWAY. I am just kidding.

You mention that the average sentence has gone down in the last few years. Are Federal judges getting softer?

Mr. BENSINGER. I think we have needed to really get the facts out.

Senator HATHAWAY. Perhaps prosecutors have not recommended stiffer sentences.

Mr. BENSINGER. I talked to Deputy Attorney General Civiletti, and I know his views are to certainly communicate with U.S. attorneys. We are having another conference with all of our principal U.S. attorneys at the beginning of next week in Los Angeles.

I think PCP because it was not in schedule II until February of this year was looked upon as just another nonnarcotic drug and not very serious.

Scheduling it in schedule II gives the prosecutors and the judges and certainly the community at large an awareness that this is a drug subject to severe abuse. It also gives some 40 States which follow closely what DEA does in scheduling an opportunity in their own State laws to reschedule for higher and more serious violations.

But whether it is in schedule IV or schedule I, the sentence itself, according to the law, does not change. It is just the priority that is attached by the prosecutor, the judge, and by all concerned in the court system.

Senator HATHAWAY. What is the status of State law? I know California has a fairly tough law with respect to this. We had testimony on it at the last hearing. But I don't know of any other States with anything other than just a general law.

Mr. BENSINGER. There are a variety of State actions that have been taken—in Maryland recently.

Out of the 50 States, 45 have uniform controlled substances acts. In Alabama, PCE was added to their controlled substances act in 1978. Alaska has a new bill in to criminalize PCP. California has three bills introduced:

Possession of the immediate precursor sufficient to manufacture piperidine or cyclohexanone shall be deemed to be the possession of such a derivative substance. Additionally, possession of any compound or mixture containing piperidine shall be deemed to be in possession of such a substance.

Connecticut has approved legislation on PCP. Kansas has rescheduled it from 3 to 2. Louisiana has put PCP into the Dangerous Substances Act. Maine has now included PCP in the Controlled Substances Act. In Maryland, PCP was rescheduled from 3 to 2 following our action. Massachusetts has legislation pending. Michigan has rescheduled it from 3 to 2 and proposed legislation similar to our administrative action on PCE. Minnesota, with their Board of Pharmacy, is presently attempting to get it rescheduled from 3 to 2. New York has three bills introduced. North Carolina, Pennsylvania, Wisconsin, Nevada, South Carolina, and West Virginia all have legislation in action or passed.

There are nine substances of considered precursors now in place in California.

So there is a correlation between action the Federal Government can take and that which the States are taking.

I would be happy to supply this data for the record. We do have a summary of it handy for you.

Senator HATHAWAY. Why couldn't we put PCP on schedule I?

Mr. BENSINGER. HEW and FDA indicate that it has a legitimate medical use.

Senator HATHAWAY. For animals though.

Mr. BENSINGER. Five kilos a year for animals.

Senator HATHAWAY. Not for humans.

Mr. BENSINGER. My own view, Senator Hathaway, is that that would be helpful for enforcement; but we have to look to the Secretary of HEW for the determination as to what schedule level it should be.

If there is a legitimate medical use, even for veterinarian medicine, it would not be placed in a schedule I category, such as heroin.

Senator HATHAWAY. Did you completely answer my question about why you thought that prison sentences went down?

The question is whether or not the scheduling is all that effective. If it is not publicized, then it does not have much effect.

Mr. BENSINGER. The statistics I recited were in 1977 when PCP was not a schedule II drug. I think it reflected attitudes prevalent at that time in the judicial court system.

I think more serious attention needs to be brought to the attention of the judiciary through the public and through our prosecutorial and investigative resources.

I think this hearing helps, but I cannot explain the attitude of judges.

I have asked myself that question for 10 years, since I have been in this field.

Senator HATHAWAY. That is true of crime in general, isn't it?

Mr. BENSINGER. The State of Maine, at your encouragement, has looked at the marihuana penalties and has recently revised them to increase the penalties there for the large sale of it, recognizing that for the small user jail or imprisonment would not necessarily be appropriate.

Where there are operators making millions of dollars on the pain and suffering of others, they do need to be punished instead of given probation.

Senator HATHAWAY. I suppose if we had PCP analogs, you would recommend the same type of legislation as the Bentsen bill.

Mr. BENSINGER. We are recommending schedule I, and we believe these analogs will be, in fact, scheduled by June 30 in that schedule.

The reporting requirements for piperidine we think are very important.

Senator HATHAWAY. Senator Culver?

Senator CULVER. Mr. McClain, we have heard that the analoges of PCP have been found in illicit laboratories and have also been sold on the street. Can you give us an estimate of how many PCE and PHP-related cases have been reported to DEA officials?

Mr. MCCLAIN. In 1974, we have information which indicate that only one PHP report was made. I have the State, but I don't have it handy.

In 1975, there were three; in 1976, there was one; in 1977, it went up to 14.

Senator CULVER. Is that from all sources, including local and State, as well as DEA?

Mr. MCCLAIN. This is from all sources.

This is probably under-reporting; because, here again, once it is found out that the drug is not controlled, no cases are made.

The reports would be from analyses made in a laboratory where the drug had probably been sold as PCP.

Senator CULVER. When did DEA first get reports that these analogs were available?

Mr. MCCLAIN. We have known about the use of analogs on the street for about 3 years.

The pattern has been that they were sold primarily as PCP, and they are used primarily as PCP because they were all synthesized at about the same time under the same patent by Parke-Davis & Co. in the 1950's.

They were all tested out for the same purposes. That is, they were trying to develop a general anesthetic.

They were all abandoned because of their side effects, because they were producing some very severe side effects, some of which were mentioned here today.

The pattern has been primarily that which you would find with PCP.

Senator CULVER. Is there any pattern of incidence across the country?

Mr. MCCLAIN. They have been found in several States from the east coast to the west coast.

I don't think there is any particular concentration.

Usually you find more of these things in California.

My understanding is there has been a lot of publicity about the matter there and California is well known as being the State where many of these drugs get introduced.

Senator CULVER. Do you have any sense of what the current scope of abuse and production of the analogs is?

Mr. MCCLAIN. We do not have any figures on any amounts produced. We do know that there is probably increasing production as the illicit operators move from drugs that are controlled to ones that are not controlled.

There have been quite a bit of the analogs found in the States of Michigan and Ohio.

We don't know why, but we think it may be due to the fact that the drugs were first introduced there. The company which produced the drugs for licit purposes is in Michigan.

Senator CULVER. Have you made any effort to date to classify PCE and PHP as controlled substances?

Mr. MCCLAIN. Yes.

When we asked the Secretary of HEW for a recommendation on the transfer of PCP to Schedule II, we mentioned analogs as candidates for control. He mentioned them in his letter of concurrence with our recommendations.

We had a committee set up to study the PCP problem. It was concluded at that time, back in November of last year, that we would supply data to FDA so they could make medical and scientific evaluations of these drugs with the idea of putting them in schedule I.

Senator CULVER. How long will it take to complete these efforts?

Mr. MCCLAIN. DEA can act on them immediately. We can put a Notice of Proposed Rule Making in the Federal Register as soon as

we get concurrence from FDA and from the Secretary of Health that the drugs should be in schedule I.

Senator CULVER. Do you know when that might be available?

Mr. MCCLAIN. My understanding is that we should be getting that from them this month.

Senator CULVER. Do you have any information that has been developed on the effects of PCE and PHP on someone using them?

Mr. MCCLAIN. There is very little information on that, except for the fact that in the early days when the drug company proposed these as general anesthetics, they studied the analogs to a certain point. When they discovered the undesirable side effects, they dropped them.

These two compounds are two of a long series. They were screening the series with the idea of developing at least one as a general anesthetic. They eliminated the ones that had the worst side effects and kept the ones that they thought had some commercial potential.

There are two of those. One is ketamine which is now on the market as a general anesthetic. The other is PCP which is used in veterinary medicine.

Senator CULVER. Do you consider that PCE or PHP have any potential public health problems?

Mr. MCCLAIN. From what information is available, they seem to have the same public health problem as PCP. They may be somewhat more potent in some aspects or maybe somewhat less potent in others.

But generally, according to the literature information available to us, they have the same spectrum of activities.

Senator CULVER. Are there any medical, research, or industrial uses for PCE or PHP that you know of?

Mr. MCCLAIN. None that I know of, Senator.

All research, as far as I know, was dropped at the time that the company decided that these had no commercial potential; and that was in the 1950's.

Senator CULVER. Dr. Kruegel, we have heard testimony that these substances are analogues to PCP and are just as easily made.

Can you also tell us what is the chemical composition of PCP? How does it differ from PCE and PHP?

Ms. KRUEGEL. I have some models here which will probably demonstrate the difference better than I can tell you.

PCP stands for phenylcyclohexylpiperidine.

Here we have the phenyl portion, the cyclohexyl group, and the piperidine ring.

The analogs are formed—PCE and PHP—by substituting another group for the piperidine ring.

I have the other groups, and I will show you how that is done.

In the case of PHP, a pyrrolidine ring is substituted. It differs from the piperidine by having one less carbon, so you can see it is chemically very similar.

The PCE can be formed by substituting an ethyl amino group for the piperidine ring. Again, this is chemically very similar to PCP.

Senator CULVER. How hard is it to get the ingredients for PCE and PHP? Where would you obtain them?

Ms. KRUEGEL. Any chemical supply house would have them, and they could be obtained very easily and cheaply.

Senator CULVER. Does the manufacturer need different equipment to make PCP, as contrasted with PCE and PHP?

Ms. KRUEGEL. No. Essentially the same equipment would be required. The reactions are analogous to those of PCP.

Senator CULVER. How much experience and education does someone need to make PCE and PHP?

Ms. KRUEGEL. I would say a high school education would be sufficient.

Generally, they are following recipes. It is a cookbook procedure, and it can be really done by——

Senator CULVER. Is the manufacture of the analogs more difficult than the manufacture of PCP?

Ms. KRUEGEL. It would be a similar process and of similar difficulty or ease.

Senator CULVER. Thank you.

Mr. Rottinger, what procedures do you follow when a chemical company reports a suspicious sale?

Mr. ROTTINGER. If we receive a report of either a sale or a chemical order in advance, we attempt whenever possible to establish whether or not the company does exist and whether the individual ordering does represent a purported company.

All too often we have come across individuals who have set up nonexistent companies and gone through the facade of making up purchase orders and letterheads.

The problem here is that they will never go ahead with the company and establish a line of credit. To us, that is indicative of the illicit channel.

Had the individuals acquiring a larger amount of chemicals established a line of credit, they would probably have received a net discount.

In most cases, the individuals do not want somebody probing their accounting areas checking lines of credit and the like.

Whenever possible, we will perform an investigative check on the individual or the company ordering the chemical. At that time, we will get back to the chemical warehouse and will either try to effect a controlled or monitored delivery of that to an individual.

Senator CULVER. What types of information do you usually obtain from the participating companies?

Mr. ROTTINGER. We usually request of the individual, just to preclude them from not receiving full payment, that if it is somebody who is not of record with them and they have no information to establish a line of credit check, we ask of the companies, if we are going to effect a monitored or controlled delivery, whenever possible to accept a prepayment.

In accepting the prepayment, they should try to obtain any information they can on the phone—either the order clerks, the retail man, or the commercial-industrial salesperson within the company. Any checks they might be able to obtain on the telephone, we ask them to document this.

Senator CULVER. Is this type of voluntary program effective, in your judgment, in tracing over-the-counter purchases of such precursors?

Mr. ROTTINGER. With those companies that participate, it is very helpful to us in developing investigative leads.

The problem is that it is not regulatory in nature. We do have companies that do not subscribe to the precursor control program.

From some companies we receive excellent reporting; from other companies, it is nonexistent.

Senator HATHAWAY. What percentage do you think you are getting on a voluntary basis of the total volume of the drug?

Mr. ROTTINGER. In the area I happen to be currently working in, in the State of New Jersey, working very closely with New York, I would say we receive the better portion of the larger chemical orders.

The problem is that with the smaller retail outlet that has the same access—he is using the repackager or the manufacturer to obtain his chemicals—when we get down to the retail level, the reporting all too often is not there.

Senator HATHAWAY. Is there anything, nationwide, on that?

Mr. BENSINGER. I would think that would be characteristic, Mr. Chairman—Newark, N.J., is a principal pharmaceutical manufacturing large distributor area. I would think there would be a similar experience in the Midwest and on the west coast where you would find certainly an element of cooperation from large manufacturing and distributing houses.

But problem situations that come up from other houses—one of the major breakthroughs we had and the biggest PCP lab that was ever seized was some 28 pounds of pure PCP in the San Gabriel Valley. It came as the result of an agent, Steve Austin, who had been with DEA about a year and a half. He had been in contact with one of our agents in Albany who had been alerted to the fact that there was an unbelievably large precursor shipment destined for California.

Through that kind of cooperation, we were able to break up a lab that had tonnage quantities of raw material for methamphetamine and 28 pounds of pure PCP, which runs into the dozens of millions of dollars.

State and local law-enforcement officials with DEA made this very significant seizure in the San Gabriel Valley.

This came about through that type of information and an agent following a lead to control delivery and two parts of the country cooperating.

But there are houses that will not report that, and there may be—without this type of mandatory reporting of some of the precursors and analogs—obviously, the agency is not in the same position.

Senator HATHAWAY. Are most of these operations small ones—of one or two people operating them in a back room or something like that.

Mr. ROTTINGER. In the seizure of illicit laboratories, a lot of the labs are producing maybe 1 to 2 pounds.

One to 2 pounds of a final product, when impregnated on vegetation—marihuana, parsley, or any other thing—would yield hundreds of thousands of dosage units.

We have come across very sizable PCP labs within the States also, having occasion to work with the Canadian authorities to our northern border where we have effected seizures of intermediates.

Here, again, it is not the final product PCP but it is a very stable intermediate. It is just a matter of converting the intermediate over to PCP where there were hundreds of pounds seized.

Senator HATHAWAY. Is there any import problem, Mr. Bensinger?

Mr. BENSINGER. No.

I think Senator Bentsen characterized this accurately.

It is a domestic problem. The raw materials are all here. It is not something, unlike heroin or cocaine, that we bring in and has an overseas source of supply. It is readily available in the United States, and there is not an imported need to bring in raw materials from abroad.

Senator HATHAWAY. Are we exporting it—such as to Canada or Mexico?

Mr. BENSINGER. I know the Royal Canadian Mounted Police have been very concerned with clandestine labs there.

Howard McClain or Alice could correct me.

I believe that they probably could get the raw materials, to some extent, in Canada or the United States; but if they set up their labs in Canada, there is no reporting requirement to my knowledge for the major supply houses because these particular commodities are not controlled to report them.

Senator HATHAWAY. Thank you very much.

That was very good testimony.

Our last witness is Mr. Robert Elsberg. He is a special agent for the California Department of Justice.

He is here this morning to testify concerning the PCP problem in California and the effectiveness of a California law that requires any person who sells certain chemical precursors to submit certain information concerning that sale to the California State Department of Justice.

It is a pleasure to have you with us, Mr. Elsberg.

We will include your entire prepared statement in the record. If you would like to summarize it, that would be helpful.

STATEMENT OF ROBERT S. ELSBERG,[1] SPECIAL AGENT, DEPARTMENT OF JUSTICE, STATE OF CALIFORNIA

Mr. ELSBERG. Thank you, Senator Hathaway.

I would like to thank you and Senator Culver for inviting me here today.

Senator HATHAWAY. We are glad to have you.

Mr. ELSBERG. I bring greetings from the attorney general, Evelle Younger, who is my director.

In California, we have had a phencyclidine (PCP) problem dating back to the 1960's, when PCP was identified as the "peace pill."

PCP was observed in California for a very short period of time. Due to its bad effects at a rock concert, PCP immediately lost popularity.

Senator HATHAWAY. What were the bad effects at the rock concert?

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[1] See p. 117 for Mr. Elsberg's prepared statement.

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Mr. ELSBERG. People received adverse reactions resulting in treatment at emergency hospitals for very bad psychotic reactions to the drug.

PCP lost popularity under the term "the peace pill."

In the early 1970's, our real problem in California was the trafficking of methamphetamine—speed, which is the street term—and barbituates and LSD.

Our agents were investigating the flow of the product in California through informants and targets of opportunity.

We were really not getting to the root of the problem, which was the laboratory that was manufacturing the drug. We were investigating the flow.

In 1974, our department formed a committee to look into a reporting system. We felt that it was important to try to ascertain who the people were that were purchasing these vital chemicals necessary to the manufacture of some of these dangerous drugs, such as methamphetamine and LSD.

We invited the public; we invited chemical companies. We wanted their input, because we knew it would be a burden to them to have to report to us.

The hearings lasted for approximately 6 months.

At the conclusion the Department of Justice found no objection to the reporting system, as it would be posed to the legislature.

In 1976, the legislature enacted the California precursor chemical reporting system, which we have today.

It was not until 1977, that piperidine was added to the list. The reason piperidine was added to the list of reportable substances was because of the tremendous PCP problem we were having in California. We were attempting to find out who the persons were who were purchasing these necessary chemicals in an attempt to get to the person or persons who were manufacturing the product. Piperidine was added to the list of reportable substances because it was a very small quantity that was being manufactured, and the information that would be obtained on the form would be very beneficial.

For instance, we found that in 1976 there was approximately 500,000 pounds of piperidine manufactured. This sounds like a tremendous amount of substance, but when we compared it to cyclohexanone, which is also a very essential ingredient to the manufacture of PCP, we found 641 million pounds of this substance manufactured.

The California Department of Justice did not want to burden the chemical companies with the reporting of cyclohexanone sales because the tremendous amount of substance manufactured would negate the utility of the information as an investigative lead.

The system that we have is contained in the Controlled Substances Act of the Health and Safety Code, which contains all of our narcotic and dangerous drug laws in the State of California.

The California Department of Justice is responsible for administering the system by making sure that the chemical outlets in the State have the form and report to the Department of Justice reportable chemical sales that occur.

Failure to report these substances to the Department of Justice is a misdemeanor, punishable by a fine of $30 to $500 or a sentence

of 15 to 180 days, or both. It is not a large fine for failure to report to the State.

The person or persons who furnish the substance must report to the California Department of Justice within 72 hours.

When the California Department of Justice receives the information, it is immediately put to use in an attempt to apprehend the illicit laboratory, if there is one.

I think at this point, since my presentation is quite lengthy and rather than proceeding into areas that you may not be interested in, I would open it up at this time to any questions that you might have.

Senator HATHAWAY. Do you think the California law has been effective then? Is that your conclusion?

Mr. ELSBERG. It has been effective in many respects, and in other respects it has not been effective.

In California, we require anyone who sells, transfers, or furnishes a chemical precursor, such as piperidine, to make a report. This is strictly in California.

In many instances, the chemicals that are used to manufacture the finished illegal product are coming from other States. We do not, therefore, have the knowledge that we would like to have to stop the flow of these chemicals to the illicit laboratories in California.

The report has some excellent benefits. First of all, people come into chemical companies to purchase chemical precursors.

Upon notification that they are required to submit some identification, many of these people immediately turn around and walk away. They are not willing to produce identification.

We have deterred the person from obtaining the chemical that was necessary for that particular illegal product.

Also, many of the chemical companies are very cooperative, and they will work with us in conjunction with the form by notifying us as soon as possible as to chemical sales. We can then make contact with the chemical company and give them directions in the event that the purchaser will return for a subsequent purchase which would allow us to surveil the person to his laboratory site.

The problem with our system is that a chemical company can falsify the report. They can make up a phony address and a phony name and submit it to us. A person can enter a chemical company, purchase a reportable chemical and show phony identification.

The report will be submitted to us, in compliance with the law.

We receive many reports that are not valid. They have phony addresses, phony names, or both.

In these particular circumstances, we do not have a crime. As a result, the California system is weak in this area.

California is also hindered by chemicals that come into California from other States through the mails for which California does not receive notification of sale or transfer.

Senator HATHAWAY. Even if there were a Federal law in this regard, there would still be the problem of people giving phony names and addresses.

Mr. ELSBERG. Under our particular system, we would still have that problem.

Senator HATHAWAY. I suppose anybody who is going to do it for illegal purposes would do just that; wouldn't they?

Mr. ELSBERG. That is correct.

For instance, let us take a chemical company. A chemical company has charged up to 10 times the going price for a particular chemical.

For example, one chemical company sold a person one pint of phenyl-2-propanone. Phenyl-2-propanone is a chemical precursor for the manufacture of speed.

The fair retail market value that most legitimate chemical companies charge for this chemical is approximately $70. The chemical company charged $700.

The customer returned and purchased one-half gallon of methylamine for $250. The fair market value for the methylamine is $17.

So the chemical company sold approximately 100 dollars' worth of chemicals for approximately $1,000.

The unspoken condition for spending the $1,000 in this case was that the purchaser did not have to present identification.

The California Department of Justice has not received reports from this chemical company for these overpriced transactions.

The $1,000 that was spent for these chemicals, which was very high, yielded approximately 1 pound of methamphetamine—speed—which had a very conservative value of $16,000.

So the profit is there.

If we looked at it in terms of PCP and took roughly 600 to 700 dollars' worth of chemicals and starting equipment, a manufacturer would yield approximately 35 pounds of PCP.

So the profit that could be gained is tremendous from very little money.

Senator HATHAWAY. Are you familiar with the Bentsen bill which is pending before Congress?

Mr. ELSBERG. Yes; I am.

Senator HATHAWAY. Do you think that is a good bill?

Mr. ELSBERG. I think it is an excellent bill.

Senator HATHAWAY. Do you think monthly reporting is enough?

Mr. ELSBERG. No; I do not.

Senator HATHAWAY. How often?

Mr. ELSBERG. I believe at least within 72 hours of the sale, such as in California.

Senator HATHAWAY. In other words, if it were monthly, they could have the operation, make it, and leave town, I suppose.

Mr. ELSBERG. That is correct.

Part of the information on the report is an investigative lead. It is a hot clue that someone is going to a chemical company. If we wait a month, that information may be worthless.

Senator HATHAWAY. They can make it in what—24 hours?

Mr. ELSBERG. Yes. It can be made in a very short period of time. The information will be worthless after that type of delay.

However, in California, we do have a system where we allow companies that sell to a particular person on a repeated and regular basis to report once a month. However, no one has ever made the request to report once a month.

Actually, the amount of chemical precursors that are legitimately used in California is very small. Therefore, we do not expect

many reports. We do not feel that we intrude very much into the legitimate flow of the chemical companies' business.

Senator HATHAWAY. Do you think stiffer penalties are in order?

Mr. ELSBERG. Yes.

The California Narcotic Officers Association has recommended three proposals to be amended on pending California legislation.

One of these is that anyone who falsifies the report be guilty of a misdemeanor or felony upon the discretion of the judge. This would eliminate one of our biggest problems.

Also, it has been recommended that anyone who sells, gives away, or furnishes any of the chemical precursors, such as piperidine, that has the knowledge that that chemical precursor will be used to manufacture an illegal drug, such as PCP, be in violation of a felony.

The third recommendation is that anyone who manufactures PCP be mandatorily sent to State prison.

Presently, under our system in California, we have three options by a judge.

No. 1 is straight probation; No. 2 is county jail with a maximum sentence of 1 year; and No. 3 is State prison with a maximum of 4 years.

When you think of the small amount of initial investment and the tremendous amount of profit that one can realize, the gamble as to getting probation, county jail time, or State prison really makes it worth the risk to many people, as we are witnessing in California.

In just the past year, in southern California alone, approximately 20 PCP laboratories have been seized. Ten of them were in just an 8-week period.

It is a very profitable business, and people are making literally hundreds of thousands of dollars off of this type of business.

The reporting system, I think, is an excellent tool. It is one of the few tools where we can get to the source.

Most of our arrests and apprehensions occur through the use of informants. Informants generally occur three ways: No. 1, through arrests, where they want to cooperate, and through their cooperation receive a lesser sentence; No. 2, where they do it for pay; and No. 3, because they feel it is their civic duty.

The type of people who have the type of knowledge we are interested in are generally in the trafficking stages, where a person sells and comes in contact with many people. We are able to have a great many informants on the street giving us information about traffickers.

But the manufacturer is a very secluded person who does not make his presence noticeable in the business. The only person who may know him would be his chemical supplier and his No. 1 wholesaler. So we find it very difficult to get to the manufacturer, and the reporting system gives us a direct lead to that person by his name and possibly his address. I think that Senator Bentsen's bill is an excellent bill for helping us in that direction.

Senator HATHAWAY. Depending on how tough a requirement there is on identification, I suppose.

Mr. ELSBERG. That is correct.

We receive numerous forms that have false addresses, no such address, and false names. With the misdemeanor factor, it is not much of a deterrent. I believe that we need stiffer penalties for the enforcement of the reporting system.

Senator HATHAWAY. Thank you very much, Mr. Elsberg. You have made a valuable contribution.

Mr. ELSBERG. Thank you.

Senator HATHAWAY. The hearings stand adjourned.

We will have a markup on the legislation in the near future.

[Whereupon, at 12 p.m., the hearing adjourned.]

APPENDIX

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

WEDNESDAY, JUNE 7, 1978

STATEMENT OF STEVEN E. LERNER, M.S., COFOUNDER, LERNER, BURNS, LINDER & ASSOCIATES, SAN FRANCISCO, CALIF.

PHENCYCLIDINE ABUSE IN THE UNITED STATES

Mr. Chairman, members of the committee, ladies and gentlemen. I appreciate this opportunity to share with you some of my group's thoughts regarding the abuse of phencyclidine by youth throughout the United States.

During 1974 while working in a federally funded drug research project, Dr. R. Stanley Burns and I came in contact with patients who had used phencyclidine, alone or in combination with other drugs. While providing emergency medical coverage at large rock music concerts, we encountered young people requiring treatment for unusual symptoms related to their use of phencyclidine. At this time we also discovered several groups who by their history had used phencyclidine on a regular daily basis for as long as 5½ years.

From our experiences and subsequent study—including the review of medical records of patient's friends who had died from phencyclidine—we wrote "Phencyclidine: States of Acute Intoxication and Fatalities," published in the *Western Journal of Medicine* in 1975. This article highlighted our early research findings on the "behavioral toxicity" of phencyclidine. In addition to this we have published 12 other papers on phencyclidine which at this time we would like to submit for the record. Included in these publications is a chapter entitled "Phencyclidine Use Among Youth," to be published later this month by the National Institute on Drug Abuse that presents a comprehensive overview on phencyclidine abuse among youth.

In an attempt to learn more about the effects of long-term exposure to phencyclidine, we developed a research protocol. Users were invited to participate in a study which consisted of physical and neurological examinations, EEG's, EKG's, chest X-rays, clinical chemistries, complete toxicology, blood and urine screens for phencyclidine, psychological testing and clinical interviews.

As we began to receive requests from physicians and other health professionals for information related to our studies, we initiated a national consultation service. Dr. Ronald L. Linder joined our group as the demand for written information and prevention strategies increased. To date, we have received over 2,000 requests for information or services.

The growing popularity of phencyclidine throughout the United States parallels the early histories of LSD and marijuana. The initial passage of phencyclidine through the drug subculture in 1965 resulted in "bad reviews," attributed to the relatively limited drug experiences of users and the social climate. However, during the past three years, its popularity has rapidly increased among the now more experienced drug users and particularly among youth in their early teens. In addition, the extensive use of clandestine drug combinations containing phencyclidine has resulted in a marked rise in acute phencyclidine intoxications. The medical problems emerging from illicit use of this entirely new class of psychoactive drugs is compounded by its myriad analogs.

With the advent of polydrug abuse, the widespread experimental and long-term use of phencyclidine has expanded at an alarming rate. The large quantities of phencyclidine that have been recently confiscated by law enforcement officials in California alone, commensurate with the reported Drug Abuse Warning Network "mentions" and associated deaths, are convincing indicators of a serious drug problem. Of particular concern to the law enforcement community is the upsurge of phencyclidine related crimes, including rapes, child and wife abuse, and the carrying of weapons by users to protect themselves from their imagined enemies.

Phencyclidine was developed by Parke, Davis and Company as a nonnarcotic, nonbarbiturate, intravenously administered anesthetic agent and marketed under the name Sernyl. Initial clinical studies on humans were begun in 1957. Doses of 0.25 mg/kg given intravenously produced anesthesia sufficient for minor and major surgery. Because the drug produced postanesthetic confusion and delirium of prolonged duration in some cases, clinical investigations were discontinued in 1965. In 1967 phencyclidine became commercially available under the trade name Sernylan for use in veterinary medicine.

Street preparations of phencyclidine have continuously changed by name, physical form and purity. Many of these street names are regional while others are national in scope.

Phencyclidine is sold on the West Coast by such labels as Angel Dust, Cannabinol, Crystal, PCP and THC. In the midwest, among its street names are DUST, TAC and TIC. On the East Coast phencyclidine is sold as Angel Dust, Erth, Green, KW and Sheets. It has been identified in street samples sold under 46 different names, the most consistent misrepresentation being "THC".

The crystalline or granular powder form is found most frequently as Crystal or Angel Dust, which usually contains 50–100 percent phencyclidine. Found under other names the purity drops to a range of 10–30 percent. Most tablets contain approximately 5 mg and tend to range from 1–6 mg. Leaf mixtures have been found to contain between 0.24–7.9 percent phencyclidine averaging 1 mg phencyclidine per 150 mg leaves.

Phencyclidine can be taken orally, by inhalation, insufflation and by injection.

Phencyclidine was first seen illicitly in Los Angeles in 1965. Two years later it appeared in San Francisco under the guise of the "PeaCe Pill". By 1968 it was seen on the East Coast as "Hog". The N-ethyl analog of phencyclidine, PCE, cyclohexamine appeared in 1969 in Los Angeles. Due to the "ripple effect" phencyclidine appeared in five states from California to Maine by 1972. The following year it was seen in 17 states, including Texas. In 1974, the Thiophene analog of phencyclidine, TCP was first identified in Hawaii. That same year phencyclidine had spread into another four states including Indiana, Iowa and Virginia. The use of phencyclidine had spread into Maryland, New Jersey, Utah and 21 other states by 1976. During 1977, phencyclidine appeared in 29 states. Between 1972 and 1978 phencyclidine was identified in street samples received by merely one drug analysis program in California as being in 44 states.

In a recent study of 2,750 patients under 19 years of age admitted to drug treatment programs nationally, 32 percent reported to have ever used phencyclidine and 20 percent reported using phencyclidine during the three month period prior to admission. Phencyclidine was found to be used with equal frequency among the sexes with approximately a third of the males and females reporting use. The average age of first phencyclidine use was 14.6 years and the average age of continuous (use at least once a week for one month) use was 14.8 years. The prevalence of phencyclidine in this sample is the highest reported in any previous national sample for adults or youth.

Phencyclidine use at the time of this study occurred primarily among the white suburban population. Phencyclidine is being added to an already existing pattern of multiple substance abuse. Two thirds of those patients who ever tried phencyclidine used it at least weekly. Self-destructive behavior is also much more prevalent among the phencyclidine user compared with the non-user. The phencyclidine users were also found to have a more extensive involvement in the criminal justice system and more dysfunction in the educational process.

The information needed for the preparation of phencyclidine was reported over 50 years ago. Piperidine and cyclohexanone are two of the major chemicals required for production.

Piperidine believed to be the most guarded reagent and the easiest to trace, remains available to illicit drug manufactures willing to pay as much as $1,000/kg for a non-traceable bottle. Illegal laboratories containing as much as $25 million dollars in street value worth of phencyclidine have been discovered in various areas throughout the United States. The last major seizure in Los Angeles (1977) yielded 900 pounds of phencyclidine.

For $625 worth of chemicals an illicit manufacturer can net $225,000. Phencyclidine sold as Angel Dust is packaged in foil bindles and zip-lock baggies. In bulk form it generally sells for $125 an ounce. The more common foil bindles sell for $10 and weigh approximately 1 gram. Tablets infrequently sell for $2–$4 each. Liquid phencyclidine is generally a clear fluid found in one-pint jars which sells for $800–$1100. In addition, phencyclidine has been used to adulterate commercially

manufactured cigarettes by dipping them into liquid phencyclidine. These cigarettes are sold for as much as $20 each.

New problems have surfaced in communities in direct proportion to the frequency and regularity of phencyclidine abuse. Violent and bizarre behavior is seen in the home, in public places and in schools, often disrupting education. Young people exhibit unexplained speech problems, memory loss, thinking disorders, personality changes, anxiety, severe depression, suicidal and homicidal tendencies.

An increasing number of young people appearing violent, bizarre, unresponsive, extremely confused, or acutely psychotic are seen in local emergency rooms. Police report erratic driving and inappropriate behavior following automobile accidents in individuals who have no evidence of alcohol or sedative-hypnotic ingestion. On toxicological examination only the isolated presence of phencyclidine is often discovered.

Young people who are observed to be highly intoxicated in public are often arrested for sale, possession and being under the influence of phencyclidine. In addition, an increasing number of referrals by family, friends, and the criminal justice system are made to community drug abuse programs in an effort to deal with this new drug problem.

The following are typical cases that illustrate the problems seen in youth on phencyclidine.

Case 1: A 15 year old male was found by police in a field with no clothes on, hanging on a barb wire fence. He was disoriented and incoherent upon questioning. A physical examination revealed a confused, disoriented youth with inflamed eyes, bloody mouth with an upper incisor missing, multiple scratches on the trunk and scratches and lacerations of the extremities. Fluctuations in orientation were observed over the next seven hours ranging from cooperative and alert to unarousable. Prior to being discharged the patient stated that he "smoked some phencyclidine and got awfully stoned".

Case 2: A 16 year old female smoked "a crystal joint" while at school and began acting bizarre. School authorities notified her mother who brought her to a local hospital. On admission she was dazed and unable to recall who gave her the drug or how much she had taken. Toxicology was positive for phencyclidine only.

Case 3: During the summer a youth gave a pool party while his parents were away on vacation. A 17 year old female guest was discovered at the bottom of the swimming pool. Post mortem examination revealed no head or neck trauma and the isolated presence of phencyclidine in the urine.

The confusional state induced by phencyclidine is characterized by disorientation, agitation, or excitement, and a "blank stare" appearance in a patient who is noncommunicative. These patients are grossly ataxic and exhibit horizontal and vertical nystagmus (jerky movements of the eyes) on testing. Muscle rigidity may be present.

In phencyclidine stupor or coma, the eyes may remain open, although the patient is unresponsive to deep pain. Spontaneous nystagmus, "purposeless" movements, facial grimacing, and muscle rigidity on stimulation are characteristic findings.

The most characteristic feature of the high dose oral ingestion is the prolonged recovery period marked by confusion, disorientation, agitation, anarthria, and intermittent somnolence; followed by depression, irritability and emotional lability.

In our intensive study of 30 chronic users, 80 percent considered their first phencyclidine experience to be pleasant and wanted to take the drug again. They found it "fun," "exhibarating" and felt "happy" or "euphoric". For many, it seemed to be a "perfect escape" or a "dream world". Users also experienced a feeling of super strength and endurance. They used such descriptions as "powerful," "superior," "bursts of energy," "like God was with me and I could move mountains". There was a loss of inhibitions. These users reported difficulty in doing things, one had "to think about moving or talking". They said feeling restless and nervous usually occurred while using phencyclidine.

Tolerance to the effects of the drug appeared to develop. Initially users would get "high" after 2 or 3 puffs on a phencyclidine joint, following a one week period of daily use they required ½ to 1 joint. After smoking for a period of 2–6 weeks, most individuals used 1 or 2 joints at a time. Some users reported being able to smoke up to ¼ gram of street purchased material at one sitting, following several months of regular daily use.

Chronic users reported persistent problems with memory and speech and difficulty with thinking processes following long periods of regular use of phencyclidine. Impaired recent memory capability appears to be a primary outcome. Users complain of stuttering, inability to speak or blocking, and difficulty with articulation.

Speech and memory difficulties laster as long as several years following prolonged daily use of large doses of phencyclidine.

Several chronic users, complaining of anxiety or nervousness, sought psychiatric care. Some individuals became severely depressed and attempted suicide on repeated occasions after chronic exposure to phencyclidine. Some reported personality changes, social withdrawal, social isolation and divorce from their use of phencyclidine. Violent behavior is a common denominator among chronic phencyclidine users.

A large number of deaths have occurred in association with phencyclidine intoxication. The majority was asphyxia by drowning or trauma, circumstantial evidence suggesting that death was secondary to the "behavioral toxicity" of phencyclidine. Users often can not perceive their limbs in relation to three dimensional space and can not respond appropriately to imminent danger.

Other individuals have died from no apparent cause and the presence of phencyclidine in high concentrations constituted the only positive finding. The most probable cause of death in high dose phencyclidine intoxication is primary respiratory depression.

Many phencyclidine users report swimming while intoxicated because they experience unusual but pleasant sensations from the water.

Suicide by self-inflicted trauma or a massive oral overdose of phencyclidine occurred among chronic users who became moody or severly depressed. It is the chronic user who is usually in possession of large amounts of phencyclidine. They report that a chronic user will do almost anything to get the drug. Threatening behavior or violence has increasingly resulted in provoked homicide.

Phencyclidine deaths nationally appear to be on a dramatic increase. In Los Angeles alone the Coroners office reported 20 phencyclidine related deaths in 1976 and 66 in 1977. There were three seperate phencyclidine related murders in San Jose recently.

Nationally, phencyclidine use appears to be a serious new drug problem. Factors contributing to its increasing popularity include the users ability to control the dosage, an understanding of the immediate effects, and its availability.

Phencyclidine related problems have surfaced as tips of icebergs, the underlying causes hidden from public view. The problems emerge in the form of speech difficulties, memory loss, thinking disorders, personality changes, paranoia, severe depression, violence, accidents, suicides and homicides.

In conclusion, the evidence currently available supports the assumption that if there is a solution to the problem of phencyclidine abuse, it is in part, better control of the primary chemical precursors.

Thank you.

STATEMENT OF MICHAEL A. GUY, INVESTIGATOR, LOS ANGELES POLICE DEPARTMENT

Phencyclidine (PCP) is the fastest rising abused drug in the Los Angeles area. Undercover officers on the school campuses report that PCP is more popular at many schools than marijuana.

PCP first appeared as an illicit street drug in the late 1960's as a tablet called the Peace Pill. It has since appeared in liquid, powder, and crystalline forms. PCP began to gain a great deal of popularity in the east bay area of Northern California in the early 1970's. It was at this time that "angel dust" began to surface in its current popular form. Angel dust most commonly appears as mint leaves which are treated with PCP and then rolled into cigarettes.

AVAILABILITY

PCP is readily available. The Undercover Buy Detail, Administrative Narcotics Division, reports that the use and sale of PCP are existent in all areas of the City. Rumors of laboratories in "every nook and cranny" are based, at least partially, on reliable sources. A Department expert on PCP laboratories stated that in 1972 there was only one known individual manufacturing PCP in Los Angeles. It is estimated that today there are over 50 individuals and groups involved in the large-scale manufacture of PCP and literally hundreds of individuals who are manufacturing the drug on a lesser scale. The Los Angeles Police Department (LAPD) has investigated in excess of 35 laboratories in the last four to five years, 17 of those in 1977. Thus far in 1978 there have been in excess of 10 and nearly 50 percent of these were discovered as a result of a fire or an explosion due to combustibility and volatility of the chemicals. Most laboratories are very unsophisticated; for example, many use bathtubs, sinks, etc., in which to mix the various ingredients.

An indicator of the popularity of any particular drug is the amount of that drug seized by law enforcement. The LAPD seized 253,268 dosage units of PCP in 1974. Since that time, the seizures of this drug have increased dramatically. The following indicates the amount of PCP seized by LAPD since 1974.

	Units
1978 (through May)	6,375,537
1977	5,098,869
1976	4,705,726
1975	8,095,950

Another indicator of the popularity of a drug is the number of arrests related to that drug. During the calendar year of 1974, the LAPD arrested approximately 130 persons for all types of violations of PCP. The following LAPD arrest statistics indicate how PCP-related arrests have increased since 1974 (both adult and juvenile).

1978 (first quarter)	764
1977	2,538
1976	839
1975	231

PCP currently accounts for almost 40 percent of all felony narcotic complaints issued in the City of Los Angeles by the Los Angeles County District Attorney's Office. The following figures reflect the seizures and arrests of the other large enforcement agencies in Los Angeles for PCP violations.

1977

Drug Enforcement Administration:	
Seizures	34,116,300
Arrests	16
Los Angeles County Sheriff's Department:	
Seizures	21,187,798
Arrests	3,314
Bureau of Investigation and Narcotic Enforcement:	
Seizures	22,984
Arrests	9

1978 (through April)

Drug Enforcement Administration:	
Seizures	100,543
Arrests	5
Los Angeles County Sheriff's Department:	
Seizures	1,027,927
Arrests	1,693
Bureau of Investigation and Narcotic Enforcement:	
Seizures	5,365
Arrests	10

Just as seizures and arrests have been skyrocketing in Los Angeles, so have PCP-related deaths. Statistics in this area prior to 1976 did not properly portray the problem as it really existed. The Coroner's Office did not identify the death as PCP related unless it was directly known to the toxicologist. In 1976, the Los Angeles County Coroner's Office reported 20 overdose deaths. In 1977, they reported 66 overdose deaths. The two-year total of 86 overdose deaths is broken down in the following manner as they relate to sex, race and age.

Sex:	
Male	64
Female	22
Race:	
Negro	46
Caucasian	[1] 35
Oriental	5
Age range:	
10 to 19	14
20 to 29	51
30 to 39	17
40 to 49	2
50 to 59	2

[1] Includes Spanish names.

COST

PCP is inexpensive to manufacture and to buy when compared to most other drugs. Consequently, there is a tremendous profit margin for manufacturers and dealers of PCP more so than any other drug. An initial investment of $5,000 to $10,000 enables an individual to utilize readily obtainable chemicals in manufacturing 60 to 100 pounds of pure PCP crystal. The pure crystals currently wholesale for $10,000 to $18,000 a pound, thereby producing an immediate profit of approximately $50,000 to $175,000. PCP crystals are utilized to manufacture pills or angel dust (treated mint or parsley leaves). PCP pills (*Pea*Ce *P*ills) currently sell for $2.00 each. Angel dust is normally packaged in $10 bindles that weigh approximately 1.5 grams. From a bindle, the user can make seven to ten "pinroll" joints. "Pinroll" joints are much smaller than normal marijuana joints due to the potency of PCP. Though not usually sold individually, "pinroll" joints have sold for $1.50 to $2.00 each.

The substitution of PCP for marijuana is not uncommon. One result of the proliferation of PCP is that it is now one of the most frequently discovered ingredients of "street" drug preparations. PCP is commonly the only drug in substances sold as THC, cannabinol or mescaline. The Los Angeles County/University of Southern California Medical Center's Street Drug Analysis Program reported that of the total samples analyzed from January 1976 through May 1977, PCP was contained in 100 percent of the samples sold as THC and 86 percent of those sold as cannabinol.

DANGERS OF PHENCYCLIDINE

Nearly every user of PCP demonstrates some sort of bizarre behavior. In many cases this behavior manifests itself in incidents so gruesome that they almost defy belief.

Because Los Angeles has the unfortunate distinction of being the PCP capitol of the world, doctors, paramedics and law enforcement officers in the Los Angeles area have witnessed much of this bizarre behavior.

There have been numerous instances in which individuals have inflicted unbelievable atrocities upon themselves. One incident involved a young man methodically pulling his own teeth out with a pair of pliers. Another individual, while hallucinating about unbelievably grotesque monsters, gouged his eyes from their sockets to avoid seeing these visions. Yet, another young man drank rat poison to kill the rats he believed had infested the inside of his body.

Law enforcement officers have also discovered that an arrestee who is under the influence of PCP and becomes combative poses a serious threat to the safety of the arresting officers.

Most law enforcement officers are given instruction and training in the use of control holds to restrain or subdue combative arrestees. Individuals under the influence of PCP, however, possess a phenomenal amount of strength, while feeling little or no pain. The control holds are thereby rendered useless and an arresting officer must rely on physical strength alone to subdue the arrestee. Unfortunately, the physical strength of one or two officers, even those in superb physical condition, is rarely enough to overcome the awesome strength of a combative PCP user.

In a recent incident in southwest Los Angeles, two patrol officers observed a 19-year-old male walking in the traffic lanes of the roadway. The officers approached the male and instructed him to use the sidewalk. The young male left the roadway as requested but suddenly picked up a piece of concrete and smashed the window of a business establishment. The officers cautiously approached the young man to effect an arrest. This suspect passively submitted to a cursory search, but became extremely violent as the officers attempted to handcuff him. Control holds on the suspect were useless and the officers were unable to restrain the suspect from punching and kicking. After wrestling the suspect to the ground, a second attempt was made to handcuff him; however, the combined strength of both officers was not enough to force the suspect's hands into a position that would allow handcuffing. The suspect eventually got up from the ground and dragged both officers along until he finally broke loose. Running into the street, the suspect removed his belt and began swinging the buckle end at the officers. Six additional officers responded to assist and, by the sheer weight of numbers, succeeded in controlling and handcuffing the suspect. A subsequent investigation revealed that the arrestee was under the influence of PCP.

In another incident, six officers were required to restrain a combative arrestee armed with a knife. During the six-to-one melee the arrestee's hand was struck repeatedly with batons to such an extent that the knife handle within the suspect's

hand broke apart; yet, the arrestee maintained a death-like grip on the blade. Again, the arrestee was found to be under the influence of PCP.

Another frightening aspect of PCP is that it does not have to be taken by an individual before it becomes dangerous. Many of the ingredients used to manufacture PCP are, in themselves, extremely hazardous, such as potassium cyanide and hydrochloric acid. These are the two chemicals used in prison gas chambers. Although the "recipe" for PCP does not call for these two ingredients to be mixed directly together, the potential for a major disaster is obvious.

In addition to the threat of deadly gases, there is the potential for explosion and fire created by the use of extremely volatile liquids, such as ether and benzine. There have been many incidents wherein illicit clandestine PCP laboratories have exploded and burned. Recently, investigators of LAPD's Administrative Narcotics Division were investigating the possible presence of an illicit PCP laboratory in southwest Los Angeles. Late one evening, while conducting a surveillance of the suspected location, the investigators' suspicions were confirmed when the building exploded and two suspects were blown through the walls and into the street.

The Coroner's Office has reported the following examples of disorientation, confusion, aggressive and threatening behavior attributed to PCP use.

Case A: A 26-year-old male was smoking angel dust in a friend's apartment. It was reported that he smoked five to six cigarettes, one right after another, and had been using angel dust for several months. He suddenly jumped out of the second story window, landing on a grapestake fence before striking the ground. He then removed all of his clothing and ran upstairs onto a balcony. He dove off the balcony onto the concrete below, killing himself.

Case B: A 23-year-old male was discovered inside a secured, fenced parking lot. The security guard approached the intruder and asked what he was doing there. The intruder replied that he was stronger than God and made some incoherent remarks. The intruder then attempted to reach for the guard's revolver. The guard attempted to stay away from the intruder, pulled his weapon and fired one round in the air. The intruder kept laughing, reiterating to the guard that he was stronger than God. He lunged at the guard who, in turn, fired once striking the intruder in the chest. The intruder rose and attacked the guard again. The guard fired again and the intruder then fell to the ground dead.

Case C: A young female joined her boyfriend in smoking angel dust. The male companion told the police that he felt like the "Master;" like a God while he was under the influence of the drug. He imagined a cord tightening around his neck and he proceeded to strangle the girl with the cord from the bathrobe he was wearing.

Case D: A 27-year-old male was observed indiscriminately breaking shop windows with a long-handled chopping axe. A patrol unit was summoned by a citizen. The suspect was told to put down the axe, but instead he replied by swinging the axe at one of the officers. The officer promptly fired a shotgun at the assailant.

The Los Angeles County Sheriff's Department reported an injury call where the officers were met by the Fire Department who observed the patient lying on the floor in a pool of blood. Examination revealed the patient had cut off his penis. While the paramedics were attempting to stop the bleeding, the patient became sick and regurgitated his penis. Further investigation revealed that the patient was a PCP user.

PCP is the most dangerous drug on the streets today, yet the popularity of the drug is increasing with alarming speed. It is only a matter of time before the PCP problem that now exists in California spreads across the entire nation. It is imperative that the legislators of this country find a way to control the manufacture and distribution of this extremely dangerous drug.

WEDNESDAY, JUNE 21, 1978

Statement of Peter G. Bourne, M.D., Special Assistant to the President for Health Issues

Mr. Chairman, thank you for the opportunity to be here today to discuss the Federal Government's activities regarding phencyclidine, or PCP.

The Administration has been very concerned about this issue and has been working vigorously for the past year to deal with both the health and law enforcement aspects of the problem.

I first raised this issue last year at our meeting of the principals having primary responsibility in the drug area. Meeting on a bi-weekly basis, the principals group includes the Senior Adviser and Coordinator for International Narcotics Matters to the Secretary of State, the Director of the National Institute on Drug Abuse, the

Administrator of the Drug Enforcement Administration, and the Commissioner of the U.S. Customs Service.

My deputy and I work with the group in discussing and coordinating the Federal response to specific drug-related issues. PCP is one issue which was addressed by the principals in the Fall of 1977 and the PCP Action Coordinating Committee was established under the principals group to develop and coordinate the Federal response to the PCP problem.

As you are well aware, PCP is a psychoactive drug which can have very serious consequences. Although approved for use as a veterinary tranquilizer, it is not approved for human use. It can be extremely dangerous if taken by humans, producing extreme, severe, long-lasting behavioral problems. PCP use can have a variety of effects, ranging from mental dullness and low motivation to misperceptions, paranoia, schizophrenia, and confusion to hostility and a tendency towards violence and extremely unpredictable behavior.

PCP is relatively easy and inexpensive to synthesize. The chemicals and equipment needed to make PCP are not restricted and are easily obtainable. For a very modest investment of a few hundred dollars, PCP with a street value of tens of thousands of dollars can be manufactured. Because of the low cost of manufacturing and the fact that legal production is very small, there is no evidence of diversion from licit sources.

There appears to have been an increase in PCP use throughout the country and especially in several major cities (New York, Washington, D.C., Detroit). From 1975 to 1977, the number of PCP mentions in the Drug Abuse Warning Network (DAWN) nearly tripled and PCP-related deaths for the same period increased by 60 percent. The DAWN system is a statistical reporting system utilized by both the Drug Enforcement Administration and the National Institute on Drug Abuse. It collects information from selected hospital emergency rooms and medical examiner offices on drug-related incidents. While by no means providing complete national statistics, it does provide a good indication of trends and use patterns.

While PCP is often a drug of choice, it is sometimes sold as another substance (such as LSD, THC, cocaine) or in combination with other substances and not identified to the user. When this is considered, along with the fact that many injuries or accidents resulting from PCP use are not identified as such, it becomes apparent that the extent of PCP use and abuse is probably under-reported.

In response to rising patterns of abuse of this drug, the Federal Government has initiated a number of activities to curtail its use and manufacture. On the law enforcement side, PCP was moved from Schedule III to Schedule II of the Controlled Substances Act on February 24, 1978. Two of the precursors of PCP, 1-phenylcyclohexylamine and PCC, have also been rescheduled into Schedule II. DEA and HEW are currently investigating several other precursors and analogues for possible rescheduling and are considering the desirability of a generic ruling on all precursors and analogues of PCP.

In addition, the Drug Enforcement Administration is working with chemical manufacturers and distributors to closely scrutinize any unusual orders or purchases of the chemicals and equipment needed to manufacture PCP. This technique is already proving effective in identifying and developing cases involving illicit PCP production.

Based on the recommendations of the PCP Action Coordinating Committee, the National Institute on Drug Abuse (NIDA) has utilized the research it has been conducting on PCP for the past two to three years, as well as other available information and research to develop numerous materials for education, prevention, treatment and rehabilitation. NIDA's activities in this area include letters to treatment programs and emergency rooms to make them aware of the PCP problem, as well as report on treatment and rehabilitation. Public service spots on television, fact sheets and summaries for both professionals and lay persons have been developed and distributed. A conference on the subject of PCP was held in February 1978 which provided an opportunity for professionals in the field to discuss incidence and prevalence, treatment, and other health related aspects of its use. The proceedings are being compiled for distribution to the field.

In addition, NIDA has a number of activities under development which will be completed in the near future. These include development of treatment manuals, research into trends and characteristics of use, ethnographic studies, educational videotapes, and biological and clinical research. PCP will also be included in the 1978 Drug Abuse Prevention Campaign.

In summary, while the Federal Government clearly recognizes the seriousness of the PCP issue, we must be cautious not to overreact. We have spent the past year developing the information, approach and research which are essential in combat-

ting the problem. We have begun implementing the education and prevention, and treatment and rehabilitation plans, and we have tightened the law enforcement efforts. Dr. DuPont and Mr. Bensinger will provide the details on these initiatives in their testimonies. Let me assure you that we will continue to vigorously pursue this issue and we welcome both Committees interest and efforts.

I will be happy to answer any questions.

STATEMENT OF ROBERT L. DUPONT, M.D., DIRECTOR, NATIONAL INSTITUTE ON DRUG ABUSE, ALCOHOL, DRUG ABUSE, AND MENTAL HEALTH ADMINISTRATION, PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Mr. Chairman and members of the Subcommittee, I thank you for the invitation to appear today to discuss phencyclidine, or PCP as it is commonly known. PCP is a drug which is producing tragic consequences for increasing numbers of Americans. Based on data gathered in 24 cities between May 1976 and April 1977, there were reported nearly 4,000 emergency room visits for PCP, and 100 PCP-related deaths. PCP ranks 20th among the 26 most abused drugs (Item 1). Unlike the reaction of general disbelief among American youth that greeted the information provided by Federal officials in the late 1960's about the dangers of marihuana, the knowledge young, and often drug-experienced, people have about PCP matches the frightening facts we have provided them and the reports which have appeared so often recently in the press.

PCP made its first appearance as an illicit, abused drug in 1965 on the West Coast. At that time it rapidly developed a bad street reputation and had only limited popularity. Since then there have been sporadic outbreaks of its use, and more recently there has been evidence to suggest a marked national increase in use.

On the street phencyclidine is referred to by a variety of terms, among them: "angel dust," "dust," "crystal," "cyclones," "embalming fluid," "elephant" or "horse tranquilizer," "killer weed," "superweed," "mintweed," "mist," "monkey dust," "peace pill," "rocket fuel," "goon," "surfer," "HW," and "scuffle." The wide range of regional names for this illicit drug, as well as variations in its appearance, and its frequent misrepresentation, mean that the user may not be aware that he or she has used PCP or may fail to report its use in surveys because he or she does not know the drug by the name used in the survey. A further complication in user identification of PCP is the fact that it is sometimes taken along with other drugs.

Phencyclidine in the pure form is a white powder which dissolves in water. In "street" form PCP is often adulterated and misrepresented as other drugs. It is variable in appearance and is sold in many colors in powder and tablet form. Often it is placed on parsley or on other leaf mixtures to be smoked as cigarettes (joints). When misrepresented, it is most commonly sold as THC (the principal psychoactive ingredient in marihuana, which is never available on the street), but has also been sold as cannabinol (another marihuana constituent), mescaline, psilocybin, LSD, and even as amphetamine or cocaine. Depending on the care with which the synthesis of PCP is carried out, the street drug available may contain impurities, including potassium cyanide, which significantly adds to the risk of illicit PCP use, especially when it is taken orally.

Between 1971 and 1974 about 50 percent of the street samples of phencyclidine analyzed on the West Coast were found to be mixed with other drugs. Since 1975, however, only 25 percent of the total were found to contain additional drugs. Still more recently, PCP or one of its analogs (TCP) have constituted 10 percent of all drug samples analyzed in one Los Angeles laboratory. Only one in 33 of the samples which contained PCP was actually sold as such. When PCP is sold as a granular powder (angel dust), it usually consists of from 50 to 100 percent phencyclidine. However, sold under a variety of other names and in other guises, the purity is from 10 to 30 percent with leafy mixtures generally containing still smaller amounts of the drug.

Although originally ingested orally, PCP is now commonly smoked or snorted. Intravenous use has been reported but is less frequent. By smoking, the experienced user appears to be better able to limit the dose to a level with which he or she is comfortable and is less likely to overdose. When the drug is taken by mouth, there is a longer period before the drug takes effect, and the dose is usually greater, resulting in more cases of overdose.

Currently the only legally approved use for phencyclidine is in veterinary medicine as an animal-immobilizing agent. It was originally investigated as an anesthetic for use with humans; this research was abandoned, however, because in many patients it produced thought disturbances and agitation.

PCP is in a class by itself. It has stimulant, depressant, hallucinogenic, and analgesic properties, some of which are dose-dependent. One proposed classification is with ketamine as a "dissociative anesthetic."

Unfortunately, phencyclidine can be synthesized readily. The starting chemicals are readily available and PCP can be made by individuals with limited technical training and without elaborate equipment. In addition, there are over 30 chemical analogs similar to phencyclidine, some of which produce psychoactive effects. These can also be synthesized with varying degrees of difficulty and some have already appeared on the street. Thus, the problem of interdicting PCP and related materials is unusually difficult and the potential for contamination, side effects, and unanticipated reactions is unusually high.

EXTENT OF PHENCYCLIDINE ABUSE

It is difficult to estimate how widely PCP is used. Since the drug is often sold as another substance, the user, especially if he or she is inexperienced, may not realize PCP is involved. The fact that phencyclidine is known by a large number of street names and varies widely in its physical appearance also contributes to the confusion. In the past most reports of drug use have included PCP within a category of "other hallucinogens," making trend detection difficult. Moreover, the patient admitted for emergency treatment of PCP-induced bizarre behavior is likely to be diagnosed as schizophrenic, rather than as a drug reaction. Patients admitted with injuries from automobile accidents, fires, and drownings in which PCP was a cause may not be so identified. Thus, a marked increase in use and in use-related drug emergencies is not fully reflected in emergency room and medical examiner statistics.

Despite these limitations, there is evidence to suggest increased use in recent months. This ranges from reports of law enforcement agencies on disruption of illegal laboratory production to self-reports by users. In NIDA's 1976 National Survey, for example, 3 percent of youth between 12 and 17 years of age reported having used PCP at some time in their lives. In the same year, one of ten young adults 18 to 25, the age category in which drug use peaks, reported using PCP prior to the 1976 survey. In contrast, data from the 1977 National Survey reveals that the percentage who have ever used PCP in the 12- to 17-year-old group has nearly doubled since the previous year's survey (5.8 percent vs. 3 percent in 1976). Use by the 18- to 25-age group also increased nearly 50 percent (from 9.5 percent to 13.9 percent) during the same period. Because of the frequent misrepresentation, these figures probably underestimate the extent of actual use.

The extent to which a drug poses serious problems is also revealed through the Drug Abuse Warning Network (DAWN), a national reporting system counting drug-related deaths and emergencies. DAWN figures are also likely to be minimal estimates of the PCP problem; however, they can be useful in providing an indication of trends. Data from the 662 emergency rooms which reported to DAWN from November 1974 to October 1976 indicate that the rate of PCP emergencies doubled during that period (111 mentions in October 1976 as contrasted with 54 in October 1974). Deaths also show nearly as great an increase (30 PCP-related deaths vs. 17 the year before).

It has been learned that many PCP-related deaths go undetected since deaths often involve accidents. For example, one reported cause of PCP-related deaths has been drowning. In one series of 19 PCP deaths investigated in two California counties, 11 of the 19 were from drowning—1 while in the shower. The PCP user often loses his orientation while immersed and drowns, sometimes in very small amounts of water. Unless PCP is looked for under such circumstances, it is very likely to be missed. Similarly, deaths resulting from violent behavior and accidents resulting from PCP intoxication may not be reported as PCP related. Suicide while under the influence of the drug was the cause of death for three persons in the California study.

The National Youth Polydrug Study, a nationwide study of youthful drug abuse conducted in 1976-77, surveyed the extent of PCP use among youth in treatment. Nearly 32 percent of the 2,750 individuals surveyed reported either current or past use of PCP. Females were as likely as males to have used PCP and whites were more likely to report using this drug than either black or Hispanic clients (42.3 percent of whites, 8.5 percent of blacks, and 9 percent of Hispanics). The data from this study show that PCP use is not confined to specific communities or areas of the country. Instead the data indicate that PCP is being used in all regions of the country with the highest rates reported in the Great Lakes and Midwest regions. Two-thirds of those who reported having used PCP indicated continued use at a rate of at least once a week for at least 1 month. It was also learned in this study that

PCP users tend to be multiple drug users who, on the average, take twice as many different substances as other youthful drug users. PCP users reported a mean of 6.0 substances ever used, while non-PCP users reported a mean of 2.8 substances ever used.

EFFECTS OF PCP

The effects of PCP are so unpleasant that many have wondered how PCP could be popular. Many one-time users will not knowingly use it again, yet others enjoy it and use it chronically.

Moderate PCP users most frequently report depersonalization and distortion of body image among the effects of the drug. These users feel a sense of distance and estrangement from their surroundings. Time expands and body movements are slowed. Muscular coordination worsens as impulses are dulled; users may stagger as though drunk. A sense of increased physical strength frequently occurs. Speech is blocked, sparse, and often meaningless. Auditory and sometimes visual hallucinations may occur, more frequently at higher doses, and feelings of severe anxiety, impending doom or death may appear and disappear. Touch and pain sensations are dulled. Bizarre behavior, such as nudity in public places, has been reported.

Feelings of immobility, numbness, and detachment may be desirable in themselves to some users. Feelings of strength, power, and invulnerability, coexisting with a dreamy estrangement and lack of coordination, are reported by many users. The drug is described as stronger than marihuana, more comparable to LSD, but basically "in a class by itself." It is important to emphasize that great variability exists in effects from one user to the next.

It has been reported that chronic users experience persistent cognitive and memory problems. Speech difficulties, including stuttering, poor articulation, and difficulties in expressing themselves to others, have been reported lasting in some cases 6 months to a year following prolonged daily use. Mood disorders—depression, anxiety, and violent behavior—also occur. Purposive activity becomes more difficult with resultant loss of employment or impaired school performance. Chronic users have reported losing 10 to 35 pounds during regular use. Following a 2- to 3-day "run," users need great amounts of sleep and may awaken feeling disoriented and depressed. In later stages of chronic use, outright paranoid and violent behavior with auditory hallucinations often appear.

PCP PSYCHOSIS

It is not clear at this point whether PCP causes or contributes to long-term psychosis. It may be that persistent psychosis occurs in individuals who are latently schizophrenic as a result of some triggering function of the phencyclidine. Whatever the cause, there is some clinical evidence that individuals who have used PCP may develop a persistent prolonged psychosis resembling schizophrenia despite abstinence from the drug.

Having used PCP repeatedly without serious adverse effect is apparently no guarantee that more serious consequences will not occur on a given occasion of use. Some clinical researchers believe that if use is persistent, adverse consequences are inevitable.

Some patients experience a psychotic phase which lasts from several days to several weeks despite abstinence from further use of PCP. The psychosis, which may occur after a single dose of PCP, can be divided into three stages: the initial stage, characterized by violent psychotic behavior, lasting perhaps 5 days; the second stage, with restless but more controlled behavior; and the final stage, including rapid improvement of thought disorders and amelioration of paranoia.

The psychotic stage may be the first stage at which the patient enters treatment, often through a psychiatric hospital emergency room rather than a general medical hospital emergency service. He may or may not have passed through an earlier stage of reduced consciousness or coma in the company of friends or alone, but a psychotic-like picture of confusion manifests incoherent speech, paranoia, assaultiveness, restlessness, autism, preoccupation, mutism, auditory hallucinations, and grandiosity. Entering the health care system at this point, without a ready history of drug intoxication, the patient is frequently misdiagnosed as schizophrenic. This diagnosis does not complicate his or her immediate treatment, which is much the same as for acute schizophrenia, but labels him with a diagnosis which may be quite inappropriate and misleading for future medical contacts.

Phencyclidine psychosis constitutes, in this initial phase, a psychiatric emergency. The patients are dangerous to themselves because of depression and suicidal impulses, and dangerous to others because of paranoia and strong tendencies toward violence. For patients fitting this description, psychiatric inpatient treatment is

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indicated. The immediate goals of treatment for this acute PCP-induced psychosis are: one, prevention of injury to the patient or others; two, assurance of continuing treatment; three, reduction of stimuli; four, amelioration of psychosis; and five, reduction of agitation.

As the psychotic symptoms abate, there are sometimes unpredictable reoccurrences. Patients will often wish to leave the hospital against medical advice, with encouragement from others to do so, only to experience unexpected suicidal or homicidal impulses following their discharge (the patient may still not realize, because of drug-induced amnesia, that PCP was responsible for his hospitalization. When feasible, psychotherapy or, when appropriate, an anti-psychotic medication, can help.

Some doctors observe that one-fourth of the patients originally treated for phencyclidine psychoses return to the hospital within a year. Schizophrenic symptoms may occur in the absence of further PCP use. Thus, some users may be at risk for schizophrenia which later reappears without the precipitating drug. These patients may in fact be latent schizophrenics. In addition, significant numbers of users experience depression and must be followed carefully to monitor their suicidal potential.

Because of the increasing evidence of the extremely harmful effects that phencyclidine can have, NIDA has a high priority effort: (1) to obtain information on the nature and extent of PCP abuse and its distribution; (2) to develop comprehensive information about PCP; and (3) to disseminate this information and provide training to emergency room personnel, health professionals, medical examiners, and criminal justice and law enforcement personnel.

The overall NIDA PCP plan includes education/prevention, training, treatment, and research initiatives, as well as support of the rescheduling of PCP and some of its precursors and analogs. In the implementation of this plan, there has been a great deal of coordination between Office of Drug Abuse Policy, National Institute on Drug Abuse, National Institute of Mental Health, Drug Enforcement Administration, and Food and Drug Administration, etc. To pool expertise and to better coordinate multi-agency efforts, a PCP Action Coordinating Committee was formed as the result of a discussion at a meeting of agency heads with Dr. Peter Bourne, Special Assistant to The President for Health Issues.

The following initiatives have been completed:

1. In early December 1977, letters were sent to alert treatment programs and emergency rooms to the PCP problem and its recognition and treatment, as well as the procedure for detection of PCP. More than 18,000 letters have been sent to hospitals, emergency rooms, crisis centers, single State agencies for drug abuse prevention, regional offices, drug treatment programs, community mental health centers, and other mental health service delivery organizations, informing them of treatment methods and the procedure for PCP detection. In addition, letters were distributed to all medical examiners urging them to be alert to PCP-related deaths, particularly in deaths by accident, fire, and drowning, and to inform them of the procedure for detection of PCP in blood, urine, and body tissue.

2. NIDA's National Clearinghouse for Drug Abuse Information has published a brief fact sheet in both Spanish and English to respond to public inquiries. This includes information for use by parents, youth, and educators about PCP and its acute and chronic effects, why people use it, and what to do if someone is using PCP. In addition, the Clearinghouse has published the PCP Report Series which provides an overview of the chemistry, pharmacology, and toxicology of the drug, as well as problems associated with its use.

3. NIDA has developed a 30-second Public Service Announcement for television warning that PCP does have significant health risks. This announcement has been distributed to all TV stations in the United States. In response to many requests from the media and the public, NIDA's Press Office also published a brief summary of the extent of PCP abuse and of its acute and chronic effects.

4. NIDA's prevention efforts are focused on four areas: information, education, alternatives, and intervention programs. While any of these programs may deal with specific drugs, they are typically not drug-specific, but deal with promoting positive human growth and development. PCP is discussed in all public information and education efforts of NIDA's Prevention Branch and is included in the materials developed for the 1978 National Drug Abuse Prevention Campaign, aimed at preventing, reducing, or delaying the use of all drugs—primarily among young people aged 8 to 20.

5. To determine the nature and extent of the PCP problem, data from several sources (including DAWN, Client Oriented Data Acquisition Process (CODAP), Na-

tional Survey, Pharmchem, National Youth Polydrug Study) have been reviewed and published.

6. NIDA's Division of Research held a PCP conference in late February 1978. More than two dozen researchers and clinicians from various parts of the United States participated. The purpose of this meeting was to review the present state of PCP knowledge and to focus on additional areas requiring research initiatives by the Institute. Papers were presented on the pharmacology and pharmacokinetics of PCP; the interaction of PCP with other drugs; diagnosis and treatment of overdose, acute intoxication, toxic psychosis, and prolonged PCP psychosis; epidemiology of PCP use, etc. This meeting provided the content for a NIDA research monograph on PCP which will be available for distribution this summer. This PCP monograph details the presently known facts about the drug for use by drug researchers and treatment programs.

The following are some highlights from the conference:

(*a*) The use of PCP is increasing. Smoking and snorting are the most common modes of use. Intravenous use is less frequent.

(*b*) There is evidence that in areas where the drug has been continuously available, it has gained a preferred drug status with small clusters of individuals who use it on a chronic daily basis for periods of 6 months to 6 years.

(*c*) Some youth are now using PCP in social settings in a way similar to marihuana. Many users have the misconception that PCP is "a little stronger than marihuana."

(*d*) A number of young children have been accidentally poisoned with PCP.

(*e*) With high-dose chronic administration, tolerance can develop to some of the effects of PCP. Present evidence does not indicate that PCP is addictive, in the sense that heroin or the barbiturates are.

(*f*) Studies of the effects of PCP on the brain have suggested that various specific neurotransmitters may be involved in some way in mediating the drug's effects. More research in this area is needed.

(*g*) Why do people continue to use PCP? In one study of chronic users carried out in Chicago, 88 percent believed the drug to be dangerous, but, nevertheless, continued to use it. For some, the fact that use is risky may add to the thrill. Users state that they like the "spacey," floating feeling described as "walking on clouds" or being in a "hot-air balloon." One investigator suggested that even aversive stimuli can be reinforcing because they supply a desired change of psychological state.

7. As a result of the conference, NIDA's Division of Research has identified areas in which research on PCP is needed and has released an announcement of areas of special interest in order to encourage investigators to submit research grant proposals on PCP and PCP-like drug abuse. The Division has also published a report on PCP which includes information on extent of abuse, acute and chronic effects, diagnosis and treatment of adverse reactions. This report is being sent to emergency rooms, crisis centers, poison control centers, hospitals, single State agencies for drug abuse prevention, regional offices, drug treatment programs, community mental health centers, and other mental health service delivery organizations.

ACTIVITIES UNDERWAY

1. NIDA continues to monitor PCP trends through the available data sources. A 10 percent random sample of units has been selected from the units reporting to the National Client Oriented Data Acquisition Process Treatment Program Control file. These units will identify PCP use on the CODAP admission forms for a period of four months. At the conclusion of this period a report will be prepared to analyze the use of PCP and the demographic characteristics of users at the time of admission to treatment. The preliminary results of this study should be available later this summer.

2. Two PCP treatment manuals, to be used by emergency room personnel and health professionals who deal with persons intoxicated with PCP, are currently being developed and will be utilized in various training strategies. PCP information has also been included in all of the Institute's training materials.

3. An ethnographic study of PCP users in four U.S. cities—Seattle, Chicago, Philadelphia, and Miami—has begun to study patterns of PCP use within the natural context of drug users, the characteristics of the users, and the effects of PCP. In addition, the Institute is conducting a survey of treatment systems in five cities located in different areas of the country, to determine the extent to which PCP cases have come to the attention of these systems.

4. NIDA's prevention and training programs are coordinating the development of videotapes in order to disseminate PCP information to educators, health professionals, criminal justice and law enforcement officials.

5. A comprehensive research plan has been developed which includes: (*a*) research on more effective treatments; (*b*) studies on the chronic effects of PCP abuse on psychological and physiological function and performance, and on the development of tolerance and dependence; (*c*) additional studies on the extent of PCP abuse; (*d*) a study of the effects of PCP on driving; (*e*) the development of methods for identifying PCP in body fluids; (*f*) research on prevention strategies; (*g*) studies of the effect of combining the use of PCP with other drugs such as alcohol, marihuana, and barbiturates. The overall purpose of these studies is to develop more effective treatment and prevention programs.

6. NIDA has been working closely with the Drug Enforcement Administration (DEA) and the Food and Drug Administration (FDA) on the rescheduling of PCP and the scheduling of the PCP analogs. Effective February 24, 1978, PCP was placed under Schedule II. This action had the effect of subjecting PCP to stricter inventory, manufacturing, and security controls. The penalty for trafficking offenses is a maximum of 5 years in prison and up to a $15,000 fine. Illegal possession for one's own use is a misdemeanor on the first offense, punishable by 1 year in jail and up to a $5,000 fine. It was the consensus of opinion of NIDA, DEA, and FDA that PCP and its two immediate precursors, 1-piperidinocyclohexanecarbonitrile (pcc) and 1-phenylcyclohexylamine, be placed in Schedule II. (These actions were finalized on February 24, 1978, and June 16, 1978, respectively.)

7. NIDA, together with DEA and FDA, is reviewing the PCP analogs and will make appropriate recommendations for scheduling. FDA is preparing the documentation necessary to recommend the placement of the ethylamine (PCE) and pyrrolidine (PHP or PcPy) analogs in Schedule I.

8. NIDA has several efforts underway in which additional PCP analogs will be tested for their abuse potential. Several analogs have been synthesized under a NIDA contract. The NIDA Addiction Research Center in Lexington, Kentucky, is currently assessing the abuse potential of a few of these analogs in dogs and has initiated behavioral studies in rats and monkeys.

Under contract to DEA, Dr. Keith Killim, of the University of California at Davis, will look at these compounds using EEG patterns and self-administration behavior in monkeys as experimental models. Finally, NIDA and DEA, with scientific assistance from FDA, will develop a contract program to assess the abuse potential of PCP and its analogs.

PCP phenomenon provides us with an example of what can happen with chemical substances that can be easily synthesized. The fact that PCP is highly potent as well as readily available, inexpensive, and easily manufactured, has contributed to its increasing abuse. NIDA has initiated activity to obtain information on the nature and extent of PCP abuse and to disseminate the available information about PCP to the public. We welcome your efforts through these hearings to help focus public attention on the harmful effects that may be caused by this drug.

Mr. Chairman, I thank you for the opportunity to appear today and would be pleased to answer any questions you or other members of the Subcommittees might have at this time.

STATEMENT OF DR. HELEN H. NOWLIS, DIRECTOR, ALCOHOL AND DRUG ABUSE EDUCATION PROGRAM, BUREAU OF ELEMENTARY AND SECONDARY EDUCATION, U.S. OFFICE OF EDUCATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Mr. Chairmen and members of the Subcommittees, it is a pleasure to appear before you and to share with you our experiences in responding to the increasing use of phencyclidine by young people.

The current concern over the spreading use of PCP is strongly reminiscent of the late 1960's and the emerging use of LSD and speed. Our impulse is to respond as we did then, to sound the alarm. Surely, if young people knew the potential dangers involved, they would not use a drug. But sometimes the best intended acts have unintended consequences. In retrospect, many now believe that the nationwide attention given to the hallucinogens was at least one factor in the rapid spread of their use.

There is no doubt that phencyclidine is a potentially dangerous drug. Long before its appearance on the drug scene, it had been declared unfit for human consumption. There is also no doubt that its use is increasing. A 1977 NIDA survey of drug use indicated that use of PCP defined as ever used, had increased from 3.0 percent in 1976 to 5.6 percent in 1977 in the 12 to 17 year old sample and from 9.5 percent to 13.9 percent in the 18–25 age group. Evidence would suggest that use is still increasing. However, that increase is still primarily in certain areas where there is already a thriving drug scene, notably in California and major cities on the east

coast. In vast areas of the country, inquiries about PCP or Angel Dust evoke the response, "What's that?"

Why would use of one of the more dangerous drugs be attractive, and what should we do about it? The answer to these questions present us with a dilemma. It involves young people more than it does a specific drug. It involves the meaning and function of use.

Some young people use PCP for the same reasons that they use other drugs, not the least of which is to demonstrate strength to themselves and others and to gain status in their peer group. The greater the risk, the greater is the status. This is not a new phenomenon. Many of us remember other equally or more dangerous activities from the 1940's and 1950's. This at least suggests that, for some young people, the more potentially dangerous, the more it is a test of strength and the more status it gives. In addition, unpleasant as it is to contemplate, for far too many young people who are bored and see no future worth pursuing, pointing out risk evokes the response, "So what?"

Other motivations for use are not so subtle but none-the-less important. PCP is cheap and easily available. A small amount added to ordinary cigarettes, which are cheaper than marihuana joints, will produce an eight-hour buzz for several individuals. Many PCP users report that they actually prefer alcohol because their response is more predictable. But the unpredictability is part of the need to demonstrate strength in the face of risk.

Research at Stanford and at Yale suggests that the effect of drug education that involves information about specific drugs may speed entrance into drug use. It also suggests that, once specific drugs are in a community, such information may be the best immediate response available.

In view of all this, how does the Office of Education Alcohol and Drug Abuse Education Program respond? It must be remembered that it is a small, developmental program, However, it does take seriously all of the above considerations. Through its network of five training resource centers, interdisciplinary school teams are trained to develop and implement prevention programs in their individual schools. They are also trained to monitor the introduction and patterns of use of specific drugs in their communities and to have plans and mechanisms in place to respond to new developments as they are identified. A description of the current response of the system to the current increase in PCP use will illustrate.

The rapid increase in the use of PCP first came to attention in California. The California center immediately started to develop a response. It is reviewing current research and observations of the PCP scene and materials available, such as the NIDA pamphlet, those of the Do It Now Foundation, and Leslie Gregg's PCP primer, and is keeping in touch with developments in Governor Brown's office. It has developed a cautious response that involves raising the awareness of school personnel, alerting school nurses to the symptoms of PCP use which are often mistaken for the symptoms of barbiturate use, and urging teams to step-up their monitoring. For schools and communities where PCP use is emerging, they are developing a one to one-and-a-half day workshop to be delivered as part of their follow-up technical assistance to teams. These workshops will assist teams to introduce appropriate PCP responses into whatever system their particular school has set up and has functioning. These may include rap rooms, parent education programs, comprehensive health education courses, peer counseling programs or any of a variety of innovative and creative mechanisms that many schools have developed.

The four other centers have been responding on an *ad hoc* basis to requests from individual school teams. For example, a school district in Louisiana detected PCP use early, in part because of its proximity to a race track. The trained school team was prepared to initiate and coordinate a community wide response, with discussion groups and distribution of appropriate materials.

Because the five centers are an interdependent network, the research and experience of the California center will be quickly shared with the other centers so that they can respond immediately to developments in their own regions.

Within each region there is a network of several hundred trained teams that provides a ready means of rapid communication. The challenge is to use this network cautiously and wisely.

The Office of Education's small effort is obviously not the answer to the Nation. One thousand out of over 16,000 school districts is miniscule if PCP use should spread widely. Participating districts do, however, provide nuclei of trained teams scattered across the country that can provide assistance to neighboring communities.

The problem facing us at this moment is to raise awareness without creating panic, to put PCP use in the broader context of drug use in general, and, above all,

to do this without contributing to the status of PCP as the "in" risk-taking thing to do for those young people who feel compelled to prove to themselves and to their peers that they are strong and able to handle risk.

STATEMENT OF PETER B. BENSINGER, ADMINISTRATOR, DRUG ENFORCEMENT ADMINISTRATION, U.S. DEPARTMENT OF JUSTICE

Chairman Hathaway, Chairman Culver, members of the subcommittees, I appreciate this opportunity to appear before this joint hearing to present to you an overview of the phencyclidine (PCP) abuse situation and the Drug Enforcement Administration's (DEA) response to this problem.

The procedures necessary to synthesize PCP and its related compounds were first reported in 1926. It was not until the 1950's, however, that Parke-Davis, a pharmaceutical company, became interested in this group of compounds and evaluated several of them for their therapeutic utility. Although the product was found to have analgesic and anesthetic properties, PCP produced unwanted and unpleasant side effects on humans. The development of PCP as a veterinary product continued, however, and was subsequently approved for marketing by the Food and Drug Administration in 1966. At present, only one company markets this veterinary anesthetic. I would like to emphasize that the only sanctioned use of PCP is as an immobilizing agent for animals (sub-human primates) to be administered by or under the supervision of a veterinarian.

When phencyclidine first surfaced as a "street drug" in 1967, it was usually misrepresented as THC, which is the principal psychoactive ingredient in marihuana, or LSD. By the mid-1970's though, PCP had, in its own right, become a drug of choice. Within the illicit trade, this drug is known by many different names including: Angel Dust, Killer Weed or KW, PeaCe Pill, Hog, Crystal, TIC and TAC. PCP also masquerades in a variety of forms: it can be found as a powder, tablet, "rock" crystal, in leaf mixtures, and combined with other drugs. As a result, PCP is administered in a variety of ways. It can be inhaled, injected, ingested, or most commonly, sprinkled on a leaf mixture and smoked.

PCP has, at various times, been called a stimulant, a depressant, a hallucinogen, an analgesic, and an anesthetic. There is no disagreement, though, that PCP is a psychoactive drug; that is, a mind-altering drug. PCP is capable of inducing a mental state lasting for days or weeks which is indistinguishable from one of the most serious forms of mental illness, schizophrenia.

Of course, the effects of PCP will vary depending on the amount taken, the method by which it was administered, and the individual who is taking it. Obviously, not all users of phencyclidine have the same reactions with the same intensity. Some PCP users may become violent and aggressive, while others may become silent and withdrawn. Aside from this well-publicized ability to spark behavioral aberrations, PCP is capable of inducing comas lasting from several days to several weeks. The simple documented fact is that a massive overdose of PCP can kill. Many PCP users have also died from accidents caused by the strange behavior this drug produces in them.

The Drug Abuse Warning Network, better known as DAWN, is a system initiated by DEA and co-funded with the National Institute on Drug Abuse (NIDA), to gather information relative to drug abuse nationwide. DAWN monitors emergency room and medical examiner statistics in 24 key metropolitan areas across the country. The total number of PCP mentions increased from 795 reported incidents in 1975 to 3,069 during 1977; an increase of 286 per cent. PCP-related deaths, as recorded by the DAWN medical examiners, rose from 22 reported incidents in 1975 to 35 incidents two years later; an increase of 60 per cent. PCP was involved in all but one of the 36 deaths attributed to hallucinogenic abuse in 1977. The data as recorded by DAWN indicates that this product is a primary substance of abuse.

NIDA estimates that over seven million people in the United States have used PCP. Use of this drug appears to be evenly divided between males and females.

In a NIDA survey, when young PCP abusers were asked to name the source of their PCP, almost two out of three responded that their primary source was "a friend." Dealers supplied the drug in most other cases. All the available data indicates that theft and diversion of the licit PCP veterinary supplies is negligible. Virtually, the entire illicit supply is manufactured in clandestine laboratories. Phencyclidine can be synthesized relatively easily. This process is not particularly difficult and can be done by individuals who have only modest technical training. These laboratory operations vary in size and scope from a small quantity of chemicals and a few pieces of glassware in the possession of two juveniles, to a large facility with the production capabilities of a commercial scale which include barrels

of chemicals, sophisticated industrial equipment and major distribution networks. Although there is considerable diversity among the clandestine labs, most that we in DEA encounter have several elements in common:

(1) *Rudimentary Equipment and Facilities.*—The workplace typically consists of a kitchen, bathroom, or basement in a residential dwelling, although we have encountered operations housed in industrial buildings. The equipment normally consists of a reaction vessel—frequently a trashcan—stirrers, ovens, vacuum filtering equipment, kitchen utensils and a few items of glassware. Little or no safety equipment exists.

(2) *Small Size of Operation.*—Typically, the scale of the operation is on the order of a few pounds per batch.

(3) *Lack of Cleanliness.*—The operations employ no quality control and are thus usually dirty. Furthermore, the material they produce is usually not purified to any extent so that reaction by-products and intermediates are usually incorporated into the final product.

Of course, the size and production capability of the operations vary greatly, but the following example will illustrate how a small investment in a lab can yield enormous profit.

One kilogram (2.2 pounds) of phencyclidine can be produced with a total outlay of $500 to $1,500. Of this amount, $80 to $150 is required for consumable chemicals. The balance is for equipment which is reusable. At PCP's wholesale price of $700 an ounce, the operator can expect a $24,000 return on his investment of $500 to $1,500.

DEA has been aware of the problems relating to the manufacture, distribution, and subsequent abuse of phencyclidine for several years. The ever-increasing number of clandestine lab seizures and related arrests indicated to us that PCP abuse was on the rise. It was apparent to us that, although the mechanisms necessary to conduct thorough PCP investigations existed and were, in fact, being employed, increased attention to the PCP problem was necessary. Consequently, in August 1977, I directed the agency to include PCP among the dangerous drugs receiving priority attention and also directed that appropriate measures be taken to reschedule PCP.

A clandestine laboratory conference was held at DEA headquarters in September 1977 to discuss the problems encountered in investigating clandestine labs and methods available for improving operations. One such operation, which had been conducted for several years by DEA and its predecessor agencies, is the Precursor Liaison Program. An immediate precursor is a final chemical intermediary used in the manufacture of a controlled substance. The careful monitoring of unusual or suspicious orders for these chemicals and related equipment is an important investigative tool for DEA Special Agents. This program is based on liaison with and voluntary cooperation by the chemical industry. DEA field coordinators establish contact with the firms and identify to them the chemicals in which we are interested. The firm is requested to give added scrutiny to purchases of the identified chemicals and to notify the local DEA office in the event of an unusual order. As a result of this clandestine lab conference, specific agents in each field office were assigned the responsibility for the Precursor Liaison Program, and the precursors for PCP were made a high priority.

The Headquarter's Office of Intelligence has responded by coordinating the development of a comprehensive list of PCP violators and chemical precursor manufacturers. This past spring, the DEA Office of Training implemented an updated program on clandestine laboratories for the Advanced Agents Training School. This program is in addition to the continuing training at the State/local training schools offered both at headquarters and across the country.

The expansion of our PCP program has enabled DEA to better fulfill its drug law enforcement responsibilities as described in the Controlled Substances Act of 1970. From an enforcement viewpoint, the results of the stepped-up program are encouraging. Several significant points worth noting are:

1. The number of PCP laboratory seizures during 1977 was 32 percent higher than the combined totals of the previous two years.

2. The number of dosage units removed in conjunction with the laboratory seizures was 209 percent higher.

3. Total DEA and DEA Task Force removals during 1977 nearly equaled the combined total of the two previous years.

4. Total DEA and DEA Task Force arrests for PCP were 60 percent above arrests reported for 1975 and 39 percent above those reported in 1976. Simply, the numbers of individuals arrested for PCP has nearly doubled.

At the same time that the DEA operational elements were giving the PCP program added attention, DEA also moved to more tightly control the manufactur-

ing and trafficking of this drug by rescheduling PCP from Schedule III to Schedule II of the Controlled Substances Act. According to this law, DEA could not place PCP in Schedule I because that Schedule is reserved for drugs and substances without currently accepted medical use in treatment in this country; and PCP does have a legitimate use in veterinary medicine. This rescheduling was effective on February 24, 1978. With PCP on Schedule II, DEA has more control of the storage and distribution of PCP through tighter security and inventory regulations. Significantly, at least 40 State schedules will follow the Federal Government's rescheduling lead. The rescheduling of PCP will serve as a signal to judges, prosecutors and juries that PCP is a drug of considerable danger and high abuse potential.

Following the control of PCP in Schedule II, immediate steps were taken to thwart further clandestine manufacturing. On May 17, 1978, two of the immediate precursors of PCP, phenylcyclohexylamine and PCC (piperidinocyclohexane-carbonitrile), were placed in Schedule II of the Controlled Substances Act. This is the first time that DEA moved to control an immediate precursor. These precursors would generally be found only in illicit laboratories, since either is a step in the manufacture of PCP from raw material to finished product. In the past, the clandestine lab operators synthesized the manufacture of PCP to a point just short of the actual drug, thus avoiding legal grounds for prosecution for producing PCP. After making certain that they were not under surveillance, the chemists would then complete their work. Control of these substances now allows enforcement action against operators prior to their obtaining the final "marketable" product, PCP.

The Drug Enforcement Administration supports the type of legislation that would increase the criminal penalty for the unauthorized manufacture, distribution, or possession with intent to distribute PCP. We also encourage implementation of legislation that would impose upon purchasers of essential chemicals (such as piperidine) the requirement of providing proper identification, and that would impose upon sellers of precursors the requirement of maintaining records for reporting purposes.

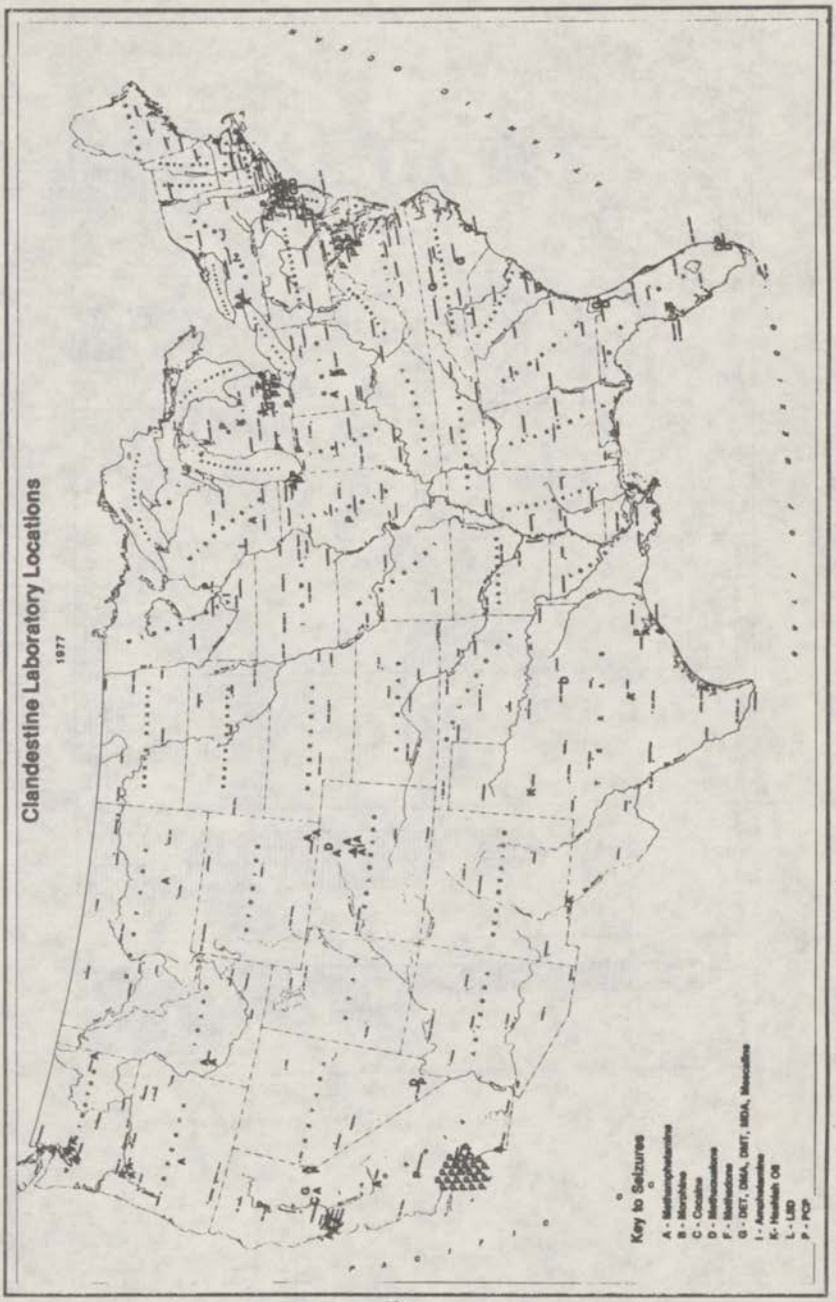
DEA believes that legislation incorporating these measures will have a decided impact on the PCP abuse situation.

The provisions for piperidine reporting would be an important single step in the prevention of the manufacture of PCP. The casual producer who can now purchase essential "starter" chemicals from chemical supply houses without scrutiny as to the appropriateness of the transaction will, to a large extent, be deterred. We are, of course, cognizant of the increased burdens that accompany the implementation of a comprehensive reporting system; but DEA believes that provisions could be made that would offset that charge, such as exempting reporting of sales determined to be legitimate and recurring.

A reporting system would provide an audit mechanism, much like the Precursor Liaison Program I mentioned earlier, that would assist in the investigation of PCP cases. In 1977, information obtained through the Presursor Liaison Program was responsible for the development of approximately one-third of the cases where an illicit laboratory was seized.

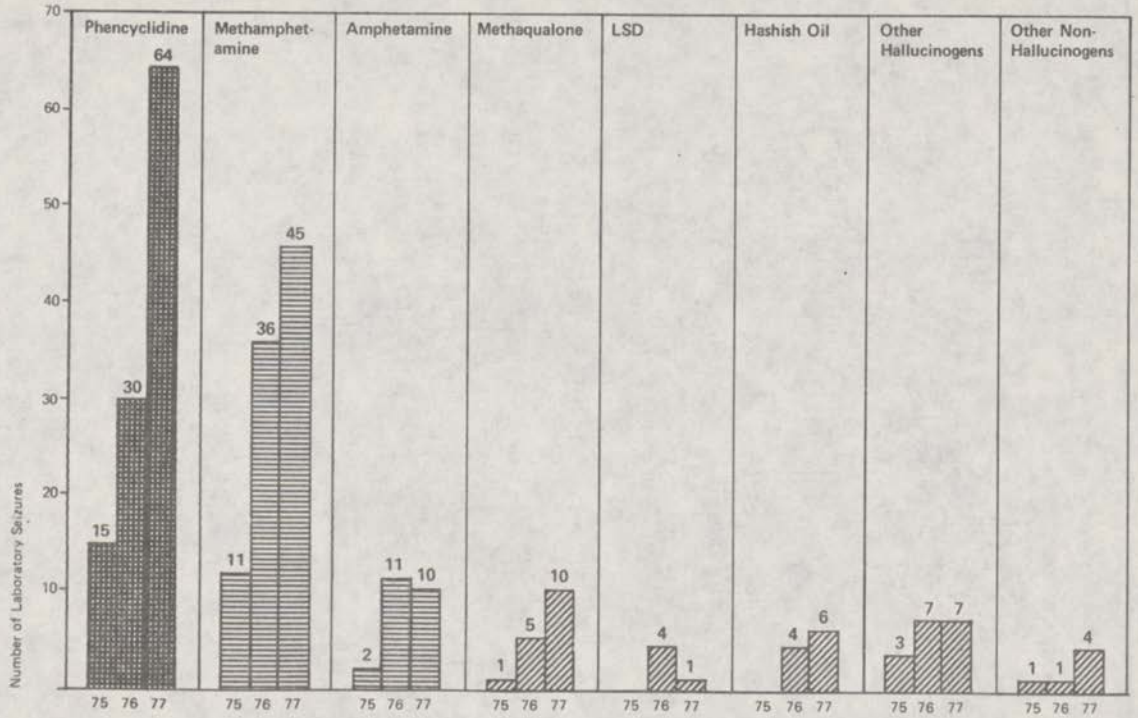
The Drug Enforcement Administration believes that legislation providing for increased criminal penalties for the unauthorized manufacture or distribution of PCP would be beneficial to the enforcement of the Controlled Substances Act. PCP is a non-narcotic in Schedule II, and as such, the *maximum* sentence is five years imprisonment as well as a fine. Preliminary data indicate that a significant number of PCP violators are being released upon conviction with suspended sentences and probation. And, in fact, the average length of Federal prison sentences imposed in 1977, *decreased* substantially in PCP cases from the previous year. In 1976, the average length of Federal prison sentences for a PCP defendant was 35.3 months; the following year the average length was only 24.9 months. I believe that the sentencing structure for PCP violators should reflect the emphasis we are placing on the PCP abuse problem. The recent amendments made by the Senate during their consideration of S. 1437 concerning PCP exemplify the seriousness of PCP abuse.

I look forward to working with the Congress on the development of legislation directed toward the PCP problem. I would like to thank Chairman Hathaway and Chairman Culver for their interest and support in dealing with this significant drug problem.


UNITED STATES
Clandestine Laboratory Locations
1977
Key to Seizures
A - Methamphetamine
B - Morphine
C - Cocaine
D - Methaqualone
F - Methadone
G - DET, DMA, DMT, MDA, Mescaline
I - Amphetamine
K - Hashish Oil
L - LSD
P - PCP
18

Comparison of Clandestine Laboratory Seizures

1975 - 1977



Seizure statistics for 1975 and 1976 are based on partial data and are subject to correction.

STATEMENT OF ROBERT S. ELSBERG, SPECIAL AGENT, DEPARTMENT OF JUSTICE, STATE OF CALIFORNIA

In October, 1974, there were a number of illicit drug manufacturing laboratories in the State of California and there was little, if any, knowledge as to who was selling or purchasing the chemical precursors which were vital to the manufacture of the illicit drugs. The California Department of Justice formed a committee, held hearings, and invited the public and individual chemical companies to attend the hearings to give input into the concept of having a chemical precursor reporting system to identify those individuals who purchase these vital chemicals. The identification of these individuals, an investigative lead, could assist in the apprehension of illicit laboratories. The reporting system was approved by those that participated and was then forwarded to the legislature who enacted the chemical reporting system into law in 1976.

The reporting system is contained in the Uniform Controlled Substances Act which is in division 10 of the Health and Safety Code. California's laws relating to restricted controlled substances (narcotics and restricted dangerous drugs) are contained in this act.

The section referring to reporting of chemical precursors is contained within the section of regulation and control of licit sources of distribution.

This section indicates that any manufacturer, wholesaler, retailer, or other person who sells, transfers, or otherwise furnishes any of nine designated chemical precursors must submit a report of such transaction to the Department of Justice within seventy-two hours; however, the Department of Justice may authorize the submission of such reports on a monthly basis with respect to repeated regular transaction between the furnisher and recipient involving the same substance if the Department of Justice determines a regular pattern of supply exists and the recipient has established a record of such substance for lawful purposes.

The Department of Justice can add or delete a chemical precursor to or from the list in an emergency situation; however, its effect is terminated on March 1 of the year following the calendar year during which the regulation is adopted when the legislature reconvenes and then they may enact it into law.

The State Department of Justice provides a common reporting form which contains at least the name of the substance, the quantity of the substance sold, transferred, or furnished, the date, the name and address of the persons buyer or receiver, and the name and address of the seller.

When the report is received at the headquarters office of the California Department of Justice, it is duplicated, the original is filed, and the duplicate immediately sent to the area office located in the region where the transaction occurred.

An agent in the regional office reviews the report and checks the background of the purchaser for prior drug violations. The purchase of phenyl-2-propanone, because of its limited legitimate use, and its common usage to manufacture methamphetamine, is closely checked. A report showing certain chemical precursor combinations would immediately raise suspicion, as would a nonexistent address for the purchaser.

The majority of the chemical companies are very cooperative with law enforcement. An agent generally will contact a cooperative chemical company on a questionable report to verify the information on the form and arrange to be contacted if the purchaser returns for a subsequent order. This enables the department to conduct a surveillance of the purchaser in order to learn his activities, associates, method of operation, and laboratory location.

During this course of investigation, probable cause can be established for a search warrant for the site; however, timing in service of a search warrant in this manner is generally hit-and-miss as to seizing the finished product. Frequently, the agent finds only starting materials or chemical combinations in an intermediary level.

In 1977, the California Legislature enacted a law that made the possession of certain chemical phencyclidine precursors or a combination product of specified precursors with intent to manufacture phencyclidine a crime, punishable as a felony. This law assisted law enforcement in those situations where an entry to a laboratory site was made before or after the manufacturing process was completed.

How effective is the California reporting system?

The system is an investigation tool. It notifies law enforcement of the identity of the purchaser and assists as previously indicated. Failure of the furnisher to notify the California Department of Justice of the transaction is a misdemeanor punishable by a fine of $30–$500, imprisonment for not less than 15 days nor more than 180 days.

Some chemical companies will take advantage of the fact that the product will be used to manufacture an illicit drug such as PCP. The chemical company inflates the

retail price to the customer ten times and either fails to notify the State of the transaction or falsifies the report. The seller realizes that asking for proper identification from the purchaser or making him sign for the chemical may result in a no-sale.

Examples: In California, an undercover officer purchased one pint of phenyl-2-propanone from a wholesale drug company for over $700. The average retail value is $70.

The undercover officer purchased one-half gallon of methylamine for $250.00. The retail value is $17.50.

The total average value of these chemicals is approximately $100. The chemical company received almost $1,000 and the chemicals will make one pound of methamphetamine with a conservative value of $16,000. With $700 in starting materials, one could produce thirty-five pounds of phencyclidine at $6,000 a pound, realizing about $200,000.

A suspect purchased one pint of phenyl-2-propanone, a $70 item, a few months ago for $1,000 and was followed by the California Department of Justice to an apartment where she was apprehended in the process of manufacturing one pound of methamphetamine. Only a purchaser with illicit intentions would pay such an exorbitant price, and a chemical company could not survive charging prices which are ten times the going rate for legitimate purposes.

Purchasers, knowing that the purchase will be reported to the Department of Justice frequently use false identification to conceal their identity due to the illegal nature of their activity.

The California Department of Justice supports the following suggested amendments to current pending PCP legislation which would improve the California reporting system:

No person shall make a false statement in any report or record required by this chapter. (Pertains to the reporting system.) Any person violating any of the provisions of this section is guilty of a felony/misdemeanor.

Any manufacturer, wholesaler, retailer, or other person who sells, transfers, or otherwise furnishes any of the substances listed in section 11100 with knowledge that the recipient will use the substance to illegally manufacture a controlled substance is guilty of a felony.

Any person convicted of violating section 11379 of the Health and Safety Code by manufacturing phencyclidine or convicted of violating subdivision (b) of section 11383 of the Health and Safety Code by possessing both piperidine and cyclohexanone at the same time with intent to manufacture phencyclidine would be sentenced to mandatory State prison for 4, 5, or 6 years.

The present penalty does not appear to be a deterrent to the crime. In Los Angeles County, this year, 10 phencyclidine laboratories were seized just within an 8-week period. Presently, the risk of manufacture is a gamble where one can get probation, minimum county jail up to 1 year, or State imprisonment, and realize a profit of $200,000 with a $700 investment. This gamble to many violators is definitely worth that risk as verified by the number of PCP laboratories seized this year and the amount of PCP available.

Very few incidents of phencyclidine analog abuse have been documented in California. DOJ contacted many crime labs who indicated that they did not screen for PCP analogs and did not even have analog standards. Some crime labs detected PCP analogs and concluded "negative for controlled substances" with no documentation as to the particular analog.

ADDITIONAL STATEMENTS AND MATERIAL SUBMITTED FOR THE RECORD

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C., July 14, 1978.

Hon. JOHN C. CULVER,
Chairman, Senate Subcommittee on Juvenile Delinquency,
Washington, D.C.

DEAR SENATOR CULVER: As a member of the House Select Committee on Narcotics Abuse and Control, I am concerned that Phencyclidine (PCP) abuse has reached a drug crisis for this Nation and that so many of our teenagers are resorting to this hallucinatory drug to escape from their problems.

Unfortunately, pressing legislative matters prevented me from presenting my thoughts to the joint hearing that you and the distinguished Chairman of the Senate Subcommittee on Alcoholism and Drug Abuse (Senator Hathaway) recently conducted. I have, however, enclosed a statement, including a legislative proposal (H.R. 11727), that might interest you and your colleagues and which I request be inserted in the record of the joint hearing.

Briefly, my approach to attacking the PCP problem would be (1) to place Phencyclidine into Schedule I of the Controlled Substances Act and (2) to establish within section 401(b)(1)(B) of that Act, which governs penalties for nonnarcotic Schedule I and Schedule II drugs, certain mandatory minimum prison sentences for those who unlawfully manufacture, dispense or distribute PCP or any of its analogues, derivatives or variants.

I welcome your thoughts and support on this proposal, and I commend you and your colleagues for holding joint hearings on this vitally important subject.

With best wishes.

Sincerely,

BENJAMIN A. GILMAN,
Member of Congress.

Enclosure.

P.S.—To date, 57 members of the House have cosponsored H.R. 11727, including 17 members of the House Select Committee on Narcotics Abuse and Control.

PREPARED STATEMENT OF REPRESENTATIVE BENJAMIN A. GILMAN, 26TH DISTRICT, NEW YORK ON PHENCYCLIDINE (PCP)

Mr. Chairman, I commend you and the distinguished members of the Senate Subcommittee on Alcoholism and Drug Abuse and the Senate Subcommittee on Juvenile Deliquency for holding these joint hearings on Phencyclidine (PCP), to date the most dangerous hallucinatory drug on the market and one that has supplanted the mind-crippling LSD that was so popular among our teenagers during the mid-1960's and early 1970's.

The devastating and debilitating effects produced by PCP intoxification—delusions of grandeur and persecution, superhuman strength, irrational, violent and unpredictable psychotic behavior capable of masking symptoms of schizophrenia—are well documented; the extensive usage of this horror drug by an estimated 7 million individuals, mostly between ages 12 and 25, are well-known; and the ease by which this drug and its more than 30 derivatives can be manufactured by anyone with an elementary knowledge of chimistry from readily available, inexpensive, over-the-counter chemicals is well-established. Law enforcement authorities have attributed hundreds of murders, suicides, accidental deaths and bizarre self-inflicted injuries to PCP intoxification. Profits from the sale of this pernicious drug are enormous. An investment of $100 can produce PCP worth a street value of about $100,000.

The salient questions is: what are we as legislators going to do to try to stem this drug crisis that has reached eipdemic proportions among teenagers who are the primary users of PCP?

As a member of the House Select Committee on Narcotics Abuse and Control, I have given considerable thought about how to attack the PCP problem. I do not claim that my proposal is a panacea that will dry up the demand for this hallucinatory drug, but I do believe that it is a starting point * * * a step in the right direction, which I would like to share with this distinguished panel and hope that

you would favorably consider this proposal when you consider S. 2778, the PCP Criminal Laws and Procedures Act of 1978, a measure that I would support.

On March 22nd, 1978, I introduced H.R. 11727, which, to date, has been cosponsored by 57 of my colleagues. My proposal is twofold: it (1) would place Phencyclidine into Schedule I of the Controlled Substances Act and (2) would establish within section 401(b)(1)(B) of that act, which governs penalties for nonnarcotic schedule I and schedule II drugs, certain mandatory minimum prison sentences for those who unlawfully manufacture, dispense or distribute PCP or any of its analogues, derivatives or variants.

As you know, Mr. Chairman, PCP is a nonnarcotic, synthetic drug. The criteria for placing a drug into Schedule I of the Controlled Substances Act are threefold: first, the drug must have "a high potential for abuse"; second, the drug must not have "a currently accepted medical use in treatment in the United States"; and third, "there is a lack of accepted safety for use of the drug or other substance under medical supervision."

PCP meets all three criteria for being classified as a Schedule I drug. The record is clear with regard to the abuse and danger that this hallucinatory, psychoses-schizophrenia inducing drug presents to the user and to those around him, and because of these dangers, PCP has not been medically approved for treatment in humans with assurances that the patient, under medical supervision, would be safe from the post-operative effects of this dangerous drug. The drug continues to be medically approved only for veterinarian use as an animal tranquilizer.

Unlike heroin, a narcotic, addictive-causing pain killer, some thought has been given as to whether this drug should be used for terminally inoperative cancer patients, thereby minimizing the pain and suffering for these patients. But PCP does not possess this redeeming quality. It is a dreadful drug and accordingly, should receive the most stringent warning and control available under the Controlled Substances Act.

Under the leadership of the distinguished Senator from Illinois (Senator Percy), the Senate unanimously adopted his amendment to place PCP as a Schedule I drug in S. 1437, the Federal Criminal Code, which passed the Senate on January 30th, 1978, and to increase the criminal penalties for trafficking and manufacturing this pernicious drug. Rather than increase discretionary criminal penalties for manufacturing and trafficking of PCP, my preference is to provide stiff mandatory prison sentences for manufacturing and trafficking of this drug, thereby minimizing certain aspects of judicial sentencing discretion to require, upon conviction of violating my proposal, a specified mandatory prison sentence.

With regard to the second aspect of my measure—the unlawful manufacture, distribution or dispensing of PCP—anyone convicted of violating this proposed legislation would be subject to a mandatory minimum sentence of 3 years in prison with no parole eligibility. A convicted felon, regardless of whether the first conviction was drug-related, who subsequently is convicted of violating this measure, as a two-time offender, would be subject to a mandatory minimum sentence of not less than 7 years in prison with parole eligibility after serving a prison sentence of 5 years.

With regard to an individual who unlawfully distributes or dispenses PCP or any of its derivatives to a person under 21 years of age, the convicted violator would be subject to a mandatory minimum sentence of 8 years in prison with no eligibility for parole. An individual convicted of a felony, regardless of whether the prior conviction is drug-related, would be subject, as a two-time offender, to an imprisonment of not less than 11 years with parole eligibility after serving a prison sentence of 9 years.

Any sentence imposed under my proposal would not be suspended and probation would not be granted. A sentence of imprisonment and a term of parole ineligibility imposed on the convicted violator would run consecutively to any other sentence imposed on the individual.

A court of competent jurisdiction would, however, have discretion and flexibility to reduce the term of parole ineligibility or imprisonment, to provide a term of imprisonment with no parole ineligibility, to place the violator on probation, or to suspend the sentence if the court found that (1) the individual's mental capacity was significantly impaired, (2) the individual was under unusual duress, (3) the individual was an accomplice whose participation in the prohibited offense was relatively minor, or (4) if the court found that after the arrest, the individual supplied law enforcement officials with information useful in the apprehension of anyone who violated this proposed measure.

Mr. Chairman, transferring PCP from Schedule II, where it is currently located, to Schedule I without providing stiff, mandatory minimum prison sentences for its unlawful manufacture or distribution would amount to cosmetic legislation, since

the penalty for violating section 401(b)(1)(B) of the Controlled Substances Act includes, among other penalties, a sentence of *not more than* 5 years in prison, which, in my view, is not sufficiently stringent, considering the devastating mind-crippling effects that PCP can cause to its user. Commenting on the relatively lenient Federal and State penalties for the unlawful manufacture and distribution of PCP and several Maryland proposals to increase its penalties, The Washington Post in an editorial entitled, "PCP: Infernal 'Angel Dust' " (Feb. 27, 1978) stated:

"We suspect that as the terrifying effects of PCP become better known, more States will want to consider the thinking behind the Maryland proposals: That is, that given the ease with which PCP can be illegally produced and the profits that can be realized from its sale, it's important now to up the stakes for those who are either now in or considering this illegal line of work."

Mr. Chairman, PCP is a deadly drug. It is an hallucinogenic king cobra. Considering the inherent dangers associated with this substance, it puzzles me why so many of our teenagers escape into this pernicious drug. In my view, one way to attack the PCP problem would be to provide maximum warnings to the public regarding the dangers of PCP intoxification and to provide stiff, mandatory prison sentences to those who manufacture or traffic in this substance.

Although a companion bill to H.R. 11727 has not been introduced in the Senate, I would welcome the thoughts and support of the members of the distinguished Senate Subcommittees on Alcoholism and Drug Abuse and on Juvenile Delinquency. It is not too late to introduce in this session of the Congress a Senate version of H.R. 11727 or to amend a germane Senate legislative proposal that would include provisions of H.R. 11727.

Again, Mr. Chairman, I commend you and your colleagues for holding these joint hearings on this vitally important subject and I thank you for affording me this opportunity to present my views to this distinguished panel.

95TH CONGRESS
2D SESSION

H. R. 11727

IN THE HOUSE OF REPRESENTATIVES

MARCH 22, 1978

Mr. GILMAN (for himself, Mr. BEARD of Tennessee, Mr. BIAGGI, Mr. BURKE of Florida, Mr. DE LA GARZA, Mr. GUYER, Mr. MURPHY of Illinois, Mr. NEAL, Mr. RAILSBACK, Mr. RANGEL, Mr. RODINO, Mr. SKUBITZ, Mr. WOLFF, and Mr. ZEFERETTI) introduced the following bill; which was referred to the Committee on Interstate and Foreign Commerce

A BILL

To place phencyclidine in schedule I of the Controlled Substances Act, to amend the Controlled Substances Act to increase the criminal penalties under that Act for the unlawful manufacture, distribution, or dispensing of, or the possession with intent to distribute or dispense, phencyclidine and to increase the penalties under that Act for illegal distribution of phencyclidine to persons under twenty-one years of age, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 202 of the Controlled Substances Act (21 U.S.C. 812) is amended—

(1) by repealing "(7) Phencyclidine." in schedule III(b);

(2) by deleting the numbers "(8)", "(9)", and "(10)" in schedule III(b) and inserting in lieu thereof the numbers "(7)", "(8)", and "(9)"; and

(3) by adding "(18) Phencyclidine." at the end of schedule I(c).

SEC. 2. Section 401(b) of the Controlled Substances Act (21 U.S.C. 841(b)) is amended by inserting after "such person shall" in the first sentence of paragraph (1) (B) the following: ", except as provided in paragraphs (4) and (5) of this subsection,", and (2) by adding after paragraph (4) the following new paragraph:

"(5) (A) Except as provided in subparagraph (B), in the case of a violation involving phencyclidine or any analogue, derivative, or variant of phencyclidine that is in a schedule under this title, such person shall be sentenced to a term of imprisonment of not less than 3 years. In imposing a sentence of imprisonment under this subparagraph a court shall, notwithstanding section 4205 of title 18, United States Code, designate in such sentence a minimum term of 3 years which must be served before the person subject to such sentence would become eligible for parole.

"(B) If any person commits a violation of subsection (a) with respect to phencyclidine or any analogue, deriva-

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tive, or variant of phencyclidine that is in a schedule under this title after one or more prior convictions for an offense punishable under this paragraph or for any other felony under any other provision of law, such person shall be sentenced to a term of imprisonment of not less than 7 years. In imposing a sentence of imprisonment under this subparagraph a court shall, notwithstanding section 4205 of title 18, United States Code, designate in such sentence a minimum term of 5 years which must be served before the person subject to such sentence would become eligible for parole.

"(C) In the case of any sentence imposed under subparagraph (A) or (B), imposition or execution of such sentence shall not be suspended and probation shall not be granted. A term of imprisonment imposed on a person under subparagraph (A) or (B) shall run consecutively to any other term of imprisonment imposed on such person, and a term of parole ineligibility imposed on a person under subparagraph (A) or (B) shall run consecutively to any other term of parole ineligibility imposed on such person.

"(D) Notwithstanding the provisions of subparagraph (A) or (B), the court may sentence any person who violated section 401(a)(1) by manufacturing, distributing, or dispensing phencyclidine or any of its analogues, derivatives or variants to a shorter term of parole ineligibility or imprisonment than required under subparagraph (A) or

(B), to a term of imprisonment with no term of parole ineligibility, or to probation, or may suspend imposition or execution of the sentence, if the courts finds that, at the time of the violation—

"(1) such person's mental capacity was significantly impaired, although not so impaired as to constitute a defense to prosecution,

"(2) such person was under unusual and substantial duress, although not such duress as would constitute a defense to prosecution, or

"(3) such person was an accomplice, the conduct constituting the offense was principally the conduct of another person, and such person's participation was relatively minor,

or if the court finds that after the arrest of such person such person supplied law enforcement officials with information useful in the apprehension of any other person who violated this title.".

SEC. 3. Section 405 of the Controlled Substances Act (21 U.S.C. 845) is amended—

(1) in subsections (a) and (b) by striking out "at least eighteen years of age" wherever it appears in such subsections; and

(2) by adding at the end of such section the following new subsection:

"(c) (1) Except as provided in paragraph (2), the court, in setting the sentence under section 401 (b) (1) (B) of any person who violated section 401 (a) (1) by distributing or dispensing phencyclidine or any analogue, derivative, or variant of phencyclidine that is in a schedule under this title to a person under twenty-one years of age, shall not sentence such person to probation or suspend imposition or execution of the sentence, or sentence the person pursuant to chapter 402 of title 18, United States Code, but shall—

"(A) except as provided in subparagraph (B), sentence such person to a term of imprisonment of not less than eight years and shall designate a term of parole ineligibility of not less than eight years; or

"(B) sentence such person to a term of imprisonment of not less than eleven years and shall designate a term or parole ineligibility of not less than nine years, if such person committed such violation after such person had been convicted of a felony.

A term of imprisonment imposed on a person under this subsection shall run consecutively to any other term of imprisonment imposed on such person, and a term of parole ineligibility imposed on a person under this subsection shall run consecutively to any other term of parole ineligibility imposed on such person.

"(2) Notwithstanding the provisions of paragraph (1),

the court may sentence any person who violated section 401 (a) (1) by distributing or dispensing phencyclidine or any analogue, derivative, or variant of phencyclidine that is in a schedule under this title to a person under twenty-one years of age to a shorter term of parole ineligibility or imprisonment than required under paragraph (1), to a term of imprisonment with no term of parole ineligibility, or to probation, or may suspend imposition or execution of the sentence, if the court finds that, at the time of the violation—

"(A) such person's mental capacity was significantly impaired, although not so impaired as to constitute a defense to prosecution,

"(B) such person was under unusual and substantial duress, although not such duress as would constitute a defense to prosecution, or

"(C) such person was an accomplice, the conduct constituting the offense was principally the conduct of another person, and such person's participation was relatively minor,

or if the court finds that after the arrest of such person such person supplied law enforcement officials with information useful in the apprehension of any other person who violated this title.".

95TH CONGRESS
2D SESSION

S. 2778

IN THE SENATE OF THE UNITED STATES

MARCH 22 (legislative day, FEBRUARY 6), 1978

Mr. BENTSEN introduced the following bill; which was read twice and referred to the Committee on the Judiciary

A BILL

To provide for increased criminal penalties for the unauthorized manufacture or distribution of PCP and to provide for piperidine reporting.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "PCP Criminal Laws and Procedures Act of 1978".

ILLEGAL TRAFFICKING IN PHENCYCLIDINE (PCP)

SEC. 2. Notwithstanding any other provision of law, any person who manufactures, distributes, or possesses with intent to manufacture or distribute, except as authorized by chapter 13 of title 21 of the United States Code, phencyclidine and its salts shall be subject to a penalty not to exceed

ten years imprisonment, a fine of not more than $100,000, or both. If any person commits such a violation after one or more prior convictions for an offense punishable under any law of the United States relating to narcotic drugs, marihuana, or depressant or stimulant substances, such persons shall be sentenced to a term of imprisonment of not more than twenty years, a fine of not more than $150,000, or both.

SEC. 3. Chapter 13 of title 21 of the United States Code is amended by adding the following new subchapter:

"SUBCHAPTER III.—PIPERIDINE REPORTING

"§ 980. Reporting requirement

"(a) It shall be unlawful—

"(1) For any person to sell or transfer any piperidine unless the seller or transferor reports to the Attorney General not less than monthly or such shorter time as the Attorney General promulgates by regulation, the name, age, place of residence, notation of identification presented, purpose of purchase declared by buyer or transferee and such other information, including that necessary for establishing positive buyer or transferee identification, requested by the Attorney General pursuant to regulations promulgated under this section.

"(2) For any person to sell or transfer any piperidine unless the buyer or tranferee presents positive per-

sonal identification pursuant to regulations promulgated by the Attorney General.

"(3) For any importer of piperidine to receive such substance without reporting such receipt at least monthly or such shorter time as the Attorney General promulgates by regulation, along with other information necessary for the enforcement of this section requested by the Attorney General pursuant to regulations promulgated under this section.

"(4) For any recipient or purchaser of piperidine to knowingly make any false, oral or written statement or misrepresentation with respect to information required to be reported under this subsection.

"(b) Every sellor or transferor of piperidine shall maintain such records as is deemed necessary by the Attorney General to enforce this section.

"(c) The Attorney General may enter during business hours the premises of any seller or transferor of piperidine for the purpose of inspecting or examining any records or documents required to be kept by this Act. Upon the request of any State or any political subdivision thereof, the Attorney General may make available to such State or any political subdivision thereof, any information which he may obtain by reason of the provisions of this Act with respect to identification of persons within such State or political subdivision

thereof who have purchased or received piperidine, together with a description of such piperidine.

"(d) Whenever it shall appear that any person has violated any provision of this section, the Attorney General may bring a civil action for such relief (including injunctions) as may be appropriate.

"(e) Whoever violates any provision of this section shall be fined not more than $20,000, or imprisoned not more than five years, or both, and shall become eligible for parole as the Board of Parole shall determine.

"§ 981. Other criminal violations

"(a) MINORS.—It shall be unlawful to sell or transfer any piperidine to any person who the seller or transferor knows or has reasonable cause to know is less than eighteen years of age.

"(b) STOLEN PIPERIDINE.—It shall be unlawful for any person to transport, receive, conceal, store, barter, sell, or dispose of any stolen piperidine, or pledge or accept as security for a loan any stolen piperidine.

"(c) RESTRICTED SALES.—It shall be unlawful to sell or transfer any piperidine to any person if the seller or transferor knows or has reasonable cause to believe that such person—

"(1) is under indictment for, or has been convicted in any court of, a crime punishable by imprisonment for a term exceeding one year;

"(2) is a fugitive from justice;

"(3) is an unlawful user of or addicted to any depressant or stimulant drug (as defined in section 201 (v) of the Federal Food, Drug, and Cosmetic Act) or narcotic drug (as defined in section 4731 (a) of the Internal Revenue Code of 1954) ; or

"(4) has been adjudicated as a mental defective or has been committed to any mental institution.

"(2) MISCELLANEOUS RESTRICTIONS.—It shall be unlawful for any person—

"(1) who is under indictment for, or who has been convicted in any court of, a crime punishable by imprisonment for a term exceeding one year;

"(2) who is a fugitive from justice;

"(3) who is an unlawful user of or addicted to any depressant or stimulant drug (as defined in section 201 (v) of the Federal Food, Drug, and Cosmetic Act) or narcotic drug (as defined in section 4731 (a) of the Internal Revenue Code of 1954) ; or

"(4) who has been adjudicated as a mental de-

fective or who has been committed to any mental institution;

to purchase, receive import, or manufacture piperidine.

"(c) PENALTIES.—Whoever violates any provision of this section shall be fined not more than $20,000, or imprisoned not more than five years, or both, and shall become eligible for parole as the Board of Parole shall determine.".

DEFINITIONS

SEC. 4. For purposes of this Act—

(1) "Person" includes any individual or business entity.

(2) "Piperidine" means piperidine and its salts.

(3) "Phencyclidine" means 1-(1-phenylcyclohexyl) piperidine and its salts.

(4) "Attorney General" means the Attorney General of the United States.

EFFECTIVE

SEC. 5. This Act shall become effective one hundred and eighty days after the date of enactment.

PREPARED STATEMENT OF HON. WENDELL R. ANDERSON, A U.S. SENATOR FROM MINNESOTA

Mr. Chairman, I commend you and the other members of the Subcommittee for your attention to a continuing problem among children, young people and adults—the use of a substance known as phencyclidine, alias PCP, alias "angel dust."

As you know, Mr. Chairman, drug abuse cannot be dealt with in a vacuum. It is a symptom of alienation and social disorganization. Whether it is manifested through alcohol, marijuana, PCP or heroin, drug abuse is often part of the same attempt to escape. But whatever the motives of the abuser, in many cases, and especially when the drug is PCP, he or she can be plunging headlong into a mire of unforeseen trouble and heartache.

We've all heard about the most tragic examples of PCP use. The real horrors—overdoses, suicides, self-maimings and irrational violence—have caught our attention. But even when its results are less dramatic, PCP use can destroy lives and cripple minds. According to William Schueter, Drug Education Advisor at the Metro Drug Awareness program of the Minneapolis Health Department, many chronic PCP users complain of impaired concentration, learning and memory disfunctions, reduced reaction time, and impaired sensory discrimination and physical coordination, even when not using the drug. The possibility has also been raised that even short-term use of PCP may produce long-term behavior changes in individuals.

And despite the increased publicity about the negative effects of PCP, it's not going away. There has, in fact, been a 50 percent increase in the number of young people using the drug in the past year alone.

I'd like to share with the subcommittee the comments of a Minneapolis couple whose daughter was hospitalized for PCP use:

"* * * I hope and pray that no other parent should have to go through that experience. The doctor in the emergency room gave her some sort of a shot and said that all she needed was to be calmed down. After we found out (much later) what she had taken, I was greatly disturbed that the doctor did not inform us that she had taken some type of drug. After 3 years of being on drugs; one 30-day period of treatment; 3 months in a state hospital and 3 more months in a half-way house, we once again have a daughter who is now attending college and working towards a degree in drug counselling.

The other day, during one of our "talks" she was discussing the different drugs and made the remark that PCP was the most harmful drug on the market at this time.

The abuse is bad and the long-term effects are not really known, but, from our experience, if the illegal manufacture of this drug could be stopped, by any means, then all the heartache would certainly be worth it. Please—we need legislation controlling the manufacture of PCP."

Mr. Chairman, I wish to add my strong support to the Subcommittee's efforts to combat the use of this dangerous, and sometimes deadly, substance.

PREPARED STATEMENT OF MITCHELL S. ROSENTHAL, M.D., PRESIDENT, PHOENIX HOUSE FOUNDATION

Seven months ago, Dr. Robert Dupont of NIDA asked if we at Phoenix House knew how much PCP—the drug commonly call "angel dust"—was being used in the New York City area. We didn't know, and we should have known, for Phoenix House is the largest residential program for the treatment of drug abuse in the nation. It has cared for more than 13 thousand young men and women during the past eleven years. At the time Dr. Dupont asked, more than one of every four new Phoenix residents had used PCP.

When we surveyed other drug programs, schools and hospitals in and around the city, we were shocked by the extent of PCP use. So was everyone else. We found the percentage of PCP-abusers ran as high as 80 percent in ambulatory programs, and between 30 and 40 percent of drug-abusing high school students were using "angel dust". City hospitals reported a gradual increase in PCP emergencies during the year and suburban hospitals had just seen the numbers jump within the preceeding several weeks.

Since that time, reports of PCP admissions to New York hospitals and treatment programs have increased. But this may well reflect the fact that doctors and clinicians are now actively looking for signs of "angel dust" abuse.

When we first discovered how widespread the drug had become in New York, we were most concerned about proper diagnoses, the danger of inappropriate treatment in hospital emergency rooms, potentially fatal physical effects of PCP overdose and

such extreme psychological reactions as severe hallucinations, paranoia, suicidal depression, stupor and coma.

As we worked with the growing number of residents who have regularly used the drug, we've found something far more disturbing about PCP. It is not the occasional dramatic aftermath of a toxic dose that makes PCP such a frightening drug. More terrifying is the incidence of bizarre, dangerous and self-destructive behavior among adolescent and other young users who seem never to have experienced what could clinically be called an "overdose".

More frequent users of PCP recall at least one occasion when they were truly out of control. Often they did not recall the incident itself—for they have no memory of it. But they can never forget the aftermath. One young man does not remember how he came to stab his best friend four times. But he did one night when he was high on PCP. Many young people tell of rampages—smashing car windows or store windows when they were high. A 13-year-old girl and her friends found themselves holding up gas stations and grocery stores. A teenage boy recalls a friend who leaped from a building top.

These are some examples of what PCP-using Phoenix residents have experienced. You have heard more extreme cases. But what is most significant is the danger posed by the frequency of unreasoning rage to almost every kid who buys or tries angel dust. The parallel between what we know to be true about PCP and the fanciful "horror stories" once told about marijuana is truly ironic.

It is not by chance that most PCP is consumed with marijuana. It is not an accident that the drug is widely abused by adolescents. Indeed, PCP and the threat it poses to school age youngsters is a tragic, but not illogical, consequence of public policies and attitudes about the use of psychoactive drugs.

For the illicit drug wholesaler, PCP is an ideal commodity. It is cheap. It is synthetic. It can be produced by a minimally competent chemist using modest equipment in a basement laboratory. It requires no long or elaborate supply routes. Unlike such natural psychoactives as opium and its derivatives, cocaine, marijuana, mescaline, the supply of PCP is not threatened by the actions of foreign governments, more vigilance on the border or interdiction by the DEA. It can be turned out just down the block.

And there is a market down the block, an adolescent market. It is made up of kids who come of age during the period when public perceptions about drug abuse have changed—when these changes are reflected in public policy.

Whether we like it or not, whether we agree with it or not, the "social" use of ostensibly soft drugs has gained wide acceptance during the past decade. The decriminalization of marijuana by state legislatures reflects this reality. And it is pointless, I believe, to debate the merits of the situation that now exists and is unlikely to change.

It is, however, foolish to ignore the inevitable consequences of this situation and fail to deal with them realistically and responsibly. The chief consequence is the increase in drug abuse among adolescents, a phenomenon that has gone nearly unnoticed in the absence of any alarms from parents, educators or public officials. With the appearance of PCP—with evidence of a clear and present danger to young Americans—fear and concern about the widespread misuse of psychoactive drugs has mounted sharply.

I do not believe it is ultimately useful to consider ways of controlling this particular substance—not when the mechanism of enforcement has failed to control far more vulnerable lines of supply, not when other, newer synthetics are inevitable. I do not believe it is now possible to change radically our more tolerant attitudes and policies.

But I do believe it is not only possible but necessary to provide the means to deal, through intervention, with the needs of adolescent drug abusers. Today, many American children are exercising what they perceive as the right to grow up "stoned". I believe they deserve as equal an opportunity to grow up drug free.

What we cannot provide through control, we can offer through prevention. What we cannot prevent, we must be prepared to remedy. The individual drug-abusing child deserves every opportunity for treatment, for emotional and social rehabilitation.

I put it to you as I see it. The danger PCP and other synthetics pose to adolescents is the result of public attitudes, policies and practices during the past decade. We cannot change them. We can only work to minimize the threat to the individual child and to repair the damage when we fail. I believe we owe our young no less than that.

BALTASAR CORRADA
RESIDENT COMMISSIONER, PUERTO RICO

JOAQUÍN A. MÁRQUEZ
ADMINISTRATIVE ASSISTANT

COMMITTEES:
EDUCATION AND LABOR
INTERIOR AND INSULAR AFFAIRS
SELECT COMMITTEE ON POPULATION

Congress of the United States
House of Representatives
Washington, D.C. 20515

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AREA CODE: 809-753-4240

P.O. BOX 128
PONCE, PUERTO RICO 00731
AREA CODE: 809-843-5640

May 30, 1978

Hon. William D. Hathaway
Chairman
Subcommittee on Alcoholism &
Drug Abuse
Senate Committee on Human Resources
4230 Russell, S.O.B.
Washington, D. C. 20510

Dear Mr. Chairman:

I have been advised that your subcommittee is having joint hearings with the Subcommittee on Juvenile Delinquency, Senate Committee on the Judiciary, on the problem of Phencyclidine, commonly known as PCP.

According to the information provided to me by the Congressional Research Service this drug was developed in the late 1950s, and first marketed in the United States during the early 1960s under the trade name Sernyl (Parke, Davis & Co.) and originally used as an anesthetic agent for humans undergoing surgery. After unpleasant side effects were observed in some patients, the drug's use was discontinued in procedures involving humans, but in 1967 it became commercially available "for veterinary use only", under the trade name Sernylan.

A report issued in April 1973 by the National Institute of Mental Health (National clearing house for Drug Abuse Information) described the general effects of PCP as follows:

> ...The effects of phencyclidine upon the central nervous system (CNS) differs greatly among animal species and with varying dose levels. Whereas hyperactivity is more prominently observed in mice and rats, PCP tends to depress the CNS in higher species including man. In low doses (the exact effective dosage varies depending upon the rout of administration) the drug produces a state resembling alcohol intoxication, including muscular incoordination and generalized numbness of the extremities. Analgesia and anesthesia occur at moderate dose levels characterized by sensory disturbances or blockade, muscular

> rigidity and, perhaps, loss of contact with one's environment. Large doses of the drug may produce convulsions.

More recently, in a general letter dated December 1, 1977, to drug treatment program directors throughout the country, the Director of the National Institute on Drug Abuse, Dr. Robert DuPont, noted:

> PCP differs from other drugs in that it produces extreme, severe, long-lasting behavioral toxicity. PCP use may poses a psychiatric emergency because of misperceptions, paranoia, schizophrenia, hostility, confusion, and a tendency towards violence and extremely unpredictable behavior.

One of the most distressing facts with this drug is its ever increasing use by the juvenile and adult population of this Nation. The U.S. Drug Enforcement Administration (DEA) reports that abuse of PCP, alone or in combination with other substances, has risen dramatically since 1973. In July-August of 1973, PCP accounted for 13 percent of all hallucinogens mentioned in drug emergencies. By the end of 1976 it was nearly 43 percent. Last year, at least 4,000 users of the drug turned up in hospital emergency rooms, and it was judged the cause of approximately 100 deaths. A national survey on drug abuse, conducted for the National Institute on Drug Abuse in 1977, showed that experience with PCP among the 12-17 age group had increased from 3 percent in 1976 to 5.8 percent in 1977 while the rate for 18-25 year-olds rose from 9.5 percent to 13.9 percent. All told, Federal officials estimate that nearly 7 million people have tried the substance. On this same problem the Secretary of the Puerto Rico Department Against Drug Adiction advised me that the use of PCP is spreading in Puerto Rico. They already know of various serious cases in which PCP has been the main cause of the problem. On May 20, 1978, one of the major newspapers in Puerto Rico published the news that four minors were seriously intoxicated with PCP, and so far the extent of their psicosis could not be determined. They have been considered the first victims of an undetermined amount of PCP stolen from a Zoo Park in Mayaguez, Puerto Rico.

The Congressional Research Service also informed me that in December 1977, and in view of these developments, DEA moved to impose further restrictions on PCP. Under the Controlled Substance Act of 1970 (CSA), PCP had been initially classified as a schedule III substance, the third most restrictive of the five categories established by the legislation. Under regulations effective February 24, 1978, the drug was transferred

from schedule III of the CSA to schedule II. Moreover, DEA subsequently proposed that two immediate precursors to PCP also be added to schedule II (43 F.R. 11588, March 20, 1978). These precursors -- 1-Piperidinocyclohexane-carbonitrile and 1-Phenylcyclohexylamine -- are the principle compounds used in the manufacture of PCP. This rescheduling will be effective June 16, 1978.

As a schedule II drug, PCP is now subject to manufacturing quotas, more stringent storage and other security requirements, and special order form requirements; and persons who manufacture, distribute or dispense the drug are subject to more restrictive standards of registration.

The National Institute on Drug Abuse, functioning as a part of the review process involved in a rescheduling action, had recommended that PCP be placed in schedule I, thereby removing it from the market altogether except for especially approved experimental purposes. However, in view of its value as an anesthetic in the treatment of primates, the Food and Drug Administration disagreed with the recommendation and advised DEA to place the drug in schedule II.

As you must be aware a number of Members of the House have moved to support the NIDA position, and legislation to move PCP to schedule I, has been introduced. A bill introduced May 1, 1978 (H.R. 12448), by Rep. Gilman, of which I am a co-sponsor, has this purpose. Also, the criminal code reform bill as it passed the Senate in January (S.1437) contains an amendment offered on the floor by Senator Charles H. Percy to make the same change. In a floor statement Senator Percy observed that his amendment has "the full support of the Justice Department" and also noted that -- "Legal counsel informs me that such an action (placing the drug in schedule I), would not prohibit the Food and Drug Administration from granting exemptions for legal uses where necessary." (Cong. Rec., January 26, 1978: S.541).

Among Senator Percy's comments in support of his amendment to S.1437 was the following:

> "Mr. President, one of the principal purposes we can serve is not only to pass legislation but also to provide the kind of public attention to a problem that is required. If young people and their parents knew of the disastrous consequences that can result from the use of this low-cost, readily-available, drug, we could solve this serious problem without the necessity of this kind of action in this code. But certainly

public education must be supplemented now by proper legal action."

However laudable and commendable as all these efforts are I believe that some preventive action should be taken to avoid or deter the spreading of this national malaise.

I have a great concern about this problem and will do whatever is necessary to cooperate with the Committee in finding a solution. The PCP problem should be highlighted as one of the most serious threats to the social well-being of our Nation by reason of its potential and already demonstrated harmful effects. This problem should be addressed immediately.

I have confidence that after the public hearings your subcommittee will make appropriate recommendations to tackle this problem. Please include this letter in the record of your hearings with respect to this matter.

Cordially,

Baltasar Corrada
Member of Congress

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June 27, 1978

The Honorable William D. Hathaway
United States Senate
Washington, D. C. 20510

Dear Senator Hathaway:

I am writing to you in your role as chairman of the Subcommittee on Drug Aubse to express my views on the legislative attempt to reschedule phencyclidine. I am the principal investigator on a National Institute on Drug Abuse research grant to study the effects of phencyclidine and have authored nine scientific publications on this drug.

The issues raised by a legislative attempt to place phencyclidine into Schedule I are complex and cannot be given justice in a short letter. Although there are some reasons to consider this action, I believe that it would be unwise to do so, and in this regard find myself to be in agreement with what I understand to be Dr. Peter Bourne's position before your subcommittee as reported in the media.

Very briefly, my reasons for opposing the rescheduling of phencyclidine include the following:

(1) The climate in which this is being done does not favor a balanced consideration. There has been a lot of media exploitation of phencyclidine abuse.

(2) Although there is no doubt that some users of the drug have suffered unfortunate consequences, it is nevertheless necessary to see these highly publicized occurrences in perspective. Although much research remains to be done, there is no evidence at the present time that the toxicity of phencyclidine is especially great relative to, for example, heroin, barbiturates and even alcohol.

(3) Emphasizing the dangers of phencyclidine by placing it into a higher schedule may actually increase its attractiveness to certain subgroups of users. There is considerable evidence accumulating that phencyclidine use is especially prevalent in risk-taking groups (e.g. motorcycle clubs, youth gangs). It is this association

that no doubt contributes to the "bad press" the drug has received (association with acts of violence, etc.). In any case, it is clear that, in part, it is the alleged danger of phencyclidine use that makes it attractive to these user groups.

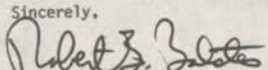
(4) Rescheduling phencyclidine will make it considerably more difficult for the scientific community to get access to the drug for research. This is a serious consequence, since the recency of phencyclidine abuse finds us in a relative scientific vacuum concerning this drug.

(5) Phencyclidine, although no longer available in retail markets, still has an approved veterinary use. Placing it in Schedule I will establish an important precedent and undermine the current basis for drug scheduling.

(6) Rescheduling drugs by legislative action in an emotional climate of claim and counterclaim by-passes the established procedures carried out by agencies and advisory groups with considerable experience in these matters. This too, sets an important precedent and does not take advantage of the federal machinery existing for such decisions.

For these and other reasons I encourage you and the two subcommittees meeting on this matter to recommend that suggestions for changing the schedule for phencyclidine be directed through normal channels. I would appreciate it if you would see that my views are made known to other members of the subcommittees. I am at your disposal to amplify any of the considerations I have voiced on this matter.

Sincerely,



Robert L. Balster, Ph.D.
Associate Professor of
Pharmacology

RLB/rsp

PHENCYCLIDINE—A REPORT SUBMITTED TO THE U.S. SENATE SUBCOMMITTEE TO INVESTIGATE JUVENILE DELINQUENCY, MAY 1978

(By Migs Woodside)

INTRODUCTION

The United States Senate Subcommittee to Investigate Juvenile Delinquency has long played an extraordinarily important role in the control and regulation of drugs of abuse. The Subcommittee's jurisdiction in this area has led to Hearings and the passage of legislation designed to control the abuse and diversion of Methadone, Methaqualone, Psychotropic substances, Amphetamines and Barbiturates. Additionally, interest and action by the Subcommittee has been essential to Congressional amendments to the Comprehensive Drug Abuse Prevention and Control Act of 1970 (Public Law 91-513), particularly in the areas of stiffer penalties for manufacture and sale of drugs of abuse and regulations of substances listed on Schedule I and Schedule II of Title II—Control and Enforcement—of the Act.

It is no wonder that with this history and jurisdictional mandate, the Subcommittee is deeply concerned about the alleged phenomena of increasing abuse of the chemical substance, phencyclidine. It must be noted that at this time various sources have made the use of phencyclidine—"Angel Dust" or "PCP" as it is commonly called—a well-publicized item. Newspaper headlines proclaim "Angel Dust, the new killer in town"*(1)* and offer reports of sudden, violent murders committed by people under the influence of this drug. Television programs depict young PCP users carried screaming into hospital emergency rooms. Directors of drug rehabilitation programs, as well as school officials, publicly state that PCP is widely used among the adolescent population.

However, in order to initiate an effective and rational response to the abuse of any drug, it is imperative to determine the reality of the situation. With this background the Subcommittee to Investigate Juvenile Delinquency has set out to review the following aspects of phencyclidine abuse: clinical effects, incidence of use, profile of the user, veracity of the alleged dangers, chemical properties and availability of essential substances to illicitly produce the drug and possible legislative and regulatory methods to control the illegitimate manufacture and sale of PCP.

In 1926 the original chemistry which laid the groundwork for the future synthesis of phencyclidine was first reported. However, it was not until the mid-fifties that the substance was found to have anesthetic and analgesic properties for humans and at that time clinical testing was introduced. Because phencyclidine was a nonbarbiturate, nonnarcotic agent, there were high hopes for its use and Parke, Davis and Company was assigned patents (in 1960—British and in 1968—U.S.) to manufacture the drug under the trade name Serynl. However, with clinical studies and use in surgery, the drug was found to induce adverse side effects. An article by Munch relates various findings which illustrate this point: *(2)*

	Effects	Dosage	Route
Normal volunteers	Apathy; interference with performance	5 to 12 mg	Intravenous.
Do	Hostility; impaired learning and recall	.075 to 0.10 mg/kg.	Do.
Do	Depression; hostility; disturbed body image	0.10 mg/kg	
Do	Delirium; hallucinations	10 mg	Oral.
Number of patients:			
735	77 pct. had no complications; remaining had hallucinations.	.275 to .44 mg/kg	Intravenous.
51	12, mild excitement; 3, severe excitement; 13 disorientation for 3-18 hrs.	.25 mg/kg	
64	10, severe maniac behavior; 3, violent behavior; 1, semi-conscious for 10 days.		

In 1965, as a result of the unpredictible and serious side effects of phencyclidine, Parke, Davis and Company requested that it be discontinued for human use. However, the drug had proven to be an effective tranquilizing and anesthetic agent in handling large primates and consequently was manufactured by Philips Roxanne under the trade name Sernylan. Veterinarians at the N. Y. Zoological Society and Cornell University, College of Veterinary Medicine currently report that Sernylan "never was much of a drug" and that they haven't "used phencyclidine for years because better products are available for the same purpose." *(3)* Four years ago the rights to manufacture phencyclidine were sold to Bioceutics Laboratories which

produces small quantities of the drug for veterinarian purposes and is the sole, legal distributor at this time.

It is generally believed that the first illicit use of phencyclidine as a drug of abuse took place in California in 1965. It was called by the street name PCP, which stood for PeaCe Pill, as well as the initials of its chemical compounds, 1-(1-Phenylcyclohexyl) piperidine. Originally, PCP was marketed as a mild psychedelic, just a little stronger than marijuana and sold in tablet or capsule form. However, users often experienced unpleasant and negative reactions to the drug. As would be expected, phencyclidine again displayed some of the very same effects as those which had made it medically unacceptable. Additionally, since it was available only in tablets, users could not adjust the dose or mitigate its adverse effects once they swallowed the substance.

For these reasons, combined with the fact that there were many other more pleasant and predictable drugs already obtainable in the street, PCP did not win acceptance. Although it did cross the continent to the East Coast under the name of HOG, it just about disappeared except for pockets of users in California.

By 1972 the street chemists had learned to convert phencyclidine from the tablet form to a substance which could be smoked with a leafy material or snorted. In addition, a group of experienced users had evolved who were able to relate the drug's folklore, could explain how it should be consumed and the expected effects. *(4)* From that time on phencyclidine has been more widely abused and its growth appears to have spread throughout the country. It has been identified by a vast number of names (Table 1). One street drug analysis laboratory indicates that PCP has proliferated from appearance in five separate states in 1972 to twenty-eight states in 1977 (Table 2).

TABLE 1.—*Names Given for Material Containing PCP-TCP*[1]

Amphetamine
Angel Dust
Bellodonna
Cocaine
Cadillac
Cannabinol
Crystal
Cyclones
Detroit Pink
DMT (N,n-dimethyltryptamine)
Dust
Elephant tranquilizer
Erth
Goon
Green
Hashish
Hog
Horse tranquilizer
Killerweed
KJ crystal
KW
LSD (lysergic acid diethylamide)
Marijuana
MDA (3,4-methylenedlaxy amphetamine)
Mescaline
Mintweed
Mist
Monkey Dust
PeaCe Pill
PCPA (para-chlorophenylalamine)
Peaceweed
Peyote
Psilocybin
Rocket fuel
Scuffle
Sheets
Snorts
Soma
STP (3-methyl-2,6-dimethoxyamphetamine)
Superweed
Surfer
T
TAC
TCH (tetrahydrocannabinol)
TIC
TT-1

[1] Information from Steven E. Lerner, R. Stanley Burns, "Phencyclidine Use Among Youth," unpublished report, 1978.

TABLE 2.—DISTRIBUTION OF PCP–TCP BY STATE [1]

[Reported by Pharm-Chem Research Foundation]

State	1972	1973	1974	1975	1976	1977 [2]
Alabama				X	X	
Alaska			X		X	
Arizona		X		X	X	X
Arkansas						
California	X	X	X	X	X	X
Colorado	X	X	X	X	X	X
Connecticut					X	X
Delaware						
District of Columbia					X	X
Florida	X	X	X	X	X	X
Georgia		X	X	X	X	X
Hawaii			X	X		
Idaho						
Illinois		X	X	X		X
Indiana			X	X	X	X
Iowa			X		X	X
Kansas						X
Kentucky		X	X	X	X	X
Louisiana						X
Maine	X					
Maryland					X	X
Massachusetts		X			X	X
Michigan		X	X	X	X	X
Minnesota			X			
Mississippi						
Missouri						
Montana		X		X		
Nebraska						
Nevada						
New Hamsphire						X
New Jersey				X		X
New Mexico				X	X	X
New York	X	X	X	X	X	X
North Carolina		X				
North Dakota						
Ohio		X	X	X	X	X
Oklahoma			X	X	X	X
Oregon		X	X	X	X	X
Pennsylvania			X	X	X	X
South Carolina						
South Dakota						
Tennessee			X			X
Texas		X	X	X	X	X
Utah					X	
Vermont						
Virginia			X	X		
Washington		X	X	X	X	X
West Virginia						
Wisconsin		X				
Wyoming						
Total States	5	17	21	22	24	28

[1] As confirmed by street drug analysis.

[2] Reporting period January–November.

Note.—Information from Steven R. Lerner, R. Stanley Burns, "Phencyclidine Use Among Youth," unpublished report, 1978.

It is crucial to note that the major problem in the control of the manufacture and use of PCP stems from the ease with which it is made. This is not a problem of illicit diversion of Sernylan from veterinarians' offices or zoos. Illicit drug wholesalers, dealers and users do not have to import or steal this substance from licit sources. The materials and equipment to make PCP are inexpensive, readily available and easily combined. Any person with a basic knowledge of high school chemistry, a recipe and ready cash under $100 can go into the PCP business. And if the reports of the street value, compared to the cost of the initial ingredients, are correct, this is big business indeed (Table 3).

TABLE 3

Year	Source	Cost of chemicals	Amount of drug	Street value
1974	Jama		90 lb	$25,000,000
1976	G. Lundberg		1 g	25–50
			1 oz (with leaves)	100
1977	New York Post	$400		50,000
	News World	75		20,000
	M. Rice	300–400	4 to 5 lb	10,000
	N. Showalter	75		20,000
	Time	100		100,000
	Youth Aid (NYC police).	5,000–10,000	60 to 100 lb (tablets).	7,200,000–12,000,000
1978	S. Lerner		1 g	25–200
			1 oz	1,000
	New Times	150	1 lb	58,000

BACKGROUND

In order to assess the extent and nature of the phencyclidine problem, it was necessary to collect information and data from a variety of resources. To determine the history, chemistry, pharmacology, toxicology and behavioral effects of the drug, an examination was made of the literature. Tools used in this review include a bibliography compiled by the research staff of Parke, Davis and Company, 1958–1967. Additionally, computer searches were made of the Index Medicus, 1972–April 1978 and Psychological Abstracts, 1967–March 1978 (Appendix A). The latter two sources disclosed a total of 168 items, although there was duplication of titles. In addition, the January–March 1978 issues of Life Sciences and Social and Behavioral Sciences were explored (Appendix A).

The material from the Parke, Davis bibliography showed extensive experimental work on a wide variety of animal species with particular emphasis on the primates. There were also numerous studies cited on the hallucinogenic and schizophrenic effects of phencyclidine on humans, as well as reports on the drug's pharmacology and use as an anesthetic and analgesic.

From 1972 on, the literature related to animals continues to show clinical experimentation. However, the articles pertaining to humans focus on phencyclidine as a drug of abuse, producing acute intoxication, psychosis, poisoning and death. It should be noted that one of the factors contributing to confusion about the actual dangers of phencyclidine abuse is the absence of clinical research since Parke, Davis and Company discontinued the use of the drug. Examination of the literature did not reveal longitudinal studies on humans or clinical proof of permanent damage or impairment from the use of PCP. The absence of these kinds of studies was, in fact, confirmed in discussion with the National Institute on Drug Abuse. *(5)* Upon completion of the literature review, various authors were contacted to discuss their material and any additional, current findings.

Examination of the New York Times Information Bank, compiled from a data base of sixty periodicals discloses that the majority of news articles on PCP concern raids and seizures of illicit labs and increased abuse of the drug by young people (Appendix A). A breakout of the 32 items in the data bank shows that there were five items reported in 1971–75 as compared with twenty-three articles from 1976-February 1978. These numbers tend to confirm the fact of the media's recent increased interest in PCP.

To obtain a profile of the PCP user, rate of incidence and dangers of use, interviews were conducted with professionals in drug rehabilitation, law enforcement, probation, parole and hospital emergency rooms (Appendix B). In addition, an analysis was made of three studies containing relevant data: the Drug Abuse Warn-

ing Network, Project Eden, Inc. and a study titled Phencyclidine Use Among Youths in Drug Abuse Treatment.

Efforts to determine appropriate action in the control or regulation of the essential chemicals needed to produce PCP as well as its analogs led to interviews with organic chemists. Further, consideration of penalities for the manufacture or sale of PCP and the control of its precursor materials and analogs were discussed with various State legislative offices which are considering similar measures.

CLINICAL EFFECTS

The appropriate classification of phencyclidine is still a matter of confusion and controversy. It belongs to a group of chemicals called the arylcloakylamines and may act as either a depressant or stimulant to the central nervous system, depending on the amount of the dose consumed and the route of consumption (smoked, inhaled, swallowed or injected). It has been classified with "downers similar to barbiturates, as another psychedelic, with newer narcotic agents, as a central acting sympathomimetic and as a central acting anticholinergic." *(6)* It has also been suggested that "this may be an entirely new class of psychoactive drug. The small amount of available research evidence tentatively supports the assumption that humans may develop tolerance to the intensity and duration of the behavioral effects of phencyclidine, yet no evidence of physical dependence exists currently." *(7)*

It is doubtful that the street user would show the same concern in determining the proper category for phencyclidine. He is assuredly more interested in the drug as it appears in its myriad colors, sizes and forms whether in powders, tablets or combined with various leafy substances such as parsley, oregano, mint and rolled into a joint. However, a major concern for the user is the wide variation in purity of the substance which depends on the skill of the original chemist. Also of primary interest is the inconsistency of the amount of the substance in capsules, pills or joints. A picture of the data reviewed by Burns and Lerner indicate the percentage range of phencyclidine found in various forms: *(8)*

Powder forms:	*Percent*
"Crystals"	50–100
"Angel dust"	88–100
Other street names	10–30

Tablets: 1–6 mg range—Average 5 mg.
Joints: 0.24–7.9 range—Average 1 mg/per 150 mg of leaves.

In other words, the PCP user has absolutely no idea of the quality or quantity of the drug he is getting.

Consideration of the amount of dosage and resulting effects also produce discrepancies in responses from professionals working in the field. For example, the National Institute on Drug Abuse characterizes 5–10 mg as a moderate dose which could induce coma. *(9)* However, Imperato characterizes 5–10 mg as a low dose and does not indicate coma until a high dose of 30 mg. *(10)* Luisada reports that there is no way of predicting the effect that any given dosage will have on a particular individual because there are some people who appear so hypersensitive to the drug that even a low dose could induce a schizophrenic-like psychosis which could last as long as six weeks. *(11)*

As illustrated by Liden, the clinical effects of phencyclidine are as follows: *(12)*

	Low dose	*High dose*
Neurological:		
Nystagmus		
Variable pupil size		
Depressed light reflex		
Blurred vision		
Diminished pain, proprioception, temperature sensation.		
Ataxia		
Increased deep tendon reflex		Decreased deep tendon reflex.
Tremors		Convulsions.
Muscle weakness		
Slurred speech		
Drowsiness		Coma.
Increased respiratory rate/depth		Decreased respiratory rate/depth; respiratory arrest.

	Low dose	*High dose*
Psychological:		
Amnesia	.....	
Anxiety/agitation	.....	
Body image distortion	.....	
Euphoria	.....	
Depersonalization	.....	
Disordered thought process	.....	
Hallucinations (rare)	.....	
Activation psychopathology	.....	
Cardiovascular:		
Increase pulse rate	.....	Arrhythmias.
Increased blood pressure (systolic and diastolic).		Decreased blood pressure.
Gastrointestinal: Nausea and vomiting	.....	
Renal: Increased urine output	.....	Decreased urine output.

The majority of the cases discussed here are probably not representative of the average phencyclidine user. The illustrations presented concern only those individuals whose experience with PCP have been so adverse that medical attention was warranted. It is quite possible that there are individuals who suffer little consequences from using PCP and are never seen for medical treatment. However, in an effort to separate the speculated effects of PCP use from actual effect, it is necessary to review reports where the presence of phencyclidine has been toxicologically confirmed in the alleged user.

In his study Liden reports nine cases of phencyclidine poisoning in which the presence of the drug was confirmed in the urine, blood or ingested material. *(13)* The patients ranged in age from 10 months to 26 years of age and exhibited a wide variety of reactions including violent withdrawal from objects, disordered thought processes, seizures, amnesia and coma. The majority of the cases reached peak symptoms between 2 to 4 hours after ingestion, and the recovery period was generally completed within 24 hours. However, three cases having prior histories of psychiatric difficulties suffered more severe recovery periods and were agitated and depressed. Since two of these three patients had used PCP in suicide attempts, it is understandable that their recoveries would be difficult.

Tong reports a case of a 33 year old man who was admitted to the hospital in a coma after collapsing while drinking in a tavern. Gastric and urine specimens confirmed the presence of 8.5 mg/ml and 1.3 mg/100 ml phencyclidine and no other drugs were detected. On his second day in the hospital, the man regained consciousness and "was agitated, shouting and gesturing with bizarre and rigid movements; he was incoherent and at times appeared to be hallucinating." *(14)* Over the next three days the patient responded well except when stimulated by noise or touch at which time he again became agitated. On the fifth day he left the hospital against medical advice.

A study of 18 patients with acute phencyclidine intoxication reported by Burns and Lerner indicated that 7 patients were confused or delirious and 11 patients were in a stupor or coma when they were admitted to the hospital emergency room. The urine of all 18 cases was tested and disclosed the presence of phencyclidine. Recovery for 10 of the cases took place within 72 hours. However, 5 cases were not fully recovered for a period from 3 days to 15 days; 2 cases displaying hostility and depression were transferred to psychiatric facilities and 1 individual still showed inappropriate behavior at the time that he left the hospital. *(15)*

The following three cases were represented in another study by Lerner and Burns: *(16)*

"A 15 year old caucasian male reported to be 'out of hand' was seen earlier in the month at a local medical center for bizarre behavior. He had been involved with drugs and talked about 'getting it all over.' He was found hanging by an electrical cord from a beam in his garage. Toxicological examination revealed a phencyclidine blood level of 0.10 ug/ml. No other drugs were detected."

"During the summer a youth gave a pool party while his parents were away on vacation. A 17 year old caucasian female guest was discovered at the bottom of the swimming pool. Post mortem examination revealed no head or neck trauma and the isolated presence of phencyclidine in the urine (0.5 ug/ml)."

"A 16 year old male, acting belligerent and combative, was brought to the hospital from a party where he had smoked 'crystal' and drank beer. On admission he was drowsy but responsive to verbal stimuli. There was an abrasion on his right

arm and face. Over the next 3 hours he became verbally abusive, belligerent and uncooperative and was transferred to the county hospital. Initially violent he alternated between periods of sleep to moaning. Toxicology screen obtained at this time revealed a phencyclidine urine value of 1.1 ug/ml. Over the next 15½ hours the patient became alert and oriented and was subsequently discharged."

In addition to the types of cases thus far described, there exists another group of individuals who suffer somewhat different but equally profound effects from the use of PCP; these are the people who exhibit psychotic or schizophrenic-like behavior.

In a report by Fauman, it is asserted that "We have observed several prolonged psychotic reactions in young adults, which appear in a number of ways, generally including severe anxiety, bizarre behavior and alterations in the state of consciousness." *(17)* In a study of seven cases it was found that patients requiring hospitalization had a prior history of poor employment records, poor school work and problems with interpersonal relationships. For example, an 18 year old male who eventually stated upon his recovery that he had taken PCP entered the hospital in a state of extreme agitation, became paranoid and leapt out of a window to effect his escape. After placement in the psychiatric ward and use of transquilizers he was able to be discharged after 25 days with no medication. His prior history revealed that he was both an alcoholic and poly-drug abuser. Similarly, another case depicts a 20 year old female, known to have used PCP in the past who entered the hospital 3 days after having taken a pill. During that interval she had shown delusions, restlessness, insomnia and anxiety. At one point in the hospital interview, she crawled on the floor, barking and snapping at her mother's feet. She was placed on the psychiatric ward, given tranquilizers and discharged after 35 days from the hospital, but she still needed to be maintained on medication.

Of the seven reported cases, one was sent home from the emergency room after treatment with tranquilizers, one patient died and the remaining five individuals were hospitalized for a period of 2½ to 9 weeks. Fauman states that "the consistent finding of an illness generally lasting four to six weeks suggests some sort of chemical interaction. * * * The notion that a drug-produced psychosis can persist this long has support in the literature: amphetamines and LSD have both been considered to have caused psychosis weeks to months after exposure. Descriptions of the pre-morbid personalities of those who became psychotic resemble descriptions of LSD and marijuana users who experienced prolonged psychiatric difficulty. * * * However, the infrequent occurrence of psychosis in the (apparently) large exposed population still suggests that this is a combination of drug effect and vulnerable, pathologic personality." *(18)*

Whereas Fauman's study took place in a university hospital and included the entire city of Chicago in its cachement area, Luisada's research was performed in a hospital in Washington, D.C. with a comparatively small cachement area and population of only 200,000 persons. Since Luisada was seeing fewer numbers of people, it was not difficult to become aware of striking changes in the incidence and pattern of schizophrenia-like psychosis appearing in the mental health center. In 1973 Luisada noted that the number of admissions for patients with unusually long, severe and treatment-resistant schizophrenic psychosis had tripled. "Unlike the vast majority of toxic psychosis, these episodes often required two weeks of aggressive inpatient treatment before resolution began. In addition, violently aggressive behavior was characteristic of the onset, and the presenting picture was at first indistinguishable from a florid schizophrenic episode." *(19)* Clinical studies performed in the 1960's had already shown that PCP was able to induce schizophrenic-like effects in normal persons. When low doses of PCP were given to four schizophrenic individuals, their psychoses became so aggravated that they were hospitalized for a period up to six weeks and were quite unmanageable during that time period. Luisada also recognizes that PCP produces a reaction that "may be defined as a schizophrenic psychosis which occurs in some individuals after phencyclidine use and which persists for more than a day. * * * Behavior is extremely unpredictable. These patients may be reluctantly cooperative one minute and violently assaultive the next. Some carry lethal weapons to protect themselves from their imagined persecutors. Bystanders have often been furiously, unpredictably and unremittingly attacked without provocation because the psychosis may include both extreme global paranoia and delusions of superhuman strength." *(20)* Whereas administration of various drugs rapidly produce positive responses in agitated schizophrenic patients, Luisada comments that the PCP psychosis responds unusually slowly to treatment and that "the sense of lack of progress engendered by this slow treatment response was a factor leading to our first investigation of these psychoses." *(21)* Although the hospital staff has warned repeatedly against further use of PCP, many patients do use it again and return to the medical facilities for treatment of a second psychotic

episode. Individuals justify their renewed use of the drug on the basis of "feeling good and wanting to see if they could 'handle it'." *(22)* It was also found that "about one fourth of the patients originally treated for phencyclidine psychoses, return within a year with schizophrenic ones in the absence of drug use. By contrast, these later episodes have lacked the characteristic violence of the phencyclidine induced ones, and they have been much more quickly responsive to antipsychotic drugs, yet they have also left behind typical schizophrenic personality changes. Those patients who had experienced the longer phencyclidine psychoses were generally the same ones who returned later with schizophrenic ones." *(23)*

There are many profoundly important questions which remain unanswered about the effects of phencyclidine use. Three specific areas needing further clinical research must be noted. They compromise the questions of body tolerance to the drug, prolonged duration of its effects in the body and the possibility of birth defects in children of parental PCP users.

Balster and Chait have been in the forefront of those studying questions related to tolerance. In their work with rhesus and squirrel monkeys, they found that the animals did in fact self-administer larger doses of the drug. In the study of two rhesus monkeys, the subjects voluntarily administered PCP by lever pressing, at any time during a 24 hour period, for 8 consecutive days. After this time, the monkeys were limited to an administration period of only 4 hours per day. Yet, the subjects continued to administer doses equal to those of the 24 hour period compressed within a severely limited time. *(24)* Also cited is a study in which repeated use of PCP as an anesthetic for juvenile chimpanzees and adult baboons resulted in a shortened period of effectiveness and eventually, the animals "required about 50 percent more drug to produce the same anesthetic effect initially obtained." *(25)*

The mystery surrounding the unusually long time period of continued PCP activity in the body stems in part from the fact that there is confusion about the site locations where PCP lodges.

Done claims that PCP is secreted into gastric acid and then reabsorbed as it proceeds into the intestinal tract. "This 're-circulation' certainly could account for both the prolonged systematic course and the fact that it continues to be excreted in the urine for several days." *(26)* James and Schnoll, in studies of PCP distribution in the tissues of the rat, found that the drug showed an affinity for lodging in adipose tissues. In fact, PCP could be found in adipose and brain tissue sites long after blood and urine tests indicated that phencyclidine was no longer present. It is their thinking that possibly "the drug is slowly released from adipose tissues and is selectively taken up by the brain, thus maintaining low levels of phencyclidine. The release of drug from adipose tissues after phencyclidine is no longer detected in blood could also account for the fluctuating levels of consciousness * * *" *(27)*

Although there are no published studies indicating that birth defects occur to children of phencyclidine using parents, a 1974 report of a conference of the Environmental Mutagen Society refer to Walker's findings that individuals who used drugs containing PCP "had increased rates of fetal loss, decreased fertility, extensive chromosome breakage, and increased presence of a small chromosome that resembled the Philadelphia chromosome. Their offspring had an abnormally large incidence of spinal defects, limb reduction anomolies, triploidy, and trisomy." *(28)* Further, infants were born without kidneys and without external sex organs. *(29)*

In conclusion, it is true that in cases where the presence of phencyclidine was toxicologically confirmed, PCP produced serious, unpleasant and even deadly effects. Users ranged from shivering, drooling, vomiting and experiencing delusions to convulsions, coma and death. It is a particularly dangerous drug for pre-schizophrenic personalities. Not only does it induce psychoses in normal individuals, but it can act as a continuing catalyst for the pre-schizophrenic who may have future episodes without any further use of PCP. Studies reveal that body tolerance after continued use is definitely possible, implying an expanded market and good financial opportunities for drug dealers. It is also long acting, producing a comparatively extended drug experience due to its capture in the body and there is some possibility that PCP can cause birth defects to future generations. Using phencyclidine is comparable to playing Russian roulette; one never knows or what the results will be.

INCIDENCE

After taking a look at some of the possible physical effects of PCP, it is difficult to conceive that anyone would want to use it. Putting aside the fact that it is widely available, cheap and potent, it is still extremely dangerous.

Various opinions have been offered to explain why PCP is being used. Drug abuse prevention experts in 88 public high schools in New York City say that young

people are well aware PCP is more dangerous than cocaine and that they don't know what's in a joint. But, they do relish the daredevil and bravado act of using "dust" which gives them status with their peers. *(30)* Jain and Budd add that "The 'high' produced by phencyclidine seems to be quite desirable to the user. He often feels somewhat disoriented—a state similar to being drunk. His body feels numb and he is unaware of temperature changes. His balance is affected and he feels that he is bouncing or floating along. If harassed or intimidated, he shows intense anger; if his surroundings remain calm, he experiences euphoria. This euphoria allows the user to escape temporarily from his problems or environment." *(31)* Krasner feels that it is the state of change which appeals to the user; even if the change is disphoric it is better than feeling the same. *(32)* Bolter indicates that people "feel detached from all feeling when on the drug. This seems quite different from other drug use patterns where the user tells of feeling high, or good, or a sense of well-being. From this information, it appears that those who abuse PCP and have a hard time getting off the drug, do so because feeling nothing is preferable to experiencing their own feelings. This seems to indicate that PCP is most likely to be a problem for someone who is trying to escape negative feelings rather than someone who is bored, or feeling good about him or herself." *(33)*

It is really not possible to get a true reading on the incidence of PCP use. Authorities are only aware of users at the time they present themselves in medical facilities, crisis centers, drug treatment programs or when their bizarre or violent behaviour brings them to the attention of law enforcement personnel. Many young people are able to control their use of the drug so that when they start to suffer unpleasant effects from a joint, they can simply put it down. For this reason, it is quite likely that the majority of PCP users go unrecognized or unrecorded and that the recorded cases represent only a small fraction of individuals using the drug.

Another problem in assessing possible increase in PCP use is the fact that crisis centers, drug programs and hospital emergency rooms usually rely heavily on the information indicated by patients. Accounts based on patients' self reporting are usually guesses, based on the latest or most currently "in" drug of abuse or given by users who are too confused and disoriented to give any reliable answers at all.

A review of figures extracted from Drug Survival News (issues from September 1977–April 1978) reveals that 65 people out of a total of 164 who thought they were purchasing PCP did so as verified by laboratory analysis. However, the remaining 99 people thought they were buying other drugs such as THC, cocaine, hashish, etc. Laboratory analysis determined that, in fact, all of the 99 people had actually gotten PCP (Table 4). This means that there is a very large number of users who get PCP inadvertently under another guise and they may well not be prepared for the side effects that this inadvertent use may produce.

It has only been within the last few months that the PCP alert has sounded throughout the country. According to both the National Institute on Drug Abuse, *(34)* and Phoenix House, *(35)* a telephone conversation about the PCP situation in California prompted a look at the East Coast. As a result of an informal survey, Phoenix House reported that 17 of its last 20 admissions to the adolescent unit said they had used PCP at least once. In March 1978, after a telephone sample of its funded treatment programs, the New York State Office of Drug Abuse announced that 30–40 percent of the substance abusers in its treatment network have tried PCP. *(36)* New York City drug abuse experts in the public high schools report that PCP was first seen in Queens over three years ago and that it is the drug of choice for many 15–16 year old users in that borough. Manhattan reports that three students "walked out the window;" Staten Island asserts that a student was sent to the hospital emergency room after beating up a teacher and Queens also noted instances where youngsters were removed from school. *(37)*

In the suburbs too the rise of PCP use has been indicated. According to the Narcotic Enforcement Task Force, "PCP has become the third most popular drug in northern Westchester * * * after marijuana and cocaine." *(38)*

TABLE 4

Alleged contents	Sept.–Oct.		Nov.–Dec.		Jan.–Feb.		Mar.–April		Total	
	PCP/PCP	PCC	PCP/PCP	PCC	PCP/PCP	PCC	PCP/PCP	PCC	PCP/PCP	PCC
PCP	25	3	3		15	5	9	5	52	13
MDA				1						1
THC	20	6	1		13	6	15	5	49	17
LSD					2				2	
Mescaline					2	1			2	1
Marijuana/Hashish	3						3		6	
Cocaine					1	1		1	1	2
Heroin	1				1				2	
Mushrooms					1				1	
Psilocybin					1				1	
Monkey dust	1								1	
Unknown	1		1	2			4	5	6	7
Total	51	9	5	3	36	13	31	16	123	41

Information from other geographical regions of the country also seems to show PCP incidence on the rise. Showalter cites a recent study of a Detroit hospital in which PCP was the most frequently used substance in 1,000 cases of drug intoxication. *(39)*

In Los Angeles county, the rise in PCP incidence in major indicators is as follows: *(40)*

Urine Specimens of Probationers:
1975—36 positive PCP.
1976—146 positive PCP.
1977—435 positive PCP.

Emergency Room Cases:
1975 (Fall)—10 per month.
1976—51 per month.
1977 (January & February)—80 per month.

Law enforcement statistics show equally sharp increases even in light of the fact that enforcement officials are focused mainly on control of heroin and cocaine, not PCP. The Drug Enforcement Administration reports the following figures on PCP labs seized: *(41)*

1975—15.
1976—30.
1977—63.

The San Jose, California police department figures on phencyclidine seizures in January-March show: *(42)*

1975—69.7 grams.
1976—125.1 grams.
1977—3,951 grams.

The Narcotics Division of the New York City Police Department, which prioritizes arrests for heroin and cocaine, also reports recent buys and arrests where PCP was involved. A sample from the Buy Log March 4, 1978 to April 6, 1978, showed the following:

March 4—13 joints, Harlem; 83 joints, Harlem.
March 15—2 joints, Harlem.
March 16—⅝ oz., Queens.
March 20—2 joints, Harlem.
April 5—1 joint.
April 6—1 joint, Brooklyn.
April 6—4 joints.

According to Sgt. Gillespie, the presence of the drug in Harlem is a "bad sign. Once it gets into the ghetto sub-culture, it seems to stay. LSD wasn't that bad in the ghetto because the message that it was dangerous got out right away. PCP is more popular than LSD was. The PCP message isn't getting out. Many kids are smoking it without any problems." *(43)*

In piecing together reports from the major indicators, including drug programs, hospital emergency rooms, crisis centers, and law enforcement officers, there emerges a picture of recent awareness and consequent increased reporting on the use of PCP.

PROFILE OF PCP USERS

In attempting to identify the average user of PCP, a comparison was made of studies and data collected by the Drug Abuse Warning Network (DAWN), 1976, 1977, 1978; Project Eden, Inc., study published in 1976; and Phencyclidine Use Among Youths in Drug Abuse Treatment, a study commissioned by the National Institute on Drug Abuse from data obtained September 1976 through March, 1977.

The DAWN system is based on reports of adverse drug reactions seen by emergency rooms, medical examiners, coroners and crisis centers chosen from 24 Standard Metropolitan Statistical Areas throughout the United States. In prefaces to its reports for 1976 and 1977, DAWN indicates the caveats in its system including the fact that various facilities often fail to report complete data and may miss several time periods and that facilities are added and dropped from one year to another. For example, 818 emergency rooms reported to DAWN in 1976 but only 796 emergency rooms were included in the 1977 reporting period. Similarly, Crisis Center facilities numbered 54 in 1967, 42 in 1977 and are to be decreased further to 24 in 1978. If one were looking at the DAWN system as an indicator of PCP use, the data would be extraordinarily skewed. However, for the purpose of user identification, the picture has remained generally stable and the DAWN composite is still applicable. A comparison of data from emergency rooms, medical examiners and crisis

centers reveals some differences within these categories although a fairly uniform picture of the PCP user does emerge.

	Emergency room	Medical examiner	Crisis center [1]
Drug taken	PCP alone and in combination.	PCP alone and in combination.	PCP alone and in combination.
Motivation	Psychic effects		Psychic effects dependency.
Age	10–19 primary; 20–29 about 44 pct.	20–29	20–29; 10–29 about 40 pct.
Ethnicity	White; Black 22 pct (1978)	White; Black 25 pct (1978)	White.
Sex	Male	Male	Male.
Occupation	Student, unemployed	Employed	Student employed/ unemployed.

[1] There was no DAWN data available from the crisis centers for 1978. Additionally, none of the 1978 data had been refined but was generously shared, in raw form, by the Drug Enforcement Administration.

Project Eden, Inc., is a community based drug abuse program located in Hayward, California, the original "PCP capitol." A review of 158 cases records of clients whose major drug of abuse is PCP reveals the following profile: *(44)*

Age: 19.

Ethnicity: White.

Sex: Same proportion of males and females as seen in total drug using population.

Occupation: Unemployed but has completed high school.

Referred to treatment: Self/criminal justice.

Previous history: Jail/prison, probation, poor self-image, difficulty with family/peer relationships.

The study Phencyclidine Use Among Youths in Drug Abuse Treatment, includes data on 2,750 drug abuse clients aged 12–18 in 97 treatment programs in 37 states. Results show that 31 percent of the youths in the sample report having used phencyclidine and their profile is as follows: *(45)*

Age: 14½ years—67 percent report use at least once a week.

Ethnicity: White.

Sex: Percent reflects the proportion of males to females in total drug using population.

Occupation: N/A.

Referred to treatment: Parole office/judge/family/self.

Previous history: Drug/alcohol abuse/hospitalizations mental health treatment/hospitalizations overdoses/suicide attempts.

Polydrug Use—Percent of PCP Users who used each of the other drug types: *(46)* Marijuana, 99.1 percent; Alcohol, 94.9 percent; Hashish, 61.4 percent; Amphetamines, 54.6 percent; Hallucinogens, 53.5 percent; and Barbiturates, 52.1 percent.

It should also be noted that although the use of PCP is generally considered to be a recent phenomena, Lerner and Burns have identified "small cluster groups of individuals who use it on a chronic daily basis for periods of six months to six years." *(47)* A study of 20 caucasian chronic users, 15 males and 5 females, aged 20–43, showed that the majority began using the drug, at age 15 to 21, and have used it usually in combination with marijuana and alcohol. The average daily intake by smoking PCP was 216 mg, and two individuals "would place amounts of up to ¼ of a gram of powder layered with parsley, or as a crystal in a pipe, and smoke it in one sitting." *(48)* Case records of the chronic users show interruptions in employment and education; frequent arrests; necessity for psychiatric care, and suicide attempts. *(49)*

The three studies, combined with the report on chronic users all produce a similar portrait of the PCP user: male; white; aged 10–29; has prior or current difficulties with employment, law enforcement agencies; history of poor relationships with family and friends; low self image; and prior drug, alcohol and mental health problems. A very important finding is that almost all PCP users are using other substances, as well as phencyclidine. This is particularly significant because little is known about the effects one drug potentiates in another and what the effect of the combined results will produce in the PCP user.

DEATHS

Although it is rumored that PCP users fall off roofs, walk out windows and die from injuries in car accidents, these incidents are not widely confirmed in the literature. This is not to imply that similar events do not happen. Rather the fact is that, in general, medical examiners and coroners are not testing for the presence of phencyclidine in the body. According to DiMaio, New York City only tests for PCP in cases where it is specifically indicated, although tests are automatically made for seven other drug substances. *(50)* For example, DiMaio reports specific testing for PCP in the case of a young woman who fell to her death from a window and examination of her apartment revealed a cache of PCP tablets. This case illustrates conditions present to warrant testing for phencyclidine.

Many deaths are, therefore, probably going unreported because emergency rooms, medical examiners and coroners are not looking for PCP in cases related to falls, fires, automobile accidents, and drownings. Yet, it is known that the use of PCP can produce blurred vision, muscle weakness, body image distortion, insensitivity to pain and temperature and disorientation to place. In other words, PCP has the potential to short-circuit all the warning systems individuals need to avoid placing themselves in positions of danger.

After reviewing the literature, Burns & Lerner indicate that 9 phencyclidine related deaths were reported between 1974 and 1976. *(51)* None of these deaths occurred as a direct overdose of the drug, but from other medical complications. Additionally, they present documentation collected from two counties in California from July 1970 to June 1976 of 19 other deaths related to phencyclidine intoxication. An analysis of the cause of these 19 deaths are as follows:

13 cases: Asphyxia by drowning or trauma.

2 cases: Death from no apparent cause—high concentrations of PCP present in blood and body tissues.

4 cases: Secondary drug effect or concurrent disease.

Analysis of the 13 cases where death resulted from drowning or trauma reveals that death was actually secondary to the behavioural toxicity of phencyclidine:

8 drowned in a swimming pool.

1 went into coma while taking a shower and drowned.

3 had self-induced gunshot wounds.

1 showed threatening behaviour which resulted in provoked homicide.

In conclusion, it is notable that death can result from a direct dosage of phencyclidine and from combination of it with other drugs or other disease processes. However, it is crucially important to note that the behavioural effects caused by the use of PCP can well lead to a death producing situation.

ESSENTIAL CHEMICALS

Having reviewed the clinical effects of phencyclidine and the population involved in using it as a drug of abuse, it is important to understand the chemical properties of the substance. Taken singly, each essential chemical appears innocuous and is widely used for industrial, medical and research purposes. Combined, however, the substances interact to produce this potent drug, capable of creating unpredictable, violent and bizarre reactions.

The list of essential chemicals obtained from DEA, contains 12 substances which can be used to manufacture PCP: Bromobenzene, Cyclohexanone, Isooctane, Magnesium (metal) Phenyl Magnesium Bromide, Piperidine, Potassium Cyanide, Sodium Cyanide, Sodium Bisulfite, Sodium Hydrogen Sulfite, p-Toluene Sulfonic Acid, para-Toluene Sulfonic Acid. *(52)* The list, however, is incomplete in that it does not consider the vast number of recipes and chemical combinations which can be used to make PCP.

According to Shuglin, there are at least three different methods and five groups of chemicals which need to be present to manufacture PCP as follows: *(53)*

1. An aliphatic amine; examples would be piperidine, eythyl amine, pyrollidine, morpholine, N-methyl piperazine.
2. An aliphatic ketone; cyclohexanone.
3. An aliphatic halide; examples would be bromobenzene, bromoanisole, bromotoluene, bromothiophene.
4. A leaving group intermediate; examples would be potassium cyanide, anhydrous hydrogen bromide, p-Toluene sulfonic acid.
5. A metal; magnesium or lithium.

A conversation with Dr. Shuglin revealed that any one of the chemicals in each of the five groups can be substituted for one another. *(54)* Further, there are many other chemicals which could also be included in these five categories which were purposely not identified in an effort to keep further knowledge from street chemists.

All of the five groups of chemicals are fairly easy to obtain, relatively inexpensive and their purchase would not cause undue questions from an organic chemical supply store—particularly since street chemists are much too savvy to purchase all necessary materials at the same time and in the same place. The physical equipment needed ranges from a large bucket, to a Bunsen burner or a kitchen stove. The recipes have been published in several underground magazines and a manufacturer hardly needs more than a basic knowledge of chemistry—or even of cooking. As plainly seen, anyone with motivation can go into business.

It should be noted, however, that there are some dangers in the production of PCP. When ether is used as a solvent, there is a distinct possibility of explosion and combustion. As a result, flash fires and explosions are known to have occurred which have wiped out both PCP labs and producers.

Additionally, the combination of piperidine with cyclohexanone, if not properly synthesized, will produce an intermediate, 1-Piperidinocyclohexanecarbonitrile PCC which is highly toxic. Shuglin reports that "Immense care is taken during illicit manufacture at the stage where this intermediate is collected and dried, more even than in the handling of the final product. Chronic exposure to this compound has led to an aggravated psychotic condition that has resulted in a protracted hypersensitivity to the chemical . . ." *(55)* Since many of the people manufacturing PCP are not perfectionists in their measurements or processing skills, much of the PCC contaminant does spill over into the final PCP compound. In a review of actual contents compared with drugs alleged to PCP, a Street Drug Analysis laboratory indicated that of a total of 68 samples, 39 contained PCP and 10 additional samples contained PCP/PCC (Table 5).

Of the five groups of chemicals, the aliphatic amines are the most difficult to obtain. The other substances, magnesium, cyclohexanone, potassium cyanide and bromobenzene are abundant, and would be too difficult to regulate or control. In the aliphatic amine group, the chemical piperidine, is the substance generally sought in the first step to make PCP. Piperidine is produced in comparatively small quantities, only 509,000 pounds, per annum. When compared to the 640,794 million pounds of cyclohexanone manufactured annually, it is clear that regulation of piperidine would be a more feasible possibility to consider. If, in fact, piperidine were to be regulated, the next question must be concerned with the ease with which piperidine can be made: is its basic ingredient available, cheap, and easy to convert to piperidine. If not, one could possibly get control over one of the major ingredients in the manufacture of PCP. However, investigation revealed that piperidine is easily synthesized from pyridine, which has an annual production of 10–19 million pounds (about half of which is exported).

TABLE 5.—DRUGS ALLEGED TO BE PCP

Actual contents	Sept.–Oct.	Nov.–Dec.	Jan.–Feb.	Mar.–Apr.	Total
PCP	25	3	7	4	39
PCP/PCC	3	.....	4	3	10
Marijuana/hashish	3	.....	.....	1	4
Cocaine	2	.....	.....	.....	2
Methaqualone	.....	.....	.....	1	1
Unknown	3	.....	.....	3	6
No drug	1	2	1	2	6
Total samples	37	5	12	14	68

This means that control of piperidine may well result in street chemists turning to pyridine for conversion to piperidine in the PCP synthesis. A quick assessment of comparative annual production, properties, containers, hazards and uses of piperidine, cyclohexanone and piperidine (Table 6) does show that pyridine has some particularly unpleasant characteristics. It has a nauseating odor, burning taste and is toxic by ingestion and inhalation.

33-300 0 - 78 - 11

TABLE 6

Chemical	Annual amount produced [1] (1,000 lb)	Discovery	Properties	Derivation
Cyclohexanone	640,794		Water—white to pale liquid yellow with acetone and peppermint-like odor; slightly soluble in water.	By passing cyclohexanol over copper with air at 280° F; also by oxidation of cyclohexanol with chromic acid or oxide.
Piperidine	509	Found in small quantities in black pepper; may be obtained from piperine by heating with alcoholic KOH; or from 1.5 diaminopentate hydrochloride by cyclization; usually made by electrolytic reduction of pyridine.	Colorless liquid with odor of pepper; soapy feel; soluble in water, alcohol, ether; combustible.	By electrolytic reduction of pyridine.
Pyridine	10,000–19,500	By Anderson, in coal tar in 1846	Slightly yellow or colorless liquid; nauseating odor; burning taste; slightly alkaline in reaction; soluble in water, ether, alcohol, benzene, ligroin, and fatty oils.	Coal carbonization and recovery both from coke-oven gases and the coal/tar middle oil; also synthetically from acetaldehyde and ammonia.

Chemical	Containers	Hazards	Human toxicity	Uses
Cyclohexanone	Cans, drums, tank cars	Moderate fire risk; toxic by inhalation and skin contact.	Vapor is harmful	Organic synthesis about 95 pct to produce nylon; polyvinyl chloride; wood stains, paint, and varnish removers; spot removers; degreasing of metals, leveling agent in dyeing and delustering silk; solvent for shellac, resins, waxes, DDT.
Piperidine	Drums	Strong irritant; moderately toxic by ingestion		Solvent and intermediate curing agent for rubber and epoxy resins; ingredient in oils and fuels; complexing agent; catalyst for condensation reactions.
Pyridine	Bottles, drums, barrels, tank cars	Toxic by ingestion and inhalation; flammable; dangerous fire risk; explosive limits in air 1.8 to 12.14, shipping, rail; red label air; flammable liquid label.	May cause central nervous system depression; irritation of skin and respiratory tract; large doses may produce G.I. disturbances, kidney and liver damage.	Production of piperidine; used for rubber and epoxy resins; intermediate in antihistamines and anti-infectives; starting material for fabric waterproofing; herbicides; denaturant for alcohol and antifreeze mixtures.

[1] Approximately 5 to 10,000,000 lb are manufactured for export.

Note.—Information compiled from: "Condensed Chemical Dictionary," 9th ed.; "The Merck Index," 9th ed.; Stanford Research Institute, 1977; and U.S. International Trade Commission, 1976.

Although producing unpleasant working conditions for the chemist, the user will probably not be affected by pyridine's adverse properties because the substance will not precipitate, "spill over" and will, in fact, be washed out in the PCP synthesis. *(56)* Additionally, pyridine presents a dangerous fire risk with special shipping and handling instructions. However, it is doubtful that this risk would impede or prevent illicit synthesic of PCP. In an analysis of five separate methods applicable in converting pyridine to piperidine, Katz indicates chemicals needed, equipment and steps (Appendix C). It is his assessment that two or three of the complete procedures could be handled by high school chemistry students. Additionally, Katz offers five alternate routes to make piperidine, without using any pyridine at all. He feels that these procedures are more difficult to perform, the raw materials are less available and a college chemistry major would be required.

Impediments to the control of piperidine due to synthesis from pyridine leads again to review of the other aliphatic amines (Table 7). Apparently, they are equally as difficult to control; morpholine is very available and cheaper than piperidine; N-methyl piperizine is available but a little more expensive; pyrrolidine is only slightly less available than the other two and it is comparable in price to piperidine.*(57)* According to Parke, Davis and Co. there are as many as twenty other substances which can stand in for any of the aliphatic amines as indicated.*(58)*

TABLE 7

Chemical	Annual amount produced (1,000 lbs)	Discovery	Properties	Derivation
Ethylamines:				
Diethylamine	13,897	U.S. patent 1962 to Union Carbide	Colorless, volatile liquid or gas; ammonia odor; strong alkaline reaction.	From ethyl chloride and alcoholic ammonia under heat and pressure.
Ethylamine, mono	36,806			
Morpholine	Amount is kept confidential in order to protect the market share of producers.		Colorless liquid. Soluble in water.	By reduction of ethylene oxide and ammonia.
Pyrrolidine	According to U.S. International Trade Commission amount is not reported.	Found in tobacco and carrot leaves	Colorless to pale yellow liquid. Soluble in water and alcohol. Unpleasant ammonia-like odor.	By reduction of pyrrole.

Chemical	Containers	Hazards	Human toxicity	Uses
Ethylamines:				
Diethylamine Ethylamine, mono	1-gal. cans; 55-gal. drums; tank cars; tank trucks	Flammable, dangerous fire risk. Highly toxic; strong irritant. LD orally in rats: 400 mg/kg. Keep tightly closed and in a cold place. Shipping regulation: Red label.	Irritating to skin, mucous membranes, respiratory tract.	Dye intermediates; solvent extraction; petroleum refining; stabilizer for rubber latex; detergents; medicinals.
Morpholine	Drums; tank cars	Moderately toxic by ingestion and inhalation; irritant to skin; absorbed by skin. MCA warning label. Flammable; moderate fire risk.	Irritating to eyes and mucous membranes. Corrosive to human skin.	Cheap solvent for resins, waxes, casein, dyes. Morpholine fatty acid salts are used as surface-active agents. Other morpholine compounds are used as corrosion inhibitors, antioxidants, plasticizers, viscosity improvers, insecticides, fungicides, herbicides, local anesthetics and antiseptics, brightener for detergents.
Pyrrolidine	5-gal. cans; 55-gal. drums	Flammable, dangerous fire risk. Moderately toxic by ingestion and inhalation. Shipping regulation: Red label.		Intermediate for pharmaceuticals; fungicides; insecticides, rubber accelerators; citrus decay control; curing agent for epoxy resins.

ANALOGS

Inaccurate or sloppy synthesis of chemical compounds may produce another substance, closely related to PCP and also chemically active, called analogs. Too, manipulation of the chemical groups or substitutions of chemicals within chemical categories can also result in the occurrence of analogs; some of which may be even more lethal than the original substance, PCP. Although a few analogs have already been seen in the street or found in illicit laboratories, there are limitless varieties of possible chemical combinations which can produce analogs. Currently, working from a list prepared by DEA of 33 analogs, the National Institute on Drug Abuse is reproducing these substances in their laboratories to determine the dangers inherent in replication by street chemists. Since many of these analogs have never been made and have no licit use, it is quite likely that it will be this clinical manufacture and research which will demonstrate the presence of the potential for abuse. Sources in California have already asserted that the number of analogs might be as many as sixty and Shulgin asserts that in the literature, "there are literally dozens of analogs described both chemically and pharmacologically. Implicit in the generalized directions are dozens more, many of which may reasonably be predicted to be of similar pharmacology. "A host of analogs with the aromatic rings replaced with other functions, such as benzyl, vinvyl, allyl, acetylenyl and cyano groups. * * * appear to be similar in potency."(*59*)

One of the first analogs to turn up in the street was thiophene (TCP) identified in 1972 by the Drug Enforcement Administration. "Since 1974, 47 exhibits of the drug have been analyzed by DEA laboratories. The exhibits were collected in 15 different states."(*60*) In this case, TCP was produced by manipulation of a chemical in the aliphatic halide group rather than the aliphatic amine category. Specifically, the substance involved was bromothiophene and the analog "is somewhat more potent than PCP."(*61*) At present, DEA is greatly concerned with identification and regulation of two other analogs which have become prevalent on the drug scene, PCE and PHP.

PCE, N-Ethyl-l-phenylcyclohexylamine was first seen in 1970 in California and it turned up again in 1973 when discovered by the Illinois State Police. From that time until the fall of 1976, it was not identified. However it has since been encountered in Louisiana, Oklahoma, Indiana, Alabama, Florida, Georgia, Kansas, Kentucky, Michigan, New Jersey, New York, North Carolina, Ohio, South Carolina, Tennessee, and Texas. It is important to note that "A fairly wide distribution chain seems to exist in that tablets made with the same set of punches were encountered in Michigan, North Carolina and South Carolina and those made with a second set were encountered in those states as well as Ohio and New York. Tablets of PCP are also known to have been made with one of the sets of punches.

The PCE tablets sell for $1 to $2 each. * * * At the wholesale level, the powder sells for $100 per gram and $1,200 per ounce."(*62*) The fact that PCE is widely distributed and that a substantial quantity is being produced is further confirmed in an internal DEA memo dated August 31, 1977. "It is now becoming painfully clear that PCE is an abused drug. In the last three to four months there have been several incidents where quantities of 100,000 DU or more have been available to federal, state and local police agencies. Seizures do not reflect the huge quantities available due to the fact that once the sample has been determined to be PCE the case is not pursued."(*63*) Shulgin assesses that the average dose of PCE is smaller than PCP, "suggesting a higher human potency."(*64*) DEA reports that clinical results of PCE conducted in Israel in 1968 "show that PCE is more powerful, (approximately twice as powerful) on mice, rats and gerbils than PCP. This point seems to be reinforced by some of the cases reported by crisis centers in the Detroit area."(*65*)

PHP, 1 (1-phenylcyclohexyl) pyrrolidine was first identified in Maryland in 1974 and since then has spread to California, Florida, Nevada, New Jersey and in New York. Although not as prevalent as the PCE analog, it is surfacing in geographical areas which are widely separated. This raises the question of whether distribution is by several main sources, as may well be the case of PCE, or whether it is being individually manufactured and distributed from separate clandestine labs. It is suggested that PHP "produces depressant-like effects which range from euphoria, to depression, a cataleptoid condition and anesthesia, depending on the amount of compound or route of administration employed."(*66*) Shulgin reports of studies which disclose that "both mouse and primate screening have shown this compound to be quantitatively and qualitatively similar to PCP * * * and was found in street use to cause a barbiturate-like sedation."(*67*)

At this time, there has been only one instance in which the morpholine analog, 1 (1-phenylcyclohexyl) morpholine has been seen, in 1977, in an illicit laboratory in California.(*68*) It has not yet been seen on the street.

In summary, a review of the aliphatic amine group used in the manufacture of PCP reveals that many of the alternate substances, published in the literature, have already been used to produce analogs of PCP. This fact leads to the conclusion that it will be extraordinarily difficult to control the manufacture of PCP and similar substances. Shulgin concludes with the following statement: "The pharmacologic literature is avidly followed, and there are, apparently, an unending line of experimental subjects who, knowingly or unknowingly, can be called upon to determine the properties of an unknown drug."(*69*)

LEGISLATIVE AND REGULATORY CONTROLS

On January 25, 1978, phencyclidine was moved from Schedule III to Schedule II of the Controlled Substances Act—Title II—of the Comprehensive Drug Abuse Prevention Act of 1970.(*70*) This action was initiated by the Drug Enforcement Administration in conformity with Schedule II guidelines which mandate that:

(a) The drug or other substance has a high potential for abuse.

(b) The drug or other substance has a currently accepted medical use in treatment in the United States or a currently accepted medical use with severe restrictions.

(c) Abuse of the drug or other substances may lead to severe psychological of physical dependence.

This action has the effect of subjecting phencyclidine to stricter manufacturing, inventory and security controls. However, the difficulties inherent in the manufacture of PCP pertain to illegal production in illicit laboratories. Rescheduling the drug to Schedule II would be more applicable if there was any problem with illicit diversion from legal sources. In the case of PCP, rescheduling does not really get to the root of the problem. Nonetheless, the movement to Schedule II does set a precedent for states to follow by demonstrating that Federal authorities now consider phencyclidine to be more dangerous than other substances, classified in higher schedules.

Because phencyclidine is neither a narcotic nor an opiate substance, its rescheduling does not change the penalty structure for unauthorized manufacture or distribution or possession for those two purposes. The penalties still remain up to five years in prison and/or a $15,000 fine. Penalty terms for illegal possession by an individual for his own use also remains constant: up to one year in jail and/or a $5,000 fine.

In 1975, with the growing evidence of the analogs of PCP appearing on the street, the Drug Enforcement Administration moved to place the thiophene (TCP) analog on Schedule I. This is an appropriate classification because TCP has a high potential for abuse, no currently accepted medical use in treatment and a lack of accepted safety for use of the drug under medical supervision. In fact, TCP was manufactured solely by street chemists and solely for abuse purposes.

Currently, DEA is pursuing the inclusion of PCE and PHP on Schedule I due to the fact that these analogs fit the same specifications as TCP and are only manufactured as substances of abuse. Considerations involved in scheduling these substances include:

1. The actual relative potential for abuse of the substance.
2. Scientific evidence of its pharmacological effect, if known.
3. The state of current scientific knowledge regarding the substance.
4. Its history and current pattern of abuse.
5. The scope, duration and significance of abuse.
6. What, if any, risk there is to the public health.
7. Its psychic or physiological dependence liability.
8. Whether the substance is an immediate precursor of a substance already controlled under the Controlled Substances Act.(*71*)

At this time, DEA is waiting for a response from the FDA which must review each case prior to scheduling to insure that the substance is not a lawful item, sold over the counter without a prescription, as permitted under the Federal Food, Drug and Cosmetic Act.

In addition to control of substances of abuse and analogs, the Controlled Substances Act does include the addition "of a drug or other substances or immediate precursor, to a schedule under Part B of this title, whether by transfer from another schedule or otherwise. * * * The term immediate precursor means a substance—(a) Which the Attorney General has found to be and by regulation designated as being the principal compound used, or produced primarily for use, in the manufacture of a controlled substance; (B) which is an immediate chemical intermediary used or likely to be used in the manufacture of such controlled substances; and (C) the

control of which is necessary to prevent, curtail, or limit the manufacture of such controlled substance."(*72*)

In the Federal Register, March 20, 1978, DEA proposed placing two immediate precursors of PCP, 1-Piperidinocyclohexanecarbonitrile (PCC) and 1-Phencyclohexylamine (unnamed) on Schedule II of the Controlled Substances Act. Although DEA does not know of any legal use of these two substances and their queries to the Chemical Manufacturer's Institute had not brought forth any replies as of the closing date, April 19, 1978, DEA cannot place the precursors on Schedule I. The Controlled Substances Act, Section 201 (e) clearly indicates that a precursor must be placed on the same schedule (or numerically higher) as the controlled substance of which it is an immediate precursor,(*73*) and PCP is a Schedule II classification. DEA does have a precedent for its current action in that the pethidine intermediates (A,B,C,) were put into Schedule II in conjunction with the primary substance of abuse, Pethidine.

Activity in the regulation of PCP and its analogs has not been limited to the Federal level. Forty-five out of the fifty states do have Uniform Control Substances Acts, similar to the Congressional Act. Some of the states have already approved or are moving towards introduction of legislation on these substances. Combined information from the National Conference on State Legislatures,(*74*) DEA,(*75*) California State Department of Justice, and the New York State Legislature reveals the following regulatory or legislative action:

Alabama: PCE was added to the Controlled Substances Act in 1978.

Alaska: Has a new bill to criminalize PCP or others that are harmful.

California: Three bills have been introduced. The terms of the Morey bill are not known.

The Waters Bill would reclassify PCP within a new Class II group of central nervous system depressants and change the penalties for sale or possession of precursors to a felony up to 5 years in prison. Possession of the immediate precursors sufficient to manufacture piperidine or cyclohexanone "shall be deemed to be possession of such a derivative substance. Additionally, possession of any compound or mixture containing piperidine or cyclohexanone shall be deemed to be possession of such a substance."(*76*)

The Egeland-Waters Bill calls for elimination of probation or suspended sentences for persons convicted of manufacture or sale of PCP.(*76*)

Connecticut: Has approved legislation on PCP.

Kansas: Rescheduled PCP from III to II; changed sentencing.

Louisiana: Put PCP into dangerous substance act, part of Controlled Substances Act. Added PCE to Schedule I.

Maine: PCP now included in Controlled Substances Act.

Maryland: PCP was rescheduled from III to II. 2 bills: SB 695—sentencing changed from 5 years/$15,000 to 20 years/$20,000 for all Schedule II drugs. Exception is PCP which is 10 years/$20,000.

Massachusetts: Legislation pending to raise PCP penalty—for sale only.

Michigan: PCP rescheduled from III to II. Proposed legislation on PCE and 8 analogs to be placed in Schedule I.

Minnesota: Board of Pharmacy trying to get it rescheduled from III to II.

New York: 3 bills about to be introduced. Hevesi's Bill reschedules PCP from III to II and changes the penalty for sale and possession of four precursors (piperidine, lithium, cyclohexanone, bromobenzene) with intent to manufacture to a Class A—II Felony.(*77*)

Police Bill No. 38 does not reschedule PCP from III but specifies penalties which are raised to Class A—II Felony for possession of 16 oz.(*77*)

It is rumored that the third bill, Levy and Winikow, will reclassify PCP as a narcotic and place it on Schedule II.

North Carolina: Has proposed legislation by Drug Commission.

Pennsylvania: Has proposed legislation.

Wisconsin: PCP rescheduled from III to II by administrative ruling.

Nevada: Recommended for next session.

South Carolina: Proposed but tabled.

West Virginia: Enacted new bill.

In addition to the action of states regarding PCP, its analogs, and in the cases of New York and California, possession of precursors with intent to manufacture phencyclidine, it must be noted that California has in place a reporting system for 9 substances considered precursors to controlled substances. Piperidine is listed as one of the precursors of phencyclidine and by mandate it must be reported by manufacturers and retailers when sold.(*78*) The State Department of Justice provides forms including the quantity of substance sold, date, name and address of both buyer and

seller. According to Elsberg, the reporting system has not been successful primarily because it is too difficult to track the importation of piperidine into California from other states in the country.(*79*)

CONCLUSION

In conclusion, it has been confirmed that there is documented evidence that the use of PCP can cause extremely unpleasant and deleterious effects, ranging from short term discomfort to psychosis, violent behavior and coma. The drug seems equipped to cause pharmacological death as well as death from behavioural toxicity. It is mighty difficult to drown while taking a shower but as we have seen, the use of PCP has, in fact caused that result.

Unfortunately, the drug is widely used among adolescents and young adults and many of them do not seem to suffer particularly adverse effects. It is unrealistic to try to convince someone that his drug use can kill him when all he experiences is a slight buzzing noise, a feeling of numbness and floating euphoria. In fact, school officials indicate that the more bizarre and shocking television footage is, the more young people are interested in having the PCP experience.(*80*) Likewise, when prospective users turn for advice to other youngsters who have had only minimally bad results from drug experience, studies show that "providing more information about a drug, which indicates less harmful effects than an ambiguous description, produces a greater willingness to recommend the drug."(*81*)

Instead of trying to examine and cure the multitude of psycho/socio/economic ills that contribute to the basic causes of drug abuse, it is more productive for this subcommittee to spend time and energy in carefully planned hearings and in a review and revision of the Controlled Substances Act to deal with this problem.

Chemical abuse is a terrifying prospect; the ingredients are available; readily combinable and easily saleble. As more compounds are discovered in our industrial, medical and research laboratories there will be many new, potent substances available to those individuals who wish to get high. It is in the best interest of all of us that the subcommittee makes plain its firm intention to halt the spread of this new disease and others like it.

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APPENDIX A

INDEX MEDICUS

The following titles were obtained by a computer search of the Index Medicus from 1972 through April 1978. There are 114 articles listed. Only those items in English are included.

1

AU—Chait, L. D.; Balster, R. L.
TI—The Effects of Acute and Chronic Phencyclidine, on Schedule-Controlled Behavior in the Squirrel Monkey.
SO—J. Pharmacol. Exp. Ther. 204, 1. p. 77–87. January 1978.
MJ—Conditioning-operant: DE . . . Phencyclidine: PD.
MN—Animal. Dose-response-relationship—Drug: (Dose-response-relat.-drug). Drug-withdrawal-symptoms: PX. Male. Monkeys. Phencyclidine: AD. Reinforcement-Schedule. Squirrel-monkeys. Time-Factors. U.S.-Govt.-Supported-non-NIH: (non-NIH-Sup.).

AU—Slavney, P. R.; Rich, G. B.; Pearlson, G. D.; McHugh, P.R.
TI—Phencyclidine Abuse and Symptomatic Mania.
SO—Biol Psychiatry, 12, 5, P697–700. Oct. 1977.
MJ—Drug-Abuse, Mental-Disorders: CI. Phencyclidine.
MN—Adolescence. Adult. Case-Report. Human. Male. Phencyclidine: PO. Syndrome.

3

TI—More About Poisoning by Phencyclidine (PCP), (Angel Dust) Letter.
SO—N. Engl J.Med. 297, 25, P1405, Dec. 22, 1977.

4

AU—Miller, R. E.; Ranelli, C. J.; Levine, J. M.
TI—Nonverbal Communication as an Index of Depression. pp. 171–80.
SO—In: Hamin I.; Usdin E., Ed. Animal Models in Psychiatry and Neurology. Oxford. Pergamon Press, 1977. Wm 100 W897A 1977.

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AU—Kloog Y.; Rehayi, M.; Maayani, S.; Sokolovsky M.
TI—Anticholinesterase and Antiacetylcholine Activity of 1-Phenylcyclohexylamine Derivatives.
SO—Eur. J. Pharmacol. 45, 3. P221–7. October 1, 1977.

6

AU—Showalter, C. V.; Thornton, W. E.
TI—Clinical Pharmacology of Phencyclidine Toxicity.
SO—Am. J. Psychiatry. 134. 11. P1234–8. Nov. 1977.

7

AU—Kuncl, P. W.; Meltzer, H. Y.
TI—Role of the Adrenal in an Experimental Myopathy.
SO—Exp. Neurol. 57. 2. P322–30. Nov. 1977.

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AU—Domino, E. F.; Wilson, A. E.
TI—Effects of Urine Acidification on Plasma and Urine Phencyclidine Levels in Overdosage.

9

AU—Pinchasi, I.; Maayani, S.; Sokolovsky, M.

TI—On the Interaction of Drugs With the Cholinergic Nervous System—III. Tolerance to Phencyclidine Derivatives: in Vivo and In Vitro Studies.
SO—Biochem. Pharmacol. 26. 18. P1671-9. September 15, 1977.

10

AU—Smith R. C.; Meltzer H. Y.; Arora, R. C.; Davis, J. M.
TI—Effects of Phencyclidine on 3hcatecholamine and 3hserotonin Uptake Synaptosomal Preparations From Rat Brain.
SO—Biochem. Pharmacol. 26. 15. P1435-9. August 1, 1977.

11

AU—Sandop, P.; Nyary, I.; Reivich, M.; Kovach, A. G.
TI—Comparative Effects of Chloralose Anesthesia, and Sernylan Analgesia on Cerebral Blood Flow, CO2 Responsiveness, and Brain Metabolism In the Baboon.
SO—Stroke. 8. 4. P432-6. July-Aug. 1977.

12

AU—Jain, N. C.; Budd, R. D.; Budd, B. S.
TI—Growing Abuse of Phencyclidine: California "Angel Dust." Letter.
SO—N. Engl. J. Med. 297. 12. P673. September 22, 1977.

13

TI—Phencyclidine—A Different Hallucinogen.
SO—Med. Lett. Drugs Ther. 19. 17. P70-1. August 26, 1977.

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AU—Froehlich, P. M.; Ross, G.
TI—Separation and Detection of Phencyclidine in Urine by Gas Chromatography.
SO—J. Chromatogr. 137. 1. P135-43. July 11, 1977.

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AU—Rappolt, R. T.
TI—Toxicology.
SO—Emerg. Med. Serv. 5. 3. P80-1. May-June 1976.

16

AU—Shelburne, S. A., Jr.; McLaurin, R. L.
TI—The Effects of Phencyclidine on Visually Evoked Potentials of Rhesus Monkeys.
SO—Electroencephalogr. Clin. Neurophysiol. 43. 1. P95-8. July 1977.

17

AU—Cooper, J. E.; Cummings, A. J.; Jones, H.
TI—The Placental Transfer of Phencyclidine in the Pig: Plasma Levels in the Sow and its Piglets Proceedings.
SO—J. Physiol. (Lond.). 267. 1. P17P-18P. May 1977.

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AU—Cohen, S.
TI—Angel Dust.
SO—Jama. 238. 6. P515-6. August 8, 1977.

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AU—Stone C. J.; Forney, R. B.
TI—The Effects of Phencyclidine on Ethanol and Sodium Hexobarbital in Mice.
SO—Toxicol. Appl. Pharmacol. 40. 2. P177-83. May 1977.

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AU—Varipapa, R. J.
TI—PCP Treatment Letter.
SO—Clin. Toxicol. 10. 3. P353-5. 1977.

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AU—Helisten, C.; Johnston, L. M.; Ostrenga, J. A.
TI—Drug Use and Analysis Results: 1973–1975.
SO—Clin. Toxicol. 10. 3. P367–79. 1977.

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AU—Showalter, G. V.; Thornton, W. E.
TI—The Increasing Abuse of Phencyclidine.
SO—IMJ. 151. 5. P387–9. May 1977.

23

AU—Pryor, G. T.; Husain, S.; Larsen, F.; McKenzie, C. E.; Carr, J. D.; Braude, M. C.
TI—Interactions Between Delta9-Tetrahydrocannabinol and Phencyclidine Hydrochloride in Rats.
SO—Pharmacol. Biochem. Behav. 6. 1. P123–36. Jan. 1977.

24

AU—Finnegan, K. T.; Kanner, M. I.; Meltzer, H. Y.
TI—Phencyclidine-Induced Rotational Behavior in Rats With Nigrostriatal Lesions and its Modulation by Dopaminergic and Cholinergic Agents.
SO—Pharmacol. Biochem. Behav. 5. 6. P651–60. December 1976.

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AU—Macri, F. J.; Cevarid, S. J.
TI—Blockade of the Ocular Effects of Acetazolamide by Phencyclidine.
SO—Exp. Eye Res. 24. 2. P121–7. February 1977.

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AU—Dorand, R. D.
TI—Phencyclidine Ingestion: Therapy Review.
SO—South Med. J. 70. 1. P117–9. January 1977.

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TI—Effect of Phencyclidine on Fluid Intake and Urine Excretion.
SO—J. Pharm. Pharmacol. 29. 1. P55–6. January 1977.

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AU—Health, R. G.
TI—Brain Function in Epilepsy: Midbrain, Medullary, and Cerebellar Interaction with the Rostral Forebrain.
SO—J. Neurol. Neurosurg. Psychiatry. 39. 11. P1037–51. November 1976.

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AU—Gagne, D. R.; Pike, R. K.
TI—Identification of 1-(1-Cyanocycloalkyl) Amines, Intermediates In the Synthesis of Phencyclidine and Its Analogs.
SO—J. Assoc. Off. Anal. Chem. 60. 1. P32–47. January 1977.

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TI—Discriminable Stimuli Produced by Hallucinogens.
SO—Psychopharmacol Commun. 2. 4. P345–8. 1976.

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TI—Interactions Between Delta9-Tetrahydrocannabinol and Phencyclidine in Rats and Mice.
SO—Proc. West Pharmacol. Soc. 19. P362–8. 1976.

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AU—Green, D. E.; Chad, F. C.; Loeffler, K. O.; Lemon R.
TI—Phencyclidine Blood Levels by Probability Based Matching GC/MS.
SO—Proc. West. Pharmacol Soc. 19. P355–61. 1976.

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AU—Wickham, M. G.; Worthen, D. M.; Downing, D.
TI—A Randomized Technique of Constant-Pressure Infusion.
SO—Invest. Ophthalmol. 15. 12. P1010–4. December 1976.

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AU—Reivich, M.; Sokoloff, L.
TI—Regional Cerebral Glucose Consumption Rates in Some Experimental States, Anesthetics.
SO—Neurosci. Res. Program Bull. 14. 4. P497–8. September 1976.

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TI—1-Piperidinocyclohexanecarbonitrile. a Toxic Precursor of Phencyclidine.
SO—J. Pharm. Pharmacol. 28. 9. P713–4. September 1976.

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AU—Bolter, A.; Heminger, A.; Martin, G.; Fry, M.
TI—Out-Patient Clinical Experience in a Community Drug Abuse Program with Phencyclidine Abuse.
SO—Clin. toxicol. 9. 4. P593–600, 1976.

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AU—Wong, L. K.; Biemann. K.
TI—Metabolites of Phencyclidine.
SO—Clin. toxicol. 9. 4. P583–91. 1976.

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AU—James, S. H.; Schnoll, S. H.
TI—Phencyclidine: Tissue Distribution in the Rat.
SO—Clin. toxicol. 9. 4. P573–82. 1976.

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AU—MacLeod, W. D., Jr.; Green, D. E., Seet, E.
TI—Automated analysis of phencyclidine in urine by probability based matching GC/MS.
SO—Clin. toxicol. 9. 4. P561–72. 1976.

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AU—Shulgin, A. T.; Mac Lean, D. E.
TI—Illicit Synthesis of phencyclidine (PCP) and several of its analogs.
SO—Clin. toxicol. 9. 4. P553–60. 1976.

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AU—Luisada, P. V.; Brown, B. I.
TI—Clinical and forensic experiences with phencyclidine.
SO—Clin. toxicol. 9. 4. P547–52. 1976.

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TI—Clinical management of the phencyclidine psychosis.
SO—Clin. toxicol. 9. 4. P539–45. 1976.

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SO—Clin. toxicol. 9. 4. P529–38. 1976.

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AU—Balster, R. L.; Chait, L. D.
TI—The behavioral pharmacology of phencyclidine.
SO—Clin. toxicol. 9. 4. P513–28. 1976.

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AU—Lundberg, G. D.; Gupta, R. C.; Montgomery, S. H.
TI—Phencyclidine: Patterns seen in street drug analysis.
SO—Clin. toxicol. 9. 4. P503–11. 1976.

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AU—Burns, R. S.; Lerner, S. E.
TI—Perspectives: Acute phencyclidine intoxication.
SO—Clin. toxicol. 9. 4. P477–501. 1976.

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AU—Burns, R. S.; Lerner, S. E.
TI—Editorial. Phencyclidine: An emerging drug problem.
SO—Clin. toxicol. 9. 4. P473–5. 1976.

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AU—Pearce, D. S.
TI—Detection and quantitation of phencyclidine in blood by use of (2)H(5) phencyclidine and selection monitoring applied to non-fatal cases of phencyclidine intoxication.
SO—Clin. chem. 22. 10. P1623–6. Oct. 1976.

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TI—Screening of street drugs by high ppessure liquid chromatography, Part II—The screening of some common amphetamines, ephedrine and phencyclidine by reverse phase HPLC.
SO—J. forensic sci. soc. 16. 2. P133–8. Apr. 1976.

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TI—Influence of handling and sedation on plasma cortisol in rhesus monkeys (*Macaca mulata*).
SO—J. endocrinol. 70. 2. P325–6. Aug. 1976.

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AU—Malcolm, R.; Keeler, M. H.; Miller, W. C.
TI—Phencyclidine Toxicity: "Animal tranquilizer" reactions.
SO—Dis. nerv. syst. 37. 10. P590–2. Oct. 1976.

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AU—Hahnenberger, R. W.
TI—Influence of cataleptoid anaesthetic agents on the intraocular pressure in monkeys (*Macaca fascicularis*).
SO—Acta ophthalmol. (KBH). 54. 4. P491–9. Aug. 1976.

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AU—Gupta, R. C.
TI—Street drug identification program: Report for July 1975.

SO—Clin. toxicol. 9. 2. P281–93. 1976.

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AU—Haddad, L. M.
TI—Management of hallucinogen abuse.
SO—Am. fam. physician. 14. 1. P82–7. July 1976.

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AU—Garey, R. E.; Heath, R. G.
TI—The effects of phencyclidine on the uptake of 3H-catecholamines by rat striatal and hypothalamic synaptosomes.
SO—Life sci. 18. 10. P1105–10. 15 May 1976.

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TI—Determination of phencyclidine (PCP) in urine and illicit street drug samples.
SO—Clin. toxicol. 8. 6. P611–21. 1975.

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AU—Bacher, J. D.; Potkay, S.; Baas, E. J.
TI—An evaluation of sedatives and anesthetics in the agouti (Dasyprocta SP).
SO—Lab. anim. sci. 26. 2 PT L. P195–7. Apr. 1976.

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TI—The identification and determination of phencyclidine (PCP) in illicit seizures. PP. 193–202.
SO—IN: Singh JM. Lal H. Ed. Drug addiction. Vol. 4: New aspects of analytical and clinical toxicology. New York, Stratton, 1974. W3 IN917KC 1973D. In917KC 1973D.

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SO—Psychopharmacol. commun. 1. 4. P393–401. 1975.

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AU—Wenger, G. R.; Dews, P. B.
TI—The effects of phencyclidine, ketamine, delta-amphetamine and pentobarbital on schedule-controlled behavior in the mouse.
SO—J. pharmacol. exp. ther. 196. 3. P616–24. Mar. 1976.

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TI—Noninhalational anaesthetics.
SO—Adv. drug res. 10. P1–51. 1975.

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TI—Quantitation of phencyclidine in biological fluids and application to human overdose.
SO—Toxicol. appl. pharmacol. 35. 1. P129–36. Jan. 1976.

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TI—Influence of ketamine, phenylcyclidine, and phenobarbital on cholesterol metabolism in rats.
SO—Proc. soc. exp. biol. med. 151. 3. P445–7. Mar. 1976.

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AU—Shulgin, A. T.
TI—Drugs of abuse in the future.
SO—Clin. toxicol. 8. 4. P405–56. 1975.

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TI—Electroencephalographic findings in phencyclidine intoxication.
SO—Arch neurol. 33. 3. P200–3. Mar. 1976.

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AU—Ferin, M.; Carmel, P. W.; Warren, M. P.; Himsworth, R. L.; Frantz, A. G.; Nocenti, M. R.
TI—Phencyclidine sedation as a technique for handling rhesus monkeys: Effects on LH, GH, and prolactin secretion.
SO—Proc. soc. exp. biol. med. 151. 2. P428–33. Feb. 1976.

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AU—Chambers, J. W.; Brown, G. M.
TI—Stimulation of rhesus monkey GH release: Arginine vs plasma volume expansion.
SO—J. clin. ena.

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AU—Helisten, C.; Shulgin, A. T.
TI—The detection of 1-piperidinocyclohexanecarbonitrile contamination in illicit preparations J.

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AU—Bailey, K.; Gagne, D. R.; Pike, R. K.
TI—Identification of some analogs of the hallucinogen phencyclidine.
SO—J. assoc. off. anal. chem. 59. 1. P81–9. Jan. 1976.

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AU—Albin, M. S.; Bunegin, L.; Jannetta, P. J.; Massopust, L. C., Jr.
TI—Tetrahydroaminoacridine (THA). I. Effect on postanesthetic emergence responses and anesthesia sleep-time after ketamine, phencyclidine and thiamylal in animals. PP. 143–6.
SO—IN: Arias a et al. ed. Recent progress in anaesthesiology and resuscitation. Amsterdam, excerpta medica. 1975. W3 EX89 No. 347 1974.

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AU—Burns, R. S.; Lerner, S. E.; Corrado, R.; James, S. H.; Schnoll, S. H.
TI—Phencyclidine—states of acute intoxication and fatalities.
SO—West J. med. 123. 5. P345–9. Nov. 1975.

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AU—Wenger, G. R.
TI—The effect of phencyclidine and ketamine on schedule-controlled behavior in the pigeon.
SO—J. pharmacol. exp. ther. 196. 1. P172–9. Jan. 1976.

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AU—Griffiths, I. R.; Rowan, J. D.; Crawford, R. A.
TI—Spinal cord blood flow measured by a hydrogen clearance technique.
SO—J. neurol. sci. 26. 4. P529–44. Dec. 1975.

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AU—Setchell, K. D.; Rees, L. H.; Himsworth, R. L.
TI—Effect of acute inhibition of adrenocorticotrophin secretion on plasma corticosteroids in the rhesus monkey (*Macaca mulata*).
SO—J. endocrinol. 67. 2. P251–7. Nov. 1975.

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AU—Setchell, K. D.; Shackleton, C. H.; Himsworth, R. L.
TI—Studies on plasma corticosteroids in the rhesus monkey *(Macaca mulata).*
SO—J. endocrinol. 67. 2. P241–50. Nov. 1975.

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AU—Taube, H. D.; Montel, H.; Hau, G.; Starke, K.
TI—Phencyclidine and ketamine: Comparison with the effect of cocaine on the noradrenergic neurones of the rat brain cortex.
SO—Nhunyn schmidebergs arch pharmacol. 291. 1. P47–54. 3 Nov. 1975.

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AU—Ross, K. S.; Marcri, F. J.
TI—The concentration of ascorbic acid in the posterior and anterior chambers of the rhesus monkey (*Macaca mulata*).
SO—Invest. ophthalmol. 14. 12. P942–4. Dec. 1975.

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AU—Rainey, J. M., Jr.; Crowder, M. K.
TI—Prolonged psychosis attributed to phencyclidine: Report of three cases.
SO—Am. J. psychiatry. 132. 10. P1076–8. Oct. 1975.

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AU—White, F. P.; Barnes, C. D.
TI—The effects of 1-(1-phenylcyclohexyl) piperidine hol (Sernylan) on bulbo-spinal and spinal reflexes.
SO—Neuropharmacology. 14. 9. P665–74. Sept. 1975.

82

AU—Liden, C. B.; Lovejoy, F. H., Jr.; Costello, C. E.
TI—Phencyclidine. Nine cases of poisoning.
SO—JAMA. 234. 5. P513–6. 3 Nov. 1975.

83

AU—Tong, T. G.; Benowitz, N. L.; Becker, C. E.; Forni, P. J.; Boerner, U.
TI—Phencyclidine poisoning.
SO—JAMA. 234. 5. P512–3. 3 Nov. 1975.

84

AU—Overton, D. A.
TI—A comparison of the discriminable ons effects of ketamine, phencyclidine and pentobarbital.
SO—Arch int. pharmacodyn. ther. 215. 2. P180–9. June 1975.

85

AU—Libman, R. H.
TI—Letter: Phencyclidine poisoning.
SO—JAMA. 233. 12. P1257–8. 22 Sept. 1975.

86

AU—Meltzer, H. Y.
TI—Muscle toxicity produced by phencyclidine and restraint stress.
SO—Res. commun. chem. pathol. pharmacol. 3. 2. P369–82. Mar. 1972.

87

AU—Jarbe, T. U.; Johansson, J. O.; Henriksson, B. G.
TI—Drug discrimination in rats: The effects of phencyclidine and ditran.
SO—Psychopharmacologia. 42. 1. P33–9. 30 Apr. 1975.

88

AU—Goode, D. J.; Meltzer, H. Y.
TI—The role of isometric muscle tension in the production of muscle toxicity by phencyclidine and restraint stress.
SO—Psychopharmacologia. 42. 1. P105–8. 30 Apr. 1975.

89

AU—Ragan, H. A.; Gillis, M. F.
TI—Restraint, venipuncture, endotracheal intubation and anesthesia of miniature swine.
SO—Lab. anim. sci. 25. 4. P409–19. Aug. 1975.

90

AU—Parshall, C. J.; Vainisi, S. J.; Goldberg, M. F.; Wolf, E. D.
TI—In vivo erythpocyte sickling in the Japanese sika deer (Cervus Nippon): Methodology.
SO—Am. J. Vet. Res. 36. 6. P749–52. June 1975.

91

AU—Rainey, J. M., Jr.; Crowder, M. K.
TI—Letter: More on "angel dust).
SO—Am. J. psychiatry. 132. 8. P879. Aug. 1975.

92

AU—Eastman, J. W.; Cohen, S. N.
TI—Hypertensive crisis and death associated with phencyclidine poisoning.
SO—JAMA. 231. 12. P1270–1. 24 Mar. 1975.

93

AU—Maayani, S.; Treister, G.; Sokolovsky, M.
TI—Drugs affecting the cholinergic system in the intact mammalian eye. I. evaluation of the miotic activity of acetylcholine-like drugs in the mouse eye.
SO—Invest. ophthalmol. 14. 3. P232–5. Mar. 1975.

94

AU—Treister, G.; Maayani, S.; Sokolovsky, M.
TI—A rapid method for measuring miotic activity of drugs in the intact mouse eye.
SO—Invest. ophthalmol. 14. 2. P159–63. Feb. 1975.

95

AU—Hitner, H.; Di Gregorio, G. J.
TI—Preliminary investigation of the peripheral sympathomimetic effects of phencyclidine.
SO—Arch int. pharmacodyn. ther. 212. 1. P36–42. Nov. 1974.

96

AU—Munch, J. C.
TI—Phencyclidine: Pharmacology and Toxicology.
SO—Bull. Narc. 26. 4. P9–17. Oct.–Dec. 1974.

97

AU—Barnes, R. V.; Dopp, A. C.; Gelberg, H. J.; Silva, J., Jr.
TI—Neisseria meningitidis: A cause of nosocomial pneumonia.
SO—Am. rev. respir. dis. 111. 2. P229–31. Feb. 1975.

98

AU—Jarbe, T. U.; Henriksson, B. G.
TI—Discriminative response control produced with hashish, tetrahydrocannabinols (Delta 8-THC and Delta 9-THC), and other drugs.
SO—Psychopharmacologia. 40. 1. P1–16. 1974.

99

AU—Paster, Z.; Maayani, S.; Weinstein, H.; Sokolovsky, M.
TI—Cholinolytic action of phencyclidine, derivatives.
SO—Eur. J. Pharmacol. 25. 2. P270–4. Feb. 1974.

100

AU—Hott, L. R.
TI—Letter: "Angel Dust).
SO—Am. J. Psychiatry. 131. 12. P1411. Dec. 1974.

101

AU—Chen, G.
TI—Sympathomimetic anesthetics.
SO—Can. anaesth. soc. J. 20. 2. P180–5. Mar. 1973.

102

AU—Law, N. C.
TI—A modern approach for drug identification.
SO—Am. J. med. technol. 39. 6. P237–43. June 1973.

103

AU—Consroe, P. F.
TI—Treatment of acute hallucinogenic drug toxicity: Specific pharmacological intervention.
SO—Natl. CLGH poison control cent. bull. P1–7. Jan.–Feb. 1973.

104

AU—Jones, R. S.
TI—A review of tranquillisation and sedation in large animals.
SO—Vet. rec. 90. 22. P613–7. 27 May 1972.

105

AU—Sperling, A.
TI—Analysis of hallucinogenic drugs.
SO—J. chromatogr. sci. 10. 5. P268–75. May 1972.

106

AU—Hammar, C. G.; Holmstedt, B.; Lindgren, J. E.; Tham, R.
TI—The combination of gas chromatography and mass spectrometry in the identification of drugs and metabolites.
SO—Adv. Pharmacol. 7. P53–89. 1969.

107

AU—Winters, W. D.
TI—Neuropharmacological studies and postulates on excitation and depression in the central nervous system.
SO—Recent adv. biol. psychiatry. 9. P313–45. 1966.

108

AU—Kuncl, R. W.; Meltzer, H. Y.
TI—Pathologic effect of phencyclidine and restraint on rat skeletal muscle structure: Prevention by prior denervation.
SO—Exp. neurol. 45. 2. P387–402. Nov. 1974.

109

AU—Rainey, J. M., Jr.; Crowder, M. K.
TI—Letter: Ketamine or phencyclidine.
SO—JAMA. 230. 6. P824. 11 Nov. 1974.

110

AU—Chan, M. L.; Whetsell, C.; McChesney, J. D.
TI—Use of high pressure liquid chromatography for the separation of drugs of abuse.
SO—J. Chromatogr. Sci. 12. 9. P512–5. Sept. 1974.

111

AU—Kessler, G. F., Jr.; Demers, L. M.; Berlin, C.; Brennan, R. W.
TI—Letter: Phencyclidine and fatal status epilepticus.
SO—N. Engl. J. Med. 291. 18. P979. 31 Oct. 1974.

112

AU—Goode, D. J.; Meltzer, H. Y.
TI—Gytotoxic effects of imipramine on platelets.
SO—Biochem. pharmacol. 23. 18. P2629–35. 15 Sept. 1974.

113

AU—Stunkard, J. A.; Miller, J. C.
TI—An outline guide to general anesthesia in exotic species.
SO—Vet. med. small anim. clin. 69. 9. P1181–6. Sept. 1974.

114

AU—Consroe, P. F.
TI—Specific pharmacological management of acute toxicity due to psychedelic) drugs.
SO—Ariz. Med. 29. 12. P920–5. Dec. 1972.

PSYCHOLOGICAL ABSTRACTS

The following abstracts were obtained through a computer and manual search of issues of Psychological Abstracts from 1967 through March, 1978. Twenty of the listed items pertain to human and the remaining thirty-four abstracts relate to animal studies. Only those reports in English are included.

Human Studies

DOC year: 1977 vol. No. 58, abstract No. 01817:
Out-patient clinical experience in a community drug abuse program with phencyclidine abuse.
Bolter, Arthur; Heminger, Alan; Martin, Gale; Fry, Moira.
Project Eden, Inc., Hayward, CA.
Clinical Toxicology, 1976, vol. 9(4), 593–600.
Project Eden is a paraprofessional community drug-abuse counseling program developed in the Hayward area of California. It offers a range of services which include (a) 24-hr switchboard, drop-in center, overdose rescue, and phone counseling; (b) individual and group counseling; (c) residential treatment for narcotic addicts; (d) community and school education; and (e) alternative activities for youth. The counseling model employed relies on the client's motivation toward examining present behavior and its consequences; choice among treatment options (individual or group counseling, referral to residential treatment, referral to another, more suitable agency, or no treatment at all) is made jointly by client and counselor at initial meetings. Phencyclidine (PCP) has been a major drug of abuse in the Hayward area for a longer time than in most other areas of the US. Statistical information on 158 clients of Project Eden, whose major drug of abuse was PCP, is summarized, and a typical case report is included. Subjective impressions of those counselors working with PCP clients suggest that, because PCP creates a relatively neutral state when smoked, it is most likely to be a problem for those trying to escape negative feelings about self or others. The drug also seems to create a strong psychological dependence: even those who are most highly motivated to cease using the drug have a difficult time giving it up.

Language: Engl. Classification: 33.
Subject Terms: Outpatient Treatment, Community Services, Tranquilizing Drugs, Drug Abuse, Drug Rehabilitation; 35970, 10690, 53900, 15220, 15350.
Index Phrase: Paraprofessional community drug abuse program, phencyclidine abuse, outpatients.

DOC year: 1977 vol. No. 58, abstract No. 01689:
Clinical management of the phencyclidine psychosis.
Luisada, Paul V.; Brown, Bernard I.
St. Elizabeths Hosp., Washington, D.C.
Clinical Toxicology, 1976, vol. 9(4), 539–545.

Phencyclidine (PCP) psychosis is a schizophreniform disorder which appears in some individuals after PCP use; it is characterized by the appearance of cardinal signs of schizophrenia and unpredictable aggressive behavior which may persist for days or weeks without further exposure to the drug. The present paper describes the clinical course and management of PCP psychosis, drawing from the authors' experience in treating more than 100 cases on an inpatient psychiatric ward. The course of the treated psychosis presents 3 distinct phases: (a) violent psychotic behavior persisting for about 5 days, (b) restless and unpredictable behavior for approximately 5 more days, and (c) rapid personality reintegration and rapid improvement in thought disorder and paranoia over the final 4 days. The initial picture resembles paranoid schizophrenia, with catatonic excitement and inappropriate autistic behavior; this phase represents a psychiatric emergency and invariably requires inpatient psychiatric treatment. Chlorpromazine is the antipsychotic medication of choice, with the daily dose starting at 400 mg/day and increased by 200 mg/day until a maximum daily dose of 1,600 mg has been reached. About one-fourth of the patients treated for PCP psychosis return about a year later with schizophrenic psychoses in the absence of drug use. The authors' experience, together with earlier findings, suggest an individual sensitivity to PCP, related in some way to schizophrenia.

Language: Engl. Classification: 33.
Subject Terms: Toxic Psychoses, Tranquilizing Drugs, Drug Therapy, Chlorpromazine, Drug Abuse; 53600, 53900, 15380, 08990, 15220.
Index Phrase: Clinical course & management with chlorpromazine, phencyclidine psychosis.

DOC year: 1977 vol. No. 58, abstract No. 01314:
Psychiatric sequelae of phencyclidine abuse.
Fauman, Beverly; Aldinger, Glenn; Fauman, Michael; Rosen, Peter.
U. Chicago Hosps. and Clinic.
Clinical Toxicology, 1976, vol. 9(4), 529–538.

Describes the cases of 7 young adults in whom phencyclidine (PCP) produced a psychosis of several weeks' duration. Descriptions of the patients' premorbid personalities resemble descriptions of LSD and marihuana users who experienced prolonged psychiatric difficulty. It is noted that the psychosis produced can often be recognized as a "hallucinogen" psychosis. Certain features of the PCP psychosis, namely the neurologic abnormalities, dose-related severity of symptoms, and regularity of the length of illness, are not noted with other psychedelic drugs, leading to the conclusion that PCP psychosis is a drug effect rather than a brief functional psychosis precipitated by the disintegrating PCP experience. However, the infrequent occurrence of psychosis in the (apparently) large exposed population still suggests that this is a combination of drug effect and vulnerable, pathologic personality. (24 ref.)

Language: Engl. Classification: 32, 10.
Subject Terms: Young Adults, Personality Traits, Toxic Psychoses, Tranquilzing Drugs, Drug Abuse; 57320, 37860, 53600, 53900, 15220.
Index Phrase: Premorbid personalities & features of phencylidine-induced psychosis, young adults.

DOC year: 1977 vol. No. 57, Abstract No. 05755:
Phencyclidine toxicity: Animal tranquilizer reactions.
Malcolm, Robert; Keeler, Martin H.; Miller, William C.
Medical U. of South Carolina.
Diseases of the Nervous System, 1976, Oct. vol. 37(10), 590–592.

Reports a case study of a 22-year-old male hospitalized for 8 days because of his confused state resulting from the abuse of an animal tranquilizer: the drug was later identified as phencyclidine. Discussion focuses on the historical development of phencyclidine use: its beginnings as a surgical anesthetic, its use as an experimental psychotomimetic, and its present status as a drug of abuse. (21 ref.)

Language: Engl. Classification: 29.
Subject Terms: Drug Abuse, Anesthetic Drugs, Case Report; 15220, 02490, 07790.

Index Phrase: History of phencyclidine & report of phencyclidine toxicity, 22-year-old male hospitalized following drug abuse.
DOC year: 1976, vol. No. 56, abstract No. 07532:
PCP revisited.
Perry, David C.
PharmChem Research Foundation, Palo Alto, CA.
PharmChem Newsletter, 1975, Nov. vol. 4(9), 1–7.
Traces the history of the use of phencyclidine (PCP), the alarming increase in its misuse, diagnosis of and treatment for PCP intoxication, results of clinical studies of PCP users, and contaminants and related compounds. The psychological and physiological effects of the drug are detailed, including early intoxication, perceptual distortion, and subsequent depression, irritation, and occasional paranoia.
Language: Engl. Classification: 26.
Subject Terms: Drug Effects, Drug Usage, Anesthetic Drugs, Drug Rehabilitation; 15300, 15400, 02490, 15350.
Index Phrase: Phencyclidine, psychological and physiological effects and usage history and diagnosis and treatment.
DOC year: 1976 vol. No. 56, abstract No. 02264:
Drug use and analysis results: 1973–1975.
PharmChem Newsletter, 1976, Jan. vol. 5(1) 1–8.
Presents data on trends in the use and effects of 4 major types of popular illegal drugs: cannabis products, CNS stimulants, psychotomimetics, and opiates and miscellaneous substances. Use of most of these chemicals seems to have been relatively constant during the past 2 years, although the use of phencyclidine, a psychotomimetic, is increasing. Instances of dilution, adulteration, and misrepresentation of drugs sold on the street are described, including the most notable example which occurred during 1973–1975—alleged amphetamine samples. Tabular data on 1,600 samples analyzed during the study period are included.
Language: Engl. Classification: 29, 90.
Subject Terms: Cannabis, Opiates, CNS Stimulating Drugs, Psychotomimetic Drugs, Drug Usage, Drug Effects: 07440, 35430, 09870, 42150, 15400, 15300.
Index Phrase: trends in use and effects of cannabis products and CNS stimulants and psychotomimetics and opiates and miscellaneous substances and dilution and adulteration and misrepresentation of drugs sold on street.
DOC year: 1976 vol. No. 56, abstract No. 00951:
Electroencephalographic findings in phencyclidine intoxication.
Stockard, James J.; Werner, Sarah S.; Aalbers, John A.; Chiappa, Keith H.
University Hosp., EEG Lab, San Diego, CA.
Archives of Neurology, 1976, Mar. vol. 33(3), 200–203.
EEG findings in a 25-year-old comatose male with phencyclidine (Sernylan) intoxication were similar to EEG in deep ketamine anesthesia, suggesting intoxication with a ketamine-related (phencyclohexylamine) drug. It is concluded that an electroclinical presentation similar to the one described in this case might be anticipated in both ketamine and phencyclidine intoxication. (20 ref.)
Language: Engl. Classification: 32.
Subject Terms: Coma. Electroencephalography, Drug Adverse Reactions, Anesthetic Drugs, Case Report: 10450, 16530, 15250, 02490, 07790.
Index Phrase: EEG findings in phencyclidine intoxication, 25-year-old comatose male.
DOC year: 1976 vol. No. 56, abstract No. 00631:
Drugs of abuse in the future.
Shulgin, Alexander T.
Clinical Toxicology, 1976, Aug., vol. 8(4), 405–456.
Explores a possible approach to the problem of drug abuse, based on an outline which anticipates the chemical and pharmacological directions toward which the drug-oriented subculture might turn. From the main classifications of drugs which have abuse reality and abuse potential—opiates, stimulants, depressants, and hallucinogens—the commonly known and used drugs, as well as their new and experimental derivatives, are described, and their methods of derivation and effects are detailed. Among the opiates are morphine, heroin, and thebaine and the derivatives acetorphine, ethorpine, cyprenorphine, methylmorphanan, meperidine, and Fentanyl. The sympathomimetic (stimulant) agents include amphetamine, methamphetamine, methylphenidate, phenmetrazine, levophacetoperane, fenethylline, ephedrine, and ecgonine. Among the depressants described are phenobarbital, metharbital, glutethimide, methaqualone, and phencyclidine. The hallucinogens include psilocybin, harmaline, mescaline, and atropine. The possibility that some prescription and over-the-counter drugs (e.g., dextromethorphan) may become future abuse prob-

lems is explored, and a list of controlled substances and recent additions or reclassifications is included. (92 ref)

Language: Engl. Classification: 29.

Subject Terms: Drug Abuse; 15220.

Index Phrase: Drug abuse in future.

DOC year: 1976 vol. No. 55 abstract No. 07363:

Prolonged psychosis attributed to phencyclidine: Report of three cases.

Rainey, John M.; Crowder, Miles K.

Wayne State U. Medical School.

American Journal of Psychiatry, 1975, Oct., vol. 132(10), 1076–1078.

Reports that after ingesting street drugs, 3 young men developed schizophreniform psychoses, analgesia, anesthesia, and amnesia for the psychotic state. Except for their unusually long duration of 2–4 wks, these reactions resembled phencyclidine psychoses. The authors could find no information on phencyclidine in handbooks on drug abuse.

Classification: 32.

Subject Terms: Drug Effects, Psychosis, Anesthetic Drugs, Drug Abuse; 15300, 41910, 02490, 15220.

Index Phrase: phencyclidine-induced prolonged psychosis after ingestion of street drugs, young males.

DOC year: 1976 vol. No. 55 abstract No. 04843:

Phencyclidine poisoning.

San Francisco General Hospital, Division of Clinical Pharmacology, Medical Service, California.

JAMA: Journal of the American Medical Association. 1975 Nov. vol. 234(5), 512–513.

Reports two cases of phencyclidine-intoxicated patients who exhibited bizarre combinations of disorientation, hallucination, agitation, and dyskinetic motor activity. Supportive care and reduction of sensory stimulation were the basis for management of the symptoms.

Classification: 32.

Subject Terms: Toxicity, Drug Adverse Reactions, Medical Patients, Anesthetic Drugs, Drug Abuse; 53610, 15250, 30360, 02490, 15220.

Index Phrase: Symptoms and their management, phencyclidine hydrochloride-intoxicated patients.

DOC year: 1976 vol. No. 55 abstract No. 04825:

Phencyclidine: Nine cases of poisoning.

Liden, Craig B.; Lovejoy, Frederick H.; Costello, Catherine E.

Harvard University Medical School, Boston.

JAMA: Journal of the American Medical Association. 1975 Nov. vol. 234(5), 513–516.

In nine cases of phencyclidine hydrochloride poisoning in patients aged from 10 months to 26 years, early signs of overdose included drowsiness, nystagmus, miotic pupils, blood pressure elevation, increased deep tendon reflexes, ataxia, anxiety, and agitation. In more severe cases, seizures, spasticity, and opisthotonos were seen in addition to deep coma and respiratory depression. Treatment included removal by emetics or lavage, hydration, and a quiet, reassuring environment. Spasticity, agitation, and ocular manifestations responded to diazepam. Psychiatric intervention was instituted after the patients were stable and no longer agitated. (19 ref.)

Classification: 32.

Subject Terms: Toxicity, Anesthetic Drugs, Symptoms, Drug Adverse Reactions, Drug Abuse, Drug Rehabilitation; 53610, 02490, 51140, 15250, 15220, 15350.

Index Phrase: Early signs of overdose and treatment, phencyclidine hydrochloride poisoning, patients.

DOC year: 1975 vol. No. 53 abstract No. 06856:

Phencyclidine (PCP).

National Clearinghouse for Drug Abuse Information.

Rockville, MD.

National Clearinghouse for Drug Abuse Information, Report Series. 1973 Apr. ser. 14(1), 11 p.

Describes the pharmacology, chemistry, clinical effects, uses, and treatment uses of phencyclidine (PCP). A number of articles are reviewed to show the drug's history and legal status, and the treatment of acute intoxication with PCP. (43 ref.)

Classification: 06.

Subject Terms: Anesthetic Drugs, Pharmacology, Drug Effects, Drug Therapy, Drug Laws, Chemistry; 02490, 38070, 15300, 15380, 15330, 08560.

Index Phrase: phencyclidine, pharmacology and chemistry and clinical effects and uses and treatment uses and history and legal status and treatment of acute intoxication.

DOC year: 1975 vol. No. 53 abstract No. 04683:

Phencyclidine (PCP).

PharmChem Newsletter. 1972 vol. 1(1), 2–3.

Presents the results of an analysis of 30 street samples of drugs originating in the San Francisco area during 1972. A report on the pharmacology, history, effects, and metabolism of phencyclidine (PCP) which apparently is increasing in the illicit drug market is presented.

Classification: 06.

Subject Terms: Pharmacology, Drug Effects, Drug Usage, Metabolism, Psychotomimetic Drugs; 38070, 15300, 15400, 31000, 42150.

Index Phrase: Phencyclidine, chemical content of street drugs and pharmacology and history and effects and metabolism.

DOC year: 1974 vol. No. 52 abstract No. 09541:

Psychotomimetics as anticholinergic agents: I. 1-cyclohexylpiperidine derivatives: Anticholinesterase activity and antagonistic activity to acetylcholine.

Maayoni, Saul, et al.

Tel-Aviv University, Israel.

Biochemical Pharmacology. 1974 Apr. vol. 23(8), 1263–1281.

Found that phencyclidine (Sernyl) and 10 of its derivatives, known for their psychotomimetic activity, were potent competitive inhibitors of butyrylcholinesterase and acetylcholinesterase. The correlation between the anticholinesterase activity and the CNS activity and the structural relation of the drugs to agonists and antagonists of the cholinergic system are discussed. (52 ref.)

Classification: 06.

Subject Terms: Acetylcholinesterase, Anesthetic Drugs, Drug Effects, CNS Affecting Drugs: 00440, 02490, 15300, 09840.

Index Phrase: phencyclidine and its derivatives, competitive inhibition of butyrylcholinesterase and acetylcholinesterase.

DOC year: 1974 vol. No. 51 abstract No. 08736:

Phencyclidine (PCP): Another illicit psychedelic drug.

Reed, Alan; Kane, Andrew W.

Medical College, Wisconsin, Milwaukee.

Journal of Psychedelic Drugs. 1972 fall vol. 5(1), 8–12.

Presents a brief history of the clinical and street use of phencyclidine. The physiological effects of the drug are noted to vary widely with dose, from alcohol-like intoxication at low doses to analgesia and anesthesia at large doses. The effects on psychological functioning appear to be progressive disintegration with the 5 reporting decreasing ability to integrate his experiences and sensations. Ss reported increasing apathy and feelings of isolation. Research comparing the state produced by phencyclidine with that of schizophrenia is noted. Clinical management of phencyclidine intoxication is outlined. (29 ref.)

Classification: 06.

Subject Terms: Psychedelic Drugs, Drug Effects: 41320, 15300.

Index Phrase: Phencyclidine, physiological effects and effects on psychological functioning.

DOC year: 1974 vol. No. 51 abstract No. 05566:

Phencyclidine induced psychosis: The need to avoid unnecessary sensory influx.

Stein, Jack I.

Military Medicine. 1973 Sept. vol. 138(9), 590–591.

Describes the case of a 19-year-old male who had ingested 50 tablets of phencyclidine, an hallucinogen. He was admitted to the hospital unconscious, with blood pressure of 200/80, constricted pupils, and increased respiratory rate. Neurological examination showed anesthesia to pin pricks, depressed deep tendon reflexes, and reactive pupils 3 mm in diameter. During the first 3 days of hospitalization, behavior was characterized by an erratic mental state, blank staring, and in the presence of family or staff, he was physically aggressive and had to be restrained. Inappropriate affect, loss of time orientation, aggression, and regressive behavior were also evident. 100 mg of chlorpromazine was administered four times daily, and within 36 hours, the patient had returned to normal. Daily group therapy and occupational therapy sessions were initiated, and he was discharged after 18 days. Unlike treatment for other hallucinogenic-induced psychoses, the importance of avoiding unnecessary sensory influx is stressed.

Classification: 15.

Subject Terms: Case Report, Drug Effects, Anesthetic Drugs, Toxic Psychoses, Treatment Effectiveness Evaluation: 07790, 15300, 02490, 53600, 54160.

Index Phrase: sensory influx during treatment, phencyclidine induced psychosis, 19-year-old male.

DOC year: 1973 vol. No. 49 abstract No. 02810:

Ketamine ("ketelar"): A safer anaesthetic for ECT.

Brewer, C. L.; Davidson, J. R.; Hereward, S.

Midland Nerve Hospital, Birmingham, England.

British Journal of Psychiatry. 1972 June vol. 120(559), 679–680.

Reports that ketamine, a recently introduced phencyclidine derivative, has the important advantages of relatively good preservation of swallowing and cough reflexes plus rapid absorption following intramuscular injection. It does not markedly depress respiration and usually raises blood pressure. Muscular tone may also be increased tending to prevent airway obstruction. These advantages were confirmed on a trial with 28 West Indian patients, while the reported disadvantage of recovery hallucinations was not found.

Classification: 15.

Subject Terms: Electroconvulsive Shock Therapy, Anesthetic Drugs; 16500, 02490.

Index Phrase: Ketamine as ECS therapy anaesthetic, West Indian patients.

DOC year: 1972 vol. No. 48 abstract No. 05324:

The effects of drugs on objective measures of thought disorder in schizophrenic patients.

Payne, R. W.

Pennsylvania Psychiatric Institute, Philadelphia.

Psychopharmacologia. 1972, vol. 24(1), 147–158.

Distinguishes three separate and possibly independent syndromes among schizophrenic patients. "Process schizophrenics" are characterized by a relatively low IQ, general psychomotor retardation, a slow RT, perceptual underconstancy, concreteness, and distractibility. Many of these specific defects can be produced in normals by phencyclidine. No known drug (e.g., the phenothiazines) has been shown to improve all these dysfunctions significantly in schizophrenics. "Psychotic anxiety reaction" describes the thinking disturbances found in many reactive schizophrenics, consisting of a tendency to produce unusual responses in a wide range of experimental situations, accompanied by an unusual degree of "perceptual constancy." These behavioral abnormalities might be due to the disruptive effects of a very high level of anxiety, and might be alleviated by depressant drugs. "Overinclusive psychosis," characterizes a minority of hyperactive schizophrenics and some manic patients, who seem to use unusually broad and vaguely defined concepts in their thinking. LSD may induce this type of thinking in normals, and it is possible that it may respond to phenothiazine medication. (29 ref.)

Classification: 15.

Subject Terms: Tranquilizing Drugs, Drugs/, Drug Therapy, Schizophrenia, Thinking, Psychosis; 53900, 15440, 15380, 45440, 52880, 41910.

Index Phrase: Phenothiazines and depressant drugs, objective measures of thought disorders, schizophrenics with process versus psychotic anxiety reaction vs. over inclusive psychosis.

DOC year: 1969 vol. No. 43 abstract No. 14450:

Effects of MAO inhibitors and parachlorophenylalaine in longitudinal sleep studies.

Wyatt, Richard et al.

National Institute of Mental Health, Bethesda, Md.

Psychophysiology. 1968, 5(2), 209–210.

Obtained polygraphic sleep profiles longitudinally (30–100 nights) before, during and after human Ss were given trials of, parachlorophenylalanine (PCP) and monoamine oxidase inhibitors (MAOI). PCP (up to 4 gm/day) in four carcinoid patients eventually produced marked REM suppression with only moderately reduced total sleep. No evidence of REM rebound was seen up to 3 week postdrug, but this interval was required for REM to return to baseline levels. With varying dosages of several MAOI in two normal controls and two depressed patients slight increases in REM tended to appear initially, whether related to time course or dosage level. Moderate to complete REM suppression developed after about 1 week and on full therapeutic dosages in all cases. Delayed REM rebound appeared to occur post drug in three of four cases, this being quite marked in that patient with the most complete suppression, and suggestive in the two controls.

Classification: 15.

Subject Terms: Drug Therapy, Sleep, Eye Movements, Disorders/, Hormones; 15380, 47820, 18930, 14520, 23260.

Index Phrase: Monoamine oxidase inhibitors & parachlorophenylalanine, REM sleep, carcinoids.

DOC year: 1967 vol. No. 41 abstract No. 10609:

Effect of Phencyclidine in Chronic Schizophrenics.

Itil, T.: Keskiner, A.; Kiremitci, N.

University Missouri School of Medicine.

Canadian Psychiatric Association Journal. 1967, 12(2), 209–212.

There were significant clinical and EEG differences in response to phencyclidine between lobotomized and nonlobotomized schizophrenic groups. The inability of lobotomized patients to exhibit marked phencyclidine effects in comparison to those seen in nonlobotomized SS suggests that the thalamocortical integrative mechanism may be necessary to produce typical phencyclidine response. Clinical and EEG results suggest that it is possible phencyclidine acts on the thalamocortical system, as has already been reported. Resistance to drug treatment in some patients might be linked to impaired thalamocortical integrative functions due to the disease process or exogenous factors. Thiopental EEG investigations and therapeutic trials with these various groups of patients also substantiate this hypothesis.

Classification: 15.

Subject Terms: Antischizophrenic Drugs, Schizophrenia, Treatment/, Chronic Schizophrenia, Drug Therapy, Brain Lesions, Electroencephalography; 03210, 45440, 54190, 09200, 15380, 06830, 16530.

Index Phrase: Phencyclidine, clinical and EEG changes, lobotomy, chronic schizophrenics.

Animal Studies

DOC year: 1978 vol. No. 59 abstract No. 00656:

Interactions between D-sup-9-tetrahydrocannabinol and phencyclidine hydrochloride in rats.

Pryor, G. T. et al.

Stanford Research Institute Menlo Park, California.

Pharmacology, Biochemistry and Behavior. 1977 Jan. vol. 6(1), 123–136.

In five experiments, Delta-sup-9-tetrahydrocannabinol (THC; 2.5, 5.0, 10.0 mg/kg, orally) impaired avoidance and rotarod performance and caused bradycardia and hypothermia in male Fischer rats. Phencyclidine (PCP; 1.25, 2.5, 5.0 mg/kg, ip) impaired avoidance and rotarod performance and caused a marked increase in photocell activity. When combined, the depressant properties of each drug were enhanced, and the stimulation of photocell activity caused by PCP was antagonized by THC. Tolerance to many of the effects of 10 mg/kg THC and its interactions with PCP followed subacute treatment for 6 days, whereas many of the effects of PCP were enhanced after subacute treatment with a dose of 2.5 mg/kg. Open-field behavior was affected by each drug alone and in combination in a similar way as photocell activity, but the depression caused by their interaction was greater; both drugs caused an increase in urination. Response rates on an FR-10 schedule of food reinforcement were decreased by 2.5 mg/kg PCP, but not by 5 mg/kg THC; the combination caused greater response suppression than either drug alone. The functional interactions between THC and PCP were not related to changes in the concentrations of -sup-1-sup-4C or -sup-3H in plasma or brain derived from -sup-1-sup-4C-THC and -sup-3H-PCP, respectively. (87 ref.)

Language: Engl. Classification: 26.

Subject Terms: Tetrahydrocannabinol, Anesthetic Drugs, Animal Open Field Behavior, Rats, Response Frequency, Drug Effects, Urination, Photoreceptors; 52470, 02490, 02825, 42930, 44240, 15300, 55070, 38430.

Index Phrase: Delta-9-tetrahydrocannabinol and/or phencycline, photocell activity and open field behavior and urination and response rates on reinforcement schedule, male rats.

DOC year: 1977 vol. No. 58 abstract No. 11173:

Phencyclidine-induced rotational behavior in rats with nigrostriatal lesions and its modulation by dopaminergic and cholinergic agents.

Finnegan, Kevin T.; Kanner, Marilyn I.; Meltzer, Herbert Y.

University Chicago, Pritzker School of Medicine.

Pharmacology, Biochemistry and Behavior 1976 Dec. vol. 5(6), 651–660.

The peripheral administration of the psychotomimetic drug phencyclidine (PCP) induces a dose-related ipsilateral rotation in unilateral substantia nigra electrolytically-lesioned rats. The three experiments reported here show that the intensity of this rotation can be modulated in male Sprague-Dawley rats by administration of various dopaminergic and cholinergic agents. Injection of alpha-methylparatyrosine methylester (125 mg/kg) or haloperidol (1 mg/kg) inhibited the ipsilateral circling behavior. Pimozide (1 mg/kg) also inhibited the rotation, but to a lesser extent. The

anticholinergic agent trihexyphenidyl (5 mg/kg) potentiated, and the cholinomimetic drug arecoline (5 mg/kg) depressed, the rotation induced by PCP (7.5 mg/kg). It is probable that PCP possesses significant dopaminergic and anticholinergic properties. The capacity of PCP to induce rotation in this model may be related to its effects on dopaminergic and cholinergic neurons in the rat striatum. Thus, PCP may induce rotational behavior by potentiating dopaminergic transmission, by blocking cholinergic activity, or both; both of these effects have been demonstrated to be important in the generation of circling behavior in rats with nigrostriatal lesions. (75 ref.)

Language: Engl. Classification: 26.

Subject Terms: Brain Lesions, Rats, Stereotyped Behavior, Drug Effects, Cholinergio Blocking Drugs, Mesencephalon, Adrenergic Blocking Drugs, Anesthetic Drugs, Cholinomimetic Drugs: 06830, 42930, 49795, 15300, 09050, 30960, 01070, 02490, 09100.

Index Phrase: Dopaminergic and cholinergic agents, phencyclidine-induced rotational behavior, male rats with nigrostriatal lesions.

DOC year: 1977 vol. No. 58 abstract No. 06621:

Capturing and marking howler monkeys for field behavioral studies.

Scott, Norman J.; Scott, Alan F.; Malmgren, Linda A.

University New Mexico Museum of Southwestern Biology.

Primates. 1976 Oct. vol. 17(4), 527–533.

Discusses methods for capturing and marking howler monkeys for ecological studies and compares systems for capturing and handling animals. The effectiveness of phencyclidine hydrochloride (Sernylan) and succinylcholine chloride (SCC) is compared, and dosages are given for howlers and capuchins. The advantages of ketamine over ether as a holding drug are discussed.

Language: Engl. Classification: 21.

Subject Terms: Monkeys, Drug Effects, Experimental Methods; 31900, 15300, 18590.

Index Phrase: Methods for capturing and mating howler monkeys for field behavioral studies.

DOC year: 1977 vol. No. 58 abstract No. 02973:

The behavioral pharmacology of phencyclidine.

Balster, Robert L.; Chait, L. D.

Virginia Commonwealth University.

Clinical Toxicology, 1976 vol. 9(4), 513–528.

Discusses the species specificity of the behavioral effects of phencyclidine (PCP), compares these effects to those of other psychoactive drugs, and examines what little is known about clinically important interactions between PCP and other drugs (particularly marihuana, CNS depressants, and chlorpromazine). Research on the iv self-administration of PCP by monkeys is described, and evidence on the development of tolerance to this drug is summarized. Important species differences in response to PCP have been revealed empirically, with subhuman primates showing effects most similar to those seen in man. Behavioral studies suggest that PCP represents an entirely new class of psychoactive drugs, sharing some effects with related arylcyclohexylamines. Because very little research has been conducted with PCP, it is recommended that studies be conducted on the effects of the drug on learned behavior, on interactions of PCP with other drugs of abuse, on potentially useful antagonists of PCP, and on behavioral and pharmacological determinants of PCP reinforcement. (33 ref.)

Language: Engl. Classification: 26.

Subject Terms: Drugs/, Drug Effects, Marihuana, CNS Affecting Drugs, Chlorpromazine, Comparative Psychology, Pharmacology: 15440, 15300, 29550, 09840, 08990, 10720, 38070.

Index Phrase: Phencyclidine, species specificity of behavioral effects and comparison to effects of other psychoactive drugs and interactions with marihuana and CNS depressants and chlorpromazine.

DOC year: 1977 vol. No. 57 abstract No. 12394:

Discriminable stimuli produced by hallucinogens.

Kuhn, D. M.; White, F. J.; Appel, J. B.

University South Carolina Behavioral Pharmacology Laboratory.

Psychopharmacology Communications. 1976 vol. 2(4), 345–348.

Reviews studies on the discriminative stimulus properties of LSD, psilocypin, mescaline, ditran, and phencyclidine (PCP). Transfer tests and antagonism studies with humans suggest that (a) the ability of a hallucinogen to serve as a discriminative stimulus per se does not indicate hallucinogenic liability in man; (b) the ability of a test drug to mimic the stimulus properties of a hallucinogen in rats may be dependent on structural similarities between the two; (c) the discriminative proper-

ties of LSD and possibly mescaline appear to be mediated by 5-hydroxytryptamine (5-HT) receptors; however, it might be more accurate to attribute the mediation of stimulus properties of LSD to an LSD receptor rather than a 5-HT receptor; and (d) the discriminative stimulus properties of ditran are related to its anticholinergic properties. (15 ref.)

Language: Engl. Classification: 26.

Subject Terms: Literature Review, Stimulus Discrimination, Drug Effects, Lysergic Acid Diethylamide, Psilocybin, Mescaline, Hallucinogenic Drugs; 28580, 49950, 15300, 29070, 41310, 30950, 22160.

Index Phrase: LSD and psilocybin and mescaline and ditran and phencyclidine, discriminative stimulus properties, review.

DOC year: 1976 vol. No. 56 abstract No. 07521:

Dopaminergic effects of phencyclidine in rats with nigrostriatal lesions.

Kanner, Marilyn; Finnegan, Kevin; Meltzer, Herbert Y.

University Chicago, Pritzker School of Medicine.

Psychopharmacology Communications, 1975 vol. 1(4), 393–401.

Phencyclidine (2.5–15 mg/kg, ip) produced a dose-dependent ipsilateral rotation in male Sprague-Dawley rats with unilateral substantia nigra lesions. Findings suggest that phencyclidine may be acting by increasing the availability of dopamine on the intact side of a unilaterally-lesioned substantia nigra rat and that the response can be modulated by alterations in the cholinergic system. (25 ref.)

Language: Engl. Classification: 26.

Subject Terms: Anesthetic Drugs, Drug Effects, Brain Lesions, Dopamine, Neurochemistry; 02490, 15300, 06830, 14950, 33680.

Index Phrase: Phencyclidine and nigrostriatal lesions, dopamine availability, male rats.

DOC year: 1976 vol. No. 56 abstract No. 07494:

The effects of some drugs on an evoked response sensitive to tetrahydrocannabinols.

Boyd, Eugene S.; Boyd, Eleanor H.; Brown, Lawrence C.

U. Rochester School of Medicine and Dentistry.

Journal of Pharmacology and Experimental Therapeutics 1974 June vol. 189(3) 748–758.

Compared the effects of several drugs with those of Delta-super(9)-tetrahydrocannabinol (THC) on responses evoked in frontal lobe polysensory areas, ipsi- and contralateral to the stimulus site in primary somatosensory cortex, in squirrel monkeys with postmesencephalic or high spinal sections. THC augmented both the early evoked response and the late evoked response, which occurred 150–200 msec after the stimulus, and augmented or induced repetitive synchronous activity after the late response. Pentobarbital, ethanol, and diethyl either depressed both early and late responses, while chlorpromazine and chloralose depressed late responses without consistently affecting early responses. Mescaline had effects similar to those of THC on late responses, but its effect on early responses was much less. LSD had little effect on early responses but depressed late responses at high doses. Phencyclidine also had little effect on early responses; it facilitated late responses at low doses and depressed them at high doses. Picrotoxin and pentylenetetrazol had effects similar to, but greater than, those of THC. Strychnine had variable, and mostly small, effects on evoked responses. Gallamine, atropine, amphetamine, levarterenol, and methoxamine were without effect.

Language: Engl. Classification: 26.

Subject Terms: Evoked Potentials, Drugs/, Drug Effects, Tetrahydrocannabinol, Monkeys, Lesions, Brain Lesions, Frontal Lobe; 18330, 15440, 15300, 52470, 31900, 28200, 06830, 20440.

Index Phrase: Delta-9-tetrahydrocannabinol & other drugs, responses evoked in frontal lobe, polysensory areas, squirrel monkeys with postmesencephalic or high spinal sections.

DOC year: 1976 vol. No. 56 abstract No. 05660:

The effects of phencyclidine on the uptake of -sup-3H-catecholamines by rat striatal and hypothalamic synaptosomes.

Garey, Richard E.; Heath, Robert G.

Tulane U. Medical School.

Life Sciences 1976 May vol. 18(10) 1105–1110.

In tests of the effects of the psychotomimetic agent, phencyclidine (PCP), on the uptake of -sup-3H-catecholamines by synaptosome-rich homogenates of rat striatum and hypothalamus, PCP was shown to be a potent, competitive inhibitor of both -sup-3H-dopamine uptake in the striatal region and -sup-3H-norepinephrine uptake in the hypothalamus. Implication of these findings are discussed in terms of a drug-

induced imbalance of the catecholaminergic-cholinergic systems in those regions of the brain where activity has been correlated with emotional expression. (22 ref).

Language: Engl Classification: 26.

Subject Terms: Rats, Drug Effects, Catecholamines, Psychotomimetic Drugs, Neurochemistry, Hypothalamus; 42930, 15300, 07920, 42150, 33680, 24080.

Index Phrase: Phencyclidine, uptake of 3-H-catecholamines by striatum and hypothalamic synaptosomes, rats.

DOC year: 1976 vol. No. 56 abstract No. 03778:

The effects of phencyclidine, ketamine, d-amphetamine and pentobarbital on schedule-controlled behavior in the mouse.

Wenger, Galen R.; Dews, P. B.

U Harvard Medical School, Lab of Psychobiology.

Journal of Pharmacology & Experimental Therapeutics 1976 Mar. vol. 196(3) 616–624.

Programmed the response of 11 male C57BL mice breaking a light beam onto a photocell to produce food according to a multiple schedule with alternating FR-30 and FI-300 sec components. Each of the 4 drugs tested produced an increase in rate of responding; the increase was proportionately greater at low rates of responding than at higher rates. Dextroamphetamine (0.1–30 mg/kg ip), ketamine (1–180 mg/kg ip), and phencyclidine (0.3–30 mg/kg ip) produced dose-related increases in FI response rates but decreases in FR rates. The maximum increases in FI average rates were to 1.83, 1.25, and 1.32 times the control rate for amphetamine (1′ mg/kg), ketamine (100 mg/kg), and phencyclidine (3 mg/kg), respectively. Phencyclidine and ketamine thus showed some amphetamine-like effects in the mouse. Pentobarbital (3 mg/kg ip) increased both the FR and FI rates; higher doses (up to 30 mg/kg) progressively decreased both FR and FI response rates. (26 ref).

Language: Engl Classification: 26.

Subject Terms: Drug Effects, Dextroamphetamine, Pentobarbital, Anesthetic Drugs, Mice, Fixed Interval Reinforcement; 15300, 13940, 37250, 02490, 31270, 19880.

Index Phrase: Phencyclidine vs ketamine vs dextroamphetamine vs pentobarbital, FI schedule-controlled responding, male mice.

DOC year: 1975 vol. No. 54 abstract No. 07015:

Drug discrimination in rats: The effects of phencyclidine and ditran.

Jarbe, Torbjorn U.; Johansson, Jan O.; Henriksson, Bengt G.

U. Uppsala, Sweden.

Psychopharmacologia 1975 vol. 42(1) 33-39.

In an experiment with 58 male albino Sprague-Dawley rats, choice responding in a T-maze was made contingent upon whether Ss experienced certain drug effects. Using a state-dependent model, 8 groups of Ss received 1–6 mg/kg of phencyclidine (PCP), 8–12.5 mg/kg of ditran, or saline in intraperitoneal injections. Results show that the lower the training dose, the slower the appearance of the drug discriminative formation. Transfer testings with ketamine and cyclohexamine showed that they were interchangeable with PCP. The order of their relative potency was cyclohexamine > PCP > ketamine. Atropine transferred to ditran. Administration of compounds not structurally related to the training drugs did not show transfer. Pretreatment with parachlorphenylalanine or tetrabenazine plus imipramine did not indicate inhibition or antagonism in PCP-trained Ss. Tacrine and especially physostigmine effectively antagonized the ditran-induced cues. Yohimbine and neostigmine did not. (33 ref).

Classification: 06.

Subject Terms: Stimulus Discrimination, Rats, Drug Effects, Tranquilizing Drugs, Anesthetic Drugs: 49950, 42930, 15300, 53900, 02490.

Index Phrase: Phencyclidine & ditran, drug discrimination, male rats.

DOC year: 1975 vol. No. 54 abstract No. 06931:

The role of isometric muscle tension in the production of muscle toxicity by phencyclidine and restraint stress.

Goode, David J.; Meltzer, Herbert Y.

U. Chicago, Pritzker School of Medicine.

Psychopharmacologia 1975 vol. 42(1) 105–108.

A restraint cage with a strain gauge attached to a movable roof to record the isometric force exerted by rats during restraint is described. In a study with male Sprague-Dawley rats, the isometric activity score, an integral of the total upward force exerted during restraint, correlated significantly with plasma creatine phosphokinase (CPK) activity following restraint. Phencyclidine (5 mg/kg) administered intraperitoneally to Ss 15 min prior to ½-hr restraint produced muscle damage associated with large increases of plasma CPK activity. Dose-response curves for the effects of phencyclidine on isometric activity score and plasma CPK activity were

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essentially parallel, and isometric activity scores were linearly related to plasma CPK activity. Ss restrained and painfully stimulated on the tail developed both elevated isometric activity scores and elevations of plasma CPK activity. Slopes of the curves relating isometric activity to plasma CPK activity were identical for painfully stimulated and phencyclidine-treated Ss. It is concluded that increased isometric muscle tension developed during phencyclidine plus restraint is related to the production of muscle damage and increased efflux of CPK in rats.

Classification: 06.

Subject Terms: Drug Effects, Rats, Muscles, Toxicity, Physiological Stress, Anesthetic Drugs; 15300, 42930, 32580, 53610, 38710, 02490.

Index Phrase: Isometric muscle tension, production of muscle toxicity by phencyclidine & restraint stress, male rats.

DOC year: 1974 vol. No. 52 abstract No. 06975:

Neuronal activity in the chronic and acute epileptogenic focus.

Glotzner, F. L.; Fetz, E. E.; Ward, A. A.

U. Washington, Medical School.

Experimental Neurology 1974 Mar. vol. 42(3) 502–518.

Recorded the activity of single neurons in the chronic (alumina) epileptogenic focus of 3 unanesthetized rhesus monkeys using micropipettes and compared the results with activity in the acute penicillin focus of cats. Differences were found between the 2 types of foci in the interspike interval patterns of bursting units. The effects of phencyclidine hydrochloride (Sernylan), structural differences in the foci, and the suggestion that the bursts are generated in the axons fairly remote from the cell bodies, are discussed. (30 ref).

Classification: 06.

Subject Terms: Electrical Activity, Neurons, Chemical Brain Stimulation, Penicillins, Cats, Monkeys, Epilepsy; 16420, 33770, 08540, 37190, 07980, 31900, 17680.

Index Phrase: Single neuronal activity in chronic epileptogenic focus vs acute penicillin focus, monkeys vs cats.

DOC year: 1974 vol. No. 51 abstract No. 10646:

Phencyclidine self-administration in the rhesus monkey.

Balster, Robert L.; Johanson, Chris E.; Harris, Robert T. Schuster, Charles R.

Duke U., Medical School.

Pharmacology, Biochemistry, & Behavior 1973 Mar. vol. 1(2) 167–172.

Reports 2 experiments demonstrating that rhesus monkeys will self-administer phencyclidine (a drug with marked psychotomimetic effects in man) via venous catheters. In Exp. I 1 female and 2 male rhesus monkeys, with a long history of drug self-administration, were trained to leverpress for cocaine injections. Ss maintained higher response rates compared to saline control rates when 1.5–25 mg/kg of phencyclidine were substituted for the cocaine. In Exp. II 2 experimentally naive male rhesus monkeys spontaneously initiated leverpressing for injections of 50 mg/kg phencyclidine. Ss in both experiments self-administered enough of the drug to produce behavioral effects resembling general anesthesia. (16 ref).

Classification: 06.

Subject Terms: Self Stimulation, Drug Dependency, Cocaine, Monkeys, Psychotomimetic Drugs, Drug Effects; 46350, 15270, 09930, 31900, 42150, 15300.

Index Phrase: Self-administration of phencyclidine following leverpress training for cocaine injections vs no previous training, monkeys.

DOC year: 1974 vol. No. 51 abstract No. 06647:

Effects of psychoactive drugs on nonverbal communication and group social behavior of monkeys.

Miller, Robert E.; Levine, John M.; Mirsky, I. Arthur

U. Pittsburgh, Medical School.

Journal of Personality & Social Psychology 1973 Dec. vol. 28(3) 396–405.

Administered 3 kinds of psychoactive drugs—a stimulant (amphetamine sulfate), a tranquilizer (chlorpromazine), and a hallucinogen (phencyclidine hydrochloride)—to 6 feral male rhesus monkeys. In comparison with nontreated conditions, the stimulant improved communication in cooperative conditioning, the tranquilizer markedly damped both transmission and reception of nonverbal cues, and the hallucinogen only slightly affected transmission and reception. In subsequent group situations, the stimulant facilitated intragroup social behavior and reduced aggression, the tranquilizer reduced the attractiveness of the treated S to its untreated partners, and the hallucinogen drastically reduced all social behavior within the group and markedly augmented the proportion of aggressive responses directed toward the drugged S. An inverse relationship between transmission ability and receptive sensitivity was found in untreated Ss, a finding which has also been reported for human Ss. (21 ref).

Classification: 06.

Subject Terms: Monkeys, Drug Effects, Amphetamine, Animal Communication, Animal Social Behavior, Hallucinogenic Drugs, Chlorpromazine; 31900, 15300, 02160, 02630, 02860, 22160, 08990.

Index Phrase: Amphetamine sulfate and chlorpromazine and phencyclidine hydrochloride, nonverbal communication and group social behavior, monkeys.

DOC year: 1973 vol. No. 50 abstract No. 10747:

The effects of a new phencyclidine derivative and diazepinone derivative on the electroencephalographic and behavioral responses in the cat.

Massopust, L. C.; Wolin, L. R.; Albin, M. S.

Cleveland Psychiatric Inst., Lab. of Neurophysiology, O.

T.-L.-T. Journal of Life Sciences 1973 vol. 3(1) 1–10.

Administered tiletamine hydrochloride (CI–634), a phencyclidine derivative, intramuscularly to 12 adult domestic cats. High amplitude pulsatory activity in the EEG was produced, accompanied by convulsive seizures and clonic muscular reactions during the deep surgical anesthetic state. Since these physiological reactions were considered detrimental, a diazepinone derivative (CI–716) having tranquilizing properties was combined with CI–634 and administered by the same route. The combination caused the disappearance of the pulsatory EEG activity and markedly decreased convulsive and clonic muscular reactions. The anesthetic time was not decreased but extended. This might be considered paradoxical since CI–716 when injected alone caused high amplitude fast activity to appear in the cortex and hippocampus, persisting 6 hrs or more. Further, CI–716 alone caused bizarre behavioral reactions which vanished when combined with CI–634.

Classification: 06.

Subject Terms: Tranquilizing Drugs, Cats, Drug Effects, Electroencephalography, Convulsions, Anesthetic Drugs; 53900, 07980, 15300, 16530, 11750, 02490.

Index Phrase: Tiletamine hydrochloride and diazepinone derivative, EEG and behavioral responses, cat.

DOC year: 1973 vol. No. 49 abstract No. 08611:

Effects of various psychotomimetic agents on the EEG and acetylcholine release from the cerebral cortex of brainstem transected cats.

Domino, E. F.; Bartolini, A.

U. Michigan.

Neuropharmacology 1972 Sep. vol. 11(5) 703–713.

Determined the effects of iv administration of D9tetrahydrocannabinol (THC), LSD, phencyclidine, and the pyrrolidyl and piperidyl isomers of ditran on the spontaneous neocortical EEG and release of acetylcholine (ACh) from the somatosensory cortex of 18 brainstem-transected adult male cats. D9THC given to SS with pretrigeminal midpontine transection produced high voltage EEG slow waves more prominent in the frontal areas of the brain, and reduced blood pressure and heart rate. D9THC (.5 mg/kg) caused either no effect or a slight increase of ACh release from the cortex, and larger doses caused a progressive decrease in ACh release. 2.5 mg/kg amphetamine antagonized the effects of D9THC. 1 mg/kg phencyclidine caused marked EEG changes and slightly increased cortical release of ACh. 5 mg/kg caused pronounced EEG changes but did not significantly decrease ACh in contrast to 20 mg/kg pentobarbital which dramatically reduced it. Both ditran isomers (1 mg/kg) caused EEG slowing and a 200% increase of ACh release for the cortex. In contrast, LSD had much less obvious effects and depended upon basal release levels. If base-line release of ACh was high, .1 mg/kg LSD decreased it slightly; if basal release was low, the drug increased it slightly. It is concluded that various hallucinogens differentially affected neocortical release of ACh in pretrigeminal midpontine transected Ss, and that gross neocortical changes were not directly correlated with the cortical release of ACh per se. (25 ref.).

Classification: 06.

Subject Terms: Brain Lesions, Lysergic Acid Diethylamide, Drug Effects, Cats, Acetylcholine, Electroencephalography, Brain Stem, Tetrahydrocannabinol, Psychotomimetic Drugs; 06830, 29070, 15300, 07980, 00430, 16530, 06870, 52470, 42150.

Index Phrase: Delta-9 tetrahydrocannabinol and LSD and phencyclidine and pyrrolidyl and piperidyl isomers of ditran, EEG and acetylcholine release from cerebral cortex, brainstem transected cats.

DOC year: 1973 vol. No. 49 abstract No. 03877:

Psychotropic drug influences on brain acetylcholine utilization.

Domino, Edward F.; Wilson, Ann E.

U. Michigan, Medical School.

Psychopharmacologia 1972 vol. 25(4) 291–298.

Administered iv doses of hemicholinium-3 (HC-3), a cholinergic antisynthesis agent, to young male albino Holtzman rats to deplete brain acetylcholine (ACh). Rate of HC-3-induced depletion of Ach was used as an index of ACh utilization. Total brain ACh was determined following various doses of chlordiazepoxide, pentobarbital, chlorpromazine, methotrimeprazine, imipramine, morphine, d-amphetamine, scopolamine, LSD-25, and phencyclidine given ip alone, and after iv administration of HC-3. It was found that psychotropic drugs have marked differential effects on rate of HC-3-induced ACh depletion. (15 ref.).

Classification: 06.

Subject Terms: Chlorpromazine, Scopolamine, Amphetamine, Chlordiazepoxide, Pentobarbital, Imipramine, Morphine, Lysergic Acid Diethylamide, Acetylcholine, Rats, Drug Effects, Chemical Brain Stimulation, Neurochemistry; 08990, 45880, 02160, 08930, 37250, 24520, 32060, 29070, 00430, 42930, 15300, 08540, 33680.

Index Phrase: Chlordiazepoxide and pentobarbital and chlorpromazine and methotrimeprazine and imipramine and morphine and d-amphetamine and scopolamine and LSD-25 and phencyclidine, rate of hemicholinium-3 induced brain acetylcholine depletion, rats.

DOC year: 1973 vol. No. 49 Abstract No. 01911.

Effects of phencyclidine and stress on plasma creatine phosphokinase (CPK) and aldolase activities in man.

Meltzer, H. Y.; Holzman, P. S.; Hassan, S. Z. Guschwan, A.

Pritzker School of Medicine, U. Chicago.

Psychopharmacologia 1972 vol. 26(1) 44–53.

Phencyclidine (Phen) is a potent psychotomimetic, drug in man. In conjunction with restraint stress, Phen produces increased plasma creatine phosphokinase (CPK) and aldolase (Ald) activities and skeletal muscle pathology in rats and some acutely psychotic patients. In the present study, 4 of 7 normal paid volunteers had no elevations of plasma CPK or Ald activity either before or after .1 mg/kg Phen, iv. 1 5 had increased CPK levels which began 1 hr. after Phen. 2 Ss had increased Ald and/or CPK levels which began within 24 hr. before Phen administration and which persisted or increased for at least 24 hr. after Phen. The plasma enzyme changes occurred in those Ss who showed the most pronounced cognitive disruption after Phen. The effects of stress and Phen on plasma CPK and Ald levels and its implications for the study of muscle abnormalities in psychotic patients are discussed. (28 ref.).

Classification: 06.

Subject Terms: Drug Effects, Psychotomimetic Drugs, Stress, Aldolases, Enzymes; 15300, 42150, 50170, 01770, 17630.

Index Phrase: Phencyclidine and stress, plasma creatine phosphokinase and aldolase activities, man.

DOC year: 1972 vol. No. 48 abstract No. 10839:

Partial antagonism of the behavioural and neurochemical effects of phencyclidine by drugs affecting monoamine metabolism.

Tonge, Sally R.; Leonard, Brian E.

Liverpool Polytechnic, School of Pharmacy, England.

Psychopharmacologia 1972, vol. 24(4), 516–520.

Studied the interaction of imipramine and tetrabenazine with phencyclidine, an hallucinogenic drug known to affect 5-hydroxytryptamine (5-HIP) metabolism in the brains of Wistar rats. After ip administration of the 3 drugs alone and in combination. 5-HIP and 5-hydroxyindoleacetic acid concentrations in 3 areas of rat brain were determined. Results show that a combination of imipramine (5 mg/kg) and tetrabenazine (40 mg/kg) reversed the effects of phencyclidine on 5-HIP concentrations and antagonized many of the behavioral effects of the hallucinogen.

Classification: 06.

Subject Terms: Drug Effects, Rats, Rats, Metabolism, Biochemistry, Brain; 15300, 42930, 42930, 31000, 05940, 06750.

Index Phrase: Imipramine and tetrabenazine interaction with phencyclidine, 5-hydroxytryptamine metabolism in brain and hallucinogen behavioral effects, rat.

DOC year: 1972 vol. No. 48 abstract No. 10835:

Behavioral and biochemical effects of p-chlorophenylalanine, 3-chlorotyrosine and 3-chlorotyramine: A proposed mechanism for inhibition of self-stimulation.

Stark, P.; Fuller, R. W.

Eli Lilly & Co., Lilly Research Lab., Indianapolis, Ind.

Neuropharmacology 1972, Mar. vol. 11(2), 261–272.

Rats and dogs, with electrodes chronically implanted in the posterior hypothalamus, pressed a lever to receive electrical stimuli at various current intensities. p-Chlorophenylalanine (PSP), a drug that lowers brain serotonin by causing inhibition

of tryptophan hydroxylation, inhibited self-stimulation. This inhibition was not temporally correlated with lowering of brain serotonin. PCP also inhibits phenylalanine hydroxylation; therefore plasma levels of phenylalanine were increased with little change in plasma tyrosine levels. Levels of phenylalanine and of PCP did not correlate well with the inhibition of self-stimulation behavior in either species. 3-Chlorotyrosine, a known metabolite of PCP, inhibited self-stimulation but did not significantly lower brain serotonin. 3-Chlorotyramine, the decarboxylated product of 3-chlorotyrosine, also inhibited self-stimulation. Results suggest that the 3 compounds inhibited self-stimulation by a mechanism independent of brain serotonin, while the greater potency of 3-chlorotyrosine indicates this effect of PCP may occur after it is converted to 3-chlorotyrosine indicates this effect of PCP may occur after it is converted to 3-chlorotyrosine. A possible metabolic pathway that could yield a false neurotransmitter is suggested. (32 ref.).

Classification: 06.

Subject Terms: Hypothalamus, Blood, Drug Effects, Rats, Drug Effects, Dogs: 24080, 06200, 15300, 42930, 15300, 14840.

Index Phrase: P-chlorophenylalanine and 3-chlorotyrosine and 3-chlorotyramine, self-stimulation of posterior hypothalamus and serotonin level, rat and dog.

DOC year: 1972 vol. No. 48 abstract No. 10830:

Influences of intraventricularly administered 5-hydroxytryptamine on normal and amine-depleted rabbit: Subcellular distribution of 5-hydroxytryptamine in the brain stem, and animal behaviour.

Segawa, Tomio; Fujisawa, Toshio.

Kyoto U., Japan.

Biochemical Pharmacology 1972, May vol. 21(9), 1357–1367.

Subjected normal and p-chlorophenylalanine (PCP) pretreated rabbits to intraventricular injection of 5-hydroxytryptamine (5-HT), and investigated subcellular distribution of 5-HT in the brainstem, drug effects, and behavioral changes. 5-HT in cytoplasmic fraction was remarkably elevated by 5-HT while those of mitochondrial P2-, microsomal P3-, and synaptic vesicular P2V-fractions were not increased significantly unless Ss were pretreated with PCP. In PCP-treated Ss, 5-HI produced characteristic sedation. Ip injection of imipramine (IM) prevented 5-HT-induced increase of 5-HT in P2-fraction whereas desmethylimipramine (DMI) had no effect. DMI, was found to elevate endogenous 5-HT in P2-fraction and 5-hydroxyindole acetic acid (5-HIAA) in brainstem while IM caused a significant decrease of 5-HIAA in brainstem. Reserpine (Re) clearly blocked the increase of 5-HT in P2V-fraction. Re-induced sedation could not be counteracted by intraventricular injection of 5-HT.

Classification: 06.

Subject Terms: Rabbits, Drug Effects, Brain, Metabolism, Drugs/; 42590, 15300, 06750, 31000, 15440.

Index Phrase: Intraventricular 5-hydroxytryptamine, subcellular distribution in brainstem and sedation of behavior, normal vs. amine-depleted rabbit.

DOC year: 1972 vol. No. 48 abstract No. 10770:

The EEG in anaesthetized juvenile baboons.

Harris, Ruth.

Maudsley Hosp., London, England.

Electroencephalography and Clinical Neurophysiology 1972, Jan. Vol. 32(1), 81–83.

Obtained 124 EEGs from 39 juvenile baboons anesthetized with phencyclidine hydrochloride (Sernyl) and pentobarbitone (Nembutal). Changing EEG patterns were related to the time interval from onset of anesthesia, and became relatively stable from 15–45 min. after its start, providing useful data for monitoring changes in cerebral function. (French summary).

Classification: 06.

Subject Terms: Drugs/, Drug Effects Electroencephalography, Animals/; 15440, 15300, 16530, 02880.

Index Phrase: Phencyclidine hydrochloride & pentobarbitone anesthesia, EEG, juvenile baboon.

DOC year: 1972 vol. No. 48 abstract No. 06534:

Comparative learning impairment and amnesia by scopolamine, phencyclidine, and ketamine.

Glick, S. D.; Zimmerberg, B.

City U. New York, Mt. Sinai School of Medicine, New York, N.Y.

Psychonomic Science 1971, Nov. Vol. 25(3), 165–166.

Administered scopolamine, phencyclidine, and ketamine to naive female CF1 mice before or immediately after training of a passive avoidance response in 2 experiments. Retention was measured 24 hr. later. All 3 drugs impaired retention when administered before training. Only scopolamine impaired retention when adminis-

tered after training. The effect of post training administration of scopolamine was found to diminish as the training-injection interval increased.

Classification: 06.

Subject Terms: Avoidance Conditioning, Time, Mice, Retention Drugs/; 05200, 53210, 31270, 44400, 15440.

Index Phrase: Scopolamine & phencyclidine & ketamine, passive avoidance response retention, pre- vs. posttraining administration, mouse.

DOC year: 1972 vol. No. 48 abstract No. 04453:

Interaction of phencyclidine with drugs affecting noradrenaline metabolism in the rat brain.

Tonge, Sally R.; Leonard, Brian E.

Polytechnic, School of Pharmacy, Liverpool, England

Psychopharmacologia 1972, vol. 23(1), 86–90.

Classification: 06.

Subject Terms: Biochemistry, Brain, Metabolism, Drug Effects Rats, Drugs/; 05940, 06750, 31000, 15300, 42930, 15440.

Index Phrase: Phencyclidine and tetrabenazine and desipramine alone and in combination, noradrenaline and normetanephrine levels in fore- and mid- and hindbrains, rat.

DOC year: 1972 vol. No. 47 abstract No. 10401:

A neuropsychopharmacological comparison of d-amphetamine, L-dopa, and cocaine.

Wallach, M. B.; Gershon, S.

New York U., Medical Center, Neuropsychopharmacology Research Unit.

Neuropharmacology 1971, Nov. vol. 10(6), 743–752.

11 adult cats were chronically implanted with bipolar subcortical and monopolar cortical electrodes. The eeg, reticular formation multiple unit activity and gross behavior were monitored. The effects of acute ip administration of d-amphetamine (2 mg/kg), l-dopa (75 mg/kg), cocaine (4 mg/kg), p-hydroxyamphetamine (4 mg/kg), and l-dopa (75 mg/kg) following hydrazino-alpha-methyldopa (25 mg/kg) pretreatment were observed. All agents except the p-hydroxyamphetamine induced a desynchronized eeg, increased the multiple unit activity of the reticular formation, and elicited stereotyped behavior. L-dopa elicited more pronounced adrenergic peripheral effects than did either d-amphetamine or cocaine. These included piloerection and salivation. In the presence of hydrazino-alpha-methyldopa, l-dopa elicited salivation while the p-hydroxyamphetamine alone elicited only piloerection hallucinogenic agents, E.g., lsd, mescaline, and phencyclidine, in a previous study, induced a hypersynchronous or intermittently hypersynchronous eeg and failed to elicit stereotyped behavior in cats. Clinically, amphetamine and cocaine induce a psychotic state resembling schizophrenia of the paranoid type, while the hallucinogens elicit primarily perceptual distortions. Thus it would appear that there are 2 distinct classes of psychotomimetic agents. The use of l-dopa in treating patients suffering from parkinsonism must be viewed with caution if the animal data can be extrapolated to man. Indeed some preliminary reports of psychotic behavior following the administration of high doses of l-dopa have appeared. (36 ref.).

Classification: 06.

Subject Terms: Drugs/, Drug Effects, Cats, Electroencephalography, Electrical Activity, Brain; 15440, 15300, 07980, 16530, 16420, 06750.

Index Phrase: D-amphetamine and L-dopa and cocaine and p-hydroxyamphetamine following hydrazino-alpha-methyldopa pretreatment, EEG and reticular formation multiple unit activity and gross behavior, cat.

DOC year: 1972, vol. No. 47 abstract No. 10373:

The effect of some hallucinogenic and other drugs on the temperature of reserpinized mice.

Leonard, B. E.; Stonier, P. D.

Imperial Chemical Industries, Pharmaceuticals Div., Alderley Park, England.

Psychopharmacologia 1971, vol. 22(2), 126–132.

Studied 7 hallucinogenic and 9 centrally acting nonhallucinogenic drugs for their calorigenic effects on reserpine pretreated alderly park mice. With the exception of ditran and mescaline, all the hallucinogens had a significant calorigenic effect. Methamphetamine, amphetamine, dimethoxyphenylethylamine, desipramine, amitryptyline, and chlorpromazine also had a marked calorigenic action. Both alpha-methyl-m-tyrosine (ammt), and its active metabolite m-hydroxynorephedrine, had a significant calorigenic action even though they did not significantly affect body temperature. The calorigenic effect of ammt was significantly antagonized by phencyclidine, ketamine, lsd, and mescaline; the other hallucinogens (harmine, ditran, and p-bromethylamphetamine) were without effect. Only propranolol, desipramine

and amitriptyline significantly antagonized the calorigenic effect of ammt. The possible mechanism of action of the drugs studied is tentatively discussed.

Classification: 06.

Subject Terms: Rats, Drug Effects, Temperature Effects, Lysergic Acid Diethylamide, Amphetamine, Mice; 42930, 15300, 51990, 29070, 02160, 31270.

Index Phrase: Hallucinogenic and nonhallucinogenic drugs and reserpine pretreatment, body temperature, mouse.

DOC year: 1972 vol. No. 47 abstract No. 04384:

Dissociation of the effects of p-chlorophenylalanine on self-stimulation and on brain serotonin.

Stark, Paul, et al.

Eli Lilly, Research Lab., Indianapolis, Ind.

Life Sciences 1970, Jan. vol. 9(1, Pt. 1), 41–48.

The drug, p-chlorophenylalanine (pcp), inhibited self-stimulation in rats and dogs with chronically implanted electrodes in the posterior hypothalamic area at doses of 350 mg/kg, ip for rats, iv for dogs. PCP lowered serotonin in both species, but had little or no effect on norepinephrine in the brain. Self-stimulation in rats was depressed at 1 and 6 hr., but returned to normal by 24 hr. In dogs, self-stimulation was depressed at 6 and 24 hr. But had returned to normal at 96 hr. Rat brain serotonin was only slightly lowered by 6 hr. And markedly lowered by 24 hr.; dog brain serotonin declined steadily throughout the 96 hr. The depression of self-stimulation by pcp is therefore not a consequence of its depletion of brain serotonin.

Classification: 06.

Subject Terms: Drug Effects, Dogs, Brain, Brain Stimulation, Rats, Drug Effects; 15300, 14840, 06750, 06880, 42930, 15300.

Index Phrase: P-chlorophenylalanine, brain serotonin and self-stimulation, rat and dog.

DOC year: 1971 vol. No. 46 abstract No. 10400:

Some effects of an hallucinogenic drug (phencyclidine) on neurohumoral substances.

Leonard, B. E.; Tonge, Sally R.

ICI, Ltd., Pharmaceuticals Div., Macclesfield, England.

Life Sciences 1970, Oct. vol. 9(20, Pt. 1), 1141–1152.

Hallucinogens may owe some of their central activity to actions on the monoamine systems of the brain, however, a definite relationship between disturbed monoamine metabolism and hallucinogenesis has not been established. To investigate the possibility of other neurohumoral substances being affected by a hallucinogen phencyclidine was administered ip to Wistar rats at 10 mg/kg. Gross behavioral effects included agitation, confusion, head shaking, backing movements, and inability to escape from their home cage by climbing. Acetylcholine levels, cholinesterase activity, histamine concentration, and glutamic acid concentrations were unaffected by the phencyclidine injection. A significant depletion of gamma-aminobutyric acid (GABA) occurred in the injected Ss. The fact that the metabolism of other neurohumours, other than GABA, is not affected by the hallucinogen phencyclidine provides some negative evidence for the involvement of the monoamines in hallucinogenesis. (29 ref.).

Classification: 06.

Subject Terms: Rats, Drug Effects, Metabolism; 42930, 15300, 31000.

Index Phrase: Ip phencyclidine, behavioral and physiological effects, rat.

DOC year: 1971, vol. No. 45 abstract No. 09521:

A neuropharmacological and behavioral study of phencyclidine and two of its congeners.

Gehrmann, John E.

Stanford U.

Dissertation Abstracts International 1970, Feb. Vol. 30(8–B), 3790–3791.

Classification: 06.

Subject Terms: Drug Effects, Animal Ethology, Electroencephalography, Cats, Drug Effects, Monkeys; 15300, 02720, 16530, 07980, 15300, 31900.

Index Phrase: Phencyclidine and ketamine and 3 related derivatives, behavioral and neuropharmacological properties, cat and monkey and rat and baboon.

DOC year: 1971, vol. No. 45 abstract No. 05831:

The effects of some hallucinogenic drugs upon the metabolism of 5-hydroxytryptamine in the brain.

Tonge, Sally R.; Leonard, B. E.

U. Nottingham, England.

Life Sciences 1969, Aug. vol. 8(15, Pt. 1), 805–814.

Investigated the effects of the 4 hallucinogenic drugs (phencyclidine, ditran, LSD-25, and mescaline) on the metabolism of 5-hydroxytryptamine (5-HT) in the brains of Wistar rats. All 4 drugs caused increases in the levels of 5-HT, accompanied in the early stages by decreases in the levels of 5-hydroxyindolyl-acetic acid, suggesting that the relationship between the 2 substances which exists in untreated animals had been altered. No effect on either MAO or aromatic amino acid decarboxylase activity was detected. The depletion of 5-HT which follows the administration of either reserpine or p-chlorophenylalaine was significantly reduced by all 4 drugs. Results support the theory that LSD owes its hallucinogenic activity to an ability to alter the capacity of the tissues to bind 5-HT. Further, the demonstration that 4 hallucinogens of widely different structure all affect the binding of 5-HT supports the implication of this action in hallucinogenesis.

Classification: 06.

Subject Terms: Drug Effects, Rats, Lysergic Acid Diethylamide, Metabolism, Brain; 15300, 42930, 29070, 31000, 06750.

Index Phrase: Phencyclidine and ditran and LSD-25 and mescaline, metabolism of 5-hydroxytryptamine in brain, rat.

DOC year: 1971, vol. No. 45 abstract No. 05815:

Effects of some hallucinogenic drugs upon the metabolism of noradrenaline.

Leonard, B. E.; Tonge, Sally R.

U. Nottingham, England.

Life Sciences 1969, Aug. vol. 8(15, Pt. 1), 815–825.

Investigated the actions of phencyclidine, ditran, LSD-25, and mescaline on the catecholamines of the brains of Wistar rats. Decreased levels of noradrenaline (NA), accompanied by slightly elevated dopamine (DA) levels, were observed with all 4 drugs. Phencyclidine increased the degree of depletion of NA produced by reserpine. All 4 drugs increase the depletion of NA and DA by alpha-methyl-m-tyrosine, but had no effect upon the depletion produced by alpha-methyl-p-tyrosine. Normetanephrine levels either were unaffected or were slightly decreased, indicating that the fall in NA is not a consequence of an increased release from neurons. It is suggested that part of the mechanism of action of hallucinogenic drugs is to inhibit the release of NA from the neuron, thus allowing its catabolism by MAO. (15 ref.).

Classification: 06.

Subject Terms: Rats, Drug Effects, Lysergic Acid Diethylamide, Metabolism, Biochemistry, Brain: 42930, 15300, 29070, 31000, 05940, 06750.

Index Phrase: Phencyclidine and ditran and LSD-25 and mescaline, brain catecholamine levels, rat.

DOC year: 1971, vol. No. 45 Abstract No. 01991:

Reticular multiple unit activity during a progression of states induced by CNS excitants: III.

Winters, Wallace D., et al.

U. California, Medical School, Los Angeles.

Electroencephalography and Clinical Neurophysiology 1969, Nov. vol. 27(5), 514–522.

Recorded the EEG, gross behavior, and multiple unit activity during the continuous progression of states induced by amphetamine (d-, and meth-), LSD–25, mescaline, gamma-hydroxybutyrate, pentylenetetrazol, or phencyclidine. The drugs appear to fall within a pattern of progressively increasing excitatory states. The least active agents induce only the initial phase. The more potent agents transcend these initial phases and induce generalized seizures. The reticular multiple unit activity increased slightly during the initial 2 phases; then following gamma-hydroxybutyrate the basal level fell progressively while the fluctuation rose markedly, whereas following pentylenetetrazol the multiple unit activity progressively increased. During the generalized seizures the unit activity was markedly elevated in both of these groups; then the unit activity fell during the brief period of postictal depression followed by a return of each drug group to the unit activity levels noted during the preseizure state. (French summary) (19 ref.).

Classification: 06.

Subject Terms: Amphetamine, Lysergic Acid Diethylamide, Cats, Drug Effects, Electrical Activity; 02160, 29070, 07980, 15300, 16420.

Index Phrase: Amphetamine and LSD and mescaline and gamma-hydroxybutyrate and pentylenetetrazol and phencyclidine, reticular multiple unit activity, cat.

DOC year: 1971, vol. No. 45 abstract No. 01980:

Behavioural effects of some morphine antagonists and hallucinogens in the rat.

Schneider, C.

Parke, Davis, & Co., Hounslow, England.

Nature 1968, Nov. vol. 220(5167), 586–587.

Investigated the behavioral effects of 11 morphine antagonists and hallucinogens 20 min. after subcutaneous administration in a dose volume of 10 ml/kg body weight to groups of Wistar rats. Bizarre behavior (i.e., walking backwards, turning head more than 20 times/min, etc.) resulted from cyclazocine, levallorphan, amphetamine, phencyclidine, and psilocybin. LSD (.3–20 mg/kg) produced bizarre behavior in only 20% of the Ss, but it produced fighting behavior at doses of 5 mg/kg. It is concluded that behavioral effects caused by hallucinogenic drugs are consistent with those which have been reported in humans.

Classification: 06.

Subject Terms: Aggressive Behavior, Drug Effects, Rats, Lysergic Acid Diethylamide, Amphetamine, Animal Ethology; 01390, 15300, 42930, 29070, 02160, 02720.

Index Phrase: Cyclazocine vs. levallorphan vs. amphetamine vs. phencyclidine vs. psilocybin vs. LSD, behavioral effects, rat.

DOC year: 1971, vol. No. 45 abstract No. 01943:

Effects of para-chlorophenylalanine on sleep in man.

Wyatt, Richard J., et al.

National Inst. of Mental Health, Bethesda, Md.

Electroencephalography and Clinical Neurophysiology 1969, Nov. vol. 27(5), 529–532.

Studied the effect of depleting brain serotonin with parachlorophenylalanine (PCP), a selective inhibitor of serotonin synthesis, on the sleep of man. PCP markedly decreased REM sleep. NREM sleep remained either unchanged or was slightly increased. This is in contrast to the reported effect of PCP in other mammals. In 1 S, at a time when PCP had maximally reduced REM sleep, psychological disturbances were produced similar to those previously described in patients taking PCP. Data suggest that the establishment of any general significance of serotonin in the neuropharmacology of sleep will require detailed investigation of the species in question. (French summary) (17 ref.).

Classification: 06.

Subject Terms: Drug Effects, Rapid Eye Movement, Sleep; 15300, 42820, 47820.

Index Phrase: Para-chlorophenylalanine, REM and NREM sleep.

DOC year: 1978 vol. No. 59 abstract No. 656:

Pryor, G. T. et al. (Stanford Research Inst, Menlo Park, CA) Interactions between Δ^9-tetrahydrocannabinol and phencyclidine hydrochloride in rats. *Pharmacology, Biochemistry & Behavior*, 1977 (Jan), vol. 6(1), 123–136.—In 5 experiments, Δ^9-tetrahydrocannabinol (THC; 2.5, 5.0, 10.0 mg/kg, orally) impaired avoidance and rotarod performance and caused bradycardia and hypothermia in male Fischer rats. Phencyclidine (PCP; 1.25, 2.5, 5.0 mg/kg, ip) impaired avoidance and rotarod performance and caused a marked increase in photocell activity. When combined, the depressant properties of each drug were enhanced, and the stimulation of photocell activity caused by PCP was antagonized by THC. Tolerance to many of the effects of 10.0 mg/kg THC and its interactions with PCP followed subacute treatment for 6 days, whereas many of the effects of PCP were enhanced after subacute treatment with a dose of 2.5 mg/kg. Open-field behavior was affected by each drug alone and in combination in a similar way as photocell activity, but the depression caused by their interaction was greater; both drugs caused an increase in urination. Response rates on an FR-10 schedule of food reinforcement were decreased by 2.5 mg/kg PCP, but not by 5.0 mg/kg THC; the combination caused greater response suppression than either drug alone. The functional interactions between THC and PCP were not related to changes in the concentrations of ^{14}C or ^{3}H in plasma or brain derived from ^{14}C-THC and ^{3}H-PCP, respectively. (87 ref)—*Journal abstract.*

SOCIAL AND BEHAVIOURAL SCIENCES—CURRENT CONTENTS

The following abstracts were obtained by a manual search of Current Contents dated January 1978 through March 1978. Approximately 1,230 separate journals are included in this index.

Deren, S. and Des Jarlais, D. C. "Risk Taking Related to Drug Use: An Application of the Shift-to-Risk Design." "American Journal of Drug and Alcohol Abuse," vol. 4, No. 3, 1977.

Duncan, David F. (State University, N. Y.). "Reactions to Drug Users by Emergency Room Personnel." "*Journal Psychedelic Drugs*," 9:103–5, April–June 1977. Most staff see patients (except heroin O.D.s) as suicide attempts. They are loathed, feared, underserved. Need reeducation of staff and teaching of effective means to help patient.

Gottlieb, R. M.; Nappi, T.; and Strain, J. J. "Physicians knowledge of Psychotropic Drugs—Preliminary Results." "American Journal of Psychiatry," vol. 135, No. 1, January 1978.

Graeven, D. B. "Phencyclidine (PCP) Local and National Perspectives." "Addictive Diseases," vol. 3, No. 2, 1977.

Kaufman, E. "Polydrug Abuse or Multidrug Misuse: It's here to stay." "British Journal of Addiction," vol. 72, No. 4, December 1977.

Kozel, N. J. and Dupont, R. L. "Trends in Drug Use and Crime and their Relationship in an Arrested Population." "American Journal of Drug and Alcohol Abuse," vol. 4, No. 3, 1977.

Sutherland, May. "Drug Interests of Suburban Junior High School Students." "Journal of Drug Education," vol. 7, No. 4, 1978.

Swanson, Jan Colby (George Williams College). "Organic Products in Advertising and Street Drugs." "Journal Drug Ed," 7:291-3, 77-78. Most popular drugs in the street at this time are the "organics" which are similar to natural organic advertising and environmental concerns. "If it's natural, it can't hurt you." People are taking drugs which pose as "organic" although they are really synthetic. This illustrates the gullibility of the user—particularly regarding THC.

Wittenborn, J. R., ed. "Modern Problems of Pharmopsychiatry," vol. 12. Proceedings of a Symposium held at the twenty-first International Congress, Paris, France, 1976.

LIFE SCIENCES—CURRENT CONTENTS

The following abstracts were obtained by a manual search of Current Contents dated January 1978 through March 1978. Approximately 1,100 separate journals are included in this index.

"An Analysis of Phencyclidine Street Drug Proportion in Ontario." "Canadian Journal of Pharmaceutical Sciences," vol. 12, No. 4, October 1977. Note: H. G. Giles; K. L. Adamson; J. A. Marshman; E. M. Selles.

Chait, L. D. and Balster, Robert L. "The Effects of Acute and Chronic Phencyclidine on Schedule-Controlled Behavior in the Squirrel Monkey." "Journal of Pharmacology and Experimental Therapeutics," vol. 204, No. 1, January 1978.

Cogen, F. C.; Rigg, G.; Simmons, J. L.; and Domino, E. F. "Phencyclidine Associated Acute Rhabdomyolisis." "Annals of Internal Medicine," vol. 88, No. 2, Feburary 1978.

"Correspondence. More about poisoning by Phencyclidine ("PCP" "Angel Dust")." "The New England Journal of Medicine," vol. 297, No. 25, December 22, 1977.

"On the Interraction of Drugs with the Cholinergic Nervous System. I. Tolerance to Phencyclidine Derivatives in Mice: Pharmacological Characterization." "Psycho-Pharmacology," vol. 56, No. 1, 1978.

"On the Interraction of Drugs with the Cholinergic Nervous System. II. Cross-Tolerance between Phencyclidine Derivatives and Cholinergic Drugs." "Psycho-Pharmacology," vol. 56, No. 1, 1978.

Wilson, A. E. and Domino, E. F. "Plasma Phencyclidine Pharmacokinetics in Dog and Monkey Using a Gas Chromatography Selected Ion Monitoring Assay." "Biomedical Mass Spectrometry," vol. 5, No. 2, February 1978.

THE NEW YORK TIMES INFORMATION BANK

The following abstracts represent news items for the period 1971 through February 1978. There are 32 items included and they reflect a data base of 60 newspapers or periodicals.

Washington Post editorial supports two bills before Maryland General Assembly which would increase penalties for manufacture and distribution of phencyclidine (PCP); maintains that more States will tighten statutes as dangers of PCP become more apparent (S) (Washington Post, February 27, 1978, page: 18, column: 1).

Family of Alvin Whitehead, who was found dead in Parker Center jail cell shortly after his arrest for unruly behavior, files complaints totaling $10.5 million against city of Los Angeles, Calif.; allege police negligence in restraining Whitehead; coroner's report indicates death was due to broken neck; finds presence of drug PCP in bloodstream; in related incident, four Los Angeles County jail inmates stage hunger strike to protest Los Angeles NAACP official Ferdinand Bell's death by asphyxia; charge that death came after police restraint during arrest for reckless driving (M) (Los Angeles Times, February 23, 1978, section: 2, page: 1, column: 4).

Law enforcement officials at Maryland Congressional hearings urge harsher penalties for manufacture and distribution of drug phencyclidine (PCP); Richard L Hamilton tells House Judiciary Committee PCP is easily made, easily obtained and relatively cheap; estimates 32 percent of people enrolled in Maryland drug treatment programs have had "problems" with PCP; Timothy E. Clarke tells Senate Judicial Proceedings Committee it takes 6 hours to transform $125 worth of noncon-

traband drugs into $37,000 worth of contraband drugs; notes PCP is widely used by youths (S) (Washington Post, February 15, 1978, section: 3, page: 1, column: 1).

Los Angeles County sheriff's department and Drug Enforcement Administration agents conduct one of largest drug raids on record, seizing $300 million worth of PCP and Quaaludes; raid of four laboratories in Azusa-Covina area of San Gabriel Valley ends year-long investigation into nationwide drug operation; five persons arrested in raid, Billy Calvin Bailey, 47, his son Billy Stephen Bailey, 26, David Lee Bernstein, 29, Ronald Rovano, 35, and Dana Roma Montgomery, 24, are charged with conspiracy to manufacture controlled substance and possession with intent to distribute (S) (New York Times, December 18, 1977, page: 23, column: 1, fiche: 352-01-37).

Washington, D.C. Superior Court Judge Tim Murphy rules 3-year-old City Council drug regulation prohibiting possession of LSD, PCP, Preludin, Quaaludes, and Ritalin unenforceable because it does not specify why they are dangerous: U.S. Attorney's Office petitions DC Court of Appeals for early hearing (M) (Washington Post, December 13, 1977, section: 3, page: 1, column: 3).

Washington (DC) Court of Appeals reverses ruling by Superior Court Judge Tim Murphy; declares that City Council regulation that prohibits possession of five commonly abused drugs is valid: drugs involved in regulation are LSD, PCP, Preludin, Quaaludes, and Ritalin (M) (Washington Post, December 17, 1977, section: 2, page: 1, column: 5).

NYC and Fed officials warn that phencyclidine, animal tranquilizer that has been rejected for use on humans because it may induce violence and psychosis, has found way into marijuana cigarettes of thousands of adolescents in city in previous 6-8 months; doctors are agreed that, unlike marijuana, phencyclidine or PCP, also known as "angel dust," "dust," "busy bee," and "elephant tranquilizer," is very dangerous; complications detailed (M) (New York Times, November 10, 1977, section: 2, page: 24, column: 1, fiche: 314-77-97).

Queens (NYC) District Attorney John J. Santucci announces that three illegal laboratories that had produced several millions of dollars worth of hallucinogenic drug PCP had been closed and 58 persons arrested; states that arrests had resulted from 7-month investigation (M) (New York Times, October 21, 1977, section: 2, page: 2, column: 1, fiche: 294-77-83).

Fed and California drug officials note increasing use of drug phencyclidine hydrochloride (PCP) among Americans, especially teenagers; in another matter, National Institute on Drug Abuse estimates that almost 8 million Americans have tried cocaine; holds cocaine can cause adverse side effects and strong psychological dependence; NIDA Director Dr. Robert DuPont opposes any easing of legal restrictions on cocaine, although he endorses relaxation of stiff penalties for marijuana; in another matter, NIDA makes no statement on whether marijuana poses serious, long-term health hazard, explaining that question requires further study (M) (Time, July 18, 1977, page: 49, column: 3).

Increasing use by U.S. adolescents of drug PCP discussed; observers note drug was first used in 1960's to spike other drugs such as marijuana, LSD and THC; doctors and psychiatrists remark drug causes paranoia and schizophrenia; question why it is currently so popular; feel in light of users' often violent reactions, drug is probably more harmful than any other around; individual cases of PCP use discussed; photos of users (L) (Washington Post, July 3, 1977, section: 8, page: 4, column: 1).

Fed and State officials report laboratories hidden away in southern California's back country are supplying drug users, mostly teenagers, with cheap but deadly substitute for increasingly expensive narcotics; explain operations are cartering to revived mkt. for phencyclidine because street value of other narcotics have increased by 25 percent to 30 percent; claim laboratories are supplying users not only in California, but also in NYC, Chicago, and other U.S. drug centers; add it is difficult to track down laboratories because of their mobility; note dangerous side effects of drug and growing number of related drug deaths attributed to PCP (M) (New York Times, July 3, 1977, page: 20, column: 1, fiche: 184-01-39).

Jury returns second-degree murder verdict against Charles Peters, tried in Redwood City (Calif.) for slaying 22-month-old Manuel Tsingaris; also finds Peters guilty of attempted murder of child's mother, burglary, and assault on police officer; Peters had taken phencyclidine (PCP) before he broke into Tsingaris home (M) (San Francisco Chronicle, June 17, 1977, page: 3, column: 1).

U.S. drug authority Dr. David Smith, founder of Haight-Ashbury Free Clinic, describes effects of drug phencyclidine (PCP) during testimony in San Mateo (Calif) murder trial of Charles Peters; notes drug appeared on streets in '68, but claims use of drug is increasing at alarming rate; repts use is more often chronic than occasional, and long-term effects are often severe and unpredictable; holds Hayward (Calif)

has become 'PCP Capital of the World' with 20–30 overdoses being treated daily in East Bay area; believes Peters, who claims he does not remember murdering 22-month-old baby Manuel Tsingaris and stabbing baby's pregnant mother, is suffering from amnesia typical of PCP toxic psychosis; photo of Smith and of Peters (M) (San Francisco Chronicle, June 14, 1977, page: 2, column: 1).

Dr. Irma Strantz, Los Angeles County drug program dir, and Dr Leon Marder rept sharp increase in usage of phencyclidine or 'angel dust' by youth (S) (Los Angeles Times, May 31, 1977, section: 2, page: 1, column: 3).

Natl Institute on Drug Abuse dir Dr Robert L DuPont, speaking at major natl conf on drug addiction at Hyatt Regency Hotel in San Francisco, repts over ⅓ of U.S. herion deaths and over ¼ of all other drug-related deaths occur in Calif; notes that veterinary tranquilizer phencyclidine (PCP), which first appeared in Haight-Ashbury over decade ago, is reappearing frequently in San Francisco and is thought to be cause of increasing violence; in related article, Calif drug abuse chief Stuart Snyder repts Calif saved $12.5 million in police and prison costs during first 6 months of '76 when new and liberal marijuana law became effective; statistics cited; Dupont por (M) (San Francisco Chronicle, May 6, 1977, page: 4, column: 1).

Miami, Fla, Drug Enforcement Adm agents break up clandestine Deerfield Beach laboratory, seizing ingredients for $39 million worth of hallucinogenic drug Phencyclidine; raid was staged on automobile repair shop described as front for illegal manufacturing operation; list of those arrested at Mobile Automotive Repair Service included (S) (Miami Herald, December 19, 1976, section: 4, page: 8, column: 1).

Man awaiting trial in Montgomery County (Md) drug case is found dead in his apartment with hands handcuffed behind back; name withheld by police; was among 7 arrested Oct 28 '76 for manufacturing PCP (phencyclidine) from chems allegedly bought from Medical Supplies Ltd of Silver Springs, which employed him; co is not involved in illegal manufacturing scheme (M) (Washington Post, December 5, 1976, section: 4, page: 1, column: 6).

Seven members of Pagans motorcycle club are among 9 indicated by U.S. grand jury on charges of conspiring to mfr and distribute PCP and 'speed' drugs; Pagans' natl pres John Vernon Marron, treas Gregory Dorsey, and sgt-at-arms Kirby Keller are among those indicted in Baltimore for distributing drugs in Washington, DC, area (M) (Washington Post, November 5, 1976, section: 3, page: 9, column: 1).

Barbar Falconer survey discusses med care for fans at rock music concerts; mentions existence of San Francisco, Calif, Haight-Ashbury Free Med Clinics' rock med section; clinic works with rock music concert promoters to provide fans on the spot med care; day with rock med unit at concert detailed; alcohol, LSD, marijuana and phencyclidine pointed out as drugs favored among young people; photos (L) (San Francisco Chronicle, October 14, 1976, page: 25, column: 1).

Byron Earl Fountaine, arrested on charges of mfr dangerous drug phencyclidine (PCP) and released pending sentencing, was arrested again and charged with new scheme to mfr same drug (M) (Washington Post, August 28, 1976, section: 2, page: 1, column: 2).

Charles James Layne tells Baltimore (Md) jury that he helped set up chemical lab in Wheaton (Md) for manufacture of PCP, hallucinogenic drug, for sale in Washington, DC, metropolitan area; 8 DC area men have been charged with conspiracy to manufacture, distribute and possess illegal drug (M) (Washington Post, August 11, 1976, section: 3, page: 1, column: 6).

HEW chemist Vincent Francis Maturi is arrested in Poolesville (Md) by Montgomery County police; charges are mfg and conspiring to mfg phencyclidine (PCP), hallucinogenic drug; police confiscated $6,000 worth of lab equipment and chemicals, plus one and a half pounds of PCP compound; 8 others arrested (M) (Washington Post, July 30, 1976, section: 3, page: 1, column: 6).

Drug Enforcement Admin reveals breakup of internatl, illicit drug-making operation operating two labs in San Francisco area; labs made methamphetamine (speed) and PCP (phencyclidine) and are located in Belmont and San Rafael; they are said to have capacity for producing $500 million worth of pills a week (M) (San Francisco Chronicle, July 14, 1976, page: 25, column: 1).

Eight persons indicted by Fed grand jury, Alexandria, Va, for conspiring to mfr and sell up to $40 million worth of hallucinogen phencyclidine; secret labs making drug were set up in 4 private homes in northern Va, 2 in Colo and one in Los Angeles (S) (New York Times, December 20, 1975, page: 25, column: 3, fiche: 354–75–66).

Alexandria, Va, grand jury charges 8 persons with conspiring to mfr and distribute $40 million worth of hallucinogenic drug phencyclidine, commonly known as PCP or 'killer weed'; indictment culminates investigation of more than 2 yrs by Fed

Drug Enforcement Adm and local police depts; those named in indictment listed (L) (Washington Post, December 19, 1975, section: 2, page: 1, column: 7).

Drug Enforcement Adm agents raid Alexandria, Va, antique shop, Washington, DC, storage bldg and W Va farmhouse in effort to break up large laboratory capability for production of hallucinogen PCP; arrest Dwight Tolliver and Michael S Steiner at Alexandria store; confiscate 5,000 pounds of drugs used to make PCP, plus laboratory equipment (M) (Washington Post, September 25, 1975, section: 2, page: 1, column: 5).

Article on phencyclidine (PCP), number 2 drug problem, after marijuana, in Fairfax County, Va; illus (M) (Washington Post, June 8, 1975, section: 2, page: 1, column: 3).

Drug Enforcement Adm seizes chems with potential for producing $900,000 worth of drug phencycldine; charges Rosemary Thompson and 3 men with mfg hallucinogenic in S Central Va (M) (Washington Post, June 4, 1975, section: 3, page: 3, column: 1).

Md State police Apr 10 break up drug distribution ring on Univ of Md's College Park Campus with arrest of 53 persons; State police spokesman Bill Clark says raids reached up to top echelon of a syndicate that in last 9-mos had handled over $2-million of marijuana, plus $100,000 of methaqualone and large amounts of PCP and LSD; raid detailed (M) (Washington Post, April 11, 1974, page: 1, column: 1).

Montgomery County, Md, and fed drug officials arrest Howard Russell Andrews Jan 16 on charges of operating hallucinogenic drug-manufacturing laboratory in his plant in Rockville, Md; he is owner of Sigma Labs; fed agents seize more than 90 lbs of hallucinogenic drug, phencyclidine (PCP) (Washington Post, January 22, 1974, page: 1, column: 5).

Brit Judge Grant says phencyclidine, drug called 'angel dust' which causes people to believe they have been reduced to size of Tom Thumb, should be proscribed by Parliament; drug is not covered by Dangerous Drugs Act; Paul Scott-Marsh is given lenient sentence after being convicted of plotting to supply drug illegally (M) (Times of London, December 20, 1973, page: 4, column: 1).

Arlington (Va) police arrest 8 employes of Western Elec plant on charges of selling heroin, marijuana and phencyclidine (Washington Post, November 5, 1971, section: 3, page: 2, column: 2).

Appendix B

Discussions and Interviews

Bellevue Hospital, City of New York, Dr. John Graham, Director, Psychiatric Emergency Area.

Dr. Selina Bendix, Bendix Institute, Berkeley, California, Environmental Review Officer.

Chief Medical Examiner, City of New York, Dr. Dominick DiMaio.

Cornell Medical College, New York Hospital, Mr. J. Carlin, Apothecary-in-Chief.

Department of Justice, State of California, Robert S. Elsberg, Special Agent.

District Attorney's Office, Queens County, New York, Michal L. Rice, Assistant District Attorney.

Drug Enforcement Administration: Floyd Anderson, Research; Kenneth Durrin, Director, Office of Compliance and Regulatory Affairs; Jim Huff, DAWN data; Dr. Judy Lawrence, Regulatory Control; Howard McClain, Jr., Federal Register; David Melocik, Congressional Liaison.

Lynn Freedman, Research Librarian.

Honorable Alan G. Hevesi, New York State Assembly, Cathy Lynch, Legislative Assistant.

Dr. Leon Katz, Organic Chemist.

Steven E. Lerner, Steven E. Lerner, R. Stanley Burns, Ronald L. Linder, National Consultant Service (PCP), San Francisco, California.

Narcotic Division, New York City Police Department, Sgt. Bernard Gillespie.

National Conference of State Legislators, Deena Bellas, Criminal Justice Division, Denver.

National Institute on Drug Abuse: Dr. Dorynne Czechowicz, Program Management; Dr. Norman Krasner, Behavioural Research; Dr. Heinz Surer, Chemist; Dr. Robert Willette, Liaison to DEA and FDA.

Office of Drug Abuse Services, State of New York: Leonard Berry, Public Information; Dr. Douglas Lipton, Assistant Commissioner.

Office of the Mayor, City of New York, Peter A. Piscitelli, Chief Albany Lobbyist.

Office of Probation, City of New York, Thomas Jacobs, Commissioner.

Parole Board, State of New York, Ed Hammock, Commander.

Pharm-Chem Newsletter, Palo Alto, California, Jerrie Dayharsh.

Phoenix House Foundation, Inc.: Dr. Mitchell S. Rosenthal, Director; Susan Pinto, Executive Assistant.

Saint Elizabeth's Hospital, National Institute of Mental Health, Dr. Paul V. Luisada, Deputy Medical Director, Area D, Community Mental Health Center. Dr. Alex Shulgin, Research Chemist.

S.P.A.R.K., City of New York High School Drug Abuse Prevention Program, Arthur Jaffee, Director.

Youth Aid Division, New York City Police Department, Capt. J. Daly.

Appendix C

METHODS OF CONVERSION OF SUBSTANCES TO PIPERIDINE

1. Reduction with Tin and Hydrochloric Acid.—One would need a flask equipped with a stirrer and a reflux condenser. The reflux condenser could be hooked up to the water faucet in the kitchen, and a kitchen stove could be used to supply heat to the flask. Tin, Hydrochloric Acid and Pyridine would be added to the flask. Apply heat agitate and reflux overnight. Pour contents through a fluted filter and evaporate to dryness in a large evaporating dish. The product is a salt of piperidine. It is released by treatment with caustic (NaOH) and taken up in a suitable solvent for the next reaction.

Equipment is basically simple. A high school chemistry student and above could handle this.

2. Reduction with Sodium Metal and Absolute Ethanol.—Into a large flask, with or without a stirrer charge the ethanol and pyridine. Slowly add small pieces ½" x ½" x ½" of sodium reacts with the ethanol to generate hydrogen which reduces pyridine to piperidine. Reaction is rapid initially, generates its own heat and goes slower as time proceeds. Let go overnight, being certain that hydrogen gas generated is led out of a window. Evaporate whole mixture after treatment with acid. The white salt is piperidine salt plus a sodium salt (sulfate or phosphate or hydrochloride). Now treat as in (1) above, add caustic and proceed.

Equipment is even simpler than in (1) above and a high school chemistry student could handle this.

3. Catalytic Hydrogenation with Palladium or Platinum Catalyst.—In an all glass apparatus equipped for shaking, charge catalyst, ethanol and pyridine. Flush air out using a water aspirator which can be hooked up to a kitchen faucet and fill glass bottle apparatus with hydrogen gas from a cylinder which is under pressure. These cylinders plus the pressure valves are readily available from chemical supply houses. The reaction is followed easily by reduction of pressure. At the end, the contents of the bottle are filtered to recover the expensive catalyst and the filtrate made acid with HCl, H_2SO_4 or H_3PO_4. Evaporate to dryness, treat with caustic to release piperidine and take up in a suitable solvent.

A variation of this is to run the reduction in the solvent you wish to use in the next step. We can discuss this by telephone. This would make work-up much easier.

Although I feel that a good high school student could do this, and I have taught technicians to perform these operations, I feel a first year chemistry major in college is a better bet. The hydrogenation apparatus would have to be purchased from a supply house. A good mechanically oriented high school student could build it from a motor and spare parts.

4. Catalytic Hydrogenation with Raney nickel.—This is identical to (3) above except that it requires a sophisticated expensive autoclave and a greater degree of sophistication. A small one-quart autoclave costs $6,000 to $8,000. Reaction is run at 100–250 atmospheres as opposed to 25–50 pounds in (3) above.

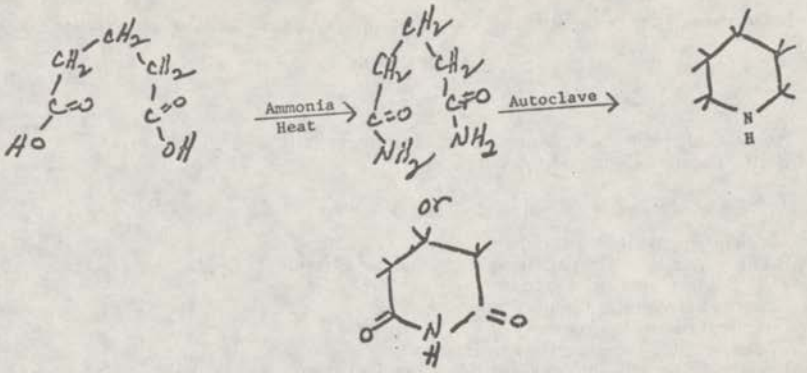
5. Electrolytic Reduction in 20 Percent Sulfuric Acid Using a Lead Anode.—I am not experienced in electrolytic processes, but this is relatively simple to do if one has the cells, anodes and a D.C. power source. Isolation of piperidine would be similar to those above.

I feel advanced college chemistry students could handle this. The acquisition of a D.C. power source would be the most difficult hardware to acquire—but it is available at gas stations.

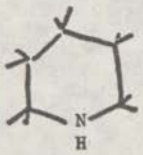
OTHER METHODS USING DIFFERENT RAW MATERIALS

1. High Pressure Hydrogenation over Copper-Chromium Oxide of Glutaric Acid Imides or Amides.—This is done in an autoclave at 250–500 atmospheres. It would require autoclave identical to that in (4) above and work-up would be as described before. Advanced college chemistry students should be able to handle this.

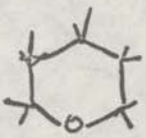
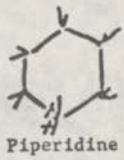
The reactions are as follows if one acquires glutaric acid.

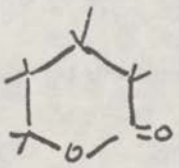
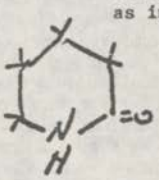


2. There are a variety of other chemical routes from the following intermediates.

a. $H_2NCH_2CH_2CH_2CH_2CH_2NH_2$ $\xrightarrow[\text{Heat}]{\text{Acid}}$ 

b. $BrCH_2CH_2CH_2CH_2CH_2Br$ $\xrightarrow[\text{Heat and Pressure}]{NH_3}$

c.  $+ NH_3$ $\xrightarrow[\text{Pressure}]{\text{Heat}}$  Piperidine

d.  $+ NH_3$ $\xrightarrow[\text{Pressure}]{\text{Heat}}$ 

Reduction as in 1.

Appendix D

Manufacturers and Suppliers of Piperidine, Pyridine and Cyclohexanone

PIPERIDINE

Manufacturers

Abbott Laboratories, Chemical and Agricultural Division, D-902
Reilly Tar and Chemical Corporation.

Suppliers

Aldrich Chemical Co., Inc.
BASF Wyandotte Corporation, Intermediate Chemicals Dept.
J. T. Baker Chemical Company.
Chemical Dynamics Corporation.
Chemical Samples Company.
Chem Service, Inc. (small quantities only).
Eastern Chemical Div. of Guardian Chemical Corp.
Eastman Organic Chemicals, Eastman Kodak Co.
Howard Hall & Co.
I.C.N./K. & K Life Sciences Group.
Lachat Chemicals, Inc.
La Pine Scientific Company.
MC & B Manufacturing Chemists.
Mallinckrodt, Inc., Science Products Div.
Pfaltz & Bauer, Inc., Div. of Aceto Chemical Co.
Sigma Chemical Company.
Tridom Chemical Corporation.
George Uhe Co., Inc.
VWR Scientific.

High Grade: Manufacturers and Suppliers

API Standard Reference Materials, Carnegie-Mellon University.
EM Laboratories, Inc.
Fisher Scientific Company.

PYRIDINE

Manufacturers

Koppers Company, Inc., Organic Materials Div.
Nepera Chemical Co., Inc., Sub. of Schering Ag, West Berlin.
Reilly Tar & Chemical Corporation.

Suppliers

Alltech Associates, Inc.
Accurate Chemical & Scientific Corporation.
American Scientific & Chemical.
Apache Chemicals, Inc.
Ashland Chemical Company, Industrial Chemicals & Solvents Div.
Bodmon Chemicals.
Chemical Dynamics Corporation.
Chemical Industries, Inc.
Chemical Samples Company.
Chem Service, Inc. (small quantities only).
Eastern Chemical Div. of Guardian Chemical Corp.
Helm New York Chemical Corporation.
La Pine Scientific Company.
The Mearl Corporation.
Pierce Chemical Company.
Pfaltz & Bauer Inc., Div. of Aceto Chemical Co.
T. R. America Chemicals, Inc.
Toyomenka (America) Inc.
George Uhe Co., Inc.
VWR Scientific

High Grade: Manufacturers and Suppliers

Aldrich Chemical Co., Inc.
Atomergic Chemetals Corporation.
Burdick & Jackson Laboratories, Inc.
J. T. Baker Chemical Company.
API Standard Reference Materials, Carnegie-Mellon University.
Eastman Organic Chemicals, Eastman Kodak Company.
EM Laboratories, Inc.
Fisher Scientific Company.
Gallard Schlesinger Chemical Mfg. Corporation.
Hach Chemical Company.
Lachat Chemicals, Inc.
MC & B Manufacturing Chemists.
Spectrum Chemical Manufacturing Corporation.

CYCLOHEXANONE

Manufacturers

Allied Chemical Corporation, Industrial Chemicals Div.
Celanese Chemical Company.
Dow Badische Company.
El Paso Products Company.
Nipro, Inc.
Union Carbide Corporation, Chemicals and Plastics.

Suppliers

Allied Chemical Corporation, Plastics Div.
Union Oil Company of California, AMSCO Div.
Atomergic Chemetals Corporation.
Ashland Chemical Company, Industrial Chemicals & Solvents Div.
BASF Wyandotte Corporation, Intermediate Chemicals Dept.
Eastern Chemical, Div. of Guardian Chemical Corp.
Eastman Organic Chemicals, Eastman Kodak Company.
Fallek Chemical Corporation.
Fisher Scientific Company.
Fairfield Chemical Company.
Great Lakes Terminal and Transport Corp.
Gallard Schlesinger Chemical Mfg. Corporation.
Hach Chemical Corporation.
Howe & French, Div. of the Hamblet & Hayes Companies.
Joseph Turner & Company.
Laramie Chemical Company.
Mallinckrodt, Inc., Science Products Div.
Pfaltz and Bauer, Inc., Div. of Aceto Chemical Co.
Sigma Chemical Company.
Spectrum Chemical Manufacturing Corporation.
T. R. America Chemicals, Inc.
Thompson-Hayward Chemical Company.
Tridom Chemical Corporation.
VWR Scientific.
Worth Chemical Corporation.

High Grade: Manufacturers and Suppliers

Aldrich Chemical Co., Inc.
J. T. Baker Chemical Company.
Chemical Samples Company.
EM Laboratories, Inc.
Lachat Chemicals, Inc.
MC & B Manufacturing Chemists.

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PCP Use Among New York State Public and Parochial Secondary School Students

(By the New York State Division of Substance Abuse Services)

EXECUTIVE SUMMARY

A 1978 survey of New York State public and parochial school students enrolled in grades 7–12 revealed that 257,000 or 14 percent have used PCP (Angel Dust) at least once in their lives. This rate is more than twice as high as the 1977 national findings on PCP use for the 12–17 age group (6 percent). About 7 percent or 118,000 of the state's secondary school students began their use in the past year.

This report on PCP use is the first of a series of reports from a survey of substance use among New York State students conducted by the New York State Division of Substance Abuse Services.

Major findings

Of the 1.8 million secondary school students in New York State:

257,000 (14 percent) have used PCP at least once in their lives;
161,000 (9 percent) report using PCP since school began in September, 1977;
83,000 (5 percent) used PCP during the 30 days prior to the survey; and,
11,000 (1 percent) report using PCP at least 10 times in the past 30 days.

Of all secondary school students, 118,000 (7 percent) used PCP for the first time in 1977 or 1978. This indicates a recent and rapid spread of PCP use in the state since 46 percent of those ever using PCP initiated use in 1977 or 1978.

Almost all PCP users have considerable experience with other drugs: Over 99 percent have also recently used one or more other substances for nonmedical reasons.

Seventh graders are least likely to have used PCP; 12th graders are most likely to have used it. The proportion of PCP users increases markedly between grades 7 and 8, and between grades 8 and 9. PCP use in grades 9 through 12 is about the same.

Lifetime, recent, and current PCP use is proportionally highest in the Buffalo and Long Island Health Service Areas and lowest in the Rochester Health Service Area.

About three quarters of the students in the state who have ever used PCP are in the downstate areas.

PCP-using students in upstate areas are more likely to have initiated their use in the past year than the PCP users in downstate areas.

PCP USE AMONG NEW YORK STATE PUBLIC AND PAROCHIAL SECONDARY SCHOOL STUDENTS

A 1978 statewide survey of New York State students enrolled in grades 7–12 revealed that 257,000 or about 14 percent have used PCP (Angel Dust) at least once in their lives. About 7 percent or 118,000 of the State's secondary school students began their use in the past year.

This report on PCP use is the first of a series of reports from a survey of substance use among New York State students conducted by the New York State Division of Substance Abuse Services. This is the first statewide survey in the United States to measure PCP use among students.

Phencyclindine (PCP) which was developed in the 1950's has legitimate use as a veterinary anesthetic and tranquilizer. It was originally synthesized for use among humans, but its use was rejected due to negative side effects among patients. Since 1967 the substance has been produced in clandestine laboratories, illegally distributed, and used on the street. PCP is popularly know as "Angel Dust," "Dog," "Super Grass," and "Elephant Tranquilizer." It is a dangerous psychoactive hallucinogen that has caused severe and violent reactions.

The survey was administered in a random sample of 146 public schools and 48 parochial schools throughout the state. In these schools, a random sample of 35,317 students completed the survey. The questionnaire was administered in March and April, 1978. The sample data were statistically projected to reflect drug use among the state's 1,817,000 students enrolled in grades 7–12. The self-administered questionnaire employed in the survey asked about the nonmedical lifetime use, recency of use, and frequency of use for the following substances: PCP, hallucinogens, cocaine, glue or solvents, heroin, methadone, marihuana, hashish, "ups" [1], "downs" [1], tranquilizers, cough medicine, other narcotics, alcohol, including beer,

[1] "Ups" and "downs" refer to stimulants and depressants. Such drugs as Benzedrine, Dexedrine, and diet pills are stimulants that are typically abused; and Tuinals, Seconals, Darvon, and Quaalude are depressants that are typically abused.

wine and hard liquor, and cigarettes. Later reports will highlight findings for these other substances.

The following sections present findings for PCP use for the state as a whole, among the eight health service areas in the state, and for each grade. Another section presents findings about the recent use of other drugs by PCP users. The final section presents separate findings for each of the eight health service areas.

Statewide Findings (table 1)

Of the 1.8 million secondary school students in New York State:

A little over 14 percent (257,000) have used angel dust (PCP) at least once in their lives (livetime use);

Almost 9 percent (161,000) report using PCP since school began in September, 1977 (recent use);

About 5 percent (83,000) used PCP during the 30 days prior to the survey (current use); and,

About one percent (11,000) report using PCP on at least 10 occasions in the past 30 days (current heavy use).

About 7 percent (118,000) of New York State's secondary students used PCP for the first time in 1977 or 1978. This indicates a recent and rapid spread of PCP use in the State since 46 percent of those ever using PCP first used the drug in 1977 or 1978.

New York State's PCP use among secondary school students (14 percent) is more than twice as high as the 1977 national findings for the 12–17 age group (6 percent).[2]

[2] Abelson, H. I.; Fishburne, P. M., and Cisin, I., "National Survey on Drug Abuse: 1977," conducted for the National Institute on Drug Abuse by Response Analysis Corporation and the George Washington University.

TABLE 1.—ANGEL DUST (PCP) USE AMONG NEW YORK STATE STUDENTS BY REGION

[1,817,000 students enrolled in grades 7–12, spring 1978 [1]]

Health service area/region	Never used		Lifetime use (used at least once)		No response	Recent use (used since school began in September 1977)		Current use (used in past 30 d)		Current heavy use (used 10 plus times in past 30 d)		New users (used for 1st time since Jan. 1, 1977)	
	Number	Percent	Number	Percent	Number	Number	Percent	Number	Percent	Number	Percent	Number	Percent
New York State	1,529,000	85.7	257,000	14.4	31,000	161,000	8.9	83,000	4.6	11,000	0.6	118,000	6.7
(1) Buffalo	156,000	85.2	27,000	14.8	4,000	19,000	10.1	10,000	5.3	1,000	0.7	14,000	7.9
(2) Rochester	127,000	94.1	8,000	5.9	1,000	5,000	3.8	2,000	1.8	([2])	([3])	3,000	2.1
(3) Syracuse	139,000	88.5	18,000	11.5	2,000	12,000	7.5	5,000	3.3	([2])	([3])	10,000	6.2
(4) Binghamton	33,000	86.8	5,000	13.2	([2])	4,000	9.8	1,000	2.9	([2])	([3])	3,000	7.6
(5) Albany	125,000	86.8	19,000	13.2	2,000	11,000	7.6	5,000	3.6	1,000	0.3	6,000	4.1
(6) White Plains	174,000	84.1	33,000	15.9	4,000	21,000	10.1	11,000	5.0	3,000	1.3	16,000	7.7
(7) New York City	506,000	84.6	92,000	15.4	12,000	54,000	9.0	31,000	5.1	4,000	0.5	42,000	7.2
(8) Long Island	269,000	83.0	55,000	17.0	6,000	35,000	10.7	18,000	5.5	2,000	0.7	24,000	7.5

[1] Date of preparation: August 3, 1978.
[2] Less than 500.
[3] Less than 0.5.

Note.—The number of users reported in the table are underestimates since they do not include the nonrespondents.

Example of how to read the table: Among the responding students in the Buffalo area (Region 1), 27,000, or 14.8 percent have used angel dust (PCP) at least once.

Regional comparisons (table 1 and attached map)[3]

Of New York State's eight health service areas (henceforth HSA):

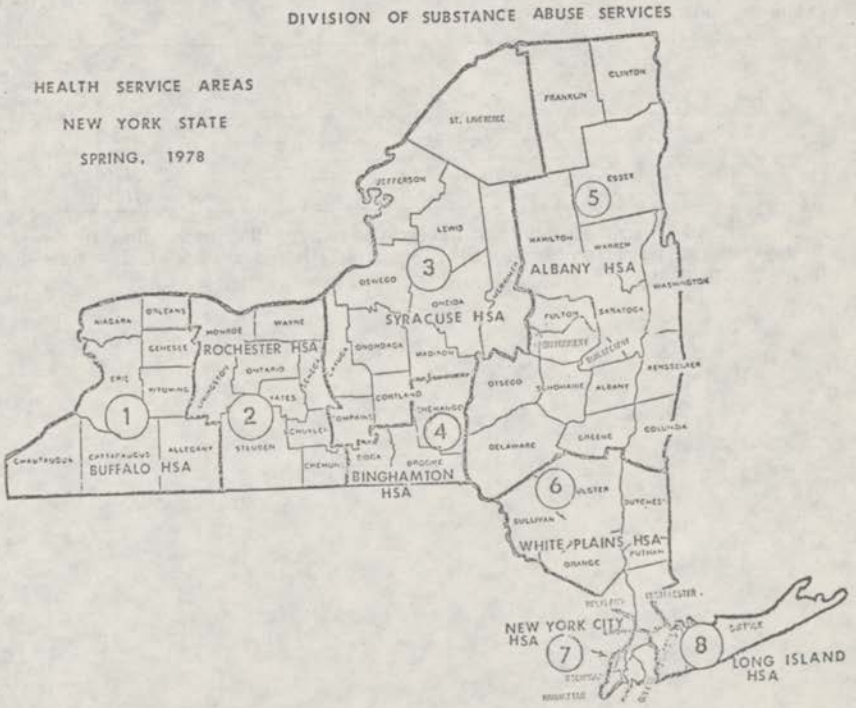
About three quarters of the students in the state who have used PCP at least once live in the downstate area. This includes the New York City HSA (92,000 students), Long Island HSA (55,000), and White Plains HSA (33,000).

The Binghamton HSA has the fewest students reporting the use of PCP (5,000).

Lifetime, recent, and current use of PCP is proportionally highest in the Buffalo and Long Island HSA and lowest in the Rochester HSA.

Current heavy use of PCP (use 10 or more times in the past 30 days) is highest in the White Plains HSA. In this area, 1.3 percent of enrolled students or 3,000 are heavy users. New York City has the largest number of current heavy users of PCP, about one percent or 4,000 students.

New use of PCP is most common in the Buffalo HSA (8 percent of enrolled students or 14,000), Binghamton HSA (8 percent or 3,000), White Plains HSA (8 percent or 16,000), and Long Island HSA (8 percent of 24,000).



In the Buffalo, Syracuse, and Binghamton HSAs, more than half of the PCP users started their use in 1977 or 1978. For the remaining HSAs, PCP use started earlier than 1977 for a majority of the students. Thus, PCP-using students in upstate areas are more likely to have initiated their use in the past year than the PCP users in the downstate areas.

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[3] In this report the name of a major central city (except for Long Island) is assigned to the entire health service area (HSA). For example, in the tables and text, the term "Buffalo HSA" refers to the Western New York HSA and includes the counties of Niagara, Erie, Orleans, Genesee, Wyoming, Allegany, Cattaraugus, and Chautauqua. All of the counties located within each HSA appear in the attached map. The statistical findings apply to all counties in the HSA and not only to the major central city.

PCP use by grade (table 2)

PCP use among New York State students consistently relates to grade level. The 7th graders are the least likely to have used PCP (about 5 percent or 16,000); 12th graders are the most likely to have used PCP (about 22 percent or 51,000).

The proportion of PCP users increases markedly between grades 7 and 8, and between grades 8 and 9; this finding emerges for several measures of use: lifetime use (used at least once in lifetime), recent use (use since school began in September, 1977), and current use (use in the 30 days prior to the survey). For example, findings for recent use indicate the following numbers and percentages of PCP users by grade:

Grade	Recent use	
	N	Percent
7	11,000	4
8	20,000	7
9	34,000	10

For grades 9–12, however, the percentage of users does not greatly differ from grade to grade:

Grade	Recent use	
	N	Percent
9	34,000	10
10	37,000	11
11	32,000	12
12	27,000	11

The 7th and 8th graders are least likely to be heavy (10 or more times in the past 30 days) users. The rates of use for 9th, 10th and 11th graders are all the same—just below one percent.

TABLE 2.—ANGEL DUST (PCP) USE AMONG NEW YORK STATE STUDENTS BY GRADE

[1,817,000 students enrolled in grades 7–12, spring 1978 [1]]

Grade level	Never used		Lifetime use (used at least once)		No response	Recent use (used since school began in September 1977)		Current use (used in past 30 d)		Current heavy use (used 10 plus times in past 30 d)		New users (used for 1st time since Jan. 1, 1977)	
	Number	Percent	Number	Percent	Number	Number	Percent	Number	Percent	Number	Percent	Number	Percent
New York State	1,529,000	85.7	257,000	14.4	31,000	161,000	8.9	83,000	4.6	11,000	0.6	118,000	6.7
Grade 7	298,000	94.8	16,000	5.2	5,000	11,000	3.6	6,000	1.9	1,000	0.5	11,000	8.6
Grade 8	274,000	90.8	27,000	9.2	4,000	20,000	6.6	11,000	3.6	2,000	0.5	17,000	5.7
Grade 9	278,000	85.1	48,000	14.9	6,000	34,000	10.2	19,000	5.8	2,000	0.7	30,000	9.2
Grade 10	269,000	82.1	59,000	17.9	4,000	37,000	11.2	20,000	6.0	3,000	0.7	28,000	7.9
Grade 11	226,000	79.6	56.000	20.4	6,000	32,000	11.5	14,000	5.1	2,000	0.7	19,000	6.9
Grade 12	196,000	78.4	51,000	21.6	6,000	27,000	10.7	13,000	5.2	1,000	0.6	16,000	6.3

[1] Date of preparation: August 3, 1978.

Note.—The number of users in the table are underestimates since they do not include the nonrespondents.

Example of how to read the table: Among the responding students in the 7th grade, 16,000 or 5.2 percent have used angel dust (PCP) at least once in their lifetime.

Of PCP users in grades 7–9, 64 percent (or 58,000 students) first used PCP since January 1, 1977, compared to 36 percent (or 60,000 students) of all PCP users in grades 10–12.

New use seems to peak among 9th graders, with almost 9 percent (or 30,000) of the students first using PCP in 1977 or 1978. Thus, among the 48,000 9th graders who have used PCP 30,000 or 63 percent first used it during the past year.

Recent use of other substances by recent PCP users (table 3)

Almost all PCP users have considerable experience with other drugs.

Over 99 percent have also recently used one or more other substances.

Of the 161,000 students who used PCP since September 1977:

about 98 percent (157,000) also recently used marihuana.
about 71 percent (114,000) also recently used hashish.
about 48 percent (78,0000 also recently tried "ups."
about 39 percent (63,000) also recently used cocaine.
about 96 percent (154,000) also recently drank alcohol.
about 83 percent (134,000) also recently smoked cigarettes.

Among recent PCP users, the fewest students reported the use of illicit methadone (11 percent or 18,000) and heroin (12 percent or 19,000).

The recent use of other substances by recent PCP users changes somewhat by grade level. Among recent PCP users,

7th–8th graders have relatively higher proportions of recent use of glue or other solvents (about 45 percent or 14,000 students), cough medicine (about 39 percent or 12,000 students) and heroin (about 26 percent or 8,000 students) than their upper class, PCP-using counterparts.

TABLE 3.—AMONG RECENT PCP USERS, THE NUMBER AND PERCENT WHO ALSO RECENTLY USED OTHER SUBSTANCES

[1,817,000 students enrolled in grades 7–12, spring 1978 [1]]

Type of substance [2]	New York State, total PCP users = 161,000		7–8th grades, total PCP users = 31,000		9–10th grades, total PCP users = 71,000		11–12th grades, total PCP users = 59,000	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No other substances used [3]	1,000	0.6	(*)	(*)	(*)	(*)	(*)	(*)
Hallucinogens	57,000	35.4	9,000	29.0	23,000	32.4	25,000	42.4
Cocaine	63,000	39.1	13,000	41.9	26,000	36.6	24,000	40.7
Glue or Solvents	39,000	24.2	14,000	45.2	15,000	21.1	10,000	16.9
Heroin	19,000	11.8	8,000	25.8	6,000	8.5	5,000	8.5
Methadone (Illicit)	18,000	11.2	6,000	19.4	7,000	9.9	5,000	8.5
Marihuana	157,000	97.5	29,000	93.5	69,000	97.2	59,000	100.0
Hashish	114,000	70.8	19,000	61.3	49,000	69.0	46,000	78.0
Ups	78,000	48.4	14,000	45.2	34,000	47.9	30,000	50.8
Downs	60,000	37.3	12,000	33.7	28,000	39.4	20,000	33.9
Tranquilizers	57,000	35.4	10,000	32.3	26,000	36.6	21,000	35.6
Cough Medicine	36,000	22.4	12,000	38.7	14,000	19.7	10,000	16.9
Other Narcotics	55,000	34.2	10,000	32.3	26,000	36.6	19,000	32.2
Alcohol	154,000	95.7	29,000	93.5	67,000	94.4	58,000	98.3
Cigarettes	134,000	83.2	27,000	87.1	58,000	81.7	49,000	83.1

[1] Date of Preparation: July 31, 1978.

[2] Hallucinogens (like LSD, acid, mescaline); "Ups" (like amphetamines, speed, pep pills, diet pills); "Downs" (like barbiturates, Tuinal,® goofballs, "reds"); Tranquilizers (like Valium,® Librium,® Miltown®); Other narcotics (like opium, morphine, codeine); Alcohol, not used for religious purposes (beer, wine, hard liquor).

[3] Excludes alcohol and cigarettes.

* Less than 500.

[a] Less than 0.5 percent.

Note.—The numbers of users reported in the table are underestimates since they do not include nonrespondents.

Example of how to read the table: Among responding students in the 7–8th grades who have used angel dust (PCP) since September 1977, 9,000 or 29 percent have also used hallucinogens during the same time period.

11th–12th graders have higher proportions of recent hallucinogen use (about 42 percent or 25,000 students) than their lower grade, PCP-using counterparts. Several tendencies across grades are also observed among recent PCP users:

recent use of heroin, illicit methadone and glue or solvents declines with grade level.

recent use of marihuana, hashish, "ups", and alcohol increases somewhat with grade level.

recent use of "downs," tranquilizers, and other narcotics peaks somewhat in the 9th and 10th grade.

Data not presented here indicate that findings for lifetime use are the same as recent use. That is, almost all persons who have tried PCP once have also misused one or more other drugs in their lifetime.

Regional findings (table 1)

This section presents the major findings for PCP use in each of the health service areas (HSA) of the state.

Buffalo health service area (Niagara, Orleans, Erie, Genesee, Wyoming, Chautauqua, Cattaraugus, and Allegany Counties)

Of the secondary school students in the Buffalo HSA:

about 15 percent (27,000) have used angel dust (PCP) at least once in their lives;

about 10 percent (19,000) report using PCP since school began in September, 1977;

about 5 percent (10,000) used PCP during the 30 days prior to the survey; and,

less than 1 percent (1,000) report using PCP on at least 10 occasions in the past 30 days.

About 8 percent (14,000) of the secondary school students in the Buffalo HSA first used PCP in 1977 or 1978. This indicates a recent and rapid spread of PCP use in the HSA, since more than half (52 percent) of those who have ever used PCP began use in 1977 or 1978.

Rochester health service area (Monroe, Wayne, Livingston, Ontario, Seneca, Yates, Schuyler, Steuben, and Chemung Counties)

Of the secondary school students in the Rochester HSA:

about 6 percent (8,000) have used angel dust (PCP) at least once in their lives;

about 4 percent (5,000) report using PCP since school began in September, 1977;

about 2 percent (2,000) used PCP during the 30 days prior to the survey; and,

fewer than 500 students used PCP on at least 10 occasions in the past 30 days.

About 2 percent (3,000) of the secondary school students in the Rochester HSA first used PCP in 1977 or 1978. This indicates a recent and rapid spread of PCP use in the HSA, since 38 percent of those who have ever used PCP began use in 1977 or 1978.

Syracuse health service area (St. Lawrence, Jefferson, Lewis, Herkimer, Oswego, Oneida, Cayauga, Onondaga, Madison, Tompkins, and Cortland Counties)

Of the secondary school students in the Syracuse HSA:

about 12 percent (18,000) have used angel dust (PCP) at least once in their lives;

about 8 percent (12,000) report using PCP since school began in September, 1977;

about 3 percent (5,000) report using PCP during the 30 days prior to the survey; and,

fewer than 500 students used PCP on at least 10 occasions in the past 30 days.

About 6 percent (10,000) of the secondary school students in the Syracuse HSA first used PCP in 1977 or 1978. This indicates a very recent and rapid spread of PCP use in the HSA since more than half of those who have ever used PCP began use in 1977 or 1978.

Binghamton health service area (Tioga, Broome, and Chenango Counties)

Of the secondary school students in the Binghamton HSA:

about 13 percent (5,000) have used angel dust (PCP) at least once in their lives;

about 10 percent (4,000) report using PCP since school began in September, 1977;

about 3 percent (1,000) report using PCP during the 30 days prior to the survey; and,

fewer than 500 students used PCP on at least 10 occasions in the past 30 days.

About 8 percent (3,000) of the secondary school students in the Binghamton HSA first used PCP in 1977 or 1978. This indicates a very recent and rapid spread of PCP use in the HSA since 60 percent of those who have ever used PCP began use in 1977 or 1978.

Albany health service area (Franklin, Clinton, Essex, Hamilton, Warren, Washington, Fulton, Saratoga, Montgomery, Schenectady, Otsego, Schoharie, Albany, Rensselaer, Delaware, Greene, and Columbia Counties)

Of the secondary school students in the Albany HSA:

about 13 percent (19,000) have used angel dust (PCP) at least once in their lives;

about 8 percent (11,000) report using PCP since school began in September, 1977;

about 4 percent (5,000) report using PCP during the 30 days prior to the survey; and,

almost 1 percent (1,000) used PCP on at least 10 occasions in the past 30 days.

About 4 percent (6,000) of the secondary school students in the Albancy HSA first used PCP in 1977 or 1978. This indicates a recent and rapid spread of PCP use in the region since 32 percent of those who have ever used PCP began use in 1977 or 1978.

White Plains health service area (Sullivan, Ulster, Dutchess, Orange, Putnam, Rockland, and Westchester Counties)

Of the secondary school students in the White Plains HSA:

about 16 percent (33,000) have used angel dust (PCP) at least once in their lives;

about 10 percent (21,000) report using PCP since school began in September, 1977;

about 5 percent (11,000) report using PCP during the 30 days prior to the survey; and,

a little over 1 percent (3,000) have used PCP on at least 10 occasions in the past 30 days.

Almost 8 percent (16,000) of the secondary school students in the White Plains HSA first used PCP in 1977 or 1978. This indicates a recent and rapid spread of PCP use in the region since 48 percent of those who have ever used PCP began use in 1977 or 1978.

New York City health service area (Bronx, Richmond, Manhattan, Kings, and Queens Counties)

Of the secondary school students in the New York City HSA:

about 15 percent (92,000) have used angel dust (PCP) at least once in their lives;

about 9 percent (54,000) report using PCP since school began in September, 1977;

about 5 percent (31,000) report using PCP during the 30 days prior to the survey; and

about 1 percent (4,000) have used PCP on at least 10 occasions in the past 30 days.

About 7 percent (42,000) of the secondary school students in the New York City region first used PCP in 1977 or 1978. This indicates a recent and rapid spread of PCP use in the region since almost half (46 percent) of those who ever used PCP began use in 1977 or 1978.

Long Island health service area (Nassau and Suffolk Counties)

Of the secondary school students in the Long Island HSA:

about 17 percent (55,000) have used angel dust (PCP) at least once in their lives;

about 11 percent (35,000) report using PCP since school began in September, 1977;

about 6 percent (18,000) report using PCP during the 30 days prior to the survey; and,

almost 1 percent (2,000) used PCP on at least 10 occasions in the past 30 days.

About 8 percent (24,000) of the secondary school students in the Long Island HSA first used PCP in 1977 or 1978. This indicates a recent and rapid spread of PCP use in the region since 44 percent of those who have ever used PCP began use in 1977 or 1978.

[From the National Clearinghouse for Drug Abuse Information, April 1973]

PHENCYCLIDINE (PCP)

(By the Student Association for the Study of Hallucinogens (STASH), Beloit, Wisconsin)

Numerous psychoactive drugs originally prepared for legitimate therapeutic or research purposes have been recruited as "consciousness-expanding" agents by the drug using youth community. One such drug which has proved both fascinating and bewildering to researchers and users alike is phencyclidine (PCP), an animal tranquilizer freely used in animal hospitals and, therefore, easily diverted to "street" drug use. Because of its markedly different effects at varying dose levels, phencyclidine cannot be accurately placed in the "standard" stimulant, depressant or hallucinogenic categories of psychoactive drugs, although it acts pharmacologically like both an hallucinogen and a central nervous system stimulant. Interest in this drug developed from its unusual range of effects and its intended medical usage as contrasted to its abuse patterns on the street.

HISTORY, CHEMISTRY AND PHARMACOLOGY

Phencyclidine was developed in the late 1950's and following pharmacological, toxicological and metabolic studies in laboratory animals, it was recommended for clinical trials in humans in 1957. Parke, Davis and Company marketed the drug under the trade name Sernyl and received the U.S. patent for phencyclidine in 1963. Originally phencyclidine was utilized as an anesthetic agent in surgical procedures and, although it was found to be generally effective, the drug often produced unpleasant side effects. Some patients experienced upon emergence from anesthesia extreme excitement, visual disturbances and delirium. Other therapeutic investigations of phencyclidine included its potential use as an analgesic (pain killer) and in the treatment and research investigation of mental disorders. Because of the serious side effects and other problems with the drug, Parke-Davis, in a letter to the Food and Drug Administration on January 22, 1965, requested that further human clinical investigations be discontinued. In early 1967, phencyclidine became commercially available for "veterinary use only" under the trade name Sernylan, and in 1969, Parke-Davis acquired the production rights to Sernylan and is at present the sole distributor of the drug for legitimate purposes.

Phencyclidine, 1-(1-phenylcyclohexyl) piperidine HCl, is a white, stable solid with a melting point of 243–244°C and is readily soluble in water and in ethanol.

The site and mode of action of phencyclidine is as yet unclear although studies indicate that the drug acts on the sensory cortex, thalamus and midbrain in such a manner as to "scramble" internal stimuli thereby impairing perceptual functioning. The effects of phencyclidine upon the central nervous system (CNS) differ greatly among animal species and with varying dose levels. Whereas hyperactivity is more prominently observed in mice and rats, PCP tends to depress the CNS in higher species including man. In low doses (the exact effective dosage varies depending upon the route of administration) the drug produces a state resembling alcohol intoxication, including muscular incoordination and generalized numbness of the extremities. Analgesia and anesthesia occur at moderate dose levels characterized by sensory disturbances or blockade, muscular rigidity and, perhaps, loss of contact with one's environment. Large doses of the drug may produce convulsions.

Toxicity studies conducted at the research laboratories of Parke, Davis (Chen, Weston and Weston) revealed that the acute LD-50s (the lethal dose required to kill 50 percent of the animal population to which the drug is administered) for rats are: 179 ± 0.40 milligrams per kilogram (mg./kg.) oral, and 15.9 ± 0.6 mg./kg. intravenously. Chronic daily administration of phencyclidine of 1.0 mg./kg. orally or intravenously for 6 to 9 weeks was tolerated by dogs. Monkeys tolerated daily intravenous (i.v.) doses of 1.25 mg./kg. or an oral dose of 25 mg./kg. for the same time period.

PATTERNS OF USE

The first reported "street" use of phencyclidine was observed in the Haight-Ashbury district of San Francisco in 1967 (Meyers, Rose and Smith) at which time the drug was illegally marketed as the *PeaCe Pill*. The drug-using community was apparently not happy with the effects produced by PCP; the Haight-Ashbury Free Medical Clinic reported that "use of the drug * * * [had] virtually ceased" by early 1968. In the summer of that year, a drug called "Hog" appeared in New York City and was identified as phencyclidine (Lindgren *et al.*). Although PCP had not proven to be a drug of choice among members of the "hippie" community, by 1969, it was being mislabelled and promoted as some other desirable psychedelic drug. This

coincided with the general contamination of street drugs and camouflaging of one drug for another. PCP was often the principal ingredient in drugs marketed as LSD, cocaine and THC.

In October, 1970, five different varieties of "mescaline" sold in Milwaukee were analyzed (Reed and Kane). Four of these samples contained between 2 to 6 milligrams of phencyclidine, and the fifth sample was LSD. An analysis of alleged tetrahydrocannabinol (THC), the suspected active ingredient in marihuana, in the Philadelphia area and at rock concerts (Schnoll and Vogel) revealed that phencyclidine was the most commonly used compound in these samples. These findings have been routinely confirmed throughout the country.

Street use of PCP has been generally confined to oral ingestion or inhalation by smoking the drug as "Angel Dust," when it is sprinkled on parsley, marihuana or other smokable substances. Phencyclidine seems to be primarily synthesized in illicit laboratories, rather than diverted from legally produced supplies. It is produced in powdered form both alone and in combination with other drugs, often LSD, and is sold in gelatin capsules. The May-June, 1971, issue of the *BNDD Bulletin* reported that the Bureau's regional laboratory in Chicago analyzed multicolored capsules (blue, white and brown layers—the latter was intended to be red) to be PCP. This underground synthesis of PCP often produces a dangerous contaminated form of the drug. During the fall of 1970, a missynthesized batch of phencyclidine appeared in the Midwest. The compound was an extremely toxic substance which was reported to have produced abdominal cramps, vomiting and, in several individuals, coma and death (Reed and Kane).

SUBJECTIVE EFFECTS

Reported experiences under phencyclidine are mainly nondescript or unpleasant ones. In subanesthetic doses the experience usually proceeds in three stages: (1) changes in body image, sometimes accompanied by feelings of depersonalization; (2) perceptual distortions, infrequently evidenced as visual or audial hallucinations; and (3) feelings of apathy or estrangement. The experience often includes feelings of drowsiness, inability to verbalize and feelings of "nothingness" or "emptiness." Reports of difficulty in thinking, poor concentration and preoccupation with death ("meditatio mortis") are frequent. Many users have reacted to its use with an acute psychotic episode.

The following subjective accounts occurred under "normal" clinical settings. Luby *et al.* administered 0.1 mg./kg. of phencyclidine intravenously in 150 cc of 5 percent dextrose over a 12-minute period.

A subject reported: "I feel far away; now I'm coming back. My arms and legs feel distant."

A medical student recalled: "Before I realized it, I was standing, but I didn't feel like I was standing. I didn't know where my feet were, and I didn't feel myself get up. I know I got up fast because my body felt light, just as though my legs didn't have much to support. When I began to walk, I didn't know where my feet were. I could feel my shoes on my feet, the pants around my legs, a slightly numb sensation like that in my arms, but I couldn't feel them move. * * * There were feelings of "selflessness," of not being human, and of being an "empty nobody." I am a small * * * not human * * * just a block of something in a great big laboratory."

Davies and Beech reported the effects produced by a low dosage level of phencyclidine in normal volunteers. One subject stated: "The feeling was neither pleasant nor unpleasant but peculiarly indifferent. Whilst I retained some insight—I could not think clearly on abstract topics—my mental processes seemed slow and as well, there was an unwillingness to think, an indifference to the whole proceedings."

Studies in which a larger dosage of phencyclidine was given in a sensory deprivation setting indicate that the unpleasant experiences were markedly lessoned in effect. Pollard et al. (1965) administered phencyclidine orally (10 mg.) to college students. One student reported: "This is a very strange drug. Doesn't produce images. I don't feel bad, I don't feel like I'm drowning, I don't feel normal. I just feel somewhere, but nowhere. I feel like I'm trying to wake up but it's such a long process, waking up."

PSYCHOLOGICAL EFFECTS

The profound psychological changes associated with phencyclidine intoxication have been variously described and examined. Meyer *et al.* described the symptoms of sensory disturbance produced by the drug to resemble sensory deprivation. This contention was supported by Luby *et al.* who suggested that phencyclidine impaired the individual's ability to organize sensory input.

Rosenbaum *et al.* compared the effects of phencyclidine (0.1 mg./kg. intravenously), LSD (1 mcg./kg., orally) and amobarbital with amphetamine (500 mg. and 15 mg., intravenously) on attention (reaction time), motor performance (rotary pursuit test), and proprioception (weight discrimination test) in normal subjects. The pre- and post-drug test performance of the subjects were compared with those of chronic schizophrenics. Reaction times in a nonshock condition were markedly slower in the schizophrenics and in the phencyclidine-treated group.

The LSD and amobarbital groups displayed significantly faster reaction times. Under the impetus of shock, no significant differences were observed between the four groups. On the rotary pursuit test, the phencyclidine-treated group demonstrated a deficit in motor performance closely approximating the schizophrenics. LSD produced significant improvement in this activity while amobarbital produced essentially no change. On the weight discrimination test, the phencyclidine group again compared with the poor performance of the schizophrenics, but the LSD and amobarbital groups differed notably. The authors interpret the data to suggest that the primary symptoms of schizophrenia (attention and motor function deficits) and the effects produced by phencyclidine are related to disturbances in proprioceptive feedback.

Bakker and Amini studied the effects of phencyclidine on performance using a battery of psychological tests. Twenty-five prisoners received orally 5 mg. and 10 mg. of phencyclidine or a placebo. Significant decrements in performance as compared to controls were observed at both dose levels. The authors concluded that the drug produces a slowing of the functions necessary to perform the tasks presented in the test battery. This slowing was considered to be related to a "defense mechanism" to avoid making mistakes, as well as a direct action on the central nervous system. Impairment in performance is dose related as well as dependent upon the complexity of the task. Concentration, learning and memory functions were found to be severely disturbed.

Ban *et al.* compared the effects of 0.01 to 0.1 mg./kg. of phencyclidine administered intravenously with several other drugs in 55 psychiatric patients. Phencyclidine was found to aggravate pre-existing psychopathologies to a greater degree than the other drugs tested, including LSD and mescaline.

Twelve experimental (7.5 mg. orally) and six control subjects were tested for perceptual ability by Morgenstern et al. Perimetry, audiometry, visual acuity, taste threshold (quinine), two-point discrimination, touch and position sense were tested. The results appeared to support the theory that the symptoms produced by phencyclidine may be a result of partial sensory deprivation. Sensory disturbances were observed to occur well in advance of verbal reports of psychological changes.

Cohen *et al.* reported the findings of the second part of the study previously conducted by Rosenbaum. This part of the study was concerned with the effects of various drugs (phencyclidine, LSD and amobarbital) upon symbolic and sequential thinking. Only phencyclidine was found to approximate the inferior performance of schizophrenics on proverb interpretations and other similar tests. The findings were felt to be consistent with those reported by Rosenbaum.

PHYSIOLOGICAL EFFECTS

Phencyclidine was administered (10 mg. in 100 cc. water intravenously) to 64 patients for anesthesia by Greifenstein *et al.* The drug did not depress circulation, respiration or disturb the cardiac rhythm, but a moderate slowing of the electroencephalographic (EEG) pattern of the brain was evident.

Meyer *et al.* found that intravenous administration of 7.5 mg. of phencyclidine blocked the pain response of a pin prick; this was coupled with a slowed or attenuated response to sensory stimulation. At 9.5 mg., vertical nystagmus (involuntary eye movements) and drooping eyelids commonly occurred. After 10.5 mg., drowsiness was experienced; objects could no longer be identified by vision or touch, but motor movement was preserved. Intravenous administration of 0.25 mg. of phencyclidine produced a slight increase in respiration and diastolic and systolic blood pressure; however, pulse rate changes did not exhibit a consistent pattern.

Common peripheral signs of phencyclidine use include flushing, profuse sweating and mild relaxation of the arteries. Analgesia, nystagmus, muscular incoordination, double vision, dizziness (perhaps resulting in nausea and vomiting) may also occur.

TREATMENT OF ACUTE INTOXICATION

There has not been very much experience with the acute treatment of PCP effects. Reed and Kane of the Milwaukee Free Medical Clinic suggest utilizing techniques similar to those used for adverse reactions to psychedelic drugs. "The more important of these are: a warm and non-threatening environment, one-to-one

contact with an empathetic individual who would be capable of determining the deterioration of the individual's physical state, protection from self-harm, and the availability of hospital facilities." A comatose or convulsant patient needs general supportive care (respiratory assistance being unlikely) with, perhaps, the "judicious use of sedatives."

LEGAL ASPECTS

Phencyclidine is considered a controlled dangerous substance under the Comprehensive Drug Abuse Prevention and Control Act of 1970. Illegal possession of phencyclidine could result in a sentence to a term of imprisonment of not more than 1 year, a fine of not more than $5,000, or both. Conviction of illicit manufacture or sale could result in a sentence to a term of imprisonment of not more than 5 years, a fine of not more than $15,000, or both. Subsequent convictions would result in increased penalties.

COMMENTS

Phencyclidine (PCP) has not been found to be a "drug of choice" by either the medical profession for therapeutic uses or the drug-using population for its subjective qualities. Generally, phencyclidine is sold on the street under the guise of another label such as THC (which has never really been available for street use).

"We desperately need to give our youth information about the risk factor in drugs. There's such a mythology they get; for example: The kids hear that THC (Tetrahydrocannabinol), the active ingredient in marihuana, is available in a capsule on the black market. It's phencyclidine, the peace pill, which is a veterinary anesthetic. In other words, it makes dogs hallucinate, which is why it was never released for humans. That's what the kids are taking, and it's a very dangerous drug." (John Thomas Ungerleider, M.D.)

The discomforting feelings (apathy and isolation) often produced by PCP are, perhaps, the most important factors in the drug experience.

"When the drug itself apparently serves to intensify these feelings of anomie, it would seem likely that the possibility of psychological harm due to the drug would be relatively great. While acute psychotic reactions due to the use of PCP have not, *per se*, been reported, it is quite possible that some such reactions attributed to other hallucinogens may have been actually due to PCP sold under the name of LSD or mescaline." (Alan Reed, M.D. & Andrew W. Kane, Ph.D.)

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Phencyclidine Use Among Youths in Drug Abuse Treatment

(By Alfred S. Friedman, Ph.D., Edward Farley, Yoav Santo, M.A., David Speck, B.Ph.)

INTRODUCTION

Phencyclidine has recently surfaced as one of the most publicized "street" drugs in the United States and for some very important reasons. There are serious physiological and psychological dangers associated with the use of this drug and there is evidence that it is becoming more widely used. Phencyclidine is relatively easy and inexpensive to manufacture and consequently can be targeted to youthful drug users of relative modest means.

The drug has been sold under many different names, including "PCP" or "Peace Pill," "Angel Dust," "Hog," and "Killer Weed." It has also been used in many different forms: powder, tablet, leaf mixtures, and "rock" crystal, and in combination with other drugs. On the illicit market, phencyclidine reportedly often is substituted for another drug because it is easier to obtain. Phencyclidine users can never be sure what dose they are getting and there is always the possibility that contaminants may be included with the drug.

In recognition of the emerging significance of this drug, the National Institue on Drug Abuse (NIDA) has initiated several studies to increase understanding about the nature and extent of phencyclidine use. In addition, steps are being taken by the Institute to develop appropriate prevention and treatment strategies.

METHODOLOGY

In association with those efforts, the National Youth Polydrug Study (NYPS), a nationwide study of youthful drug use conducted by the Philadelphia Polydrug

Research Project, made investigation of phencylidine use based on their 1976-77 survey. The 2,750 subjects were drawn from a national sample of 97 drug abuse treatment programs oriented toward a youthful population. All subjects were 18 or younger (average age equals 16.4) and all were interviewed between September 1976 and March 1977, within 3 months of entering into treatment. A brief description of the sample in terms of demographic characteristics is shown in appendix A.

The programs represent all geographic regions (urban through rural settings), all modalities, and treated youth of differing racial and ethnic groups. Nonetheless, the data base cannot be regarded as wholly representative, since clients and programs were neither randomly drawn nor strictly stratified.

Single State Agency staff assisted in the location of appropriate youth treatment programs. Approximately 350 treatment programs, servicing any youthful drug abusers, were contacted to determine the appropriateness and the adequacy of the admission rate of their youth client populations for the study. Ninety-seven such programs were selected, agreed to participate, and formed the study sample.

The regional distribution of the 97 participating programs is depicted in the following chart.

The treatment environments sampled included: inpatient (hospital), residential, day care, and outpatient. The treatment modalities included: detoxification, counseling/psychotherapy, therapeutic comminities, halfway houses, crisis centers, and methadone maintenance. The largest client group, comprising 63 percent of the total sample, was in the outpatient group and was being treated with counseling and psychotherapy. The next largest category received treatment in a residential therapeutic setting and accounted for 12 percent of the subjects.

FINDINGS

In response to NIDA request, the staff of the NYPS made special analysis of its data base to produce information about youthful phencyclidine use. It should be recognized that the findings described represent an early and partial reporting of the data available from the youth polydrug sample. Additional reports, now in production, will explore other aspects of youthful drug use.

Phencyclidine (PCP) use

Within the total NYPS sample, 875 cases of the 2,750 (31.8 percent) reported either current or past use of phencyclidine (see table 1). Phencyclidine ranked seventh in current or past use among the 15 drug types in the NYPS survey and had been used more widely and more frequently than all drugs other than alcohol, marihuana, hashish, amphetamines, barbiturates, and hallucinogens.

The size of the phencyclidine-using subsample is noteworthy. To find that 31.9 percent of the male sample and 31.7 percent of the female sample reported to have used phencyclidine at some time during their young drug use careers was quite unexpected. These percentages lend support to recent reports of a national trend in increased phencyclidine use.

As reported above, phencyclidine use was found to be equally in use among both sexes, with approximately a third of the males and a third of the females reporting its use. In regard to racial (ethnic) background, whites were found to report a higher rate of phencyclidine use relative to their proportion in the sample (see table 2). A substantial percentage of the white subjects (42.3 percent), compared to only 8.5 percent of the black subjects, and 9 percent of the Hispanic subjects, reported use of phencyclidine. (Table 2 shows column percentages and not these row percentages.)

The regional prevalence of phencyclidine in the NYPS sample is described in table 3. The Great Lakes and the Midwest regions show the highest rates of phencyclidine use, with 46.6 percent and 46.4 percent of respondents from each region reporting ever having used phencyclidine. Again, the reader is cautioned regarding the nonrepresentativeness of the programs and clients selected. Data obtained from west coast and Northwest regions particularly must be seen questionable, as a consequence of the relatively small numbers of clients and programs available from which to choose.

The onset of phencyclidine use

The mean age of first phencyclidine use was 14.6 years of age and the mean age of first continuous use was 14.8 years. Figure 1 demonstrates graphically that age of first "continuing" use tends to follow very soon after age of first use. Consistent with most other drug types in this study (except alcohol, marihuana, and inhalants), females reported the earlier mean age for first use of phencyclidine: 14.4 years, compared to 14.7 years for males (see table 4). It must be recalled that, in order to qualify for this sample, subjects had to be between the ages of 12 and 18, inclusive.

Of the 875 clients reporting any phencyclidine use, 67 percent (586) reported "continued" use of phencyclidine (use at a rate of at least once a week for at least a 1-month period). The percentage of phencyclidine users who became "continuing" (or regular) users (67 percent) is compared in table 5 with the percentages of users of each of the other types of drugs who also became "continuing" users of each of those drugs. Thus, only alcohol and marihuana are reported as likely to be used at least once a week for a 1-month period by greater than 70 percent of their users.

The phencyclidine user vs. the nonphencyclidine user

Perhaps one of the most remarkable differences between those who have used phencyclidine and those who have never used it is the greater involvement of phencyclidine users in polydrug abuse: the phencyclidine user reported using twice as many substances as the nonphencyclidine user. Phencyclidine users report a mean of 6 substances ever used, while nonphencyclidine users report a mean of 2.8 substances ever used ($t=33.4$, $p<.0001$). Phencyclidine users also reported a higher mean number of drugs used during the three months prior to admission to treatment; 5.8 substances compared to a mean of 2.6 substances by nonphencyclidine users ($t-28.1$, $p<.0001$). Thus, it is clear that for a youth population that applies or is referred for treatment, phencyclidine use is commonly an integral part of a larger polydrug abuse problem.

The use of phencyclidine—one component of a multiple substance use pattern

It is of particular interest that not a single subject who used phencyclidine in this study used only this substance. All phencyclidine users were using other substances either sequentially or concurrently with phencyclidine. Almost all (99.5 percent) of the phencyclidine users used marihuana. Other drugs reportedly used by phencyclidine users were: alcohol (97.7 percent); hashish (77.8 percent); amphetamines (75.8 percent); hallucinogens (72.2 percent). (See table 6.) Interestingly, other than alcohol, marihuana (which is almost universally used in this sample), and hashish, phencyclidine is reported as a drug of abuse next most frequently by users of amphetamines and hallucinogens.

Frequency of use of phencyclidine

As shown in table 7, of the current users of phencyclidine, approximately 50 percent were found to be using at an average frequency of once per week or more frequently during the 3-month period. Data was available on peak frequency of use for 812 of the 875 subjects who ever used phencyclidine (see table 8). Sixty-three percent of these subjects were found to have had an average peak frequency of use of at least once per week. However, a sizable minority (18.7 percent) of these had an average frequency of at least daily use during the one month of peak use.

Ease of obtaining phencyclidine

More than half (55.5 percent) of the subjects who ever used phencyclidine reported that they found it "easy" to obtain (see table 9). Thus, it may be said that the clients in this study generally believed phencyclidine easy to obtain, or at least to be "available," since an additional one quarter of the subjects (24.7 percent) rated phencyclidine as being "available."

This finding, however, needs to be put in perspective, since the client sample reported most of the drug types to be at least as "easy" to obtain and as "available" as phencyclidine. Only cocaine, hashish, illegal methadone, and hallucinogens were reported to be less easy to obtain or less available.

Sex Difference by Phencyclidine Source

Male youth reported they more often made street buys from dealers than did females. Female youth more often received their phencyclidine as a gift from a friend, presumably from a male friend (see table 10). This finding is apparently related to culture-bound sex-role differences which expressed themselves in the way illicit drugs are obtained by the two sexes; thus, this difference was also found to be present for most of the other types of drugs.

Overdoses and Suicide Attempts

Table 11 appears to show clearly that phencyclidine users engage in significantly more self-destructive behavior, intentional and/or unintentional, in the form of overdoses (ODs) and suicide attempts, than do nonusers of phencyclidine. However, the reports of toxic reactions and self-destructive acts cannot be interpreted as consequent to phencyclidine use, but simply as associated with persons who use phencyclidine. The greater incidence of ODs could be explained at least in part by the more intensive involvement by phencyclidine users with multiple drugs, by a

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greater level of psychopathology among phencyclidine users, etc. Clearly, this is an area requiring further investigation.

Table 11 similarly gives the impression that there is a more extensive experience of previous treatment episodes associated with the use of phencyclidine, as indicated by a significantly greater number of previous drug, alcohol, and mental health treatment episodes and hospitalizations, than was reported for nonusers of phencyclidine.

Entry into treatment

Phencyclidine users entered treatment (current admissions) at an average age of 16.5. The primary sources of referral to treatment for phencyclidine users and for nonusers of phencyclidine are presented in table 12. Phencyclidine users were somewhat less often referred for treatment by their peers, and somewhat more often referred by judges.

Having a history of regular ("continuous") use of phencyclidine was found to be associated with the reporting of a "Family Related Problems" and problems in maintaining school attendance as a consequence of familial difficulties and/or learning problems.

CHART 1

REGIONAL DISTRIBUTION OF PARTICIPATING PROGRAMS

REGION	STATES IN WHICH PROGRAMS PARTICIPATED	NUMBER OF PARTICIPATING PROGRAMS
Northeast	Connecticut, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Virginia, Vermont	26
Southeast	Alabama, Arkansas, Florida, Georgia, Louisiana, North Carolina, Tennessee	16
Great Lakes	Illinois, Indiana, Michigan, Ohio, Wisconsin	18
Midwest	Iowa, Kansas, Minnesota, Missouri, North Dakota	11
Southwest	Arizona, Nevada, New Mexico, Oklahoma, Texas, Utah	11
West Coast	California, Oregon, Washington	12
Northwest	Idaho, Montana	3
Totals	37 (States)	97

TABLE 1

USE OF 15 DRUG TYPES FOR YOUTHS IN TREATMENT

(N = 2,750)

Drug Type	N	%
1. Marihuana	2,486	90.4
2. Alcohol	2,449	89.1
3. Amphetamines	1,237	45.0
4. Hashish	1,165	42.4
5. Hallucinogens	1,098	40.0
6. Barbiturates	1,097	39.9
7. Phencyclidine	875	31.8
8. Inhalants	795	28.8
10. Cocaine	710	25.8
11. Other Opiates	678	24.7
12. Heroin	344	12.5
13. Over-the-Counter	232	8.4
14. Illegal Methadone	108	3.9
15. Other	44	1.6

TABLE 2

COMPARISON OF SUBJECTS WHO "EVER USED"
WITH THOSE WHO "NEVER USED" PHENCYCLIDINE

Characteristic	Never Used Phencyclidine		Ever Used Phencyclidine	
	N	%	N	%
Sex				
Male	1,138	61.1	534	61.4
Female	725	38.9	336	38.6
Race				
White	1,068	58.8	784	90.5
Black	354	19.5	33	3.8
American-Indian	116	6.4	18	2.1
Oriental	3	.2	4	.5
Hispanic	274	15.1	27	3.1
Age (at admission)				
< 12 Years	31	1.8	1	.1
13	94	5.0	18	2.1
14	228	12.2	64	7.3
15	389	20.8	173	19.8
16	507	27.1	276	31.6
17	398	21.3	225	25.7
18	224	12.0	117	13.4

TABLE 3

PHENCYCLIDINE USE BY REGION

Region	Ever Used Phencyclidine		Never Used Phencyclidine		Row	Total
	N	Row %	N	Row %	N	Col. %
Great Lakes	270	(46.6)	309	(53.4)	579	(21.1)
Midwest	116	(46.4)	134	(53.6)	250	(9.1)
Southeast	153	(31.5)	333	(68.5)	486	(17.7)
West Coast	67	(27.2)	179	(72.8)	246	(8.9)
Northeast	191	(24.2)	599	(75.8)	790	(28.7)
Southwest	72	(23.8)	230	(76.2)	302	(11.0)
Northwest	7	(7.2)	90	(92.8)	97	(3.5)
	876	(31.9)	1,874	(68.1)	2,750	(100)

TABLE 4

MEAN AGE OF 1ST DRUG USE & 1ST CONTINUING DRUG USE BY SEX

		MALES			FEMALES			t Age 1st Use	t Age 1st Continuing Use
		X	S.D.	N	X	S.D.	N		
Heroin	A_1	15.0	1.6	219	14.7	1.6	119	1.65	1.31
	A_2	15.5	1.5	130	15.2	1.6	73		
Illegal Methadone	A_1	15.1	1.7	70	15.0	1.3	37	.34	.22
	A_2	15.7	1.5	30	15.6	1.5	17		
Other Opiates	A_1	14.5	1.7	413	14.2	1.8	257	2.14*	.54
	A_2	14.8	1.9	207	14.7	1.5	135		
Alcohol	A_1	12.0	2.7	1468	12.4	2.5	952	-3.73**	1.28
	A_2	13.9	1.8	1284	13.8	1.7	807		
Barbiturates	A_1	14.2	1.6	633	14.0	1.4	447	2.18*	2.81*
	A_2	14.7	1.5	423	14.4	1.4	323		
Other Sedatives	A_1	14.4	1.5	449	14.0	1.6	332	3.60**	2.29*
	A_2	14.7	1.5	304	14.4	1.5	230		
Amphetamines	A_1	14.2	1.6	696	14.0	1.4	528	2.33*	2.71*
	A_2	14.6	1.7	461	14.3	1.5	378		
Cocaine	A_1	15.1	1.5	450	14.8	1.6	253	2.44*	0.0
	A_2	15.3	1.7	216	15.0	1.4	118		
Marihuana	A_1	12.8	2.0	1501	13.1	1.7	951	-3.97**	0.0
	A_2	13.6	1.8	1416	13.6	1.6	884		
Hashish	A_1	14.0	1.8	722	13.9	1.5	428	1.01	3.12*
	A_2	14.4	1.6	457	14.0	1.6	236		
Hallucinogens	A_1	14.5	1.6	678	14.2	1.4	409	3.24**	3.27**
	A_2	14.8	1.5	379	14.4	1.5	248		
Inhalants	A_1	13.0	2.1	534	13.3	1.9	253	-0.67	.45
	A_2	13.1	2.2	354	13.0	2.2	137		
Over-the-Counter	A_1	14.1	2.0	122	14.0	2.2	106	.36	.83
	A_2	14.6	1.6	55	14.3	2.3	63		
Phencyclidine	A_1	14.7	1.5	530	14.4	1.4	332	2.98**	.83
	A_2	14.9	1.4	356	14.8	1.4	216		
Other	A_1	14.0	3.0	32	13.3	4.0	11	.53	.54
	A_2	14.8	3.3	20	14.3	1.4	6		

-"t" = earlier age of first use by males
+"t" = earlier age of first use by females
* = significant at .05 level of confidence
** = significant at .01 level of confidence
A_1 = Age of first use
A_2 = Age of first Continuing use

FIGURE 1

COMPARISON OF AGE OF FIRST PCP USE AND
AGE OF FIRST CONTINUOUS USE OF PCP

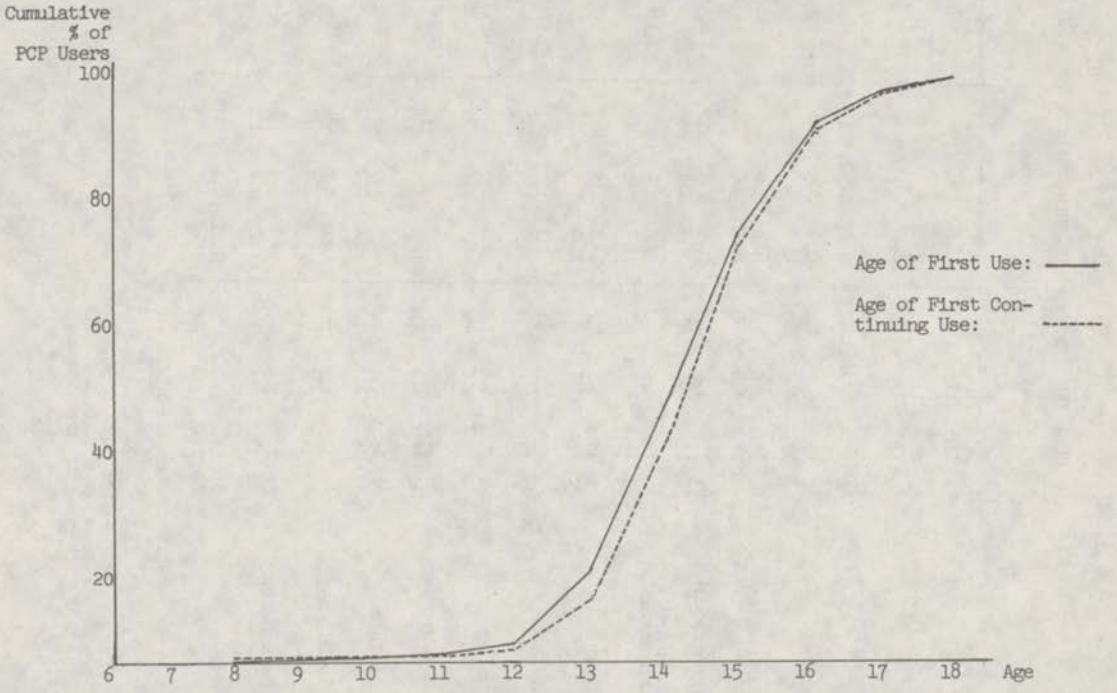


TABLE 5

PERCENTAGE OF SUBJECTS REPORTING "CONTINUED USE"* FOR EACH DRUG TYPE

Drug Type	% of "Ever Used" Reporting Continuing Use
Marihuana	96
Alcohol	87
Other Sedative	69
Barbiturates	68
Amphetamines	67
Phencyclidine	67
Inhalants	62
Other	60
Hashish	60
Heroin	60
Hallucinogens	58
Over-the-Counter Drugs	51
Other Opiates	51
Illegal Methadone	45

* "Continued Use" is defined as use of the substance at least once per week for at least a one month period.

TABLE 6

PHENCYCLIDINE USERS (N = 875) WHO USED EACH OF THE OTHER DRUG TYPES

	Ever Used Phencyclidine		Currently Using Phencyclidine	
Drug Type	N	% of All PCP Users	N	% of PCP Users
Marihuana	871	99.5	550	99.1
Alcohol	855	97.7	526	94.9
Hashish	681	77.8	341	61.4
Amphetamines	663	75.8	303	54.6
Hallucinogens	632	72.2	289	52.1
Barbiturates	589	67.	297	53.5
Other Sedatives	489	55.9	248	44.7
Other Opiates	414	47.3	140	25.2
Cocaine	414	47.0	141	25.4
Inhalants	364	45.8	91	16.4
Heroin	173	19.7	51	9.2
Over-the-Counter Drugs	143	16.3	44	7.9
Illegal Methadone	64	7.3	14	2.5
Other	10	1.1	-	-

TABLE 7

FREQUENCY* OF PHENCYCLIDINE USE BY SUBJECTS CURRENTLY USING PHENCYCLIDINE

	N	%
Less than once a month	97	17.3
Once a month	69	12.3
Two to three times a month	112	20.0
Once a week	83	14.8
Two to three times a week	99	17.6
Four to six times a week	28	5.0
Daily	41	7.3
Twice a day	12	2.1
Three or more times a day	20	3.6
Total	561	100.

*Frequency of use was assessed for the three month period preceding admission.

TABLE 8

AVERAGE PEAK FREQUENCY OF PHENCYCLIDINE USE

	N	%
Less than once a month	87	10.7
Once a month	115	14.2
Two to three times a month	97	11.9
Once a week	105	12.9
Two to three times a week	178	21.9
Four to six times a week	79	9.7
Daily	81	10.0
Twice a day	24	3.0
Three times or more a day	46	5.7
	812	100.0

Peak frequency was measured in terms of the frequency of use the one month period during which the subject used the drug most often.

TABLE 9

RATINGS OF EASE IN OBTAINING PHENCYCLIDINE

Obtainability	N	%
Easy	483	55.5
Available	215	24.7
Difficult	115	13.2
Very Difficult	50	5.7
Not Available	8	0.9
Total	871	100.0

TABLE 10

PRIMARY SOURCES OF OBTAINING PHENCYCLIDINE

	Male		Female		Total	
Primary Source	N	%	N	%	N	%
Street Buy - Friend	199	37.6	134	41.1	333	39.0
Street Buy - Dealer	218	41.2	63	19.3	281	32.9
Gift from Friend	80	15.1	117	35.9	197	23.0
All Other Sources	32	6.1	12	3.7	44	5.1
Total	529	100.0	326	100.0	855	100.0

TABLE 11

SELF DESTRUCTIVE BEHAVIOR BY PHENCYCLIDINE USERS AND NONUSERS OF PHENCYCLIDINE

	Phencyclidine Users			Nonusers of Phencyclidine			t Test
	X	N	S.D.	X	N	S.D.	
Mean Number of ODs	1.29	876	4.7	.31	1874	1.0	t = 6.06 p < .0001
Mean Number of Suicide Attempts	.65	876	2.1	.30	1874	14	t = 4.33 p < .0001

PREVIOUS TREATMENT HISTORY BY PHENCYCLIDINE NONPHENCYCLIDINE USE AND NON-USE OF PHENCYCLIDINE

Mean Number of Drug or Alcohol	.49	876	1.2	.20	1874	.88	t = 5.96 p < .0001
Number of Drug or Alcohol Hospitalizations	.41	876	1.0	.16	1874	.66	t = 6.36 p < .0001
Mental Health Treatment Experiences	.68	876	1.8	.37	1874	1.7	t = 4.14 p < .0001
Inpatient Hospitalization for Mental Health Related Problems	.22	876	.69	.12	1874	.60	t = 3.4 p < .001

TABLE 12

PRIMARY SOURCE OF REFERRAL

	Never Used Phencyclidine		Ever Used Phencyclidine		Total	
Referral Source	N	%	N	%	N	%
Self	223	14.2	111	15.2	334	14.5
Family	231	14.7	112	15.4	343	14.9
Peers	265	16.9	77	10.6	342	14.9
School	161	10.3	66	9.1	227	9.9
Judge	106	6.8	88	12.1	194	8.4
Police	83	5.3	25	3.4	108	4.7
Parole Office	217	13.8	122	16.8	339	14.8
Social Service Agency	140	8.9	53	7.3	193	8.4
Other	142	8.8	74	10.1	216	9.2
	1568	100.0	728	100.0	2296	100.0

TABLE A

DEMOGRAPHIC CHARACTERISTICS OF THE NYPS SAMPLE*

		% of Subjects
Age Distribution	12.00 - 14.99	16
	15.00 - 15.99	20
	16.00 - 16.99	29
	17.00 - 17.99	23
	18.00 - 18.99	12
Mean Age	16.4 (S.D. = 1.7)	-
Sex	Males	61
	Females	39
Race	White	70
	Black	14
	Other	16
Education (Last Year of School Completed)	8	
	8 - 9.99	13
	10 - 11.99	47
	12 - 13.99	36
		4
Mean Years of School Completed	9.1 (S.D. = 1.4)	-
Marital Status	Single	98
	Married	1
	Separated or Divorced	1
Religion	Protestant	34
	Catholic	34
	Jewish	2
	Other	2
	None/No response	28
Living Arrangements	At Home	77
	With other relatives	5
	Group & foster homes	5
	Friends	3
	Alone	2
	Other	8

N = 2750

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Appendix A

THE SUBJECTS

The criteria for inclusion as an interviewee in the NYPS study were that the person had to be between the ages of 12 and 18, have a history of drug abuse, and have been admitted to the treatment program within the 3-month period preceding the interview. All subjects were interviewed during the 6-month period from September 1976 to March 1977, except for a special group of 140 native-American youth clients who were included in the sample in order to achieve an adequate representation of minority youth. Since participation was voluntary, an additional criterion was the client's consent to the interview; however, the participating programs did not report any difficulty in obtaining the client's consent. Interviews generally took from 40 to 90 minutes. Table A of the appendix describes client demographic characteristics.

[From the California Society for the Treatment of Alcoholism and Other Drug Dependencies, April 1976]

The Phencyclidine Dilemma

(By R. Stanley Burns, M.D. and Steven E. Lerner, M.S.)

Phencyclidine, a white crystalline powder discovered in the mid 1950's, with a molecular weight of 243.8, is primarily a central nervous system depressant in monkeys and humans. Increasing doses produce sedation, catalepsy, general anesthesia and convulsion. Also, it is psychomimetic and possesses certain sympathomimetic actions.

Animal studies of phencyclidine hydrochloride show its high potency for inducing surgical anesthesia in monkeys. Clinical investigations of its anesthetic properties in humans were discontinued because the drug caused recurrent emergent delirium of prolonged duration in some cases.

Although phencyclidine has appeared on the illicit market in powder, tablet, leaf mixture, and one gram rock crystal forms, the powder is seen most frequently. Most street preparations contain the hydrochloride salt, however phencyclidine as the free base has appeared.

Phencyclidine is sold on the west coast under the street names crystal, angel dust, and PCP. It is also frequently misrepresented as THC and cannabinol.

The percentage of phencyclidine in the powder forms varies from 10–100 percent. Tablet forms consistently contain from 1 to 6 mg, most containing approximately 5 mg. Reports indicate that about 50 mg of the powder form is used to prepare street joints.

Phencyclidine can be taken orally, by smoking (inhalation), by snorting (insufflation), and by the intravenous route which is rarely the case. Powder forms are generally sprinkled on joints of marijuana or parsley or sometimes snorted.

CLINICAL PRESENTATION AND RECOVERY

Several patterns of clinical presentation and recovery from acute phencyclidine intoxication exist, dependent on dosage. The acute confusional state—delirium, following typical street doses, is characterized by disorientation, agitation or excitement, and a blank stare appearance in a patient who is noncommunicative. These patients are grossly ataxic and exhibit horizontal and vertical nystagmust on testing. Muscle rigidity may be present.

In phencyclidine stupor or coma associated with higher doses, the eyes may remain open, although the patient is unresponsive to deep pain. Hypertension and tachycardia are present. Except in the more massive oral overdose, respirations are normal. The pupils are initially miotic but reactive to light. Spontaneous nystagmus, purposeless movements, facial grimacing and muscle rigidity on stimulation are characteristic findings. Repeated episodes of vomiting, increased bronchial and oral secretions, and profuse diaphoreses are frequently observed.

In the massive oral overdose, delayed and prolonged hyperventilation and apnea may occur. Respiratory depression may require ventilatory assistance for an extended period. These cases are also marked by sustained hypertension and tachycardia, and by generalized motor seizures proceeded by muscle tremors, muscle twitching, opithotonic posturing and decerebrate rigidity.

A confusional state lasting less than 8 hours usually follows a typical street dose, the smoking of one joint.

Persons who either smoke greater amounts or take a higher dose orally or by snorting may present in stupor or coma. This initial state lasts less than three hours in most cases, and a confusional dose related state follows for 24 to 72 hours.

Massive oral overdoses, involving up to 1 gram of street purchased material, have resulted in periods of stupor or coma of several hours to 5 days in duration, marked by potentially lethal respiratory depression, reiterative seizure activity, and hypertension. This initial state is followed by prolonged recovery lasting up to 15 days and marked initially by confusion, disorientation, agitation, anarthria, and intermittent somnolence; and followed by depression, irritability and emotional lability.

In some cases, the phencyclidine confusional state is followed by a psychosis which may persist for several weeks.

Laboratory tests frequently reveal an increased WBC (up to 20,000), an elevated CPK (up to 20,000+), and the presence of ketones in the urine. The EEG may show diffuse slowing with theta and delta wave activity.

The clinical diagnosis of acute phencyclidine intoxication can be established by toxicological analysis of a urine specimen obtained shortly after admission, ideally within the first 12 hours.

CLINICAL PROBLEMS AND DEATHS

Reported clinical problems associated with acute phencyclidine intoxications include respiratory depression, status epilepticus, intracerebral hemorrhage, myoglobinurea with renal failure, hypertensive encephalopathy, and one case of seizures, hyperpyrexia and cardiac arrest.

We have reported 19 phencyclidine related deaths, one involving a child. In eight cases, the levels of phencyclidine in the blood and urine and the related circumstances suggest that death resulted from behavioral toxicity. Six persons were found dead with no apparent cause and on toxicological analysis of body fluids and tissues the isolated presence of phencyclidine in high concentrations was confirmed. These deaths appear to represent true pharmacological overdoses. Clinical findings in cases of acute phencyclidine intoxication point to respiratory depression as the most probable primary cause of death.

COMMUNITY PROBLEMS

Increasing numbers of young people after experimenting with phencyclidine began using it on a regular basis. The continuous availability of phencyclidine has elevated it to a preferred drug status with several cluster groups who have smoked it on a regular daily basis for periods as long as 6 years.

Several new problems have surfaced in the community in direct proportion to the increasing frequency and regularity of phencyclidine abuse:

Violent and bizarre behavior manifest in the home, in public places, and in the school, often disrupting education.

Young people exhibiting unexplained speech problems, memory loss, thinking disorders, personality changes, anxiety, severe depression and suicidal tendencies.

An increasing number of young people appearing violent, bizarre, unresponsive, extremely confused, or acutely psychotic seen in local emergency rooms.

Police observations of erratic driving and inappropriate behavior following automobile accidents in individuals who had no evidence of alcohol or sedative-hypnotic ingestion.

Young people observed to be highly intoxicated in public being arrested for sale, possession and being under the influence of phencyclidine.

An increasing number of referrals by family, friends, and the criminal justice system to community drug abuse programs.

A number of unexplained deaths of young people found to have high concentrations of phencyclidine in their body fluids and tissues and evidence of an oral route of ingestion; and several deaths by drowning, fires, falls from heights, and automobile accidents following the smoking of street doses of phencyclidine.

VITAL QUESTIONS

Illict use of phencyclidine has been followed by a prolonged period of acute confusion or delirium (up to 15 days) which in most cases was preceded by stupor or coma. Violent behavior frequently seen with the acute confusional state is a major management problem.

The cause of the prolonged recovery period associated with phencyclidine intoxication is currently unknown.

A number of people have presented as acutely psychotic with a history of recent illicit phencyclidine use. Additionally, several have remained psychotic for several

weeks after recovery from coma or a confusional state following the use of phencyclidine.

The psychosis which appears in some persons following illicit phencyclidine use is characterized by the cardinal signs of schizophrenia, unpredictable aggressive behavior and paranoia. Such episodes appear to be more resistent to antipsychotic medications, require a prolonged recovery period and involve significantly more violent and unpredictable behavior in contrast to other acute psychoses.

Chronic use patterns have also been associated with the development of a psychosis. Chronic phencyclidine users report psychological dependence and tolerance to the behavioral effects of increasing doses of phencyclidine. In addition, they report long-term and persistent problems with vision, speech, memory, and difficulty with thinking processes. Chronic users have complained of stuttering, inability to speak, and difficulty with articulation.

The chronic users often experience severe depression with suicidal ideation, paranoia, delusions and auditory hallucinations. Several users have sustained minor and major trauma secondary to the ataxia and perceptual deficits associated with the intoxicated state. And in some cases death has resulted from the behavioral toxicity of phencyclidine or oral ingestion of "massive" amounts in their possession during the depression following a period of heavy use.

Other arylcyclohexylamines have appeared in street samples. The thienyl analog of phencyclidine, TCP, first seen in 1972, appears to produce clinical effects similar to phencyclidine but of a shorter duration. The anaesthetic Ketamine has recently been found in capsules sold on the street.

Phencyclidine and related cyclohexylamines constitute a distinct class of pshychoactive drugs and appear to have abuse liability. The ease of synthesis and the potency as a mind-altering drug have lead to widespread availability and use.

The increasing abuse of phencyclidine highlights the current lack of knowledge about this drug. Questions of cellular and behavioral tolerance, psychological dependence, neurotoxicity, psychological dysfunction, long-term or persistent psychomimetic effects, chronic organ toxicity and teratogenicity related to chronic phencyclidine use present an expanding drug dilemma that is wide open to investigation.

EDITOR'S NOTE.—The authors have studied PCP intoxication for the past 18 months, collecting information and conducting clinical studies about cases which came to their attention from reports from emergency departments throughout the United States. They have applied to NIDA for funds to continue this work. For further information: R. Stanley Burns, Md., 350 Parnassus Avenue, Suite 304A, San Francisco 94117 (415-752-9269).

SURVEY OF STATE CRIMINAL PENALTIES REGARDING THE POSSESSION OF PHENCYCLIDINE (PCP)

(By Peter V. Gormley, Legislative Attorney, American Law Division, The Library of Congress, *Congressional Research Service,* Washington, D.C.)

This report reviews and summarizes state statutes providing criminal penalties for trafficking in, or possessing, the drug phencyclidine, popularly referred to as "angel dust" or simply "PCP." A short summary of current federal provisions is presented in order to compare state and federal penalties in this area.

Current Federal law is contained in 21 U.S.C. section 801, et seq. which codifies title II of the Comprehensive Drug Abuse Prevention and Control Act of 1970 (Public Law 91-513, 84 Stat. 1236, Oct. 27, 1970). Title II may also be referred to as the Controlled Substances Act and has been enacted in very similar terms by 43 States.

The Controlled Substances Act establishes a system for controlling the manufacture, distribution, and dispensing of a wide variety of drugs and chemical substances. The major feature of this system is a set of five "schedules" into which are placed all substances controlled or regulated. The location of a substance in a given schedule will determine among other things, the severity of a criminal penalty for violation of a prohibited act with regard to a particular controlled substance.

With the passage of the Controlled Substances Act, scores of drugs were placed in the five schedules in accordance with general findings required to be determined for each substance. For example, the most dangerous drugs are contained in schedule I and require, in accordance with section 812(b)(1), a finding that:

(A) The drug or other substance has a high potential for abuse.

(B) The drug or other substance has no currently accepted medical use in treatment in the United States.

(C) There is a lack of accepted safety for use of the drug or other substance under medical supervision.

At the other end of the danger/abuse spectrum are Schedule V drugs which require for placement therein, a finding that they have low potential for abuse, a currently accepted medical use and only a limited danger of physical dependence.

Current Federal law prohibits a wide range of criminal activity with regard to controlled substances. In addition to the variety of prohibitions pertaining only to persons required to register as manufacturers and distributers of controlled substances, two basic prohibitions are set forth in sections 841 and 844. The former makes it unlawful for anyone knowingly or intentionally: (1) To manufacture, distribute, or dispense, or possess with intent to manufacture, distribute, or dispense, a controlled substance; or (2) to create, distribute, or dispense, or possess with intent to distribute or dispense, a counterfeit substance.

Section 844 is the simple possession provision:

(a) It shall be unlawful for any person knowingly or intentionally to possess a controlled substance unless such substance was obtained directly, or pursuant to a valid prescription or order, from a practitioner, while acting in the course of his professional practice, or except as otherwise authorized by this subchapter or subchapter II of this chapter.

The penalty for conviction under section 844 does not hinge on the schedule of the controlled substance. Rather, the offense is punishable by a 1-year prison term and a $5,000 fine. However, possible prison terms and fines correspond directly to the types of drugs involved for violation of section 841 in the following manner:

Drug:	*Maximum penalties*
1. Schedules I and II (which are also "narcotic" drugs) (15 years)	$25,000
2. Schedules I and II (which are not narcotic drugs) and Schedule III (5 years)	15,000
3. Schedule IV (3 years)	10,000
4. Schedule V (1 year)	5,000

"Narcotic" drugs are specifically defined to include opium, coca leaves, and opiates and any substances which are derivatives or chemically identical to these three classes. In turn, opiates are defined to mean "any drug or other substance having an addiction-forming or addiction-sustaining liability similar to morphine or being capable of conversion into a drug having such addiction-forming or addiction-sustaining liability." 21 U.S.C. § 802(17).

The drug phencyclidine has been classified under the Controlled Substances Act in schedule III. This classification is a result of a determination, therefore, that PCP satisfied the test findings required for designation therein, namely:

(A) The drug or other substance has a potential for abuse less than the drugs or other substances in schedules I and II.

(B) The drug or other substance has a currently accepted medical use in treatment in the United States.

(C) Abuse of the drug or other substance may lead to moderate or low physical dependence or high psychological dependence.

As a schedule III drug, violation of section 841 with regard to PCP could result in criminal penalties of 5 years and $15,000 and, of course, for conviction of simple possession, 1 year and a fine of $5,000 under section 844.

PCP REGULATION IN THE STATES

As has been noted, 43 States have adopted their own versions of the Controlled Substances Act. In these States, schedules are set forth (normally five, although a few States employ four or six) with inclusion usually guided by a system of findings or tests very similar or identical to those in the Controlled Substances Act. Criminal penalties for the more serious trafficking offenses (manufacture, possession with intent to distribute or sell, etc.) and for simple possession are keyed to the schedule of the drug. Most, but not all, of these states also contain provisions requiring that any drug be rescheduled in a similar manner in the state scheme when it is rescheduled on the Federal level, unless the appropriate state authority objects to such action and holds a public hearing for discussion of its objections.

States not adhering to the model of the Controlled Substances Act generally employ broad definitions for drugs. Alaska, for example, prohibits a variety of criminal acts with regard to a depressant, hallucinogenic or stimulant drug each of which are, in turn, broadly defined (Alaska Stat. § 17.12.010.).

The following chart graphically depicts on a State-by-State basis the criminal sanctions for trafficking and possession offenses with regard to phencyclidine. Column I will indicate whether or not the particular State employs a mini-Controlled Substances Act (CSA) and, if so, in which schedule (SCH) PCP is placed.

Where a State does not utilize findings or tests (F/T) to classify its drugs, this will be noted. Additionally, it will be noted where a State does not retain a Federal reschedule (Re-Sch) section.

Column II will set forth the maximum criminal penalties for two types of crimes, trafficking and possession. A trafficking offense is typically composed of elements involving the manufacture and sale of the drug and, therefore, is labeled MANF/SELL. The overall sentencing scheme for all types of drugs will not be set forth.

The PCP Psychosis: A Hidden Epidemic

(By Paul V. Luisada, M.D., Deputy Medical Director, St. Elizabeths Hospital, Washington, D.C.)

INTRODUCTION

During the fall of 1973, the admission rate for what appeared to be unusually long, severe, and treatment-resistant initial schizophrenic psychoses suddenly tripled at the area D CMHC in Washington, D.C. These patients had all smoked a drug called angel dust before becoming psychotic. However, unlike the vast majority of toxic psychoses, these episodes often required 2 weeks of aggressive inpatient treatment before resolution began. In addition, violently aggressive behavior was characteristic of the onset, and the presenting picture was at first indistinguishable from a florid schizophrenic episode.

The first case to catch our attention was unusual in several ways and presented a diagnostic dilemma: An 18-year-old, high school senior was admitted after becoming violently psychotic at home without any prodromal signs. He presented with the primary and secondary signs of a florid schizophrenic psychosis. Escalating doses of major transquillizers and intensive staff involvement failed to influence his illness during the first two weeks in the hospital. In fact, contact with staff appeared to aggravate his symptoms. His ambivalence and paranoia made him unpredictable and posed a constant threat of violence. He assumed bizarrly autistic postures, demonstrated a formal thought disorder, and voiced the delusions that his mother was dead and that he had a knot in his head.

The diagnosis was complicated by several factors: his mother denied a family history or the prodromal signs and symptoms of schizophrenia. A toxic psychosis seemed improbable on the basis of lack of history or physical stigmata, the absence of a clouded sensorium, the persistence of the psychosis, and the presence of all four primary signs of schizophrenia.

However, when the patient's personality was dramatically reconstituted to its premorbid level in the third and fourth weeks of hospitalization, he reported smoking a drug called angel dust just prior to admission.

Similar admissions rose from a trickle to a flood, peaking in February 1974 at the rate of one third of the first inpatient admissions. The epidemic ended even more suddenly, with no more than three cases each during April, May, and June. This decline followed by several weeks a police raid on a local PCP laboratory.

Another epidemic began toward the end of 1974, and for some periods of 1975 and 1976, PCP psychosis became our leading cause of inpatient psychiatric admissions, surpassing both schizophrenia and alcoholism. By the beginning of 1976, the Drug Enforcement Administration was calling the Washington metropolitan area the PCP capital of the country. However, despite a proliferation of local laboratories and an increase in raids on these laboratories, admissions to our center for PCP psychosis began a slow but steady decline. At the same time, experienced drug users presenting for treatment of other drug abuse problems began referring to PCP as a drug to avoid because it makes people crazy. Meanwhile, the suburbs began experiencing sudden increases in the incidence of PCP psychoses.

PCP presently remains the major drug of abuse in the Washington metropolitan area. This situation prevails despite a recent local wave of media publicity about its adverse effects. Our principal experience with the drug has involved the PCP psychosis, and I shall concentrate on that subject today.

DEFINITION

The PCP psychosis may be defined as a schizophreniform psychosis which occurs in some individuals after phencyclidine use and which persists for more than a day. The psychosis may last for days or weeks despite abstinence, and it characteristically becomes more severe during the first few days of its course.

The psychosis is characterized by the appearance of the cardinal signs of schizophrenia and unpredictable aggressive or withdrawn behavior. Characteristically,

there is autistic and delusional thinking, commonly including global paranoia, delusions of superhuman strength and invulnerability, as well as delusions of persecution and grandiosity. A formal thought disorder, with loosening of associations, blocking and auditory hallucinations can be demonstrated. Affect is generally blunted, with periods of suspiciousness often alternating with extreme anger or terror. Patients are ambivalent and unpredictable even toward their close friends and relatives.

Behavior is extremely unpredictable. These patients may be reluctantly cooperative one minute and violently assaultive the next. Some carry lethal weapons to protect themselves from their imagined persecuters. Bystanders have often been furiously, unpredictably and unremittingly attacked without provocation because the psychosis may include both extreme global paranoia and delusions of superhuman strength.

CLINICAL COURSE

An earlier paper described the course of the treated psychosis as consisting of three distinguishable phases of approximately equal length over the course of an average 2-week hospitalization: The initial phase is characterized by the violent, psychotic behavior described earlier, and this persists for an average of 5 days. During the second phase, behavior is more controlled, but patients remain restless and unpredictable for approximately 5 more days. The final phase lasts about 4 days and is characterized by rapid personality reintegration and rapid disappearance of thought disorders and paranoia.

The majority of patients presenting with this entity were in their late teens to mid-twenties, and the majority have been males. Most did not reach treatment until hours or days after the onset of the psychoses, and did so during the psychosis' initial phase. Chief complaints ranged from mute posturing to "attacking everyone in sight." The majority of these patients were brought to treatment after their aggressive behavior exceeded the limits tolerated by family, friends and police. Those few patients who presented themselves voluntarily were generally treatable on an outpatient basis, and were neither as violent, as agitated nor as psychotic as those described here.

Where admission histories were obtained from these patients, they generally included several days of confusion, paranoid ideation, insomnia and intermittent restlessness. However, a history of phencyclidine use was not reliably obtainable on admission and some of the patients were initially mis-diagnosed as schizophrenic. Family members generally described the pre-admission period as characterized by continuous insomnia, tension, hyperactivity, and intermittent unexpected aggressive behavior, bizarre paranoid delusions, ideas of reference, delusions of being controlled by others, grandiosity, but no fixed or systematized delusional system.

Apart from the characteristic history of acute onset, and an irregularly obtained history of using PCP in its current street guises, the majority of these patients lacked prior psychiatric histories and tended to be more independent of their families than schizophrenics. Most were doing reasonably well in high school, college, or work, although some did have poorer social adjustments prior to the onset of their psychoses.

Other patients we have seen had prior admissions for schizophrenia but experienced sudden psychotic reactivations after experimenting with PCP. As a rule, these psychoses involved significantly more violent and unpredictable behavior than the initial schizophrenic psychoses.

CLINICAL MANAGEMENT

The diagnosis of phencyclidine psychosis in the *initial phase* constitutes a psychiatric emergency. These patients are an immediate danger to others merely on the basis of their misperceptions, paranoia and hostility, and this threat is compounded by their confusion, tendency towards violence, and the extreme unpredictability of their behavior. They also constitute a danger to themselves not only on the basis of impaired judgement and being unable to care for themselves, but also because their violent, threatening behavior might provoke lethal countermeasures by those around them. Burns has reported a case of PCP intoxication in which the patient was shot and killed by police after not heeding their warnings. One of our patients was hospitalized involuntarily on the basis of "attacking everyone in sight," including the investigating police officer, after a car accident.

Patients in the initial stages of the PCP psychosis almost invariably require inpatient psychiatric treatment. Furthermore, these patients are poor candidates for voluntary treatment, first because their paranoia makes them unlikely to sign in on admission, and second because their restlessness, ambivalence, confusion and unpre-

dictability at this stage of the psychosis leads to a high percentage of premature A.M.A. discharges. A factor which further mitigates against successfully continuing treatment on a voluntary basis is admission under pressure from family or friends. These patients often demand to leave as soon as their relatives and friends return home. In our experience, they cannot be dissuaded on the basis of rational discussion during this phase of their illness. In one instance, a newly admitted patient insisted on "fighting my way out" despite the presence of sixteen male nursing staff, some of whom were injured in the process of restraining him.

As discussed above, patients in the initial stage of the PCP psychosis are dangerous, ambivalent, unpredictable, psychotic and agitated.

The immediate goals of treatment are therefore:

1. Prevention of injury to the patient or others.
2. Assurance of continuing treatment.
3. Reduction of stimuli.
4. Amelioration of the psychosis.
5. Reduction of agitation.

Treatment which meets the first three of these goals includes prompt inpatient hospitalization, preferably on an involuntary basis. Isolation in a bare locked seclusion room with frequent, but onobtrusive observation is the treatment of choice: Seclusion not only safeguards other patients and staff, but also calms the patient through the reduction of stimuli which he can misperceive as threatening, particularly the sight of other people.

Chlorpromazine is the only antipsychotic agent which meets the last two goals: amelioration of the psychosis and sedation. Our experience indicates that the use of nonsedating antipsychotic agents prolongs the time these patients require seclusion, delays improvement of the insomnia, and makes them more difficult for staff to manage at mealtime. Although the use of sedatives such as diazepam and chlordiazepoxide has been suggested for the management of acute phencyclidine intoxication, the dual treatment goals of ameliorating the psychosis and reducing agitation makes the use of a single drug which meets both goals (chlorpromazine) more attractive than the combination of a nonsedating antipsychotic agent and a sedative.

Some authors have noted that chlorpromazine has not been shown to antagonize the behavioral effects of PCP, and even enhances some of them. However, these conclusions are based upon observations of animals intoxicated with PCP who were given chlorpromazine. There is some doubt as to whether these conclusions apply to the PCP psychosis as seen in humans. First, behavioral changes persisting for days or weeks after PCP intoxication have been reported only in humans. Thus, there is no animal model for the PCP psychosis. Second, the experiments were performed chiefly on monkeys, and PCP's effects on monkeys is tranquillization not the psychotic agitation seen in humans. Finally, chlorpromazine enhances the depressant effect of PCP on these animals. Our experience has been that chlorpromazine also acts as a depressant in our patients, and does antagonize the persistant excited behavior seen in humans with the PCP psychosis.

Once the possibility of anticholinergic drug intoxication has been ruled out, the daily dose of chlorpromazine is increased by 200 to 400 milligrams per day from a starting dose of 400 milligrams per day in divided doses. On the average, a daily dose of 1,600 milligrams per day has been reached by the end of the initial phase of the psychosis.

Behavior in seclusion during the initial phase is characterized by continuing global paranoia, insomnia, anorexia, intermittent agitation, and strong reactions to such stimuli as the presence of staff during mealtimes. Patients may throw food about the rooms, or smear it on the walls. They are extremely suspicious of food and oral medication, and may vacillate at length before reluctantly accepting it. It is helpful if the same staff members bring the patients food and medication from day to day.

This slow response to the most aggressive treatment is characteristic of the phencyclidine psychosis, and sets it apart from paranoid schizophrenia, in which equally agitated patients respond much more rapidly. Indeed, the sense of lack of progress engendered by this slow treatment response was a factor leading to our first investigation of these psychoses.

The transition from the initial to the mixed phase is characterized by several gradual changes which become prominent around the fifth day of treatment: Although restless, the patient is no longer hyperactive; he is less threatened or overtly hostile to the presence of others in the seclusion room. He is cooperative to the extent of following simple concrete suggestions, and accepts medication without suspicious vacillation. He can agree to seclude himself if he becomes upset.

Thus, although he is confused, still demonstrates a thought disorder, hallucinations, blocking and paranoid ideation, he is relatively calm and reasonable a good portion of the time and can accept some degree of responsibility for and control of his behavior.

Despite these signs of progress, there are still intermittent periods of gross paranoia, agitation, terror and hyperactivity alternating with quiet paranoid watchfulness. Affect remains quite constricted, and inappropriate demands which are not met immediately may explode in an unexpected flurry of violence. Thus, patients in the second (mixed) phase are psychotic, paranoid, unpredictable and intermittently dangerous, although they are no longer as sensitive to stimuli.

The goals of treatment in this stage are:

1. Prevention of injury.
2. Amelioration of the psychosis.
3. Reduction of paranoia.

The first goal may be met by close monitoring of behavior and a flexible seclusion policy aimed at helping the patient voluntarily seek seclusion at the first signs that he is losing control. Behavior must be closely and continuously monitored. Operationally, sitting near other patients is a sign of stability, whereas a patient who isolates himself in a corner with his back to the wall, watching others suspiciously requires further isolation.

Clinical judgement will indicate whether further increases in chlorpromazine dosage, or switching to an equipotent dose of a nonsedating antipsychotic agent is indicated. Reestablishment of sleep pattern may be aided by switching the entire dose to bedtime. Participation in group and milieu therapy is helpful in restoring the patient's confidence in his perceptions and in establishing rapport.

The third phase begins on an average during the tenth day of hospitalization, and is characterized by rapid reintegration of the premorbid personality and the development of insight into the events leading to the hospitalization. There is often some amnesia for the early events of the psychosis, but a history of the use of phencyclidine prior to its onset is usually obtained during this period. Patients may be converted to voluntary status during this stage, and the groundwork for outpatient follow-up laid.

Outpatient follow-up is helpful as patients are tapered off medication. In this connection, it is interesting to note that despite repeated warnings against further phencyclidine use, a large proportion of our patients use it at least one more time, and return for treatment of a second psychotic episode. Most of these patients explained using the drug again on the basis of "feeling good" and wanting to see if they could "handle it."

Less encouraging is our finding that about one fourth of the patients originally treated for phencyclidine psychoses return within a year with schizophrenic ones in the absence of drug use. By contrast, these later episodes have lacked the characteristic violence of the phencyclidine-induced ones, and they have been much more quickly responsive to antipsychotic drugs, yet they have also left behind typical schizophrenic personality changes. Those patients who had experienced the longer phencyclidine psychoses were generally the same ones who returned later with schizophrenic ones.

DISCUSSION

Epidemics of drug abuse are nothing new in the United States. The past two decades have seen epidemics of heroin, LSD and several other drugs.

Alcoholism has been endemic for centuries. However, our experience with several epidemics of PCP psychosis shows that the widespread use of PCP in a community produces manifestations which are not only different, but also more dangerous in some ways.

As we have said earlier, our epidemic of PCP psychoses did not initially seem related to drug abuse at all. Our community was experiencing what appeared to be an epidemic of schizophrenia. This was unusual only because the rate of new cases of schizophrenia in a given population does not fluctuate widely and because our community mental health center admits only patients who live in a specific part of the city. Even with our present hindsight, we cannot be certain about the exact time when patients with PCP psychoses began appearing at the doors of our center. Until we learned that these psychoses were drug-induced, these patients were diagnosed and treated as schizophrenic.

Our experience indicates that although PCP abuse is spreading to other parts of the country, its incidence, and particularly that of the PCP psychosis, tends to be under-reported for a number of reasons:

1. The incidence of overdose which is a common indicator of drug abuse patterns in a community, tends to be lower for PCP than the incidence of psychoses in areas where the drug is smoked rather than taken internally.

2. As we have noted, the presenting symptoms of the PCP psychosis are often indistinguishable from schizophrenia. This is compounded by the amnesia induced by PCP. Where it is possible to perform admission interviews on these patients, they usually do not recall taking the drug. Unless family or friends are aware of the patient's drug use, no history is obtained and routine laboratory screens for drugs do not detect PCP.

Consequently, these patients are reported as cases of schizophrenia, a label which may follow them for the rest of their lives.

3. As Burns and others have reported, some PCP intoxications and psychoses result in violent or accidental deaths. In the absence of a routine toxicologic test for PCP, medical examiners may report such deaths as accidents rather than as the consequences of drug use.

Thus, the only signs that PCP abuse may be prevalent in a community are police seizures of the drug, an increase in violent and accidental deaths, and an increase in the number of new cases of "schizophrenia" admitted to mental hospitals. Unless public awareness of the dangers of PCP is raised, these statistics may never come together.

If there is a solution to the problem of PCP abuse, that solution is prevention. Practitioners must be alerted to the fact that PCP is not just another hallucinogen, to be warned about in the same breath as LSD. The public must be alerted to the fact that PCP is far more dangerous to some individuals than the other abused drugs. Medical examiners should consider toxicologic analysis for PCP in all deaths resulting from drownings, falls from high places, apparently avoidable accidents, and from attempts to contain violently assaultive subjects. Psychiatric facilities should investigate any sudden local increases in the incidence of schizophrenia, and should routinely include PCP psychosis in the differential diagnosis of all apparent schizophrenics in whom the illness is of acute onset and characterized by violent behavior, whether or not a history of drug abuse is obtained. Policemen should be alerted to the unique dangers of dealing with those individuals who have violent paranoid reactions to the drug. And finally, schizophrenic patients who have any leanings towards drug experimentation should be warned that they are unusually sensitive to its adverse effects.

Further research is also needed to determine whether there are more effective treatment methods for the PCP psychosis than what I have presented here. Research is also needed to document further PCP's adverse effects, and the Drug Enforcement Administration might consider whether this drug warrants reclassification under Schedule I.

PCP use is spreading rapidly because of ignorance of its unpredictable adverse effects among potential users, and because of the ease with which the drug is illicitly manufactured. It is important to increase awareness of PCP and its effects, as we might well anticipate a nationwide epidemic, an epidemic which, as far as we know, may be going on now.

Phencyclidine (PCP) Drug of the 70's? A Local and National Perspective

(By David B. Graeven, Department of Sociology, California State University, Hayward, Hayward, Calif.)

SUMMARY

Phencyclidine (PCP) is an illicit drug with a high potential for negative effects. It is easy to synthesize and difficult to control because the precursors are easy to obtain. DAWN data shows that PCP episodes in emergency rooms and hospitals have increased from the twenty-third most frequently observed drug in 1973 to sixteenth in 1975. One explanation for the increase in PCP use is the change in the mode of administration from pill to smoking. An exploratory study of a local outbreak of PCP describes the effects of PCP and the dilemma facing the user. Regular PCP use is difficult to hide, but since stigma is attached to PCP use, the PCP user is reluctant to admit to regular use.

In the last several years use of Phencyclidine (PCP), also known as Angel Dust, Crystal, or Peace Pill, has increased. Originally used as an adulterant PCP has become a drug of choice for many young persons. This paper discusses the current status of PCP use in the United States and presents the results of an exploratory study of a local outbreak.

HISTORY

PCP was developed in the late 1950's by Parke, Davis & Co. as an anesthetic agent for use in surgical operations. Early research on humans showed that PCP caused extreme disturbances in body image and feelings of being alone (Davies and Beech, 1960). Another experiment comparing the effects of PCP, LSD and Mescaline on psychiatric patients showed that the effects of PCP were uniformly described as extremely frightening. This fear was not noted with LSD or Mescaline (Ban, et al., 1961). Due to the negative effects, experiments with humans were discontinued in 1965. Phencyclidine is now sold commercially as a primate immobilizing agent under the trade name Sernylan for "veterinary use only."

Phencyclidine is produced for street use in illicit laboratories. The precursors for PCP are difficult to regulate and the drug is easy to synthesize. Both the ease of manufacture and the availability of the ingredients make PCP a drug which is difficult to control.

PCP is a difficult drug to classify because its effects depend on the dose levels. Pharmacologically it acts both as an hallucinogen and a central nervous system stimulant (National Clearinghouse for Drug Abuse Information, 1973). There are two primary modes of administration for PCP: Smoking and orally (in pill or tab forms). The historical trends in the diffusion of the drug are tied closely to the mode of administration. In the late 1960's PCP was usually taken in pill form. In the Haight-Ashbury in 1967 PCP was called the "Peace Pill," but its popularity was short-lived. Following the earlier use of PCP in pill form, PCP then became an adulterant most often sold as THC, Mescaline or Acid. Most early use of PCP in a community is as an adulterant. Many sources still feel that PCP is almost always sold under a fictitious name and that PCP is not a "drug of choice" for street users (STASH, 1975). However, many community drug centers now have noticed the fact that many young people have become regular users of PCP. The most common mode of administration for regular users is to sprinkle PCP on parsley or low-grade marijuana and smoke it.

NATIONAL USE OF PCP

Information on the national use of Phencyclidine is based on the DAWN reporting system (Drug Abuse Warning Network, 1974). DAWN is funded by the Federal government and involves the monitoring of all drug episodes reported in selected hospital emergency rooms, medical examiners, inpatient facilities and crises centers. The DAWN system is designed to reflect the geographic and demographic distribution of the population and provides the most comprehensive picture of contacts between drug users and the reporting facilities. Thus, DAWN data reflect the relative degree of problems that people are having with different drugs. Monitoring the frequency of drug episodes over time by geographic area provides some indication of the diffusion of drug use.

The DAWN II data, which covers the period from July 1973 to March 1974, was the first complete year of data collection. DAWN I was essentially a pilot study of the system. DAWN III and DAWN IV covered the following 2 years. PCP was ranked twenty-third over-all in drug mentions in DAWN II, twenty-first in DAWN III, and had a modal rank of sixteen for the 5 months of DAWN IV for which data were available. These DAWN reports document the rapid rise of PCP use over the last 3 years.

Figure I presents the overall DAWN III ranking of PCP in 23 Standard Metropolitan Areas. These data show that PCP ranks in the top ten in San Francisco, Los Angeles, Detroit and Raleigh and in the second 10 in Chicago, Boston, Washington, D.C., Minneapolis and Philadelphia. Heavy use of PCP was first observed on the West Coast, but these data in Figure I show that PCP now ranks high in several other cities around the country. The important question is whether PCP use will increase in areas where it now has a lower relative frequency.

One important dimension in the adoption and diffusion of PCP as a drug of choice is the mode of administration. In order for PCP to diffuse rapidly and increase as a drug of choice it appears that smoking has to become the primary mode of administration. Earlier outbreaks of PCP where pills were the primary mode of administration were generally of shorter duration and did not seem to produce regular use of PCP.

Selected data on the mode of administration were available from DAWN IV for four Standard Metropolitan Statistical Areas (SMSA's). In the months of April 1975 to June 1975 the percent of PCP cases using dosages in powder form were: 100 percent for San Francisco, 95 percent for Los Angeles, 82 percent in Washington, D.C., and 75 percent in Detroit. On the West Coast, where there is a longer history of PCP use, almost all PCP cases were in powder form which is used for smoking. In

areas where PCP does not have such a long history the percent of use in powder form is much less and there is a higher proportion of use in tab or pill form. Discussions with persons in drug programs in other parts of the country seem to support this impression that PCP does not seem to become a major drug of choice when used in pill form, but when smoking is introduced use of PCP seems to increase.

The most obvious explanation for the relationship between mode of administration and diffusion of PCP is that the user can control the dosage when it is smoked, and that the effects are more desirable. The relationship between dosage form and drug use is complex, but less risky, familiar modes of administration are generally more preferred than risky modes of administration. Most PCP users have probably used marijuana and therefore would be more willing to try smoking a new drug than to adopt a new and riskier mode of administration. Further attention should be given to the changes in the mode of administration of PCP as an indicator of a potential rapid diffusion of the drug in a community.

The profile of the PCP user provided by DAWN III data shows that the PCP user who enters the DAWN system was: most likely to have used PCP alone (78 percent) rather than using it with one or more other drugs; most likely to come into a crisis center (63 percent) rather than an emergency room (34 percent) or inpatient facility (3 percent); most likely to be young (48 percent 10–19 years old); white (79 percent) and male (69 percent).

DESCRIPTION OF A LOCAL PCP OUTBREAK

The city of Hayward, which is located in the East Bay of the San Francisco Metropolitan area has experienced an outbreak of PCP use in the last several years. It is a drug of choice for many people and there now are a large number of chronic users. About a third of the drug cases in the probation department are PCP users and about one-half of the emergency contacts in the local drug crisis center are for problems with PCP. Persons in the drug culture and drug programs refer to the Hayward area as the PCP capital of the world.

This exploratory study is based on interviews with twenty-five PCP users (three of whom were dealers), probation and police officers, emergency room staff and local drug crises programs.

PCP has a reputation in the community as being a drug with one of the highest "freakout potentials." Everyone interviewed who works with users considered PCP to be an extremely dangerous drug, and most felt it had more deleterious effects than heroin. As the DAWN profile showed, PCP users tend to be very young and young people are least able to handle such a heavy drug experience. As the local outbreak has continued in Hayward the age of the PCP user has gone down and now many persons in junior high school are experimenting.

THE EFFECTS OF PCP

For low PCP doses persons experience mild excitement and may experience catatonic rigidity, while for higher doses persons often appear to be in a coma or stupor with the eyes open (Burns, et al., 1975). In addition to the dose level the effects of PCP depend on the user's frame of mind, expectations about the drug and the situation in which the drug is used. The common pattern of effects described by users includes an "ozone stage" which occurs 5 to 15 minutes after smoking PCP. In the ozone stage, which usually lasts from 2 to 6 hours, a person usually has a difficult time talking and walking, becomes confused, demonstrates repetitive behavior, and has a lack of attention. Things seem to slow down for a person on PCP. As one user described the drug, "it makes me not feel; I can put my mind in a box. It's not like getting high."

Overdoses on PCP at the local hospital are a common occurrence. According to the emergency room doctor who has worked nights for the last several years, almost all persons who come in on PCP overdoses exhibit schizoid behavior. Almost all of the recent cases coming into the hospital occur as a result of smoking PCP. Overdose cases are usually very disruptive for the hospital because of the noise they make. The usual mode of treatment is to put the person in a bed and restrain them. Sensory isolation is recommended because verbal and physical stimulation aggravate the patient's condition (Burns, et al., 1975).

For overdoses where the person is deeply under, a urine sample is usually taken. Most often medication is not used, but when a person is in an extremely acute state, either Valium or Thorazine is given to calm the person down. Most cases are released the following day, and almost all cases are amnesiac. Those persons still having trouble usually see the resident psychiatrist.

The local drug crisis center, which along with the local police bring many overdoses to the local hospital, also treats overdoses which they feel they can handle. These cases involve people either having hallucinations or people who come in with their joints very rigid.

One of the acute effects of PCP is its high rate of behavioral toxicity. In the interviews conducted almost all the persons had either been in an automobile accident or had a friend who was in an accident as a result of PCP use. In one incident a PCP user simply stopped his car on the freeway. Another incident involved a drowning in which a person could not save another person on PCP because he also was on PCP. Most accidents involving PCP occur because people try to engage in normal activities such as driving or swimming but their motor and sensory functions are impaired.

Another behavioral effect of PCP is the fact that there are a number of incidents of violence among PCP users. Violence seems to occur more often among PCPer's than other drug users. Originally the stabbings and fights appeared to be due to the fact that the distribution system for PCP had not yet stabilized and territories were being established. The interviews suggest, however, that much of the violence involving PCP is attributable to the drug itself and the frame of mind created in the user. The PCP user is often not sure what happens when he is on PCP, and this removal from the situation often creates suspicion and lack of trust.

Bad trips with PCP occur especially for the person who doesn't know he has taken PCP. Two themes which seem to recur are the fear of dying and delusions about being Christ or God. The fear of death which was noted in the early experiments with PCP (Ban, et al., 1961) is understandable because the user feels he has lost control over his body. The psychodynamics of Christ-like delusions are more difficult to understand, but are noteworthy in the frequency with which they occur.

The long-term effects of PCP are described by persons working with users and friends of users as becoming "crystalized." Getting crystalized means a person's mind seems confused; he doesn't make sense when he talks. Many regular users of PCP, who are often referred to as "Parsley Monsters," seem very depressed when they are not using. This depression is probably aggravated or produced by PCP.

Obviously, the effects of PCP are not all bad and some unknown proportion of those persons who use are able to handle PCP. Most of the regular users interviewed felt they could handle PCP. From their comments about their problems some who felt they could handle PCP seemed to be having a difficult time. Learning to handle PCP involves using it in a safe place where a person wouldn't have to drive or talk to anyone and regulating the dose so that a person wouldn't take more than he thought he could handle. Those persons who could handle PCP were generally over 21 and had been using for 2 years or more.

Positive effects of PCP include giggling and laughing together with other persons on PCP. The effect on the body is to make a person feel warm or tingle. These effects were described by most of the persons interviewed. For some of the male users, PCP was described as a drug women love. In varying degrees of sophistication, the men interviewed felt PCP increased the likelihood of intercourse with women. The use of PCP to "get over" on women is reminiscent of the use of alcohol by adolescents. The women interviewed said they liked PCP, but they didn't seem as crazy about the drug as men seemed to think they were. One of the questions requiring further examination is the use of PCP by women.

PCP users develop a tolerance for PCP; with prolonged use they need to take more to get the same effect. Initially a few tokes on a joint would be enough, but with continued use a person would have to smoke a joint. Although regular users of PCP seem dependent on the drug, more information is necessary on the regularity of use and the different patterns of PCP use. Most of the regular users in this small sample used every day. However, a more detailed history of a large sample of PCP users is needed. Another fact about PCP is that even though a person hasn't used for a day or two they still seem confused, lethargic, and unable to concentrate.

THE PCPER'S DILEMMA

One of the most interesting facets of the PCP scene is the fact that a PCP user is very hesitant to admit to others that he or she uses PCP. This resistance to "cop to PCP use" is a result of the fact that the PCP user is at the bottom of the status scale. In the eyes of the people who work with drug users, the heroin addict is more highly regarded than the PCP user. Heroin addicts want to stay away from PCP users because they see PCP users as inadequate. In many cases, heroin users feel PCPer's would be unable to use heroin because they couldn't hustle.

The PCP user is in a bind. If he is confronted by someone they often say, "You're spacie, you're out of it, you can't remember anything, you're turning into a vegeta-

ble." Therefore, because of the stigma, the PCP user wants to cover up his use, but he can't. Most people can't hide their use of PCP. One interviewee used heroin for several years and never had any contact with the police, but in 6 months of PCP use he was arrested four times. The PCPer's dilemma is that he is using a drug that puts him on the bottom of the status system; he is concerned about how PCP is affecting him, but he can't talk about his regular use of PCP because he wants to hide his identity as a user.

This dilemma for the PCPer of hiding his identity is coupled with the fact that the user is concerned that the drug is affecting his brain. When told that studies show PCP does not do permanent damage to the brain a user said, "Well, then how come I'm so spacie." I have not noticed such concern about a drug's effects on the brain or body among heroin users, but among PCP users this concern is quite prevalent. In order to feel "normal" PCPer's felt they had to stop using for 1 to 2 weeks.

The PCPer's dilemma also presents problems for treatment. The first problem is that the user is reluctant to admit to regular use or dependence on the drug. This unwillingness to be open about regular use creates barriers between the treatment person and the user. The other problem is that since the effects of PCP last for several days, it is difficult to separate the drug-induced problems from the problems they have when they aren't using. Thus treatment for persons who used in the last several days is more difficult than treatment for those who haven't used for several weeks. It is especially difficult to determine the user's problems if he is unwilling to be honest about his use.

THE CHALLENGE FOR RESEARCH ON PCP

One is struck by the possibility that with the emergence of PCP we are experiencing the same process we have witnessed with acid, barbiturates, heroin and amphetamines. When each of these drugs emerged or resurfaced in the 1960's there was a rapid diffusion of the drug accompanied by negative publicity, horror tales and eventually some systematic research on the use of the drug. The question asked regarding each of these drugs was, "Why would anyone want to use this?" Now in the 1970's we are faced with a new drug, PCP, and the most frequent question raised is, "Why would people use PCP?"

It is hoped that the initial horror stories about PCP be accompanied by systematic description of the PCP-using community, including those who use the drug and don't have contact with emergency rooms or crises centers. While there are undoubtedly some unique factors associated with PCP use, it is important to insure that what we have learned from earlier drug use is also applied here. The essential starting point then is research on local outbreaks of PCP use and an accurate profile on patterns of use.

Another important topic for research is to discover both the short and long-term psychological and social effects of PCP on experimental and chronic users. PCP could cover up some problems in the short run and exacerbate problems after continued use.

Other studies on PCP should focus on the user who seems to be able to handle the drug as well as the user who can't handle it. Given the potential for the diffusion of PCP in the United States and the many problems associated with its use, changing patterns of national and local use should be monitored.

Other studies on PCP should focus on the user who seems to be able to handle the drug as well as the user who can't handle it. Given the potential for the diffusion of PCP in the United States and the many problems associated with its use, changing patterns of national and local use should be monitored.

FIGURE 1.—*Overall ranking for PCP in SMSA's (DAWN III)*

San Francisco	7	Seattle	26
Detroit	8	Buffalo	27
Los Angeles	8	Indianapolis	28
Raleigh, N.C	8	Miami	28
Chicago	17	Denver	30
Washington, D.C	17	New Orleans	30
Boston	18	Oklahoma City	31
Minneapolis	19	San Antonio	32
Philadelphia	19	Dallas	33
Atlanta	20	Omaha	33
Cleveland	20	New York	34
Phoenix	21		

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CLINICAL MANAGEMENT OF THE PHENCYCLIDINE PSYCHOSIS

(By Paul V. Luisada, M.D., and Bernard I. Brown, PNA)

A previous paper described the appearance of phencyclidine psychoses in epidemic proportions [*1*]. This surge of psychotic patients paralleled an increase in the street supply of PCP, an increase which continues in the Washington, D.C. area. The problem has persisted, despite vigorous law-enforcement activities, to the point where the DEA recently called the Washington Metropolitan Area the PCP capital of the country [*2*]. As a result, phencyclidine psychosis is presently the leading cause of inpatient psychiatric admissions in our catchment area.

The phencyclidine psychosis may be defined as a schizophreniform psychosis which appears in some individuals after phencyclidine use and persists for more than a day. It is distinguished from phencyclidine intoxication by its persistence. The phencyclidine psychosis is characterized by the appearance of the cardinal signs of schizophrenia and unpredictable aggressive behavior, both of which may last for days or weeks after the use of phencyclidine in the absence of further exposure.

With the ever-widening availability of phencyclidine, it can be anticipated that other parts of the country will also experience an increasing incidence of phencyclidine psychoses. This paper is directed at clinicians who may be confronted with this problem, and it is based upon experience gained from treating in excess of 100 phencyclidine psychoses on an inpatient psychiatric ward over the past two years.

CLINICAL COURSE

An earlier paper [*1*] described the course of the treated psychosis as consisting of three distinguishable phases of approximately equal length over the course of an average two-week hospitalization: The initial phase is characterized by violent, psychotic behavior which persists for an average of five days. During the second phase, behavior is more controlled, but patients remain restless and unpredictable for approximately five more days. The final phase lasts about four days and is characterized by rapid personality reintegration and rapid improvement of thought disorders and paranoia.

The majority of patients presenting with this entity were in their late teens to mid-twenties, and nearly all have been males. Most did not reach treatment until hours or days after the onset of the psychoses, and did so during the initial phase of the psychosis. Chief complaints ranged from mute posturing to "attacking everyone in sight." The majority of these patients were brought to treatment after their aggressive behavior exceeded the limits tolerated by family, friends, or police. Those few patients who presented themselves voluntarily were generally treatable on an outpatient basis, and were neither as violent nor as agitated as those described here.

Where admission histories were obtained from these patients, they generally included several days of confusion, paranoid ideation, insomnia, and intermittent restlessness. However, a history of phencyclidine use was not reliably obtainable on admission. In addition, family members generally described the preadmission period as characterized by insomnia, tension, hyperactivity, and intermittent unexpected aggressive behavior.

The presenting picture most often resembled a mixture of paranoid schizophrenia and catatonic excitement, although some patients were more subdued and resembled true catatonia. Those patients amenable to admission interviews were described as preoccupied and marginally cooperative. Mental status examinations generally described inappropriate autistic behavior. Patients left to themselves often gazed fixedly at objects, or suspiciously at interviewers, with complete preoccupation and apparent oblivion to their surroundings for several minutes, ignoring questions or responding in perfunctory monosyllables. These patients often unexpectedly moved toward the door in a deliberate, mechanical way and reacted with sudden violence if attempts were made to touch or restrain them.

Their affect was generally described as blunted, constricted, distant or vacant, alternating with extreme suspicion, hostility, or terror. They often complained of persistent auditory hallucinations, and appeared to be having difficulties with visual perception. The auditory hallucinations were often described as threatening, and some patients found them terrifying.

Although these patients were oriented to place and person, month and year, the date was occasionally given as being several days in the future, and events of the past several days were perceived of as having occurred days or even weeks earlier. Speech was invariably affected, with abnormalities ranging from frank incoherence to loosening or tangential associations. Thought content, although difficult to assess in many cases because of incoherence, commonly included a global paranoia, bizarre paranoid delusions, ideas of reference, delusions of being controlled by others, grandiosity, but no fixed or systematized delusional system.

Apart from the characteristic history of acute onset, and an irregularly obtained history of phencyclidine use in its current street guises, these patients lacked prior psychiatric histories and tended to be more independent of their families than schizophrenics. Most were doing reasonably well in high school, college, or work, although some were vagrants and "street people" prior to the onset of their psychoses.

A small part of our sample consisted of patients with prior admissions for schizophrenia who experienced sudden psychotic reactivations after experimenting with phencyclidine. As a rule, these psychoses involved significantly more violent and unpredictable behavior than the initial schizophrenic psychoses.

CLINICAL MANAGEMENT

The diagnosis of phencyclidine psychosis in the initial phase constitutes a psychiatric emergency. These patients are an immediate danger to others merely on the basis of their misperceptions, paranoia, and hostility, and this threat is compounded by their confusion, tendency towards violence, and the extreme unpredictability of their behavior. They also constitute a danger to themselves not only on the basis of impaired judgment and being unable to care for themselves, but also because their violent, threatening behavior might provoke lethal countermeasures by those around them. Burns [3] has reported a case of phencyclidine intoxication in which the patient was shot and killed by police after not heeding their warnings. One of our patients was hospitalized involuntarily on the basis of "attacking everyone in sight," including the investigating police officer, after a car accident.

Patients in the initial stages of the phencyclidine psychosis almost invariably require inpatient psychiatric treatment. Furthermore, these patients are poor candidates for voluntary treatment, first because their paranoia makes them unlikely to sign in on admission, and second because their restlessness, ambivalence, confusion, and unpredictability at this stage of the psychosis leads to a high percentage of premature A.M.A. discharges. A factor that further mitigates against successfully continuing treatment on a voluntary basis is admission under pressure from family

or friends. These patients often demand to leave as soon as their relatives and friends return home. In our experience, they cannot be dissuaded on the basis of rational discussion during this phase of their illness. In one instance, a newly admitted patient insisted on "fighting my way out" despite the presence of 16 male nurses, some of whom were injured in the process.

As discussed above, patients in the initial stage of the phencyclidine psychosis are dangerous, ambivilent, unpredictable, psychotic, and agitated.

The immediate goals of treatment are therefore:

1. Prevention of injury to the patient or others.
2. Assurance of continuing treatment.
3. Reduction of stimuli.
4. Amelioration of the psychosis.
5. Reduction of agitation.

Treatment which meets the first three of these goals includes prompt inpatient hospitalization, preferably on an involuntary basis. Isolation in a locked bare seclusion room with frequent, but unobtrusive observation is the treatment of choice: Seclusion not only safeguards other patients and staff, but also calms the patient through the reduction of stimuli which he can misperceive as threatening, particularly the sight of other people.

Chlorpromazine is the only antipsychotic agent that meets the last two goals: amelioration of the psychosis and sedation. Our experience indicates that the use of nonsedating antipsychotic agents prolongs the time these patients require seclusion, delays improvement of the insomnia, and makes them more difficult for staff to manage at mealtime. Although the use of sedatives such as diazepam and chlordiazepoxide has been suggested for the management of acute phencyclidine intoxication, the dual treatment goals of ameliorating the psychosis and reducing agitation makes the use of a single drug which meets both goals (chlorpromazine) more attractive than the combination of a nonsedating antipsychotic agent and a sedative.

Once the possibility of anticholinergic drug intoxication has been ruled out, the daily dose of chlorpromazine is increased by 200 mg/day from a starting dose of 400 mg/day in divided doses. On the average, a daily dose of 1600 mg/day has been reached by the end of the initial phase of treatment.

Behavior in seclusion during the initial phase is characterized by continuing global paranoia, insomnia, anorexia, intermittent agitation, and strong reactions to such stimuli as the presence of staff during mealtimes. Patients may throw food about the rooms, or smear it on the walls. They are extremely suspicious of food and oral medication, and may vacillate at length before reluctantly accepting it. It is helpful if the same staff members bring the patient food and medication from day to day.

This slow response to the most aggressive treatment is characteristic of phencyclidine psychosis, and sets it apart from paranoid schizophrenia, in which equally agitated patients respond much more rapidly. Indeed, the sense of lack of progress engendered by this slow treatment response was a factor leading to our first investigation of these psychoses.

The transition from the initial to the mixed phase is characterized by several gradual changes which become prominent around the fifth day of treatment: Although restless, the patient is no longer hyperactive; he is less threatened or overtly hostile to the presence of others in the seclusion room. He is cooperative to the extent of following simple concrete suggestions and accepts medication without suspicious vacillation. He can agree to seclude himself if he becomes upset.

Thus, although he is confused and still demonstrates a thought disorder, hallucinations, blocking, and paranoid ideation, he is relatively calm and reasonable a good portion of the time and can accept some degree of responsibility for and control of his behavior.

Despite these signs of progress, there are still intermittent periods of gross paranoia, agitation, terror, and hyperactivity alternating with quiet paranoid watchfulness. Affect remains quite constricted, and inappropriate demands that are not met immediately may explode in an unexpected flurry of violence. Thus, patients in the second (mixed) phase are psychotic, paranoid, unpredictable, and intermittently dangerous, although they are no longer sensitive to stimuli.

The goals of treatment in this stage are:

1. Prevention of injury.
2. Amelioration of the psychosis.
3. Reduction of paranoia.

The first goal may be met by close monitoring of behavior and a flexible seclusion policy aimed at helping the patient voluntarily seek seclusion at the first signs that

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he is losing control. Behavior must be closely and continuously monitored. Operationally, sitting near other patients is a sign of stability, whereas a patient who isolates himself in a corner with his back to the wall, watching other suspiciously requires further isolation.

Clinical judgment will indicate whether further increases in chlorpromazine dosage, or switching to an equipotent dose of a nonsedating antipsychotic agent is indicated. Reestablishment of sleep pattern may be aided by switching the entire daily dose to bedtime. Participation in group and milieu therapy is helpful in restoring the patient's confidence in his perceptions and in establishing rapport.

The third phase begins on an average during the tenth day of hospitalization, and is characterized by rapid reintegration of the premorbid personality and the development of insight into the events leading to the hospitalization. There is often some amnesia for the early events of the psychosis, but a history of the use of phencyclidine prior to its onset is usually obtained during this period. Patients may be converted to voluntary status during this stage, and the groundwork for outpatient follow-up laid.

Outpatient follow-up is helpful as patients are tapered off medication. In this connection, it is interesting to note that despite repeated warnings against further phencyclidine use, a large proportion of our patients have used it at least one more time, and have returned for treatment of a second psychotic episode. Most of these patients explained using the drug again on the basis of "feeling good" and wanting to see if they could "handle it."

Less encouraging is our finding that about one-fourth of the patients originally treated for phencyclidine psychoses return about a year later with schizophrenic ones in the absence of drug use. By contrast, these later episodes have lacked the characteristic violence of the phencyclidine-induced ones, and they have been much more quickly responsive to antipsychotic drugs, yet they have also left behind typical schizophrenic residua. Although our data on these patients are still limited, preliminary trends appear to indicate a tendency for those patients who had experienced the longer phencyclidine psychoses to later return with schizophrenic ones.

CONCLUSION

Despite extensive efforts by local law-enforcement agencies, phencyclidine remains widely available as a street drug. At the same time, phencyclidine psychoses have surpassed both schizophrenia and alcoholism as the leading cause of inpatient psychiatric admission in our catchment area.

The connection between schizophrenia and phencyclidine psychosis appears to go well beyond the phenomenologic similarities. As reported by Luby [*4*], one of phencyclidine's unique qualities is not only to mimic schizophrenia, but also to reactivate schizophrenic psychoses. The treatment of phencyclidine psychoses outlined in this paper is also quite similar to that for extremely agitated schizophrenics. Furthermore, our experience indicates that people whose sensitivity to phencyclidine has been demonstrated by the development of a psychosis will develop another psychosis upon reexposure to the drug. Finally, there are some patients who have first experienced phencyclidine psychoses and later have developed schizophrenia.

Thus, our experience with phencyclidine psychoses not only supports earlier findings that schizophrenics are highly sensitive to the drug, but also suggests the existence of an individual sensitivity to the drug, a sensitivity that is related to schizophrenia in some way. The widespread use of phencyclidine in our catchment area might even be viewed as a crude "screening test" for "schizophrenicity." The ease with which phencyclidine may be synthesized in large quantities on a clandestine basis raises the possibility that this "screening test" may soon spread elsewhere.

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EDITORIAL

Phencyclidine: An Emerging Drug Problem

This issue of the journal is devoted to the emerging problem of phencyclidine abuse throughout the United States. Phencyclidine's masquerading properties are enabling it to ride the waves of the booming psychedelic and cannabinol markets. Its growing popularity parallels the early histories of the LSD and marijuana movements. With the advent of the polydrug phenomenon, its widespread experimental and long-term abuse has expanded. It initially passed through the drug subculture as the PeaCe Pill (PCP) in 1967. The relatively inexperienced drug experimenters at the time were disappointed with its effects. However, since then its popularity has rapidly increased among experienced users. Also, the extensive use of clandestine drug combinations containing phencyclidine has resulted in a marked rise in the number of patients displaying acute intoxication. The myriad analogs of phencyclidine present a broad range of potential agents, pure or in polydrug form, for illicit experimentation and chronic abuse. There, the proper clinical recognition and management of phencyclidine intoxications is now challenging the medical community.

The origin of phencyclidine dates back to the mid-1950s when it was tested on humans as a surgical anaesthetic. Due to acute side effects, its legitimate use has been limited exclusively to veterinary medicine since 1967.

In a longitudinal study of the concentration and frequency of phencyclidine in street drugs, three researchers have revealed a sharp decline between 1971 and 1975. Despite these findings, a wide variety of phencyclidine-induced syndromes are being observed at an alarming rate in several major cities. During 1975 in the city of Detroit alone, phencyclidine was reported to be the single most common drug in emergency overdose screening.

Those street drugs with the most bizarre names are most often found to contain phencyclidine. Phencyclidine's masquerading properties, low cost, and ease of production, provide a high profit,

and account for its appearance as a street drug. When it is combined with or substituted for other drugs, the inexperienced user is often led to believe that he is actually getting the misrepresented agent.

The prolonged and fluctuating effects of phencyclidine intoxication, lasting up to a week with high doses, are possibly due to the drug's affinity for adipose tissue. In a study of organ distribution of phencyclidine in rats, high levels were detected in adipose tissue long after the drug was absent from the blood and urine.

One etiologic hypothesis is that the prolonged effect of phencyclidine is a result of its slow release from adipose tissue and its subsequent selective uptake by brain tissue, with sequestration in the central nervous system. The presence of a long-acting phencyclidine metabolite is among several alternative hypotheses that require further research.

Preliminary studies suggest that phencyclidine may represent a completely new class of psychoactive drug. The small amount of available research evidence tentatively supports the assumption that humans may develop tolerance to the intensity and duration of the behavioral effects of phencyclidine, yet no evidence of physical dependence exists currently. That clinically significant interactions occur between phencyclidine, and marijuana and central nervous system depressants is substantiated by several investigations.

A study of the psychiatric sequelae of phencyclidine abuse has disclosed a drug-specific psychosis lasting several weeks for a small number of users. These psychotic episodes often resemble the premorbid personality changes associated with LSD and marijuana use. Additional features of the psychosis—neurologic changes, dose-related severity of symptoms, and the consistent duration of illness—are not common to other psychedelic drugs. It is assumed, based on clinical observations, that phencyclidine-induced psychoses is a drug effect facilitated by a "vulnerable, pathologic personality." Reports indicate that it can both reactivate and mimic schizophrenic psychoses. Some individuals have developed classic schizophrenia subsequent to experiencing phencyclidine psychoses. This phenomenon suggests a relationship between the pharmacology of phencyclidine and the biochemistry of schizophrenia. That some individuals may possess a predisposition to schizophrenia is suggested by the fact that schizophrenics are highly sensitive to phencyclidine. Experienced clinicians report that chronic users who say they are trying to escape bad feelings about themselves are most likely to have problems with the drug. Also, a few chronic users of phencyclidine claim they feel good about using the drug.

The increasing availability of this enigmatic psychoactive agent is likely to expand its abuse and continue to challenge the medical community. The evidence reported in this issue of the journal clearly identifies phencyclidine abuse as an emerging drug problem that requires the immediate attention of the medical community.

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Perspectives: Acute Phencyclidine Intoxication*,†

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The management of acute phencyclidine intoxication, often presenting as a medical emergency, requires an understanding of the drug's pharmacology, patterns of abuse, lethality, combined effects, and toxicology.

Phencyclidine (1-(1-phencyclohexyl) piperidine, discovered by Chen, Ensor, Russel, and Bohner in the mid-1950s [1], is a white crystalline powder with a molecular weight of 243.8 [2]. The hydrochloride salt of phencyclidine (Sernyl, CI-395), a white, stable solid with a melting point of 234-236°C, is readily soluble in water and ethanol [3].

Animal studies of phencyclidine hydrochloride reveal low cellular toxicity and high potency in inducing surgical anesthesia in monkeys [4]. Phencyclidine hydrochloride was first tested clinically as an anesthetic agent in humans in 1957 [4, 5]. In doses of 0.25 mg/kg by body weight given intravenously, it was effective in producing anesthesia sufficient for minor and major surgery [4]. Clinical investigations of its anesthetic properties were discontinued because the drug caused recurrent emergent delerium of prolonged duration in some cases.

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Phencyclidine is primarily a central nervous system depressant in monkeys and humans [6]. Increasing doses produce sedation, catalepsy, general anesthesia, and convulsion [7-9]. Also, it is psychomimetic and possesses certain sympathomimetic actions [2, 6, 10].

Phencyclidine is active orally as well as parenterally (IM, IV) in humans [3]. The oral sedative dose is estimated to be between 1 and 5 mg [9]. Given intravenously in subanesthetic to anesthetic doses (0.06-0.25 mg/kg), phencyclidine increases the minute volume, rate, and depth of respirations of low order. At a dose of 0.25 mg/kg intravenously, a mean increase in minute volume of 1140 cc was measured in seven persons. The tidal volume increased an average of 15.3 cc and the respiratory rate increased a mean of 2.57 [4].

No significant alteration of respiration occurs in animals at anesthetic doses. However, cessation of respiration has been observed with very rapid intravenous administration of high doses in rabbits and dogs [11].

Phencyclidine given humans in subanesthetic to anesthetic doses (0.06-0.25 mg/kg) consistently elevates both systolic and diastolic blood pressure, accompanied by a less consistent increase in pulse rate. A mean increase of 26 mm Hg in systolic and 19 mm Hg in diastolic pressure has been observed in seven persons receiving doses of 0.25 mg/kg intravenously [4].

No marked change in circulation has been noted in animals at doses up to the anesthetic level. Bradycardia and sometimes arrythmias occurred in cats given very large intravenous doses. Transitory hypotension has also been produced with highly toxic dosage levels [11].

In initial clinical trials, doses of 1.0 mg/kg given intravenously produced seizure activity in humans [4]. Clonic and tonic seizures occurred in monkeys after administration of phencyclidine in doses greater than those required to produce anesthesia [7, 8, 11].

Electroencephalographically, phencyclidine causes diffuse theta and delta slowing in humans [4, 5, 13]. Changes induced by intravenous infusion at subanesthetic doses ranged from slight theta slowing in one of four volunteers at 0.03 mg/kg to marked theta activity with a dominant medium voltage 4-5 Hz rhythm in two volunteers given 0.2 mg/kg. The onset and restitution of the electroencephalogram to its drug-free level was evidenced by either abrupt frequency or stepwise changes. These effects lasted 15-30 min depending on the dose given and the severity of the changes induced [5].

In six persons given intravenous infusions of phencyclidine, a decrease in fast activity occurred after 2-3 mg. At approximately seven to ten mg, a definite slowing, diffuse in nature and most pronounced in the theta range, was observed [4].

Phencyclidine appears to be rapidly metabolized and excreted. In various animal species, it has a relatively short duration of

action [3]. When labeled phencyclidine was given intravenously to monkeys in doses of 2-6 mg/kg, 60% of the label appeared in the urine within 12 hr and approximately 75% at eight days. Although the label was primarily in the form of conjugated hydroxy metabolites, some unchanged phencyclidine was present [14].

The duration of surgical anesthesia with parenteral administration of phencyclidine in monkeys is dose dependent [8].

Phencyclidine has been identified and quantitively determined in extracts of body fluids (blood, urine, CSF) and tissues by gas-liquid chromatography with flame ionization detection [15, 16] and with gas chromatography-chemical ionization mass spectrometry [17, 18].

STREET PHARMACOLOGY

Phencyclidine has appeared on the illicit market in powder, tablet, leaf mixture, and one gram "rock" crystal forms. The crystalline or granular powder form is found most frequently; occasionally it is contained in capsules [19, 20]. Phencyclidine found on parsley, mint, or other leaves is usually in the form of a "joint" [19, 21]. Most street preparations contain the hydrochloride salt, although phencyclidine as the free base has been seen [22].

Phencyclidine is sold on the West Coast as "crystal," "angel dust," "PCP," "THC," and "cannabinol" [19-21, 23]. Found under a multitude of street names, the most persistent misrepresentation is "THC" [20].

The percentage of phencyclidine in powder forms varies extremely [19, 21]. Samples of the powder form sold as "crystal" are generally 50-100% phencyclidine [24]. As "angel dust," it varies from 88-100% phencyclidine [19]. When purchased under a variety of other names, the amount of phencyclidine drops to a range of 10-30% [19].

Tablet forms consistently contain from 1 to 6 mg, with most tablets containing approximately 5 mg [19, 20, 25]. Joints of leaf mixtures have been found to contain between 0.24-7.9% phencyclidine, averaging 1 mg phencyclidine per 150 mg of leaves. Joints range from 100 to 400 mg in total weight [19]. Chronic users report using about 50 mg of the powder form, purchased as "crystal," to prepare "street" joints [24].

Phencyclidine can be taken by mouth, by smoking (inhalation), by snorting (insufflation), and, rarely, by the intravenous route [24]. Powder forms are generally sprinkled on "joints" or sometimes are snorted.

Estimates of the amount of phencyclidine used per episode by the different routes are listed in Table 1. These values are based on a combination of drug sample analyses and information on certain street materials containing phencyclidine.

TABLE 1. Phencyclidine Used per Episode

Mode	Form	Amt. purchased, mg	Est. % PCP	Est. amt. PCP, mg
Smoking	1-2 joints	50-100	50-100	35-75
Snorting	"hit" (2 lines)	5	90-99	5
By mouth	1 tablet		(2-6 mg)	5

TABLE 2. Temporal Profile of Reported Subjective Effects Among PCP Smokers

Effects	Time
Onset of "come on"	2-5 min
Peak, plateau or "high"	15-30 min
Stay "loaded"	4-6 hr
Time until "normal"	24-48 hr

The amount of phencyclidine per "hit" in powders and tablets usually falls in the range of 2-6 mg [19].

The time course of the subjective effects of phencyclidine taken by inhalation as reported by chronic users is given in Table 2.

PRESENTATION OF ACUTE INTOXICATION

Among 18 emergency room presentations for acute phencyclidine intoxications from April 1972 to August 1975 were 16 male and two female Caucasians ranging in age from 16 to 27 years.

Blood obtained on admission was screened for ethyl alcohol and other sedative-hypnotic agents. Admission urine samples were screened for amphetamines, methamphetamine, and opiates. No LSD or marijuana use appeared in their histories.

Urine levels of phencyclidine were determined by gas-liquid chromatography with flame ionization detection and confirmed by thin-layer chromatography [15].

Sixteen of the individuals were unresponsive or exhibited bizarre or violent behavior. Two individuals were observed by police to be acting inappropriately after an auto accident (see Table 3). Two of

TABLE 3. Presenting Picture Among 18 Cases of Acute Phencyclidine Intoxication

Presenting picture	Cases	Percent
Unresponsive	11	61.0
Bizarre behavior	4	22.0
Automobile accident	2	11.0
Violent behavior	1	6.0

the persons brought to the emergency room in an unresponsive state had been placed in jail earlier for suspected drug abuse in one case, and erratic driving in the other. Others were brought in by police, local drug program staff, parents, and school personnel.

CLINICAL FINDINGS

Seven of the 18 individuals were confused or delerious on admission. Four of them had smoked one "street" joint and a fifth person had swallowed a joint upon fearing discovery. In the remaining two cases, no history was available.

Eleven individuals were in a stuporous or comatose state. Six had taken phencyclidine by mouth, three in amounts ranging from 1/2 to 1 gm of street purchased material. One person had smoked phencyclidine, and in the remaining four cases no history was available.

The admission vital signs and characteristic clinical findings in cases of the acute confusional state-delerium, following typical street doses, and in cases of a stuporous-comatose state, associated with higher doses taken orally, are presented in Table 4, parts I and II.

HOSPITAL COURSE

The time required following admission for the individuals to appear alert and oriented and to exhibit normal behavior in 15 cases of acute phencyclidine intoxication is summarized in Table 5. Three of the original cases were excluded from the table, since two individuals were transferred to acute psychiatric facilities and one individual displayed inappropriate behavior at the time of discharge.

TABLE 4. Summary of Clinical Histories of 18 Cases of Acute Phencyclidine Intoxication

	Acute confusional state or delerium (N = 7)	Stupor or coma (N = 11)
Part I.		
VITAL SIGNS		
A. Respiratory rate (normal or slightly increased)	24 mean 18- 32 range	21 mean 16- 25 range
B. Blood pressure (increased)		
Systolic	142 mean 116-160 range	155 mean 100-180 range
Diastolic	85 mean 76-100 range	94 mean 60-110 range
C. Pulse (increased)	105 mean 88-140 range	88 mean 60-112 range
D. Temperature (normal or slightly increased)	101.1°F 98.8°-101.4°F range	99.3°F 97.0°-100.8°F range
Part II.		
CLINICAL FEATURES		
A. Responsiveness	Appears awake; initially uncommunicative, may respond to commands or respond to simple questions with nodding or	Unresponsive to verbal stimuli, responds with movement to deep pain

	eye movement; later incomplete verbal responses and then becomes communicative/talkative	
B. Orientation	Disoriented for time and place; appears confused and fearful; amnesia for episode	–
C. Behavior	Agitated, excited, combative; regressive, self-destructive or "bizarre" behavior; insomnia, anorexia, incontinence, followed by depression, irritability, and emotional lability	–
D. Speech	Dysarthria (slurred), perseveration; may be intermittently anarthric	Vocalizations; "moaning," "groaning," "grunting"; followed by anarthria and dysfluency, initially with automatic speech
A. Eye lids	Eyes open ("stare" appearance) with ptosis	Eyes open ("awake" appearance) or eyes closed
B. Eye position & movements	Paucity of spontaneous eye movements ("stare" appearance), may be fixation instability, dysconjugate gaze or hypometric saccades	May be roving eye movements; dysconjugate gaze; doll's eye movements present

(continued)

TABLE 4 (continued)

	Acute confusional state or delerium (N = 7)	Stupor or coma (N = 11)
C. Nystagmus	Bilateral horizontal jerky nystagmus; may be vertical nystagmus (upward-downward)	Intermittent horizontal and vertical nystagmus at rest
D. Corneal reflex	Decreased or absent	Decreased or absent
MOTOR SYSTEM		
A. Gait	Grossly ataxic (sensory), unable to tandem stand/walk; may be component of muscle rigidity	–
B. Muscle tone	Rigidity (catatonia), catalepsy (waxy rigidity)	Muscle rigidity, on stimulation, opisthotonic posturing, decerebrate rigidity
C. Movements	Motor restlessness, repetitive movements, facial grimicing	Spontaneous "purposeless movements," muscle tremors, muscle twitching
D. DTRs	Increased	Increased
E. Seizure activity	–	Generalized motor seizures, may be early or delayed in appearance & repetitive

OTHER		
A. Vomiting (central)	Repeated episodes over 1/2- to 3-hr period	Repeated episodes
B. Increased secretions (lacrimation, salivation diaphoresis, bronchorrhea)	"Drooling," diaphoretic	Secretions in posterior pharynx, at nares and mouth; tearing, diaphoresis
C. Evidence of minor trauma	Abrasions, lacerations, ecchymoses	Abrasions, lacerations, ecchymoses

TABLE 5. Time Required for Normalcy

Time	Cases	Percent	Cumulative percent
8 hr	5	33.0	33.0
9-24 hr	1	7.0	40.0
25-48 hr	2	13.0	53.0
49-72 hr	2	13.0	67.0
72 hr	(5)	33.0	100.0
4 days	1		
5 days	1		
7 days	1		
8 days	1		
15 days	1		

In six of the remaining 15 cases, recovery took place in less than 24 hr; five individuals were alert and oriented with 8 hr after admission. Recovery periods of 24-72 hr were required in four cases. The remaining five cases ranged between four and 15 days, the majority of whom recovered within approximately one week.

The hospital course in three groups classified by state of consciousness on admission is given in Table 6. Group I represents four individuals who presented in a confusional state on admission with a history of smoking one phencyclidine joint. Groups II and III were stuporous or comatose on admission for a period $\leq$ 4 hr and $\geq$ 6 hr, respectively.

The recovery period of group I represents the early discharges among the 18 cases. Individuals who were in a stupor or coma for more than 6 hr after admission required a range of several days for recovery.

Persistent irritability, emotional lability, hostility, and depression in two cases led to their transfer to a psychiatric facility. One individual had remained confused for a two-day period after smoking phencyclidine. A second person recovered from coma at 25 hr yet remained depressed and suicidal at eight days.

POTENTIAL LETHAL EFFECTS

The hospital course and selected clinical findings in two cases which by history involved one gram or more of street purchased material taken by mouth are summarized in Table 7.

TABLE 6. Course of Recovery of 16 Individuals by State of Consciousness on Admission

Presentation	Cases	Duration of initial state, hr	Period of delerium or confusion, hr	Time required until "normal," hr
GROUP I				
Confusional state & history of smoking one street 'joint'	4	5 (3-8)	–	5 (3-8)
GROUP II				
Initial state of stupor or coma	6	3 (1-4)	34 (5-62)	37 (14-66)
GROUP III				
Initial state of stupor or coma (≥ 6 hr)	4	50 (6-103)	163 (75-288)	212 (114-360)

TABLE 7. Clinical Histories of Two Cases of Acute Phencyclidine Intoxication

	Case 1	Case 2
Age	22	22
Sex	Male	Male
Estimated dose	One gram "street" material	One gram + "street" material
Route	By mouth	By mouth
Coma	25 hr	103 hr
Confusion, delerium and somnolence	71 hr	44 hr
Depression, irritability, & emotional lability	84+ hr	32 hr
Alert & oriented	Transferred to psychiatric unit	178 hr
Cardiovascular system		
Blood pressure (mean)	147/92 (84 hr)	151/98 (108 hr)
Pulse (mean)	94	111
Respiratory status	Excessive mucous/secretions on admission	Excessive mucous/secretions, hypoventilation on admission
	Hypoventilation × 15 hr, tidal volume 100 cc	Hypoventilation × 60 hr, tidal volume 50 cc
	Irregular respirations with 5 sec periods of apnea × 15 hr	Apnea × 4 hr
	Required ventilatory assistance × 27 hr	Required ventilatory assistance × 107 hr
	Complications: right upper lobe pneumonitis	Complications: bilateral basilar pneumonitis

Seizure & motor activity	Decerebrate rigidity Opisthotonic posturing Muscle tremors, twitching Generalized motor seizures at 66 and 78 hr Treatment: Valium & Dilantin	Decerebrate rigidity Opisthotonic posturing Muscle tremors, twitching Focal motor seizures at 3 & 21 hr Generalized motor seizures at 3 1/2 and 89 hr Treatment: Dilantin
Toxicology	On admission: 26.2 μg/ml PCP (urine) Day 1 26.2 μg/ml 2 18.2 μg/ml 3 15.9 μg/ml 18.0 μg/ml 18.5 μg/ml 20.0 μg/ml 4 4.7 μg/ml 1.3 μg/ml 0.5 μg/ml 5 1.2 μg/ml 0.1 μg/ml 6 0.4 μg/ml 0.3 μg/ml	On admission: 151.9 μg/ml PCP (urine) 151.9 μg/ml

33-300 0 - 78 - 18

A prolonged period of hypoventilation associated with irregular respirations or apnea required ventilatory assistance. In case 1, clinically significant hypoventilation was noted two hours after admission and persisted for 15 hr. In the second case, the patient was comatose for eight hours prior to admission, became apneic 15 hr after admission, and had no spontaneous respirations for 4 hr. Ventilatory assistance was required for a period parallel in duration to the comatose state.

Seizure activity was observed early post-admission in case No. 2, and delayed in its appearance in case No. 1, occurring on days two and four. In both cases, muscle tremors, muscle twitching, decerebrate rigidity, and opisthotonic posturing preceded the development of generalized motor seizures.

In case 1, EEGs obtained 15 hr after admission and prior to the onset of seizure activity revealed generalized slowing predominantly in the theta range (3-5 Hz) with some delta activity (1 1/2-3 Hz). A second tracing on day 4, 8 hr after the second generalized motor seizure, showed an excessive amount of theta (4-7 Hz) slowing, with better organization and no generalized slowing or focal abnormalities. Intravenous diazepam (Valium) followed by diphenylhydantoin (Dilantin) controlled seizure activity.

Sustained systolic and diastolic hypertension associated with a sinus tachycardia was observed in both cases. The blood pressure was greater than 140/90 and the pulse rate was greater than 100 for a five-day period in case 1. The maximum values (BP 190/120, P 160) were recorded 90 min after admission, and the minimum values (BP 108/58, P 62) on day 6. The highest 12-hr mean value (BP 173/98, P 140) was observed on the third day post-admission. Within a period of 8 hr on day 5, the blood pressure returned to normal (≈ 120/70).

In case 2, a blood pressure greater than 140/80 and a pulse rate over 80 persisted for four days. Following a gradual return to normal (120/80) during day 5, the blood pressure again increased to greater than 160/100 within 8 hr. The blood pressure then gradually decreased to normal levels (≈ 110/60) over 48 hr. The maximum blood pressure (BP 170/110) and highest 12-hr mean values (BP 154/99, P 107) were seen on day 3. The minimum values (BP 100/48, P 48) were recorded on day 9.

In case No. 1, a comatose state, irregular respirations with periods of apnea requiring ventilatory assistance, and significant hypertension and tachycardia were charted during the first 24 hr. Resolution of the confusional state was associated with a rapid return of the blood pressure and pulse to normal levels on day 5. Urine phencyclidine fell to lower levels on day 4 and 5. However, the patient remained irritable, emotionally labile, depressed, and suicidal, requiring transfer to an acute psychiatric facility on day 9.

In the second case, apnea and seizure activity within the first 24 hr

was followed by marked respiratory depression lasting three days. A second generalized motor seizure occurred on day four. The recovery from coma on day five was associated with wide fluctuations in blood pressure and pulse, and the return of adequate, spontaneous respirations. The confusional state resolved, and the blood pressure and pulse gradually returned to normal over the following two days. By the eighth day the patient was alert, oriented, and exhibited normal behavior, and was subsequently discharged.

COMBINED INTOXICATIONS

The presenting picture, course, clinical findings on admission, and toxicologic results in three cases of combined intoxications involving phencyclidine and barbiturates or ethyl alcohol are presented in Table 8.

In the two cases involving combinations of phencyclidine and secobarbital, the course was marked by an early but short (≈ 30 to 60 min) period of lethargy and slurred speech, not seen with unadulterated phencyclidine.

Although hypotension was not evident, blood pressures recorded within the first 3 hr in the cases involving phencyclidine and ethyl alcohol were in the lower range of values commensurate with the phencyclidine confusional state.

Pupils were small to normal and reactive to light with normal deep tendon reflexes (DTRs). Significant respiratory depression was not observed.

TOXICOLOGICAL FINDINGS

The distribution of phencyclidine levels found in 19 random urine samples collected within the first 24 hr in the 18 cases of acute phencyclidine intoxication is shown in Table 9. Seventeen of 19 samples were collected within 12 hr of admission.

The mean level of phencyclidine in urine in 14 cases of acute phencyclidine intoxication grouped by state of consciousness on admission are given in Table 10.

DIAGNOSIS

The confusional state induced by phencyclidine is characterized by disorientation, agitation or excitement, and a "blank stare" appearance

TABLE 8. Clinical Histories of Three Cases of Acute Combined Phencyclidine Intoxications

	Case 1	Case 2	Case 3
Age	24	19	29
Sex	Female	Male	Female
Route	Smoking/by mouth	By mouth/by mouth	By mouth/by mouth
Agent	PCP/seconal	PCP/seconal	PCP/ethanol
Presentation	Bizarre behavior	Unresponsive	Bizarre behavior
Course	Initial period of lethargy with slurred speech; then confusional state followed by depression; suicidal and transferred to psychiatric facility 12 hr after admission	Stupor followed by period of lethargy with slurred speech; then confusional state; transferred to psychiatric facility 15 hr after admission	Confusional state; alert and oriented at 10 hr post-admission
Admission			
Vital signs			
BP	132/90	154/100	114/96
P	120	96	104
R	16	24	22
T	98.4°F	101.2°F	99.2°F
Pupils			
Size	3-4 mm, equal	equal	4 mm, equal
Reaction	reactive	reactive	reactive

DTRs	Normal (2+)	Normal (2+)	Normal (1+)
Respirations			
Depth	Adequate	Adequate	Adequate
Rate	16-30	20-26	20-22
Toxicology			
Urine	0.4 μg/ml PCP (90 min)	36 μg/ml PCP (10 hr)	2.7 μg/ml PCP (30 min)
Blood	0.4 mg% secobarb (90 min)	0.2 mg% secobarb (1 hr)	0.11 mg% ethanol (30 min)

TABLE 9. Phencyclidine Urine Levels in Acute Intoxications

Range, μg PCP/ml urine	Frequency	Percent
0.35- 1.0	4	21.0
1.1 - 3.4	4	21.0
3.5 - 10.0	3	16.0
11.0 - 34.0	3	16.0
35.0 -100.0	4	21.5
110.0 -340.0	1	5.0

TABLE 10. Toxicology Among 14 Cases of Acute Phencyclidine Intoxications by State of Consciousness

Presentation	Urine levels of PCP (< 24 hr), μg/ml urine
Group I	
Confusional state on admission and history of smoking 1 street "joint" (N = 4)	0.88
Group II	
Initial state of stupor or coma (≤ 4 hr) (N = 6)	19.07
Group III	
Initial state of stupor or coma (≥ 6 hr) (N = 4)	85.88

in a patient who is noncommunicative. These patients are grossly ataxic and exhibit horizontal and vertical nystagmus on testing. Muscle rigidity may be present.

In phencyclidine stupor or coma, the eyes may remain open, although the patient is unresponsive to deep pain. Hypertension and tachycardia are present, and in all but the more massive oral "overdose," respirations are normal. The pupils are initially miotic but reactive to light. Spontaneous nystagmus, "purposeless" movements, facial grimacing, and muscle rigidity on stimulation are characteristic

findings. Repeated episodes of vomiting, increased bronchial and oral secretions, and profuse diaphoresis are frequently observed.

In the massive "overdose," delayed and prolonged hypoventilation and apnea may occur. Respiratory depression may require ventilatory assistance for an extended period. These cases are also marked by sustained hypertension and tachycardia, and by generalized motor seizures preceded by muscle tremors, muscle twitching, opisthotonic posturing, and decerebrate rigidity.

The most characteristic feature of the high dose oral ingestion is the prolonged recovery period marked by confusion; disorientation, agitation, anarthria, and intermittent somnolence; followed by depression, irritability, and emotional lability.

Laboratory tests frequently reveal an increased WBC (up to 20,000), an elevated CPK (up to 20,000+), and the presence of ketones in the urine.

The EEG may show diffuse slowing with theta and delta wave activity. These effects can be differentiated from those due to the barbiturates.

The absence of mydriasis and the presence of ataxia and nystagmus lead one away from the CNS stimulants and LSD when considering the acutely excited and confused patient.

In the presence or absence of respiratory depression, systolic and diastolic hypertension, and increased DTRs differentiate coma and stupor induced by phencyclidine from the sedative-hypnotic "overdose."

In combined intoxications involving smaller doses of phencyclidine and barbiturates, lethargy with slurred speech may mark the early recovery period. Normal or lower blood pressures may be observed with combined intoxications involving ethyl alcohol.

The clinical diagnosis of acute phencyclidine intoxication can be established by toxicologic analysis of a urine specimen obtained shortly after admission, ideally within the first 12 hr.

HISTORY—MANAGEMENT

It is important to know the approximate amount of phencyclidine taken, the route of administration, and the time of ingestion. Drugs used in combination with phencyclidine may produce added toxicity.

The acute confusional state appears to follow typical street doses and the stuporous or comatose state appears to be associated with the higher doses.

Taking phencyclidine by mouth or snorting it may produce a confusional state. More frequently, however, the confused patient has smoked a "joint" sprinkled with crystalline phencyclidine. Higher doses of phencyclidine taken accidentally or in a suicide attempt

result in stupor or coma. The drug in these cases is taken more frequently by mouth than by "snorting" it. Respiratory depression is predicted in high dose intoxications involving phencyclidine and the barbiturates or ethyl alcohol.

EARLY MANAGEMENT

The acutely confused patient is best managed by sensory isolation with observation at a distance. Minimizing verbal and tactile stimulation does not preclude the monitoring of vital signs. Ideally, the patient would be placed on a cushioned floor in a "quiet room" with a monitor present. In most settings, protection of the patient and staff necessitates the use of restraints.

The early management of the stuporous or comatose patient involves gastric aspiration-lavage and nasopharyngeal suctioning. In view of the recovery of large amounts of phencyclidine from the stomach contents in fatal "overdoses," gastric lavage is indicated in oral ingestions.

Intubation is often difficult because of increased muscle tone. Larygeal reflexes are maintained and active, and attempted endotracheal intubation may precipitate laryngospasm. More responsive paitents fight intubation by biting the tube off or spitting it out. However, respiratory depression may be delayed and necessitate a prolonged period of ventilatory assistance. It has been necessary in some cases to utilize succinylcholine chloride (Anectine) for successful endotracheal intubation. Positioning and intermittent suctioning will preclude respiratory distress secondary to secretions in the posterior pharnyx.

Reported clinical problems associated with acute phencyclidine intoxications include respiratory depression, status epilepticus, intracerebral hemorrhage, myoglobulinuria with renal failure, hypertensive encephalopathy, and in one case, seizures, hyperpyrexia, and cardiac arrest. Important functions to monitor are respirations, blood pressure, muscle tone and activity, renal function, temperature, and cardiac.

Urine and blood samples should be collected and screened for phencyclidine, sedative-hypnotics, ethyl alcohol, opiates, and amphetamines.

THE RECOVERY PHASE

Most acutely confused patients are communicative within 1-2 hr and alert and oriented within 6-8 hr of admission to the emergency room after ingesting the usual street dose. Once patients are alert

and orientated, their state of consciousness should be monitored for a minimum of two hours. Patients who remain oriented and alert may be discharged.

Suicide has been reported during the "come down," the period 6 to 24 hr after taking phencyclidine. Patients should be informed about depression, irritability, feelings of isolation, and nervousness which often accompanying this period, which may last up to 48 hr.

If a patient remains stuporous or comatose, responding only to deep pain for greater than 2 hr, a minimal observation period of 24 hr is indicated. The recovery phase may vary from 14 hr to several days depending on the route and the dose ingested. The patient may become alert and oriented at one point only to be found difficult to arouse several minutes later.

Hostility, paranoia, emotional lability, and depression persist in many patients requiring extended psychiatric care. Several cases of phencyclidine psychoses requiring two to four weeks or more for recovery have been reported [26-28].

TREATMENT

No agent is known to be specific in antagonizing the toxic effects of phencyclidine. However, some experience has been gained in the symptomatic treatment of reiterative seizures, hypertensive crisis, violent and self-destructive behavior, and persistent psychoses associated with phencyclidine intoxication.

Intravenous diazepam (Valium) in doses of 10-15 mg followed by intravenous diphenylhydantoin (Dilantin) has been effective in the control of seizures.

In some cases it has been necessary to give an acutely confused patient 10-20 mg of Valium orally to prevent injury to both patient and staff. During the confusional phase of the prolonged recovery period, some patients have received repeated doses of 10-15 mg of Valium to control motor restlessness and agitation. These therapeutic doses of sedative-hypnotic agents do not appear to produce significant respiratory depression in phencyclidine intoxications.

Diazoxide (Hyperstat) has been used to reduce blood pressure during a hypertensive crisis associated with acute phencyclidine intoxication. Hydralazine hydrochloride (Apresoline) has been suggested as a possible substitute agent [29].

Phenothiazines are contraindicated in the acute phencyclidine intoxication where a confusional state is associated with hypertension, tachycardia, ataxia, and nystagmus. There is no evidence that phenothiazines shorten the recovery phase, or antagonize the behavioral effects of phencyclidine [12]. In some cases they have produced prolonged hypotension.

Chlorpromazine (Thorazine) has been used, however, in cases where a psychosis persisted following resolution of the initial confusional state. Thorazine was used to "ameliorate" the psychosis and to provide sedation [27].

CONCLUSION

Several patterns of recovery from acute phencyclidine intoxication exist. A confusional state lasting less than 8 hr appears to follow a typical street dose, the smoking of one "joint."

Individuals who either smoke greater amounts or take a higher dose orally or by "snorting" may present in stupor or coma. This initial state lasts less than 3 hr in most cases, and a confusional dose related state follows for 24 to 72 hr.

Massive oral "overdoses," involving up to 1 gm of street purchased material, have resulted in periods of stupor or coma of several hours to five days in duration, marked by potentially lethal respiratory depression, reiterative seizure activity, and hypertension. This initial state is followed by prolonged recovery with a confusional state lasting up to 15 days.

In some cases, the phencyclidine confusional state is followed by a psychosis that may persist for several weeks. This may occur in individuals who present initially with acute confusion or a prolonged period of coma.

It is currently unknown whether the prolonged recovery period with fluctuating signs and symptoms represent enterohepatic recirculation [30], storage and release of phencyclidine from adipose tissue, the pharmacologic activity of a long-acting metabolite [16], or central nervous system "sequestration" [16]. The persistent psychoses seen in a small number of cases may represent a drug effect [26] or an individual sensitivity to phencyclidine, which is related in some manner to schizophrenia [27].

In areas where phencyclidine has been continuously available, it has gained a "preferred" drug status with small "cluster" groups of individuals who use it on a chronic, daily basis. In a study carried out by the authors, chronic users described psychological dependence and reported tolerance to the psychic effects of phencyclidine requiring use of increasing doses [31].

In a hospital-based study, one-third of all phencyclidine-related emergency room visits represented the chronic user of phencyclidine [24]. Chronic users frequently present with a psychiatric problem such as paranoid psychosis, severe depression, concern about "brain damage," or anxiety.

The massive oral "overdose" occurs most often in the chronic users. Depression and suicidal ideation follow long periods of daily regular use. The chronic user is usually in possession of large amounts (one gram or more) of phencyclidine. The persistent psychosis seen in some cases of acute intoxication may actually represent a drug effect of the chronic intoxicated state.

Respiratory depression, status epilepticus, intracerebral hemorrhage, hypertensive encephalopathy, myoglobulinuria with renal failure, and hyperpyrexia have now been reported to be associated with acute phencyclidine intoxication [32]. In some cases these clinical problems and medical complications were delayed in their appearance, and indicate the need for close monitoring and prompt treatment.

The present authors have reported 29 phencyclidine related deaths, one involving a child [33]. In 11 adult cases, the levels of phencyclidine in the blood and urine and the circumstances suggest that death resulted from the behavioral toxicity of phencyclidine. Six persons were found dead with no apparent cause, and on toxicologic analysis of body fluids and tissues, the isolated presence of phencyclidine in high concentrations was confirmed. These deaths appear to represent true pharmacologic overdoses.

Clinical findings in cases of acute phencyclidine intoxication point to respiratory depression as the most probable primary cause of death.

One of 12 deaths following combined intoxication involved phencyclidine and pentabarbital (blood level 2.2 mg%). Respiratory depression and cardiovascular failure are the probable cause of death, based on the results of animal studies.

The pharmacokinetics and pharmacodynamics of phencyclidine taken illicitly by inhalation, insufflation, and orally in widely varying doses and schedules is unknown. This precludes a consensus on the rational treatment of the acute and chronic intoxicated states induced by phencyclidine.

Other arylcyclohexylamines have appeared in street samples. The analog of phencyclidine, TCP (1-(1-(2-thienyl)cyclohexyl)-piperidine), was first seen in 1972 and clinically appears to produce effects similar to phencyclidine, but of a shorter duration [19, 22]. The anaesthetic ketamine has recently been found in capsules sold on the street [19].

The arylcyclohexylamines appear to have abuse liability. The case of synthesis and the potency as a mind-altering drug have lead to widespread availability and use.

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28

MANAGEMENT AND TREATMENT OF ACUTE PHENCYCLIDINE INTOXICATIONS

R. Stanley Burns and Steven E. Lerner

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I. Introduction

Phencyclidine is a member of the arylcyclohexylamine group (see Figure 1). Although phencyclidine has a potent analgesic activity, its use as an intravenous anaesthetic was discontinued because of emergence reactions–agitation, excitement, disorientation and "hallucinatory" phenomena.

Phencyclidine acts primarily on the central nervous system either by stimulation or depression. Its pharmacological activity in animals varies with the species and the dose. The effects in humans, likewise, are highly dose dependent and make it difficult to classify this agent.

In 1967 phencyclidine became available for limited use as an anaesthetic agent in primates. The same year, it made its first "street" appearance in San Francisco as the "Peace Pill." Phencyclidine was later to be found in combination with other drugs and under a multitude of street names. The most persistent misrepresentation has been as THC

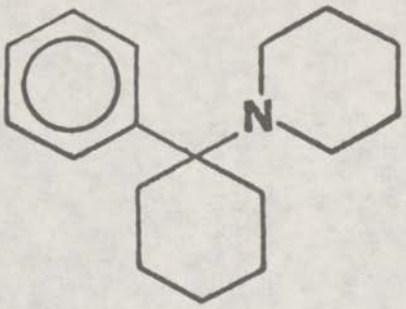


Figure 1. Phencyclidine

(tetrahydrocannabinol). Currently phencyclidine is sold on the West Coast as "crystal," "angel dust," "PCP," or "THC." On the East Coast it is known as "PCP" or "Sheets."

II. Presenting Picture

The majority of individuals acutely intoxicated with phencyclidine are found unresponsive or present with bizarre or violent behavior. Frequently young people are brought in by the police when found driving erratically or acting inappropriately after an auto accident.

It is important to know the approximate amount of phencyclidine taken, the route of administration, and the time of ingestion. Drugs used in combination with phencyclidine may produce added toxicity.

III. Clinical Findings

The characteristic clinical findings in the acute confusional state which follows typical street doses and the stuporous or comatose state associated with higher doses are presented in Table 1.

Taking phencyclidine by mouth or snorting it may produce a confusional state. Frequently, however, these patients have smoked a "joint" of parsley, mint leaves or marihuana sprinkled with the white, crystalline phencyclidine.

The confusional state induced by phencyclidine is characterized by agitation or excitement and a "blank stare" appearance in a patient who is noncommunicative. These patients are grossly ataxic and exhibit horizontal and vertical nystagmus on testing. Muscle rigidity may be present.

TABLE 1

	Acute confusional state with "low dose"	*Stupor or coma with "moderate to high dose"*
1. VITAL SIGNS		
A. Respiratory rate (normal or slightly increased)	18–24	18–24
B. Blood pressure (increased)		
Systolic	130–180	140–180(+)
Diastolic	70–100	80–100(+)
C. Pulse (increased)	100–120	100–120(+)
D. Temperature (normal or slightly increased)	98–101°F	98–101°F
2. *STATE OF CONSCIOUSNESS*		
A. Responsiveness	Appears awake; initially uncommunicative, may respond to commands or respond to simple questions with nodding or eye movement; later incomplete verbal responses and then becomes communicative/talkative.	Unresponsive to verbal stimuli, responds with movement to deep pain
B. Orientation	Disoriented for time and place; appears confused and fearful	
C. Behavior	Agitated, excited, combative; regressive, self-destructive or "bizarre" behavior	
D. Speech	Slow, slurred, repetitive speech, or may be 'mute' or intermittently unable to speak	Vocalizations: "moaning," "groaning," "grunting"

continued

33-300 0 - 78 - 19

TABLE 1. (*continued*)

	Acute confusional state with "low dose"	*Stupor or coma with "moderate to high dose"*
3. *EYE SIGNS*		
A. Eye lids	Eyes open ("stare" appearance) with ptosis	Eyes open ('awake' appearance) or eyes closed
B. Eye position and movements	Paucity of spontaneous eye movements ("stare" appearance) may be fixation instability, dysconjugate gaze, or hypometric saccades	May be roving eye movements, dysconjugate gaze; doll's eye movements present
C. Nystagmus	Bilateral horizontal jerk nystagmus; may be vertical nystagmus (upward-downward)	Intermittent horizontal and vertical nystagmus at rest
D. Pupils		
Size	Normal, 4–6 mm	Miotic, 3–4 mm
Reaction	Normal	Normal or sluggish
E. Corneal reflex	Decreased or absent	Decreased or absent

4. *MOTOR SYSTEM*		
A. Gait	Grossly ataxic (sensory), unable to tandem stand/walk; may be component of muscle rigidity	
B. Muscle tone	Rigidity (catatonia), catalepsy (waxy rigidity)	Rigidity, opisthotonus
C. Movements	Motor restlessness, repetitive movements, facial grimicing	Spontaneous "purposeless" movements, facial grimacing; tonic/clonic jerky movements
D. DTR's	Increased	Increased
E. Seizure activity		Motor seizures, generalized, may be repetitive
5. *OTHER*		
A. Vomiting (central)	Repeated episodes over ½ to 3 hr period	Repeated episodes
B. Increased secretion (lacrimation, salivation, diaphoresis)	"Drooling," diaphoretic	Secretions in posterior pharyxn, at rares and mouth, tearing, diaphoresis
C. Evidence of minor trauma	Abrasions, lacerations, ecchymoses	Abrasions, lacerations, eccymoses

Higher doses of phencyclidine taken either accidentally or as a suicide attempt result in stupor or coma. The drug is taken more frequently by mouth than by "snorting" it.

The eyes remain open, although the patient is responsive only to deep pain. Hypertension is associated with normal respirations. The pupils are miotic and reactive to light. Spontaneous nystagmus, repetitive motor movements, facial grimacing, and muscle rigidity on stimulation are characteristic findings. Repeated episodes of vomiting, increased salivation and diaphoresis are frequently seen.

The most characteristic feature of the high oral ingestion dose is the prolonged recovery period. This period is marked by alternating sleep and wakefulness, confusion, disorientation, misperceptions and "hallucinatory" phenomena. Patients have remained comatose for periods up to 72 hr and have required as long as 15 days for recovery to normal.

On laboratory testing, one frequently finds an increased WBC (up to 20,000), an elevated CPK (up to 20,000+), and the presence of Ketones in the urine.

The EEG may show diffuse slowing with theta and delta wave activity. These effects can be differentiated from those due to barbiturates.

IV. Diagnosis

The absence of mydriasis and the presence of ataxia and nystagmus lead one away from the CNS stimulants and LSD when considering the acutely excited and confused patient.

Hypertension, increased DTR's and the absence of respiratory depression differentiate stupor and coma induced by phencyclidine from the sedative-hypnotic overdose.

CNS infection must be ruled out in an acutely confused patient who is found to have an increased temperature and WBC, and may present with seizure activity. In the absence of a history of drug use, a fluctuating state of consciousness associated with evidence of minor trauma is frequently interpreted as the result of significant head injury.

V. Early Management

The acutely confused patient is best managed by sensory isolation with observation at a distance. Minimizing verbal and tactile stimulation does not preclude the monitoring of vital signs.

Ideally, the patient would be placed on a cushioned floor in a quiet room with a monitor present. In most settings, protection of the patient and staff necessitates the use of restraints.

The early management of the stuporous or comatose patient involves gastric aspiration-lavage and nasopharyngeal suctioning. In view of the recovery of large amounts of phencycliding from the stomach contents in fatal overdoses, gastric lavage is indicated in oral ingestions. Pharyngeal and laryngeal reflexes are intact and most patient handle secretions well. Positioning and intermittent suctioning will preclude respiratory distress secondary to secretions in the posterior pharynx.

Because laryngeal reflexes are maintained and active, attempted endotracheal intubation may precipitate laryngospasm. More responsive patients fight intubation or spit out the tube.

Reported clinical problems associated with acute phencyclidine intoxications include status epilepticus, intracerebral hemorrhage, myoglobinuria with renal failure, hypertensive encephalopathy, and cardiac arrhythmias.

Important functions to monitor are respiratory status, blood pressure, cardiac rate and rhythm, muscle tone and movement, and renal function. The reported medical complications and functions to be monitored are listed in Table 2.

TABLE 2

Monitor	*Clinical problems*
A. Respiratory status	– Respiratory depression with combined intoxications: PCP + opiates, sedative-hypnotics, ETOH
	– Respiratory distress secondary to secretions in posterior pharynx
	– Vomiting with aspiration
	– Laryngospasm induced by attempted intubation
B. Blood pressure	– Hypertensive crisis associated with intracerebral hemorrhage or hypertensive encephalopathy
	– Hypotension in cases of combined intoxications: PCP + ETOH, or sedative-hypnotics
C. Heart rate/rhythm	– Cardiac arrhymthia and cardiac arrest
D. Muscle tone & movement	– Rigidity and tonic/clonic movements proceed seizure activity
	– Status epilepticus
E. Renal Function	– Muscle damage associated with myoglobinuria and acute renal failure

Urine and blood samples should be collected and screened for phencyclidine, sedative-hypnotics, alcohol, opiates, and amphetamines.

VI. The Recovery Phase

Most acutely confused patients are communicative within 1–2 hr and alert and oriented within 3–4 hr of admission to the emergency room. Phencyclidine users report staying high for a 4–6 hr period after ingesting the usual street dose. Once the patient is alert and orientated, one should monitor the state of consciousness for a minimum of 2 hr. If the patient remains oriented and alert, he may be discharged.

Suicide has been reported during the "come down," the period 6–24 hr after taking phencyclidine. Patients should be warned about depression, irritability, and nervousness which mark this period. It may require up to 48 hr for recovery to normal.

If a patient remains stuporous or comatose, responding only to deep pain for greater than 2 hr, a minimal observation period of 24 hr is indicated. The recovery phase may vary from 12 hr to several days depending on the route (p.o. vs snort vs smoked) and the dose ingested. The patient may become alert and oriented at one point only to be found unarousable several minutes later.

VII. Treatment

There is no known agent which is specific in antagonizing the toxic effects of phencyclidine. However, some experience has been gained in the symptomatic treatment of reiterative seizures, hypertensive crisis, and violent and self-destructive behavior associated with phencyclidine intoxications.

Intravenous diazepam (Valium®) in increments of 2–3 mg has been effective in the control of seizure activity. In some cases it has been necessary to give an acutely confused patient 10–20 mg of diazepam (Valium®) orally to prevent injury to patient and staff.

It is unknown whether therapeutic doses of sedative-hypnotic agents produce significant respiratory depression in phencyclidine intoxications. These agents may also prolong the recovery phase due to drug interaction.

Diazoxide (Hyperstat®) has been used to lower blood pressure during a hypertensive crisis associated with acute phencyclidine intoxication. Hydralozene hydrochloride (Apresoline®) has been suggested as a possible substitute agent.

Phenothiazines are contraindicated in phencyclidine intoxications. There is no evidence that phenothiazines shorten the recovery phase, and they may produce severe, prolonged hypotension.

VIII. Conclusion

Several phencyclidine related deaths have now been reported. The majority of these deaths appear to have resulted from the behavioral toxicity of the drug. They involve death by drowning, fire, falls from heights, and auto accidents. In a few cases persons have been found dead with no apparent cause of death. Toxicological analysis has been positive for phencyclidine only. It is unknown whether these deaths represent "pharmacological overdose."

In areas where phencyclidine has been continually available, it has gained "preferred" drug status with small "cluster" groups which use it on a chronic, daily basis. In a hospital study carried out by the authors, one-third of all phencyclidine related emergency room visits represented the chronic users of phencyclidine. The chronic users frequently presents with a psychiatric problem: a paranoid psychosis, depression, concern about "brain damage," or anxiety.

Two other arylcyclohexylamines have appeared in street samples. The analog of phencyclidine TCP (*1-1-2*-thienyl cyclohexyl) piperdine was first seen in 1972 and clinically appears to produce effects similar to phencyclidine, but of a shorter duration. The anaesthetic Ketamine has recently been found in capsules sold on the street.

The arylcyclohexylamines appear to have abuse liability. The ease of synthesis and the potency as a mind-altering drug have lead to widespread availability and use.

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S.F. Bay Area Street Drug Analysis Results

PHARMCHEM



Street Drug News

PharmChem Research Foundation 1844 Bay Road Palo Alto, California 94303 (415) 322-9941

May 3-9, 1978

Alleged Content	Actual Content	Description	Origin	Price
DISSOCIATIVE-ANAESTHETICS				
Phencyclidine	PCC(1) + phencyclidine	white moist crystals	S.F.	----
PSYCHEDELICS				
LSD	LSD + iso-LSD	white paper square/blue figure	Fremont	$1.50 ea
LSD	LSD + iso-LSD	white paper/green circle 18x6mm	S.F.	$4 ea
LSD	LSD + iso-LSD	lt. pink paper square 5x5mm	S.F.	$3 ea
SEDATIVE-HYPNOTICS				
Methaqualone	methaqualone	white powder + chunks	S.F.	$320/100
Methaqualone	methaqualone	white powder + chunks	Berkeley	----
STIMULANTS				
Cocaine	cocaine, caffeine, unidentified substances	white powder	Dublin	$100/g
Cocaine	cocaine, procaine(2) mannitol	white powder	S.F.	$2200/oz
Cocaine	cocaine + lidocaine	white powder	Napa	$100/g
Cocaine	cocaine + lactose	white powder	Danville	$90/g
Cocaine	cocaine	white powder	Marin Co.	$2200/oz
Cocaine	cocaine	white crystalline powder	S.F.	$2200/oz
Cocaine	cocaine	white powder	Oakland	$2200/oz
Cocaine	cocaine	white powder	S.F.	$2200/oz
Methamphetamine	methamphetamine + unidentified subtance	lt. brown powder	San Jose	----
"Speed"	caffeine	white powder/broken black capsule	Oakland	$2 ea

MARIJUANA TESTED FOR PARAQUAT--week of May 3-9
(Nationwide tally to date: 7010 tested; 2538 positive: 36% of total.)

Total: 313
Positive for Paraquat: 126 (40% of total)
Negative for Paraquat: 187

BAY AREA (GENERAL)	Total: 1	Positive: 0	Negative: 1
MID-PENINSULA	Total: 20	Positive: 5	Negative: 15
SOUTH BAY AREA	Total: 45	Positive: 17	Negative: 28
SAN FRANCISCO AREA	Total: 107	Positive: 51	Negative: 56
EAST BAY AREA	Total: 89	Positive: 35	Negative: 54
MARIN AND NORTH CO.	Total: 50	Positive: 18	Negative: 32

(1) PCC is a contaminant resulting from an incomplete synthesis of phencyclidine (PCP). Reports indicate that it is both psychoactive (with effects similar to PCP itself) and toxic.

(2) Procaine is a synthetic local anaesthetic also known as Novocaine®.

Street PCP Use: Clinical Studies of the Acute and Chronic Intoxicated State

by
R. Stanley Burns, M.D.
Steven E. Lerner, M.S.

Presented at the California Association of Toxicologists, Quarterly Meeting, San Jose, California, August 2, 1975

CHRONIC USERS (OUT-PATIENT) STUDY

AGENT:

NAME - Crystal, Crystal Joint, CJ's, KJ's
- "PCP"

FORM - Translucent "rock" crystal
- Coarse, white granules
- Joints (parsley)
- White powder

UNIT AMOUNTS - 1 gram material
- 1 "street" joint

PREPARATION:

1 gram material (sprinkled on parsley) = 4 - 8 "heavy" joints
= 10 - 15 "good" joints
= 18 - 24 "street" joints

SAMPLE ANALYSIS:

SAMPLE NUMBER	TEST RESULTS	METHOD
1	PCP 61.0%	G.C.
	PCP 62.0%	M.S.
2	PCP 52.0%	G.C.
	PCP 52.0%	M.S.
3	PCP 80.0%	G.C.
	PCP 80.0%	M.S.
4	PCP 3.0%	G.C.
	PCP 2.0%	M.S.
5	PCP 100.0%	G.C.
	PCP 100.0%	M.S.
6	PCP 90.0%	G.C.
	PCP 87.0%	M.S.
7 (1/2 Joint)	PCP 3.18 MG	G.C.
8 (1 Joint)	PCP 28.29 MG	G.C.

PATTERN OF USE:

Cumulative period of use 15.6 months
Longest period of regular use (5/+ days/week) 10.4 months
Recent period of use 9.0 months

"Runs" - 2-3 days duration
2-4 times a month

MODE OF ADMINISTRATION:

Primary mode - smoking 90%
- snorting 10%

Modes "ever used" - smoking 100%
- snorting 75%
- By mouth 60%
- I.V. 30%

SCHEDULE OF USE:

Smoking 2-3 times a day
Snorting 4-6 times a day

ESTIMATED AMOUNT OF PCP USED PER TIME:

MODE	FORM	AMT. PURCHASED	EST. % PCP	EST. AMT. PCP
Smoking	1-2 "street" joints	[50] - 100 MG	60 - 90%	Appx. 30 - 90 MG
Snorting	"Hit" - (2 lines)	[5] MG	90 - 99%	5 MG

TEMPORAL PROFILE OF REPORTED SUBJECTIVE EFFECTS:

Effects "come on" 2 - 5 minutes
Peak or plateau 15 - 30 minutes
Stay "loaded" 4 - 6 hours
Time until "normal" 24 - 48 hours
(2-3 day "run" 48hr - 1 week)

TABLE 1
CLINICAL CHEMISTRY TEST RESULTS

LABORATORY TEST	CHRONIC PHENCYCLIDINE USERS (N=20) MEAN	STANDARD DEVIATION	MATCHED CONTROLS MEAN	STANDARD DEVIATION
SMA-12				
Calcium	9.27	1.99	9.83	.34
Inor. Phos.	3.64	.61	3.65	.46
BUN	13.35	3.03	15.28	2.54
Uric Acid	6.09	1.10	6.18	1.33
Cholesterol	187.25	24.54	209.17	40.45
Total Protein	7.35	1.70	7.68	.49
Albumin	5.09	.34	5.31	.27
Creatine	1.10	.13	1.23	.27
Alk. Phos.	64.10	15.98	64.17	18.02
LDH	168.30	31.24	157.11	28.25
SGOT	90.10	58.31	52.11	24.01
Fasting Glucose	103.90	14.46	104.94	13.97
CBC				
WBC	8.68	1.98	7.53	1.93
RBC	4.94	.43	5.03	.46
Hemoglobin	14.62	1.12	14.92	1.47
Hct	42.95	3.12	43.33	3.79
Mcv	87.80	3.83	86.33	3.09
Mch	30.89	1.43	30.52	1.00
Mchc	34.71	.52	35.03	.79
Sed. Rate	9.68	8.72		
Total Bilirubin	.46	.22		
SGPT	39.75	28.07		
CPK	64.75	43.09		
Aldolase	7.88	2.72		

CLINICAL FINDINGS ON PHYSICAL EXAMINATION IN 20 CHRONIC USERS (OUT-PATIENT STUDY)

HISTORY OF PCP USE PRIOR TO P.E.:

LAST USE	NO. CASES	CUMULATIVE PERCENTAGE
<6 hours	7	35.0
7 - 24 hours	7	70.0
25 - 48 hours	3	85.0
49 - 72 hours	1	90.0
97 -120 hours	2	100.0

PHYSICAL EXAMINATION FINDINGS:

[Reported time since last use]

Vital Signs	<6 hours	7 - 24 hours	25 - 48 hours	>48 hours
B.P. - SYST.	132	132	115	109
- DIAST.	79	71	65	65
PULSE	88	79	78	72
RESPIR. RATE	15	17	14	16
ALTERED STATE OF CONSCIOUSNESS (Lethargic, somnolent, 'high')	+	-	-	-
Disorientation (time, place)	+	-	-	-
SPEECH (slow, slurred, repetitive, intermittently unable)	+	+	-	-
E.O.M.M. 'Stare' appearance	+	+	-	-
Disconjugate gaze	+	+	-	-
Nystagmus				
H	+	+	+	+
V	+	+	+	+
Sustained	+	-	-	-

PHYSICIAL EXAMINATION FINDINGS (CONTINUED)

Vital Signs	6 hours	7 - 24 hours	25 - 48 hours	48 hours
PUPILS				
Size	4.4mm	5.7mm	5.0mm	5.3mm
Light reaction (Sluggish, decreased amplitude)	+	+	-	-
Corneal reflex (Decreased or absent)	+	+	-	-
MOTOR SYSTEM				
Movements:				
Repetitive	+	+	-	-
Restlessness	+			
Catalepsy	+	-	-	-
Rigidity	+	+	-	-
Hyperreflexia (L/e)	+	+	-	-
Gait (Ataxic, broad based)	+	+	-	-
COORDINATION				
Tandem standing (Difficulty or unable)	+	+	+	-

CHRONIC PHENCYCLIDINE USER ELECTROENCEPHALOGRAM

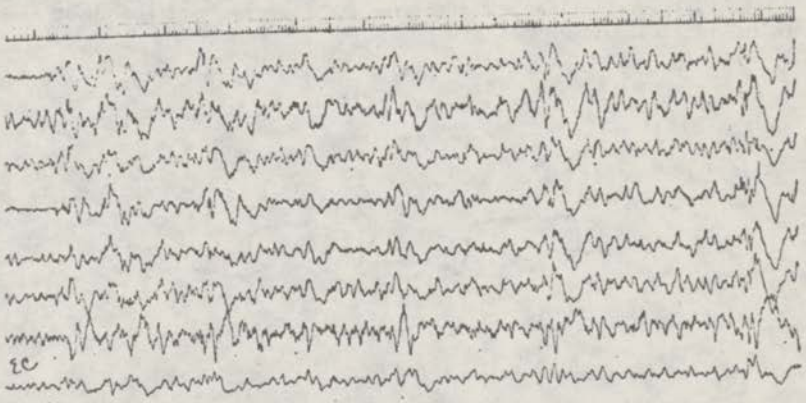


FIGURE A

Intermittent photic stimulation at both slow and fast flash frequencies induces burstsof spike and slow wave activity and with sustained 20 cycle per second stimulation, involuntary myoclonic twitching is noticed on the left face, arm and leg. This recurs with repeat photic stimulation, and is again focalized to the left side, although electroencephalographically bilateral spike and slow wave discharge occur.

PCP INDUCED OCULO-MOTOR DISORDERS

These records were obtained from photoelectric cells placed about each eye in the horizontal plane and then from EOG electrodes placed about each eye in the vertical plane.

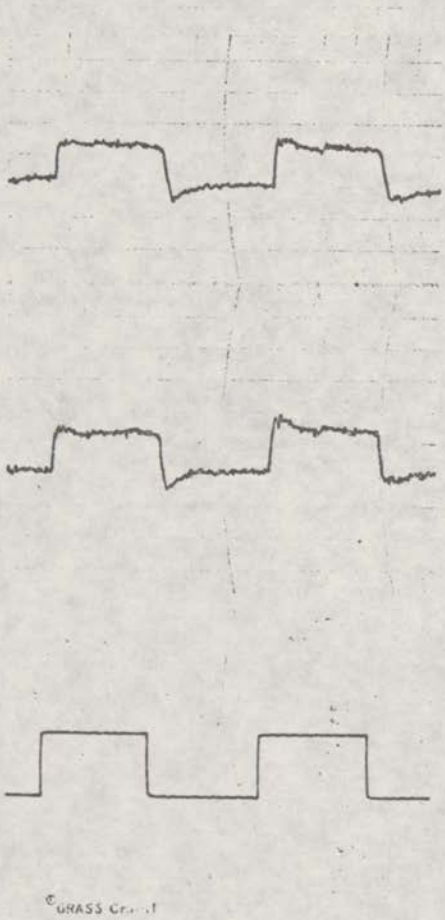


FIGURE B

FIXATION: Jerk nystagmus at the gaze limit of the photocell technique, 15°.

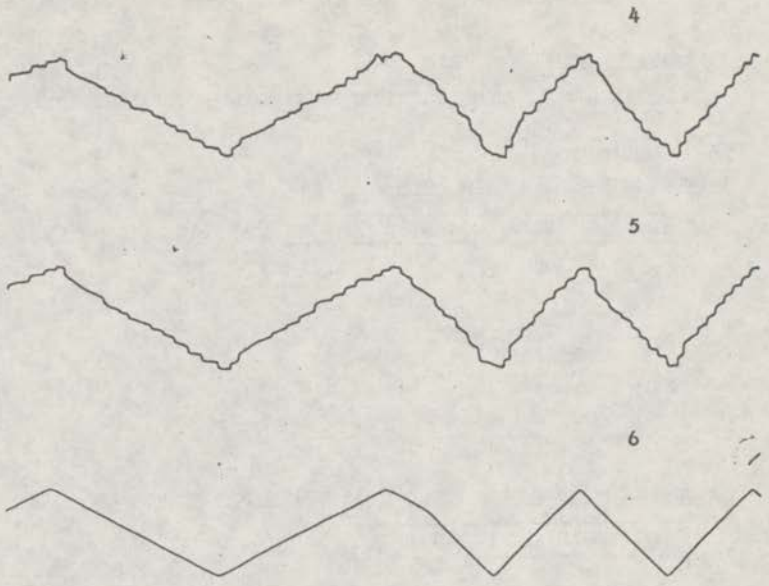


FIGURE C

SMOOTH PURSUIT: Ramp pursuit grossly saccadic (staircase) in horizontal and vertical planes.

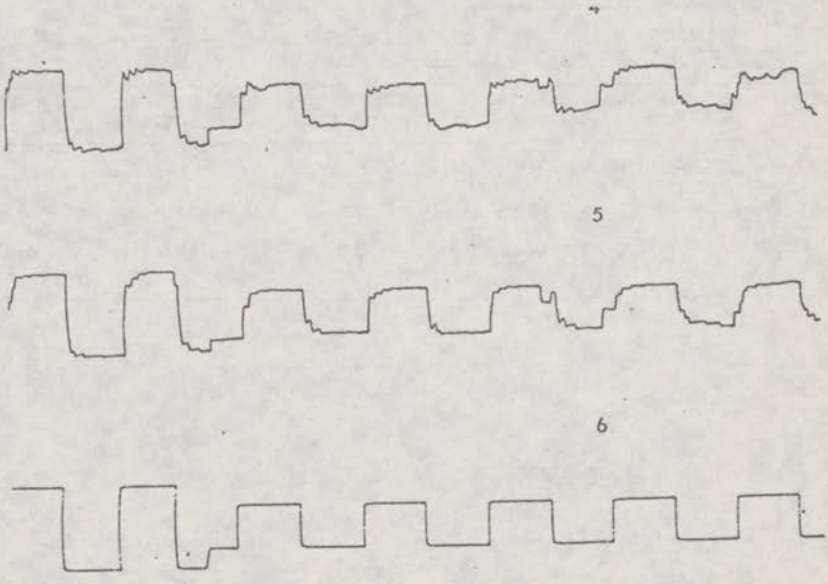


FIGURE D

SACCADES: Grossly abnormal horizontal and vertical hypometric slowed saccades.

18 ACUTE INTOXICATIONS (HOSPITAL STUDY)

VITAL SIGNS ON ADMISSION:

BLOOD PRESSURE SYST.	BLOOD PRESSURE DIAST.	PULSE RATE	RESPIRATORY RATE	TEMPERATURE
152	95	96	22	99.0

PERIOD OF TIME REQUIRED UNTIL 'NORMAL':

TIME	NUMBER OF CASES	PERCENT
< 24 hours	11	61
25 - 48 hours	2	11
49 - 72 hours	3	17
> 72 hours	2	11

TOXICOLOGICAL RESULTS IN RELATION TO TIME PERIOD REQUIRED UNTIL 'NORMAL':

PERIOD	URINE [< 12 hours]
< 24 hours	4.4 µg/ml
> 24 hours	28.5 µg/ml

HOSPITAL COURSE CLASSIFIED BY STATE OF CONSCIOUSNESS ON ADMISSION:

PRESENTATION	NO. CASES	DURATION OF INITIAL STATE	PERIOD OF FLUCT. STATE OF AWARENESS	TIME REQURED UNTIL NORMAL	TOX. RESULTS (<12 hours)
Acute symptoms	6	5 hours	- -	7 hours	1.0 µg/ml
Stuporous	5	3 hours	37 hours	39 hours	12.9 µg/ml
Obtunded	7	14 hours	90 hours	103 hours	29.0 µg/ml

TABLE 2
Chronic Phencyclidine Users Hospital
Admissions & Emergency Room Contacts

	1968	1969	1970	1971	1972	1973	1974	1975
January						3	8	4
February			1		4	2	1	3
March	1				4	2	6	5
April			1	2	2	5	2	
May			1	1	2	1	2	
June					4	3	3	1
July					2	5	5	--
August			1		3	3	9	--
September				1	1	6	9	--
October					1	5	2	--
November				3	1	4	3	--
December					1	3	2	--
Yearly totals	1		4	7	25	42	52	13

Selected Demographic Characteristics N=72

SEX:	MEAN AGE:	RANGE:	RACE:
Male 54 (75.0%)	20.0	14 - 38	White 71 (98.6%)
Female 18 (25.0%)	19.0	16 - 39	Black 1 (1.4%)

TABLE 3
Urine Phencyclidine Levels

GROUP	NUMBER	MEAN PCP LEVEL	RANGE
Chronic Users	70	1.05 μg/ml	.03 - 10.5 μg/ml
Police Arrests	75	3.28 μg/ml	.19 - 21.2 μg/ml
Hospital	24	12.92 μg/ml	.4 - 92.0 μg/ml
Coroner	11	63.83 μg/ml	.6 - 330.0 μg/ml

33-300 0 - 78 - 20

PRESENTING PICTURE IN 72 CHRONIC USERS (HOSPITAL STUDY)

Bizarre behavior	29.4%	
Unresponsive	18.9%	
Violent	13.3%	
"Intoxicated"/"Incoordinated"	9.8%	
Automobile accident	5.6%	>7.7%
Erratic driving	2.1%	
Trauma	1.4%	
Incidental trauma - minor	6.3%	>7.7%
- major	1.4%	

PSYCHIATRIC PROBLEMS:

SYNDROME	NUMBER CASES	CHARACTERIZED BY:
Psychosis	10	Delusions, bizarre behavior, paranoia, suicidal ideation/attempts, auditory hallucinations, and self-destructive behavior.
Depression	8	Severe depression, suicidal ideation/attempts, psychomotor retardation.
Concern about "brain damage"	3	
Anxiety	1	

TABLE 4
Toxicological Results in Phencyclidine Deaths

CASE NUMBER	BLOOD LEVEL	URINE LEVEL
1	0.25 MG%	- -
2	0.17 MG%	7.0 µg/ml
3	0.18 MG%	33.0 µg/ml
4	0.23 MG%	5.1 µg/ml
5	0.05 MG%	100.0 µg/ml
6	0.40 MG%	21.5 µg/ml
7	0.50 MG%	120.0 µg/ml
8	0.03 MG%	- -
9	0.30 MG%	- -
10	0.03 MG%	38.0 µg/ml
11	0.05 MG%	- -
12	0.06 MG%	2.3 µg/ml
13	0.03 MG%	0.6 µg/ml
14	0.70 MG% (2.1 MG% Phenobarbital)	30.0 µg/ml
15	0.04 MG%	.17µg/ml
16	0.05 MG%	- -

[Reprinted from the Western Journal of Medicine]

Phencyclidine—
States of Acute Intoxication and Fatalities

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Phencyclidine is now one of the most frequently used main ingredients of "street drug" preparations. Its effects are highly dose dependent and three varieties of acute intoxication have been seen clinically associated with different dosages and routes of administration. Most persons using phencyclidine smoke it sprinkled on parsley in low doses. The presence of horizontal and vertical nystagmus associated with hypertension in a patient who is agitated or comatose are diagnostic of a phencyclidine intoxicated state. Sensory isolation and intravenous administration of diazepam in the event of seizure activity have proved effective in the treatment of acute intoxicated states. Phencyclidine has pronounced behavioral toxicity and several deaths due to this agent have now been documented. It is unknown whether seizure activity or respiratory depression is the primary cause of death in pharmacological overdoses.

PHENCYCLIDINE (Sernyl®, Sernylan®) is 1-(1-phencyclohexyl) piperidine hydrochloride (see Figure 1). It is a white crystalline solid which is soluble in water and alcohol.

Synthesized by Parke, Davis and Company, phencyclidine was recommended for clinical trials in humans in 1957. Investigation of its effects in animals had shown a potent analgesic activity and potential use as a nonbarbiturate, nonnarcotic intravenously administered anesthetic agent was explored. Due to emergence reactions—agitation, excitement, disorientation and hallucinatory phenomena—Parke, Davis and Company in 1965 requested that further human clinical investigation be discontinued. The structurally related anesthetic ketamine was subsequently developed.

Since 1967, phencyclidine has been available for legitimate use only as an anesthetic or tranquilizing agent for primates. Currently, phencyclidine is considered a controlled dangerous substance under the Comprehensive Drug Abuse Prevention and Control Act of 1970.

Phencyclidine made its first "street" appearance in San Francisco in 1967 where it was being marketed as the "PeaCe Pill." Many persons experienced unexpected effects and phencyclidine gained a bad street reputation. It then began to appear in new guises and in combination with

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other drugs. Thirty different alleged street drugs analyzed during the years 1972 to 1974 contained phencyclidine.[1] The most persistent misrepresentation of phencyclidine has been as THC (tetrahydrocannabinol). Most recently, phencyclidine has been sold on the West Coast as "crystal" or "crystal joints" (CJ's).

Different patterns of phencyclidine use have emerged. First time use occurs with persons unknowingly or in an exploratory fashion smoking a cigarette made by sprinkling phencyclidine "crystals" on parsley. Although the occasional or recreational use pattern is seen, its development from this first time use is frequently interrupted by the experience of unexpected and unpleasant effects. However, several clusters of 10 to 20 persons who have shared phencyclidine daily for periods of two to six years have now been identified.

Between July 1973 and February 1974 there were in excess of 1,300 mentions nationwide of phencyclidine in the Drug Abuse Warning Network (DAWN) system. Of 86 urine samples collected during 10 months by one California police agency in cases of suspected intoxication while driving or in public, 48 were positive for phencyclidine exclusively.[2] Widespread use and availability both across the United States and Western Europe have also been reported by phencyclidine users during interviews.

Pharmacology

Phencyclidine acts primarily on the central nervous system either by stimulation or depression. Its pharmacological action in animals is complex and dependent upon both the species and the dosages.[3] The variability in activity makes it difficult to classify this agent.

The effects of phencyclidine in humans, likewise, are highly dose dependent. In clinical trials, phencyclidine proved to have a unique spectrum of activity in anesthetic dosages (0.25 mg per kg of body weight, administered intravenously). An unresponsive state with complete anesthesia was induced, although the eyes remained open (blank stare) and the patient appeared to be awake. Neither hypotension nor respiratory depression was produced by phencyclidine in anesthetic dosages. Characteristically, a moderate hypertensive response associated with tachycardia and no significant change in respiratory function was observed.

Initial trials with the administration of higher dosages (0.5 to 1.0 mg per kg of body weight, given intravenously) showed the progressive development of severe agitation, muscle rigidity and generalized seizure activity. Respiratory depression was not seen in this dosage range.[4]

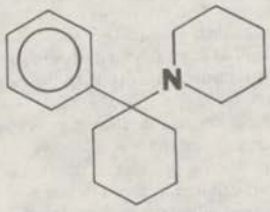


Figure 1.—Phencyclidine (1-[1-phencyclohexyl] piperidine hydrochloride).

States of Acute Intoxication

The temporal profile and unique spectrum of signs and symptoms associated with different dosage ranges and different routes of administration require description of three varieties or stages of acute intoxication.

During the period April 1974 to June 1975, 55 cases of acute intoxication with phencyclidine by history were seen by the authors. Fifty-four cases represent acute intoxication states resulting from reported low to moderate doses of phencyclidine self-administered by inhalation (smoking) or insufflation ("snorting"). In one case a high dose was taken orally and the patient was comatose for a period of approximately 10 hours. Urine samples were obtained in 10 percent of the cases. Analysis by gas chromatography showed the presence of phencyclidine in all collected samples.

The clinical findings in 44 cases of low dose acute intoxication and 10 cases involving a moderate dose have been summarized in Table 1. The single case involving a high oral dose has been combined with the findings from four similar cases and the composite clinical picture is also described in Table 1.[5-8]

The low dose state is characterized by mild agitation or excitement in a patient who is grossly ataxic and has a "blank stare" appearance. Catatonic rigidity (catalepsy) may be shown, with the patient unable to speak. However, in most cases the patient is communicative and on testing horizontal and vertical nystagmus is present. Loss of

TABLE 1.—*Acute Intoxicated States*

	Low Dose (44 cases)	*Moderate Dose (10 cases)*	*High Dose (5 cases)*
Route	Inhalation (smoking)	Inhalation or insufflation	Oral
Estimated dose	5-10 mg	10-20 mg	100+ mg (approx. for adults)
Onset	2-3 minutes	2-3 minutes	45 minutes
Duration acute, symptoms	1-2 hours	Duration of coma ½-1 hour	Duration of coma 6-12 hours
Time required to recover to normal	4-8 hours	8-24 hours	48-96+ hours
State of consciousness	Communicative, or may be unable to speak; blank stare appearance; disoriented for time/place; anxious, fearful, agitated or may be mildly euphoric; restless or excited, may exhibit regressive or self-destructive behavior	Comatose or stuporous with open eyes, waking appearance; responds only to noxious stimuli (deep pain); followed by 1-2 hour period where signs and symptoms of low dose state are manifest; amnesia for period of coma/stupor	Comatose, responding only to noxious stimuli; prolonged recovery period marked by alternating sleep and waking illusions, hallucinations, and clinical features of low dose state; amnesia for period of coma and prolonged recovery phase
Respirations			
Rate	16-24 (+)	16-24 (+)	18-28 (+)
Pattern	Normal	Normal or Cheyne-Stokes	Normal or Cheyne-Stokes (adult); apnea (child)
Circulation			
Blood pressure	135-160 (+) / 80-100	135-160 (+) / 80-100	120-200 / 60-110
Pulse	100-140 (+)	100-140 (+)	80-100 (+)
Pupils			
Size	Mid-position	Mid-position	Variable
Light reflex	Normal	Normal or sluggish	Normal or sluggish
Occular movements			
Eyelid position	Open/ptosis	Ptosis/closed	Closed
Nystagmus	Horizontal and vertical on testing	Horizontal and/or vertical at rest	Horizontal and/or vertical at rest
Motor function	Ataxia (sensory); catatonic rigidity—catalepsy, facial grimacing; deep tendon reflexes (DTR's)—increased	Purposeless movements, repetitive; myoclonus (shivering)—trunk, extremities; clonic jerking extremities; muscle rigidity on stimulation; facial grimacing; deep tendon reflexes (DTR's)—increased	Purposeless movements, muscle rigidity, opisthotonic posturing (child), generalized seizure activity, deep tendon reflexes (DTR's)—increased
Sensory function	Analgesia (pin prick)	.....	.....
Autonomic function	Vomiting (central)	Vomiting (central), hypersalivation	Vomiting (central), hypersalivation

response to pin prick is observed. Most of these patients were seen at rock music events and were able to return with friends to their seats after an hour, although mild ataxia was still evident.

The moderate dose state is marked by coma or stupor in which the eyes remain open associated with the presence of hypertension and the absence of respiratory depression. The pupils are mid-position and reactive to light. Nystagmus at rest, repetitive motor movements, myoclonus (shivering) and muscle rigidity on stimulation are characteristic findings. Frequently vomiting and hypersalivation are part of the picture. Most patients are communicative and ambulatory within 30 minutes to an hour, although they manifest all the signs and symptoms of the low dose state on awakening. One to two hours of observation are required from the time of admission until the patient returns with friends to the auditorium or stadium.

The patient who has taken orally a high dose of phencyclidine either accidentally or as a suicide attempt usually presents at the emergency room. The two children included in this series presented with apnea, although in the adult patients where information is available respirations were normal

and the blood pressure was normal or high. While pupil size varied, the pupillary light reflex was intact. Opisthotonic posturing was seen in one child over a six hour period, and generalized seizure activity has been observed in adult patients. Nystagmus at rest, vomiting and hypersalivation are, again, seen during the comatose period. The most characteristic feature of high dose oral ingestion is the prolonged recovery phase, marked by alternating periods of sleep and waking, misperceptions, disorientation, hallucinatory phenomena and the clinical picture of the low dose state. Patients have been comatose for periods of up to 12 hours and have required several days for recovery to normal.

Differential Diagnosis

The low dose state is frequently interpreted as secondary to an unknown psychedelic drug. The absence of mydriasis and the presence of gross ataxia and horizontal and vertical nystagmus are diagnostic of a phencyclidine intoxication.

The moderate dose state may be interpreted, initially, as a sedative-hypnotic overdose. However, the presence of hypertension and hyperreflexia (deep tendon reflexes or DTR's) and the absence of prominent respiratory depression differentiate the phencyclidine intoxicated state from sedative-hypnotic overdose.

Cases involving ingestion of high doses which present as undiagnosed coma may be difficult to differentiate from other causes. Again if hypertension is evident and there is no significant depression of respiration, sedative-hypnotic overdose can be ruled out. If, in addition, opisthotonic posturing is present in a child or seizure activity in an adult, a phencyclidine intoxication should be suspected. If a patient is in status epilepticus or in a postictal state, the underlying cause may be difficult to surmise. The characteristic prolonged recovery phase is diagnostic of phencyclidine intoxication.

Management, Treatment

The key to management of the low dose acute intoxicated state is sensory isolation with observation at a distance. Exacerbation of clinical symptoms is seen even with minimal verbal or physical stimulation. The patient should be placed on a cushioned surface of the floor in a quiet room with a monitor present. Protection from self-harm may also be necessary. Most patients are able to be released to family or friends within one hour.

In a patient who presents with the moderate dose state, respiratory status and blood pressure should be monitored, with close observation for clonic movements or muscle rigidity which usually precede seizure activity. Again, sensory stimulation should be controlled and minimized. On recovery from the short period of coma or stupor, the patient will require continued sensory isolation and protection from self-harm for approximately one hour.

If seizure activity does intercede, judicious intravenous administration of diazepam (Valium®) in 2 to 3 mg increments is indicated. Respirations should be closely monitored postadministration.

The general principles of management of coma would apply to high dose acute intoxication with phencyclidine. Closely monitoring respirations and blood pressure, and observing the patient for seizure activity or its prodromata would be indicated. Endotracheal intubation may be difficult and may precipitate laryngeal spasm. Gastric lavage is indicated in view of the large quantities of phencyclidine which have been recovered from the gastric contents in fatal cases.

Diazepam carefully administered in increments of 2 to 3 mg intravenously with postadministration observation of respirations is indicated in the event of generalized seizure activity. Diazoxide was reported to be effective in lowering blood pressure during a hypertensive crisis thought to be secondary to phencyclidine.[10]

The patient may remain comatose for a period of 12 hours or more. The principles of sensory isolation and protection from self-harm apply to the prolonged recovery period which may last several days and require admission to a psychiatric unit.

Fatalities

Fifteen deaths associated with phencyclidine, and previously unreported, occurred in California between 1970 and 1975. Five of these deaths occurred during the period January 1974 to July 1975. In all cases analysis of body fluids for toxicology showed the presence of phencyclidine and the absence of any other chemical agent. Most of these deaths appear to represent accidents or suicides involving a pharmacological overdose. In some cases, however, the levels of phencyclidine in the blood and urine and the circumstances of

the death suggest that death resulted from the behavioral toxicity of phencyclidine.

In the cases with high blood and urine levels, the associated presence of up to 185 mg of phencyclidine in the gastric contents points to an oral route of self-administration. In one case bloody fluid was noted in the mouth and nose which may have resulted from seizure activity. It is still unclear whether oral doses in the range of 150 to 200 mg or more, which were estimated to be involved in these cases, produce primary respiratory depression. Generalized seizure activity with postictal depression or hypoxia may be the precipitating factor in the death of these persons.

Interviews with chronic, daily users of phencyclidine do not support the idea that tolerance develops to the behavioral effects of this agent. Behavioral toxicity is consistent with the lower blood and urine levels found in four cases where the immediate cause of death was asphyxiation on drowning.

Chronic users report that friends have died while intoxicated by drowning, automobile accidents and fire. Gross ataxia, catatonic rigidity, misperception or analgesia may interfere with a person's ability to drive, swim, flee from a fire or sense imminent danger.

Discussion

The central question of the occurrence of primary respiratory depression in fatal high dose phencyclidine ingestions in adults remains unanswered. Blood levels in fatal cases have been comparable to the level reported in one patient who presented with status epilepticus (0.70 mg per 100 ml)[9] and the level in the single high dose case seen by the authors (0.37 mg per 100 ml). The former patient died four days after admission with autopsy evidence of severe anoxic encephalopathy and indications of progressive hepatic and renal failure. In the latter case no phencyclidine was detectable in the blood 7½ hours after admission, although the patient remained comatose with no significant change in respiratory function or seizure activity for 10 hours.

In a third case, where blood levels were not obtained, the patient also presented in status epilepticus. The 13 hour period of coma was marked by intermittent, generalized seizure activity with respiratory depression evident only after reiterative seizures. The information available is incomplete and the relationship between blood levels, respiratory depression and seizure activity has yet to be documented with clinical findings in cases involving potentially lethal doses of the drug.

Eastman and Cohen have recently reported a case involving a 13-year-old boy in which a hypertensive crisis was followed by an intracerebral hemorrhage and death.[10] There was no autopsy evidence of cerebral hemorrhage or hypertensive encephalopathy in the fatalities summarized.

Potentiation of the stimulant or depressant effects of phencyclidine in humans by other chemical agents is also an open question. While we have no familiarity with the intensity or spectrum of effects seen when phencyclidine is administered in comparable high doses, this becomes a critical question when central nervous system depressants are administered to control seizure activity. Judicious use of these agents would appear to be indicated.

It is not clear whether symptomatic improvement consistently follows the use of the phenothiazines. In several cases, however, significant hypotension has resulted from the administration of therapeutic dosages of the phenothiazines.

By 1964 more than 1,000 patients had received phencyclidine as an investigational drug and no evidence of acute cellular toxicity was reported.[11]

Conclusion

In contrast to its pronounced behavioral and central nervous system toxicity, phencyclidine parades as a "mild" psychedelic drug on the street. It has become one of the most frequently used main ingredients of street drug preparations. Further investigation of the cellular toxicity and neuropsychological dysfunction associated with chronic daily use of phencyclidine is indicated.

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[From JACEP, April 1978]

Phencyclidine Deaths

(By R. Stanley Burns, M.D. and Steven E. Lerner, M.S.)

The potential for a pharmacologic "overdose" and the cause of death associated with phencyclidine abuse is discussed. Nineteen deaths associated exclusively with phencyclidine intoxication have been documented. In 13 cases the immediate cause of death was asphyxia by drowning or trauma with lower levels of phencyclidine present suggesting behavioral toxicity. In two cases, the presence of phencyclidine in high concentrations constituted the only finding, and the probable cause of death was primary respiratory depression accompanied by seizure activity. A secondary drug effect or concurrent disease process may have contributed to the death of the remaining four individuals. Burns RS, Lerner SE: Phencyclidine deaths. *JACEP* 7:135–141, April, 1978. "Phencyclidine, death; drug abuse, phencyclidine."

INTRODUCTION

Phencyclidine hydrochloride (sernyl), discovered in the mid-1950s[1] is a white, stable solid with a melting point of 234 to 236 C.[2] It is a weak base that is readily soluble in water[2] and highly lipid soluble at physiological pH.[3] Animal studies of phencyclidine as a surgical anesthetic in monkeys reveal a low cellular toxicity, high potency without respiratory or cardiovascular depression.[4]

The drug was first tested on humans in 1957.[4,5] Doses of 0.25 mg/kg given intravenously produced anesthesia sufficient for minor and major surgery.[4] Because the drug produced postanesthetic confusion and delirium of prolonged duration in some cases, clinical investigations were discontinued.[1,6] Phencyclidine is now manufactured under the trade name Serynlan as an analgesic for monkeys and other primates, and appears in the classification with barbiturates and lysergide in the Comprehensive Drug Abuse Prevention Act of 1970.[7]

Forensic pathologists have been in disagreement on whether a pharmacological "overdose" and death could result from abuse of street purchased material containing phencyclidine. To address this question a retrospective study of deaths associated with phencyclidine use was conducted.

CASE REPORTS

Nineteen deaths associated exclusively with phencyclidine intoxication are known to have occurred in two counties in California from July 1970 to June 1976: 13 white men and six white women, ranging in age from 15 to 33 years, representing a mean age of 22 years. Fourteen deaths have been documented in the 2½ year period since January 1974.

In 13 cases, the immediate cause of death was asphyxia by drowning or trauma. Six persons were found dead of no apparent cause. Twelve deaths were judged to be accidental. There were five suicidal and two homicidal deaths. Six individuals were known to be regular or chronic phencyclidine users. A clear past history of use of other drugs was present in five cases (Table 1), illustrated by the following case histories:

TABLE 1.—PATIENT CHARACTERISTICS OF 19 PHENCYCLIDINE RELATED DEATHS, 1970–76

Cause and Number	Intent			Route			
	Accidental	Suicide	Homicide	PO	Snorting	Smoking	Unknown
Asphyxia/drowning (11)	8	2	1		1	3	7
Gunshot wound/head (2)		1	1				2
Unknown (6)	4	2		5			1

Deaths of Unknown Cause

Case Numbers 1 and 2.—A 27-year-old man, clad in a white sheet, was observed wandering in the hallway of his apartment building. He was going door to door stating that he was Jesus Christ and was hungry. His 23-year-old wife gestured to others by pointing to her head that he was confused. She returned him to their apartment. Two days later they were both found dead lying across one another on top of the bed. They were known to have been experimenting with the drug "THC." Ten white capsules found in their room contained phencyclidine. The isolated presence of phencyclidine was confirmed on toxicologic examination of body fluids and tissues in both individuals.

Deaths Due to Asphyxia by Drowning or Trauma

Case Number 12.—A 33-year-old man, who lived a nomadic life style, was known to be a heavy user of phencyclidine. He was on a long run, snorting and shooting "rocket fuel" several times a day. He had become unhappy, disillusioned and depressed. He was found by roommates moaning and had vomited on the rug. After being read a verse about life in the hereafter, he asked someone to take off his clothes and said, "Thank you, Mama. Thank you, Mama." He left the apartment and was found dead in the swimming pool ten minutes later. There were no signs of significant head or neck trauma and toxicologic examination revealed the presence of phencyclidine.

Case Number 13.—A 27-year-old woman, known to have used phencyclidine regularly for four years, smoked one half of a "crystal joint" while putting on her swimming suit. She then dove into the backyard pool as her fiance was suiting up. She was found a few minutes later at the bottom of the pool and pronounced dead at the scene. There was no evidence of head or neck trauma, and toxicologic studies were positive for phencyclidine only.

Case Number 18.—A 15-year-old boy, reported to be "out of hand," was seen earlier in the month for bizarre behavior at a local medical center. He had been involved with drugs and talked about "getting it all over." He was found hanging by an electrical cord from a beam in the garage. Toxicologic examination revealed the isolated presence of phencyclidine.

MATERIALS AND METHODS

Reports of deaths for the period 1970 to 1976 where phencyclidine was found on toxicological screening were provided by the coroners' offices of Alameda and Orange counties of California. Investigation of the circumstances surrounding these deaths was carried out by the coroner's office. All autopsies were performed by the coroner or his deputies.

Toxicologic Examination Findings

Body fluids and tissues submitted for toxicologic examination included blood, urine, bile, liver tissue and the stomach contents. Two independent laboratories of forensic toxicology with different methods of analysis performed these studies *(vida infra)*. Cases were excluded if other agents were present in detectable levels in addition to phencyclidine or if there was a history of recent use of lysergic acid diethylamide (LSD) or marijuana that could not be determined chemically.

Toxicologic studies in 16 cases were performed by the Institute of Forensic Sciences, Oakland, California. Urine levels of phencyclidine were determined by gas liquid chromatography. Determinations of phencyclidine in blood, bile and tissue specimens were performed by gas liquid chematography after separation of interfering materials by a back-extraction technique. Quantitation was performed by comparison of peak heights or peak areas of standard and unknown samples. Analysis of quality control samples yielded coefficients of variation of 8.4 percent. Body fluids and tissues were screened for the presence of toxic metals and other common volatile, acidic, neutral and basic drugs.

TABLE 2.—RESULTS OF TOXICOLOGIC EXAMINATION IN DEATHS OF UNKNOWN CAUSE

Case	Blood (μg/ml)	Urine (μg/ml)	Liver (μg/ml)	Bile (μg/ml)	Brain (μg/ml)	Lung (μg/ml)	Kidney (μg/ml)	Gastric contents (mg or mg/100 ml)
1	2.3	5.1	8.0					[1] 6.3
2	.5	100.0	6.0					[2] 9.6
3	.3	38.0	.9		0.1	0.4	0.1	[1] 70.0
5	1.8	330.0						
6	4.0	21.5	50.0					[1] 6.5
8	5.0	119.8	36.0	34.5			47.0	[1] 185.4

[1] Mg total.
[2] Mg/100 ml.

In the Toxicology Laboratory, Office of the Coroner, Orange County, California, blood, urine, stomach contents and tissues from three cases were screened by one or more techniques including ultraviolet spectroscopy, infra-red spectroscopy, gas-liquid chromatography and thin layer chromatography. Analysis for phencyclidine and other basic drugs was by gas-liquid chromatography employing a flame ionization

detector. The bile and urine when available was screened for morphine and other amphoenteric compounds by thin-layer chromatography.

Quantitative studies of phencyclidine in blood and urine were carried out in 16 and 11 cases, respectively (Table 2 and Table 3). These values have been grouped by cause of death.

This study is based on review by the authors of the history, autopsy findings and toxicology results in 19 deaths associated with phencyclidine abuse.

Pathologic Findings

The autopsy findings in 13 cases were consistent with the known immediate cause of death by drowning or trauma.

In the six phencyclidine related deaths of unknown cause, pulmonary congestion and other pathologic changes were found on examination of the lungs (Table 4). Acute posterior lobar pneumonia or bronchopneumonia was present in three cases. In one, gross pulmonary edema was found, and in another, aspiration of the gastric contents. Numerous macrophages were present in the alveoli in two cases. There were no needle marks indicating an intravenous route of administration or the possible complications thereof in these six cases. Viral hepatitis, septic abscesses, bacterial endocarditis, foreign body granulomas or necrotizing angitis were not in evidence in these cases.

In a single case, the right kidney had been surgically removed. No other evidence of pre-existing or active disease was found.

A similar finding of numerous alveolar macrophages in five cases of known cause of death was associated with the presence of refractile material in the lungs or occasional foreign body giant cells in two cases.

TABLE 3.—RESULTS OF TOXICOLOGIC EXAMINATION IN DEATHS OF KNOWN CAUSE

Case	Blood (μg/ml)	Urine (μg/ml)
4	[1]	0.5
7	0.36	.6
9	[2]	[3]
10	1.0	
11	[2]	
12	.6	2.3
13	1.06	
14	.55	10.6
15	.74	2.4
16	1.20	
17	.20	
18	.10	
19	.15	

[1] Not found.
[2] Trace.
[3] Present.

TABLE 4.—*Pathologic findings on examination of lungs*

Case and Condition:

1. Congestion, bronchopneumonia, aspiration of gastric contents.
2. Congestion, bronchopneumonia, microscopic edema.
3. Congestion, acute posterior lobe pneumonia.
5. Congestion.
6. Congestion, numerous alveolar macrophages.
8. Congestion, gross pulmonary edema, alveolar macrophages.

Toxicologic Findings

Blood concentrations of phencyclidine in ten deaths due to asphyxia by drowning or trauma ranged from 0.10 to 1.2 μg/ml, with a mean of 0.60 μg/ml. Urine levels of 0.5 to 10.6 μg/ml were measured in five of these cases.

In six cases where the cause of death was unknown, blood concentrations ranged from 0.3 to 5.0 μg/ml, with a mean of 2.9 μg/ml. The levels of phencyclidine in urine ranged from 5.1 to 330 μg/ml. Liver phencyclidine concentrations in five cases ranged from 0.6 to 5 mg/100 gm tissue. Liver to blood ratios ranged from 3 to 12.5. The complete toxicologic findings in this group of cases are listed (Table 2).

More extensive quantitative studies of tissue distribution were carried out in two cases (Table 2). Relatively high concentrations of phencyclidine were found in lung and brain tissue. The blood/brain ratio in case 3 was 0.33. Adipose tissue was not sampled.

Phencyclidine was present in the victims' gastric contents in five of the six deaths of unknown cause, indicating an oral route of administration. Values ranged from a concentration of 63 μg/ml to a total recovery of 185.4 mg of phencyclidine. In three cases, bile was sampled and biliary excretion of this drug was demonstrated. Urinary pH was not measured, although phencyclidine excretion is known to be pH-dependent.

DISCUSSION

Phencyclidine, and its better known derivative ketamine, belong to the arylcycloakylamine group[9] and have a similar spectrum of activity.[10] Administered to animals in increasing doses, these drugs produce excitation, ataxia, catalepsy, general anesthesia and convulsions. Their characteristic sympathomimetic effect appears to be due to central nervous system stimulation.[9]

The degree of central nervous system stimulation and depression and the anesthetic potency vary with the species.[9,11,12] Based on behavioral criteria, phencyclidine and ketamine act primarily as central nervous system depressants in both humans and monkeys. Immediate excitation does not usually occur, whereas surgical anesthesia is more readily induced in humans than in other species.[2,9,13] Ketamine is less potent, has a shorter duration of action, and produces convulsions less frequently.[6,14,15]

Electrophysiologically, phencyclidine and ketamine induce a continuum of subcortical and cortical electroencephalogram (EEG) changes in animals associated with catatonia or immobility and consistent with central nervous system stimulation. In animals and epileptic human subjects with implanted depth electrodes, limbic and temporal electrical seizure activity has been observed following ketamine administration. The electrical seizure activity is not always manifested by convulsive behavior or reflected in the conventional surface EEG.[16,17]

Profound behavioral effects are seen in several species following phencyclidine administration.[18] In the monkey, reinforcing properties have been demonstrated by the initiation and maintenance of lever-pressing for a reward of injections of phencyclidine. The animal self-administers the drug in amounts producing a state resembling general anesthesia (RL Balster, verbal communication, June, 1975).[18] In humans, phencyclidine has psychotomimetic properties. The psychosis produced in normal volunteers is difficult to distinguish from schizophrenia,[19,20] reproducing more of the primary symptoms than other drug models.[1,19] Extreme exacerbation of existing psychoses following the administration of phencyclidine to chronic schizophrenic patients has been reported.[19,20]

Phencyclidine is active orally as well as parenterally in humans.[1,2,19] In several studies involving normal subjects, comparable subanesthetic doses of phencyclidine, 0.1 mg/kg given intravenously over 2 to 12 minutes, (or 7.5 mg orally) produced slowed thinking, decreased concentration, and increased reaction time.[21,22] Although subjects were able to communicate adequately,[21] sensory functions were generally impaired,[21,23-25] and their gait was ataxic.[21,23] Some patients exhibited catatonia and repeated vomiting. With intravenous administration over five minutes, the onset was immediate with prominent symptoms lasting one to two hours.[24] Following oral administration, subjects have reported changes in their physical or psychological state within 45 minutes with maximum effects at 90 minutes.[26] In a similar study of five obsessional patients, given 5 to 10 mg phencyclidine orally, an onset of 30 to 60 minutes with a duration of one to three hours was reported.[27]

Given intravenously in anesthetic doses of 0.25 mg/kg (a total dose of 17.5 mg) over 35 minutes, phencyclidine increases the minute volume, rate and depth of respirations of low order.[4] A mean increase in minute volume of 1140 cc was measured in seven normal patients. Their tidal volume and respiratory rates increased a mean of 15.3 cc and 2.57 cc respectively. A consistent and significant mean increase of 26 mm Hg in systolic and 19 mm Hg in diastolic pressure was observed. The pulse rate change was less consistent, increasing in three subjects and decreasing in three.[4] Surgical patients given 20 mg of phencyclidine intravenously, following premedication with pethidine hydrochloride and atropine, became unresponsive to pain after a few minutes, and most patients were completely unresponsive for periods up to 90 minutes without respiratory depression. In the initial clinical trials, doses of 1.0 mg/kg intravenously produced clinically observed seizure activity.[4]

In the monkey, 1 mg/kg of phencyclidine given intravenously produced 40 minutes of anesthesia. A dose of 4.0 mg/kg resulted in tonic-clonic seizures in all animals tested. Serious respiratory depression was seen at 14 mg/kg, and death caused by respiratory failure followed doses of 15 mg/kg or greater. A therapeutic ration ("minimal lethal dose/anesthetic threshold dose") of 26 has been reported.[10,11]

In various animal species, phencyclidine has a relatively short duration of action.[2] In the monkey, for example, it is rapidly metabolized and excreted in the urine as conjugated di- and mono-hydroxyl metabolites.[28,29] After single intravenous doses, 60 percent of the radioisotope labels were recovered in the urine within 12 hours, and approximately 75% by eight days.[28] In man, the relative concentrations of mono-hydroxyl metabolite and the parent compound phencyclidine recovered in urine after acid hydrolysis and assayed by gas liquid chromatography were 68 percent and 32%, respectively. No di-hydroxyl metabolite was evident.[28]

Subsequently, two mono-hydroxyl metabolites were detected in urine from patients acutely intoxicated with phencyclidine, after enzymatic hydrolysis.[30] There is no evidence that these two compounds possess cataleptic anesthetic activity.[31]

Tissue distribution studies in animals demonstrate relatively high and persistent concentrations in adipose and brain tissue with lower and rapidly falling blood concentrations.[3,30] These results are consistent with the drug's pKa of 8.5 and lipid partition coefficient at physiological pH.[32] The half life in rat blood after intraperitoneal injection is approximately 3½ hours.[3] The drug concentration half life in the dog following intravenous administration is approximately one hour.[30]

Street Pharmacology

Phencyclidine is sold on the West Coast as Crystal, Angel Dust, PCP, THC, and Cannabinol.[33-35] Appearing on the illicit market in 1965, it continues to be available in powder, tablet and leaf mixture forms.[33] Most street preparations contain the hydrochloride salt, although the free base has been observed.[36]

The crystalline or granular powder form is found most frequently as Crystal or Angel Dust, which usually contains 50 percent to 100 percent phencyclidine.[33] Sold under a variety of other names, the purity drops to a range of 10 percent to 30 percent.[33] Most tablets contain approximately 5 mg, ranging from 1 to 6 mg.[33] Leaf mixtures have been found to contain between 0.24 percent to 7.9 percent phencyclidine, averaging 1 mg phencyclidine/150 mg leaves.[33]

Phencyclidine is taken orally, by inhalation, insufflation, and rarely by the intravenous route. Powder forms are generally sprinkled on parsley, mint, oregano, or other leaves, and smoked in the form of a cigarette.

According to our studies and others,[33,37] the estimated amount of phencyclidine used per episode, smoking, is 1.5 to 3.5 mg, and the amount per dose in powders and tablets averages between 2 to 6 mg.

Various patterns of phencyclidine use have emerged. Although the occasional, or recreational, use pattern is seen, its development is mediated by an initial experience of unexpected and unpleasant effects.[35,37] In areas where the drug has been continuously available, it has gained a preferred drug status with small cluster groups of individuals who use it on a chronic, daily basis for periods of six months to six years.[35,37]

Chronic users claim that the conversion from oral use of tablets and capsules in 1972 to smoking the powder form on leaves has allowed greater success in titrating the dose. Regular users purchase 1 gm amounts of the crystalline phencyclidine, using about 50 mg to prepare one cigarette and smoking an estimated 30 to 75 mg per episode.[37,38]

The onset of subjective effects after smoking is reported to occur within two to five minutes lasting four to six hours. A more rapid onset, 30 seconds to one minute, follows insufflation of the powder form.[37]

Psychological dependence and tolerance to the psychic effects of phencyclidine have been reported by chronic users, as well as paranoia, auditory hallucination, violent behavior, severe depression and anxiety following prolonged periods of daily, regular use.[38]

The confused state induced by typical street doses is characterized by immobility, or catalepsy, and a "blank stare" in a patient who is noncommunicative, followed by disorientation, motor restlessness or excitement, and gross ataxia of gait, lasting approximately five hours. In addition, we have noted the presence of muscle rigidity.[40] We obtained measurements of serum levels of 54 to 230 μg/ml (unpublished data) in six patients in a confused state induced by phencyclidine intoxication. An additional case of a youth described as "drowsy" with a blood phencyclidine concentration of 51 μg/ml has also been reported.[36]

In phencyclidine stupor or coma, the eyes may remain open, although the patient is responsive only to deep pain. Hypertension and tachycardia are present, and in all but the more massive oral "overdose," respirations are normal.[35,39] Purposeless movements, facial grimacing, and muscle rigidity on stimulation are common findings. Repeated episodes of vomiting and increased bronchial secretions frequently occur.[35,39]

Massive oral overdoses involving up to 1 gm of street-purchased material have resulted in periods of stupor and coma of several hours to five days in duration.[35, 37,39,40] Delayed and prolonged hypoventilation and apnea may result. Such cases are also marked by sustained hypertension and tachycardia and general motor seizures preceded by muscle tremors, myoclonus, opisthotonus, and decerebrate rigidity.[37,39,40] A child in coma was found to have a blood level of 49 μg/ml,[30] and serum levels of about 100 to 300 μg/ml were measured in patients described as in coma.[3] Two comatose adults with evidence of mild respiratory depression had plasma concentrations of phencyclidine between 190 and 220 μg/ml.[41] One adult patient, with hypoxia, myoclonus and clonic seizures associated with coma, who recovered, had a serum concentration of 340 μg/ml.[42] Coma with severe respiratory depression, and apnea and repetitive seizures with recovery was associated with a blood level of 530 μg/ml. Status epilepticus with cardiopulmonary arrest, followed by coma without recovery, was associated with a blood level of 7.0 μg/ml.[43]

Nine other phencyclidine related deaths are reported in the literature since 1974 (Table 5). Status epilepticus, a respiratory arrest—and, in one instance, seizures—hyperpyrexia and cardiac arrest were the reported drug-induced causes of death in three cases.[42–45] Reported medical complications resulting in two deaths were hypertensive crisis with intracerebral hemorrhage. In one case, early rhabdomyolysis with acute renal failure followed by aspiration pneumonitis on hospital day 50 resulted in death.[46,47]

Blood concentrations of phencyclidine in five cases ranged from 2.5 to 70 μg/ml.[30,42,44,48] Status epilepticus was associated with a blood level of 7.0 μg/ml.[43]

In the cases reviewed retrospectively here, death occurred in association with phencyclidine intoxication in 19 individuals. In 12 cases, the immediate cause of death was asphyxia by drowning or trauma with lower levels of phencyclidine present on toxicological examination. Circumstantial evidence suggests that death was secondary to the behavioral toxicity of phencyclidine. In one case, coma resulted in death by drowning in a shower. In persons found dead with no apparent cause, phencyclidine was present in blood and body tissues. A secondary drug effect or concurrent disease process may have caused or contributed to the death of four individuals. In two cases, however, the presence of phencyclidine in high concentrations constituted the only positive finding. It seems reasonable to conclude that these deaths were due to the primary pharmacologic effects of phencyclidine.

Eight deaths resulted from drowning in a swimming pool. Phencyclidine users often report swimming while intoxicated because they experience an unusual but pleasant sensation. Sensory disturbances, ataxia and muscle rigidity which follow the use of typical "street" doses of phencyclidine may seriously interfere with a person's ability to swim, drive, climb at heights, flee from a fire or sense eminent danger.

Suicide by self-induced gunshot wound or hanging accounted for the deaths of three persons. They had all been characterized as moody or depressed and one was a known chronic phencyclidine user. In one additional case, threatening behavior resulted in provoked homicide. Depression and violent behavior are frequently associated with a confusional state in acute phencyclidine intoxication.[40] Violent, aggressive and threatening behavior characterize the persistent psychosis seen in some individuals following phencyclidine use.[20] Severe depression with repeated suicide attempts has followed chronic, daily use of phencyclidine.[37] The massive oral "overdose" is seen most frequently in the chronic user who is in possession of large amounts of phencyclidine and ingests it in a suicide attempt.[49]

A wide range of blood concentrations of phencyclidine was present with some overlapping of cause of death due to behavioral toxicity, medical complications, or the pharmacologic effects of phencyclidine. This suggests rapidly changing blood levels and variations in the route of administration, dose, and elapsed time. Differences in the amount absorbed, metabolized and excreted can be predicted.

Animal studies reveal high rates of metabolism and excretion with rapidly falling blood concentrations and a relatively short duration of action. The studies correlating blood levels and clinical state are incomplete. Cases are reported where phencyclidine rapidly disappeared from the blood and was not detectable at 0.5 μg/ml levels by gas chromatography despite the persistence of a comatose state for several

hours thereafter.[3] A prolonged period of coma lasting several days followed by a long period of fluctuating confusion and delirium has been seen clinically after large oral "overdoses" of phencyclidine.[49] Studies of the sequential concentrations of phencyclidine in blood have not been carried out in these cases.

Currently, no available data exist on the relationship of dose to blood level, or the pharmacokinetic constants for administration of phencyclidine by inhalation, insufflation or orally.

Some information is available from limited toxicologic studies[35,40,49] in clinical cases of acute phencyclidine intoxication. These results may be compared with those obtained in phencyclidine related deaths.

Serum and blood levels of phencyclidine of .05 to .23 μg/ml have been associated with a state of confused drowsiness[30,40] in chronic users. In nine deaths secondary to the behavioral effects of phencyclidine, blood concentrations ranged from 0.10 to 1.0 μg/ml. One of two individuals with a level of 1.0 μg/ml was a known chronic user who died by drowning within minutes of smoking phencyclidine. In all other cases levels were less than 0.75 μg/ml.

Our patients (unpublished data, March, 1975) and those of others[41] have been reported to be in coma with blood phencyclidine concentrations of 0.10 to 0.30 μg/ml. Coma with respiratory depression and/or seizures was associated with blood levels of 0.34 to 0.53 μg/ml.[40,42] In case 16, the individual lapsed into coma while in a shower and drowned in a few inches of water. The blood concentration was 1.2 μg/ml.

A death is reported in the literature due to status epilepticus with a blood level of 7.0 μg/ml.[43,44] Other reported values without details on the cause of death ranged from 2.5 to 5.0+ μg/ml. In the six deaths of known cause, blood phencyclidine concentrations ranged from 0.3 to 5.0 μg/ml.

In cases 1 and 8, there were significant findings on pathologic examination of aspiration of stomach contents associated with pneumonitis, and pulmonary edema. Blood phencyclidine levels of 2.3 and 5.0 μg/ml and recovery of 6.3 and 185.4 mg phencyclidine in the stomach contents, respectively, indicated large oral doses. Whether pulmonary edema represented a hypersensitivity reaction and the role of asphyxia and/or pneumonitis secondary to aspiration in these deaths are unknown.

In cases 2 and 3, with the lowest blood levels of 0.50 and 0.30 μg/ml, bronchopneumonitis with microscopic edema, and acute lobar pneumonia were present. To what degree these disease processes were significant in contributing to the individuals death is uncertain. Chronic drug use may predispose one to develop infectious diseases or prolonged hypoventilation may promote the development of pneumonia as a terminal event.

In cases 5 and 6 there were no findings on complete pathologic examination. The presence of phencyclidine in blood at concentrations of 1.8 and 4.0 μg/ml constituted the only positive finding. Death was probably due to the primary pharmacologic effects of phencyclidine.

In animals lethal doses of phencyclidine induce first tonic-clonic seizures and then respiratory failure. Repetitive seizures and delayed and prolonged hypoventilation and apnea have been observed clinically with massive oral overdoses of phencyclidine. Status epilepticus has been reported. The probable cause of death in high dose phencyclidine intoxications is primary respiratory depression accompanied by seizure activity.

Numerous alveolar macrophages seen on pathologic examination in seven cases, and associated with foreign body giant cells or refractile material in two instances, appear to have resulted from smoking phencyclidine in leaf mixtures and insufflation of phencyclidine powder. In one individual with a history of intravenous phencyclidine use, needle marks were found. Reported intravenous use is rare due to the rapid onset of the drug effects and the superior control of dosage possible by smoking phencyclidine. Medical complications of the intravenous route were absent, and one would predict infrequent acute allergic reactions.

The role of tolerance to the behavioral effects of phencyclidine with chronic use on the toxicity of this drug and the occurrence of injury or death is unknown.

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Phencyclidine Use Among Youth[1]

(By Steven E. Lerner, M.S., and R. Stanley Burns, M.D.)

The growing popularity of phencyclidine throughout the United States parallels the early histories of LSD and marihuana. The initial passage of phencyclidine through the drug subculture in 1967 resulted in "bad reviews," attributed to the relative inexperience of drug experimenters. However, during the past three years its popularity has rapidly increased among the now more experienced drug users. In addition, the extensive use of clandestine drug combinations containing phencyclidine has resulted in part in a marked rise in acute phencyclidine intoxications.

The medical problems emerging from the illicit use of this entirely new class of psychoactive drugs are compounded by its myriad analogs. With the advent of the polydrug abuse phenomenon, the widespread experimental and long-term use of phencyclidine has expanded at an alarming rate. The large quantities of phencyclidine that have been recently confiscated by law enforcement officials in California

[1] Lerner, S.E.: Burns, R.S. "Phencyclidine Use Among Youth," In "Phencyclidine (PCP) Abuse: An Appraisal," R. Peterson and R. Stillman, eds., National Institute on Drug Abuse Monograph 21, DHEW Publication No. (ADM) 78–728, Washington, D.C., Superintendent of Documents, U.S. Government Printing Office, 1978.

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alone, commensurate with the reported Drug Abuse Warning Network "mentions" and associated deaths, are convincing indicators of a new major drug problem.

This paper will present an overview of the pharmacology of phencyclidine, including its effects on animals and humans, and the history of its illicit use which is highlighted by factors related to phencyclidine's increasing popularity. Data from three major Federal sources are compared with the results of the authors' hospital-based youth study. The increased problems and deaths seen in a community where phencyclidine has been continuously available are presented and discussed.

A profile of chronic phencyclidine use includes a description of the patterns of use, the phencyclidine experience, tolerance, psychological dependence and side effects, chronic toxicity, and laboratory and neurological findings.

A review of the acute intoxicated state caused by phencyclidine encompasses the presentation, clinical picture and course, laboratory and toxicological findings, diagnosis, management and treatment.

An Overview

Phencyclidine hydrochloride (Sernyl ™), discovered in the mid 1950's (Domino and Luby 1972) is a white, stable solid with a melting point of 234–236°C (Domino 1964). It is a weak base that is readily soluble in water (Domino 1964) and highly lipid soluble at physiological pH (James and Schnoll 1976). Animal studies reveal low cellular toxicity and high potency for inducing surgical anesthesia without respiratory or cardiovascular depression in monkeys (Greifenstein et al. 1958).

The drug was first tested on humans in 1957 (Greifenstein et al 1958; Rodin, Luby and Meyer 1958), and when given in doses of 0.25 mg/kg intravenously produced anesthesia sufficient for minor and major surgery (Greifenstein et al. 1958). Phencyclidine was also used as a preanesthetic agent for postoperative analgesia, for pain syndromes, burn dressing, as an abreactive agent, and for the treatment of psychoneurosis. Since the drug produced postanesthetic confusion and delerium of prolonged duration in some cases, clinical investigations were discontinued (Domino and Luby 1972; Chen, Ensor and Bohner 1966).

Phencyclidine hydrochloride in solution was legally manufactured by Parke, Davis and Company for use in humans as a short-acting analgesic and for general anesthesia under the trade name Sernyl (Munch 1974). In 1967 the patent was changed to permit the manufacture by Philips Roxane of the drug in solution as an analgesic for monkeys and other primates under the trade name Sernylan. The Comprehensive Drug Abuse Prevention and Control Act of 1970 classified phencyclidine with the barbiturates and LSD in Section 202(c), Schedule III(b)(7) as . . . "having a depressant effect on the central nervous system" (Munch 1974).

Phencyclidine and its better known derivative ketamine belong to the arylcycloalkylamine group (Chen and Weston 1960) and have a similar spectrum of activity. Administered to animals in increasing doses, these drugs produce excitation, ataxia, catalepsy, general anesthesia and convulsions. The characteristic autonomic actions of these agents, hypertension and tachycardia, appear to be due to central sympathetic stimulation (Chen and Weston 1960).

The degree of central nervous system stimulation and depression and the anesthetic potency vary among the species (Chen and Weston 1960; Chen et al. 1959; and Chen 1965). Based on behavioral criteria, phencydlidine and ketamine act primarily as central nervous system depressants in both humans and monkeys. Immediate excitation does not usually occur, whereas surgical anesthesia is more readily induced in humans than in other species (Domino 1964; Chen and Weston 1960; and Chen 1965). Ketamine is less potent, has a shorter duration of action, and produces convulsions less frequently (Chen et al. 1959; Domino, Chodoff and Corssen 1956; and Corssen and Domino 1966).

Phencyclidine is active orally as well as parenterally (IM, IV) in humans (Domino and Luby 1972; and Domino 1964). In several studies involving normal subjects, comparable subanesthetic doses of phencyclidine of 0.1 mg/kg given intravenously over 2–12 minutes or 7.5 mg orally consistently produced decreased touch, pain and position sense associated with nystagmus, ataxia and hyperreflexia (Domino 1964; Luby et al. 1959; and Davies and Beech 1960).

Impairment or increased threshold of audiometry, perimetry, visual acuity and taste is seen (Domino 1974). Touch sense and two-point discrimination were found to be the earliest, most pronounced and persistent sensory effect in one study. Changes in muscle tone ranging from a slight increase to catatonia and rhythmic motor behavior have been reported (Luby et al. 1959). An increase in the diastolic blood pressure of less than 10 mm with an increase in pulse rate of generally 20–30 beats per minute were also noted. Side effects included nausea with repeated vomiting, vertigo, ptosis and diplopia.

With intravenous administration over five minutes, effects are immediate, with prominent symptoms lasting 1–2 hours (Luby et al. 1959). Following oral administration, subjects have reported changes in their physical or psychological state within 45 minutes with maximum effects at 90 minutes (Beech, Davies and Morgenstern 1961). In a similar study of five obsessional patients, given 5 to 10 mg phencyclidine orally, the point of onset at 30–60 minutes and a duration of 1–3 hours were reported (Davies 1961).

Given intravenously in anesthetic doses of 0.25 mg/kg (or a total dose of 17.5 mg) over thirty-five minutes, phencyclidine increases the minute volume, rate and depth of respirations of low order. A mean increase in minute volume of 1140 cc was measured in seven normal patients. Their tidal volume and respiratory rates increased a mean of 15.3 and 2.57 cc, respectively. A consistent and significant mean increase of 26 mm Hg in systolic and 19 mm Hg in diastolic pressure was observed. The pulse rate change was significantly increased in three subjects and decreased in three subjects (Greifenstein et al. 1958).

In surgical patients given 20 mg of phencyclidine intravenously following premedication with pethidine and atropine, no response to pain appeared after a few minutes, and most patients were completely unresponsive for periods up to ninety minutes without respiratory depression (Greifenstein et al. 1958). Intravenous doses of 0.275 mg/kg to 0.44 mg/kg produced anesthesia for an average of 25 minutes in 735 patients. The duration of surgical anesthesia with 0.5–0.75 mg/kg of ketamine is less than 5 minutes with recovery in ½ to 1 hour (Chen, Ensor and Bohner 1966).

As a local anesthetic, phencyclidine is approximately equal to procaine. However, the analgesic activity of the arylcyclohexylamines cannot be assessed in animals by standard testing procedures. It has been suggested that their mechanism of action may differ from the narcotic or the analgesic and anesthetic doses are too close to differentiate (Chen, Ensor and Bohner 1966).

In subanesthetic doses there is general impairment of sensory function with a decrease in the appreciation for touch and pain the earliest and most pronounced effects. Subjects are awake and able to communicate with movement preserved and impaired only by ataxia and occasional catatonia until consciousness is lost when higher anesthetic doses are administered. Dissociation between sensory and motor functioning at subanesthetic doses, implying a disturbance of sensory-motor coordination, appears to occur.

Electrophysiologically, phencyclidine and ketamine induce a continuum of subcortical and cortical (EEG) changes in animals, with catatonia or immobility, consistent with central nervous system stimulation. In animals and epileptic human subjects with implanted depth electrodes, limbic and temporal electrical seizure activity has been observed following ketamine administration. The electrical seizure activity is not always substantiated by convulsive behavior or reflected in the conventional surface EEG (Ferrer et al. 1973; and Winters et al. 1972).

The arylcyclohexylamines also have anticonvulsant properties, antagonizing electrically induced tonic extensor seizures in mice in doses causing ataxia and excitation, and suppressing pentylenetetrazol-induced, initial clonic seizures only at doses approaching anesthetic levels. These properties are related to effectiveness against generalized motor seizures in humans (Chen 1973).

Electroencephalographically, phencyclidine causes diffuse theta and delta slowing in humans. In subanesthetic to anesthetic doses paroxysmal activity is not evident. Changes induced by intravenous infusion ranged from slight theta slowing in one of four volunteers at 0.03 mg/kg to marked theta activity with a dominant medium voltage of 4–5 Hz rhythm in two volunteers given 0.2 mg/kg. The onset of frequency changes and their restitution in the electroencephalogram were either gradual and stepwise or abrupt. These effects ranged in duration from 15 to 60 minutes depending on the dose administered and the magnitude of the changes induced.

In six persons given intravenous infusions of phencyclidine, a decrease in fast activity occurred after 2–3 mg. At approximately 7–10 mg, a diffuse predominant slowing in the occipital, temporal and parietal regions were observed. In the initial clinical trials, doses of 1.0 mg/kg intravenously produced clinically observed seizure activity (Greifenstein et al. 1958).

In humans, phencyclidine has psychotomimetic properties. The toxic psychosis induced by low doses is characterized more by the overt symptoms of schizophrenia than by hallucinations. Reproducing more of the primary symptoms than other drug models, the psychosis produced in normal volunteers is difficult to distinguish from schizophrenia (Domino and Luby 1972; Collins, Gorospe and Rovenstine 1960; and Luisada and Reddick 1975). Extreme exacerbation of existing psychoses followed the administration of phencyclidine to chronic schizophrenic patients (Collins, Gorospe and Rovenstine 1960; and Luisada and Reddick 1975). The drug intensified disorder

in thought processes and stimulated considerable affect. Patients acted out sexually and became more active, assertive and hostile. These behavioral changes continued for one month (Luby et al. 1959).

Phencyclidine produces unique and profound alterations of thought, perception and mood in subanesthetic doses. The mental effects in normal volunteers include changes in body image, loss of ego boundary, and depersonalization associated with feelings of estrangement, isolation and dependency (Luby et al. 1959; and Davies and Beech 1960).

Affectively charged experiences are often evoked and some subjects exhibit negativism and hostility or apathy (Luby et al. 1959; and Davies and Beech 1960). Thinking is slowed with disruption of attention span, inability to sustain organized directed thought (Davies and Beech 1960), and impairment of learning. Subjects are distractible and perseverate. Time appreciation is disturbed, with underestimation of time intervals. Echolalia, neologisms, and word salad may be observed with a loss of time "boundness." Some subjects manifest echopraxia and repetitive motor behavior (Luby et al. 1959).

Reaction time, tapping speed, rotatory pursuit performance and weight discrimination have been reported to be impaired (Davies 1961).

The oral "sedative" dose for humans is considered to be between 1–5 mg. Following oral administration of a subanesthetic dose of 7.5 mg, subjects report changes in their psychological or physical state within 45 minutes and maximum effects at 90 minutes (Beech, Davies and Morgenstern 1961).

Under conditions of sensory isolation or reduced visual, auditory and tactile stimulation, less disturbances of behavior and psychological processes are evident. Subjects experienced only minimal body image changes and felt more in control and less anxious. They were less productive verbally and appeared quieter and calmer. They reported experiencing "nothingness" or "emptiness." When the sensory isolation was stopped, subjects were immediately aware of the perceptual distortions and became more disturbed. Some subjects then experienced nausea or exhibited catatonia.

Following anesthetic doses of phencyclidine, patients were amnesic for both surgery and the recovery period.

The psychotomimetic effects of phencyclidine are most apparent following administration of low doses. The anesthetic properties of the drug associated with changes in the level of consciousness predominate after high doses.

Profound behavioral effects are seen in several species following phencyclidine administration (Balster and Chait 1976). In the monkey, reinforcing properties have been demonstrated by the initiation and maintenance of lever-pressing for injections of phencyclidine. The drug is self-administered in amounts producing a state resembling general anesthesia (Balster and Chait 1976; and Balster 1976). It is the only hallucinogen reliably self-administered by monkeys, which suggests a potential for abuse (Domino and Luby 1972; Luby et al. 1959; and Balster and Chait 1976).

Learned behavior in animals is sensitive to impairment or disruption by phencyclidine (Domino and Luby 1972; Rodin, Luby, and Meyer 1958; Chen Ensor, and Bohner 1966; Munch 1974; and Balster and Chait 1976). Discrimination studies indicate that the arylcyclohexylamines produce effects in animals different from other psychoactive substances and probably constitute a distinct class of drugs (Chen and Weston 1960; Chen et al. 1959; Domino, Chodoff and Corssen 1965; Balster and Chait 1976; and Corssen and Domino 1966).

Repeated administration of phencyclidine to monkeys and primates has resulted in shortened periods of effective anesthesia after several weeks or months of use. A similar tolerance to the anesthetic effect of ketamine has been reported (Luisada and Reddick 1975). In monkeys receiving ketamine 3–5 times per week for 6 months, the duration of anesthesia was decreased by 40 percent. Juvenile chimps receiving three doses in a 1-week period required 50 percent more ketamine to maintain the anesthetic effects (Luisada and Reddick 1975). Similar observations have been made in humans with repeated use of ketamine anesthesia in the treatment of burns (Chen and Weston 1960).

There is some recent evidence of tolerance development to the duration and intensity of the effects of phencyclidine on operant behavior in monkeys with daily administration over a 4-month period. Studies examining physical dependence to phencyclidine associated with the chronic intoxicated states do not appear in the literature (Balster and Chait 1976).

In various animal species, phencyclidine has a relatively short duration of action (Domino 1964). In the monkey, for example, it is rapidly metabolized and excreted in the urine as conjugated di- and mono-hydroxy metabolites (Ober et al. 1963; and Glazko 1967).

After single intravenous doses, 60 percent of the radioisotope labels were recovered in the urine within 12 hours, and approximately 75 percent in 8 days (Ober et al. 1963). In humans, the relative concentrations of mono-hydroxy metabolite and the parent compound phencyclidine recovered in urine after acid hydrolysis and assayed by gas liquid chromatography were 68 percent and 32 percent, respectively. No di-hydroxy metabolite was evident (Ober et al. 1963). Subsequently, two mono-hydroxyl metabolites were detected in urine from patients acutely intoxicated with phencyclidine after enzymatic hydrolysis (Lin et al. 1975). There is no evidence that these two compounds possess cataleptic anesthetic activity.

Tissue distribution studies in animals demonstrate relatively high and persistent concentrations in adipose and brain tissue with lower and rapidly falling blood concentrations (Lin et al. 1975; and Corssen and Domino 1966). These results are consistent with the drug's pKa of 8.5 and lipid partition coefficient at physiological pH (Done et al. 1977). The half life in rat blood after IP injection is approximately 3½ hours. The drug concentration half life in the dog followed intravenous administration is approximately 1 hour (Lin et al. 1975).

No evidence of acute cellular toxicity was reported in the first 1,000 patients who received phencyclidine as an investigational drug. However, phencyclidine with restraint stress produced increased muscle enzyme (CPK, aldolase) levels and skeletal muscle pathology in rats. One of seven human subjects had an increased CPK level following phencyclidine administration.

In acute phencyclidine intoxication with coma, CPK levels greater than 500 units are frequently found. In several cases where CPK has been above 20,000 units, rhambdomyolis preceded myoglobinuria and renal failure. Whether this represents direct muscle toxicity or is secondary to coma and muscle compression is unknown.

Evidence of hematologic, hepatic or renal toxicity was not found by the authors in their study of chronic use of phencyclidine for periods greater than 6 months and up to 5½ years by history.

It has been reported that infants born to mothers who ingested phencyclidine prior to conception or during the first trimester had increased rates of limb reduction defects and triploidy. Users of phencyclidine had an increased rate of fetal loss, decreased fertility, chromosome breakage and an additional F-like chromosome.

Several female patients seen by the authors have by history used phencyclidine regularly preceeding and during pregnancy with their infants being in apparent good health. One infant born to a mother who used phencyclidine regularly just prior to delivery exhibited poor feeding, a poor sucking reflex and irritability.

Phencyclidine can be detected in concentrations of 1:1000 after extraction with an organic solvent from an aqueous solution by a color reaction with gold bromide or potassium permanganate (Munch 1974). The drug has been identified and quantitatively determined in extracts of body fluid (blood, urine, CSF) and tissues by thin layer chromatography, gas liquid chromatography with flame ionization detection, and with gas chromatography—chemical ionization mass spectrometry (James and Schnoll 1976; Reynolds 1976; and McLeod, Green and Seet 1976).

THE HISTORY OF ILLICIT PHENCYCLIDINE USE

Street preparations of phencyclidine have continuously changed in name, physical form, and content.

Phencyclidine is sold on the west coast by such labels as Angel dust, cannabinol, crystal, PCP and THC (Lundberg, Gupta and Montgomery 1976; Radcliff 1975; Perry 1975; Burns et al. 1975; and Burns and Lerner 1976). In the midwest, among its street names are dust, tac and tic (Drug Enforcement Administration 1975). On the east coast phencyclidine is sold as angel dust, erth, green, KW and sheets. Recently phencyclidine has been identified as being present in samples sold under 46 different names (see table 1). Many of these street nomenclatures are regional while others are national in scope. Although phencyclidine is represented under a multitude of names, the most consistent misrepresentation is "THC" (Burns et al. 1975; Burns and Lerner 1976a, Burns and Lerner 1976b, and Lerner and Burns 1978).

When sold as THC in tablet or powder form the color may be beige, brown, blue, green, orange, pink, red, strawberry, white, or yellow. Phencyclidine sold as PCP usually appears beige, gray brown, orange, speckled pink, tan white, white gray, or white yellow in color. Physical form varies from the frequent tablet, powder, crystalline, and granular amorphous solid to the rare liquid.

Phencyclidine has appeared on the illicit market as a powder, a tablet, a leaf mixture (Lundberg, Gupta and Montgomery 1976; and Radcliff 1975), a liquid, and 1 gram "rock" crystals. The crystalline or granular form is found most frequently in capsules. Phencyclidine on parsley, mint, oregano or other leaves is usually found in

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the form of a joint. Most street preparations contain the hydrochloride salt, although phencyclidine as the free base has been seen (Shulgin and MacLean 1976).

Since 1975, only 25 percent of the street drug samples containing phencyclidine have contained additional drugs, a smaller percentage than in earlier years. In 1971–1974, other drugs were found in 40–60 percent of street samples analyzed at the street drug information program at the University of Southern California of Medicine. LSD was present in 86 percent of all combination preparations, with the "caine" drugs accounting for another 4 percent. Four percent of the samples contained two or more additional drugs. Phencyclidine was mixed with marihuana in only two of 317 samples (Lundberg, Gupta and Montgomery 1976). This trend has also been reflected in other street drug analysis programs across the United States. Recently, phencyclidine and its thienyl analog (TCP) have been identified in over 10 percent of all samples analyzed at the University of Southern California. Only 3 percent of the samples containing phencyclidine were actually sold under the designation.

The crystalline or granular powder form is found most frequently as crystal or angel dust, which usually contain 50–100 percent phencyclidine. Found under other names, the purity drops to a range of 10–30 percent. Most tablets contain approximately 5 mg and tend to range from 1–6 mg (Lundberg, Gupta and Montgomery 1976; Radcliff 1975; and Drug Enforcement Administration 1975). Leaf mixtures have been found to contain between 0.24–7.9 percent phencyclidine, averaging 1 mg phencyclidine per 150 mg leaves (Lundberg, Gupta and Montgomery 1976).

Phencyclidine is taken orally, by inhalation (smoking), insufflation (snorting), and rarely by the intravenous route.

TABLE 1.—*Names given for material containing PCP-TCP*

Amphetamine	MDA (3, 4-methylenedlaxyamphetamine)
Angel Dust	Mescaline
Belladonna	Mintweed
Cocaine	Mist
Cadillac	Monkey Dust
Cannabinol	Peace Pill
Crystal	PCPA (para-chlorophenylalamine)
Cyclones	Peaceweed
Detroit Pink	Peyote
DMT (N,n-dimethyltryptamine)	Psilocybin
Dust	Rocket fuel
Elephant tranquilizer	Scuffle
Erth	Sheets
Goon	Snorts
Green	Soma
Hashish	STP (3-methyl-2,6-dimethoxyamphetamine)
Hog	Superweed
Horse tranquilizer	Surfer
Killerweed	T
KJ crystal	TAC
KW	THC (tetrahydrocannabinol)
LSD (lysergic acid diethylamide)	TIC
Marihuana	TT-1.

Street samples analyzed have contained phencyclidine in combination with other drugs (barbiturates, ethyl alcohol, heroin, cocaine, amphetamine, Quaalude, LSD, mescaline, procaine). Combination preparations which contained phencyclidine (phencyclidine-procaine, phencyclidine-marihuana, phencyclidine-caffeine, phencyclidine-cocaine, phencyclidine-doxepin, phencyclidine-LSD, phencyclidine-LSD-mescaline, phencyclidine-LSD-aspirin, phencyclidine-LSD-procaine and some 4–5 drug combinations) have also appeared on the illicit market. In addition the presence of PCC (1-piperidinocyclohenone-carbonitrile) as a contaminant in some illicit phencyclidine preparations has been detected (Helisten and Shulgin 1976).

The information needed for the preparation of phencyclidine was reported over 50 years ago with descriptions of the reaction of 1-piperidinocyclohexanecarbonitrile (PCC) with Grignard reagents (Shulgin and MacLean 1976). The majority of the illicitly synthesized phencyclidine is prepared according to the general directions of Kalir and modified in details as required by the availability of chemicals and

equipment. Until recently most batch operations were limited by the amount of piperidine to be used (usually a maximum of 500 gms) and would produce on a 3–5 mole scale (Shulgin and MacLean 1976).

Piperidine was felt to be the most guarded reagent and the easiest to trace and for these reasons manufacturers would pay as much as $1,000/kg for a nontraceable bottle. Now piperidine is no longer the "limiting step" as it has become readily available, leading to the manufacture of larger quantities of phencyclidine.

In addition, a new solvent for distillation that should prevent fires and explosions is now available. Manufacturing is now done in larger, better equipped laboratories that are capable of producing great quantities of phencyclidine. Illegal laboratories containing as much as 25 million dollars worth of phencyclidine have been raided. The last major seizure (in the Los Angeles area) of an illicit laboratory in 1977 yielded 900 pounds of phencyclidine.

Recently an illegal laboratory was raided by the Drug Enforcement Administration in the Michigan area. Officials estimated that the $200 investment in chemicals could produce phencyclidine worth approximately $200,000 on the street.

According to the Drug Enforcement Administration, major production centers have been discovered in Washington, D.C., Detroit, Los Angeles, and San Francisco.

Complex and formal distribution systems now exist which mirror the heroin connection. In some areas phencyclidine has surpassed heroin in street price. The same criminal elements that are selling opiates are now also selling phencyclidine. Phencyclidine sold as THC or Angel Dust is usually worth from $25–$200 per gram and upwards of $1,000 an ounce. Individual phencyclidine joints vary from $1–$20 or more.

Various patterns of phencyclidine use have emerged over the past several years. First time users report smoking a cigarette containing phencyclidine unknowingly or in an experimental fashion. Although the occasional or recreational use pattern is seen, its development is mediated by an initial experience of unexpected and unpleasant effects (Burns et al. 1975; and Burns and Lerner 1978). In areas where the drug has been continuously available, it has gained a preferred drug status with small cluster groups of individuals who have used it on a chronic, daily basis for periods of 6 months to 6 years (Burns et al. 1975; and Burns and Lerner 1978). Requests for the authors' services through a national consultation service (Lerner, Burns, Linder and Associates) reveal chronic users in California, District of Columbia, Hawaii, Kansas, Kentucky, Maryland, Nevada, and Washington.

In the San Francisco-Oakland area chronic users purchase phencyclidine in gram amounts ranging from $85–$125 per gram. Money for the purchase of phencyclidine is generally provided by a partner through dealing, hustling, or Social Security Insurance (SSI). Wholesale dealer's costs average from $40–$50 per gram, $200–$300 per quarter ounce, and from $700–$1,000 per ounce.

FACTORS RELATED TO INCREASED PHENCYCLIDINE POPULARITY AND USE

When phencyclidine made its illicit debut in 1965 it was marketed as a mild psychedelic. Dealers described this new drug as a mild psychedelic, "a little stronger than marihuana," and sold it in tablet and capsule form. The effects were often unexpected. Since the dosage could not be titrated, users often experienced an adverse reaction. Hence, phencyclidine gained a bad reputation and subsequently was not seen on the streets.

By 1972, a change was observed in both the method of use and the attitude of users about the drug. A conversion had taken place from using phencyclidine orally in tablet or capsules to smoking it on leaf material. By this newly discovered method the user was able to more effectively control the dosage, thus decreasing the chance of overdose. Experienced users for the first time were able to inform new users how to take it effectively and to describe what the effects would be like. As first time users were now being prepared for this unique experience and with better methods of controlling the dosage, the popularity of phencyclidine spread rapidly. Illicit laboratories increased in proportion to the new demand for material.

Because of the ease of manufacturing phencyclidine in clandestine laboratories, its availability has dramatically increased. Youth are now using phencyclidine in social settings in a similar fashion to marihuana. As other drugs of abuse become difficult to obtain, phencyclidine in many areas is continuously available. Hence, groups of users are likely to select phencyclidine as their drug of choice and to share it with their friends.

Due in part to the lack of full information about the effects and dangers associated with phencyclidine, the drug continues to expand in popularity among youth. In general, users are still under the misconception that phencyclidine is merely "a little stronger than marijuana." Young users who were questioned about the differ-

ences between LSD and phencyclidine uniformly responded that LSD was a much more dangerous drug and that they would not use it. Phencyclidine, however, does not have this connotation. Until this is changed, usage is likely to continue to increase.

The abuse of phencyclidine and other arylcyclohexylamines has emerged over the past 12 years. As stated earlier, phencyclidine was first seen illicitly in 1965, in Los Angeles (MacLean 1977). Two years later it appeared in San Francisco under the guise of the "PeaCe Pill" (Burns et al. 1975). With media coverage of the adverse effects, phencyclidine disappeared from the street scene in the San Francisco area in 1968, at which time it surfaced on the east coast under the guise of "Hog." Since then it has been seen with increasing frequency throughout the United States.

In 1969, the N-ethyl analog of phencyclidine, PCE, cyclohexamine, appeared on the streets in Los Angeles (Shulgin and MacLean 1976).

By 1972, due to the "ripple effect," phencyclidine appeared in five States, from California to New York (see table 2). It should be noted that the PharmChem Research Foundation, which provided this data, is only one of many street drug analysis programs operating in the United States. Therefore, the epidemiology of its abuse is not necessarily reflected by these figures. Louisville, Ky., and Eugene, Oreg. presented the greatest increases in street drug samples containing phencyclidine.

In 1974, the Thiophene analog of phencyclidine, TCP, was first identified in Hawaii. That same year phencyclidine had spread into another four states.

By 1975 the use of both phencyclidine and TCP had spread to 22 States. TCP was sold on the west coast in Los Angeles, Newport Beach, Santa Cruz, and Sacramento. Outside of California, TCP was being sold in Eugene and Coos Bay, Oreg., and Seattle and Tacoma, Wash.

In 1976 phencyclidine appeared in another two States. The use of TCP decreased slightly, although it remained popular in Oregon and Washington.

During the first 11 months of 1977, phencyclidine was identified in 28 States, exceeding all prior years. For the first time samples of phencyclidine were received from Indiana, Kansas, and Nevada. Since these samples were in the powder form, the possibility of sophisticated chronic use was evident. Although they were PharmChem's first samples from these States, it is unlikely that phencyclidine had not been available previously. For example, although PharmChem's first sample from the Kansas area was received in 1977, the number of cases seen by the District Attorney's Office in Plathe, Kans., had doubled during that year.

Recently PHP 1-(1-phenylcyclohexyl)pyrrolidine was identified on autopsy in the body of an individual who was shot and killed by a police officer in Los Angeles—the first documented street appearance of this analog.

TABLE 2.—DISTRIBUTION OF PCP-TCP BY STATE [1]

State	1972	1973	1974	1975	1976	1977 [2]
Alabama				X	X	
Alaska			X		X	
Arizona		X		X	X	X
Arkansas						
California	X	X	X	X	X	X
Colorado	X	X	X	X	X	X
Connecticut					X	X
Delaware						
District of Columbia					X	X
Florida	X	X	X	X	X	X
Georgia		X	X	X	X	X
Hawaii			X	X		
Idaho						
Illinois		X	X	X		X
Indiana			X	X	X	X
Iowa			X		X	X
Kansas						X
Kentucky		X	X	X	X	X
Louisiana						X
Maine	X					
Maryland					X	X
Massachusetts		X			X	X
Michigan		X	X	X	X	X
Minnesota			X			
Mississippi						
Missouri						
Montana		X		X		
Nebraska						
Nevada						X
New Hampshire				X		X
New Jersey				X	X	X
New Mexico						
New York	X	X	X	X	X	X
North Carolina		X				
North Dakota						
Ohio		X	X	X	X	X
Oklahoma			X	X	X	X
Oregon		X	X	X	X	X
Pennsylvania			X	X	X	X
South Carolina						
South Dakota						
Tennessee			X			X
Texas		X	X	X	X	X
Utah					X	
Vermont						
Virginia			X	X		
Washington		X	X	X	X	X
West Virginia						
Wisconsin		X				
Wyoming						
Total States	5	17	21	22	24	28

[1] As confirmed by street drug analysis.
[2] Reporting period January–November.

DEMOGRAPHY—EPIDEMIOLOGY OF ILLICIT USE

A dearth of literature exists on the nature and extent of use of phencyclidine and its 30+ analogs. The major Federal sources for determining changes in emerging drug trends are the Client Oriented Data Acquisition Process (CODAP), the Drug Abuse Warning Network (DAWN), and the National Youth Polydrug Study (NYPS).

The CODAP system provides the largest available national data base of patients in treatment. All drug abuse treatment and rehabilitation programs receiving Federal funds are required to collect and report data.

Drugs of abuse are divided into 14 categories. Phencyclidine is classified incorrectly as a hallucinogen, with LSD, mescaline, MDA, DMT, mushrooms, peyote, and other drugs. Since CODAP has no flexibility in identifying and analyzing phencyclidine independently from the other drugs, this data source is not useful for our purposes.

The DAWN system has been in operation since the spring of 1973. Hospital emergency rooms and inpatient units, crisis centers and medical examiners (coroners) in 24 selected Standard Metropolitan Statistical Areas (SMSA's) are contracted to report incidents of adverse drug reactions to the DAWN central office. In each report, the victim's age, sex, race, employment and treatment status are noted, as well as the drug used, the route of administration, the source of the drug, and the form in which it was acquired.

DAWN data, however, includes only those phencyclidine users who had adverse reactions that required agency intervention. There is no record of the user who ingests phencyclidine without an adverse reaction or who handled such a reaction without agency intervention.

Also, the DAWN data are collected only in the major SMSA's. As an example, in California, DAWN data are collected only for the Los Angeles, San Francisco-Oakland and San Diego areas. Data are not available from 51 of California's 58 counties. Even within these reporting counties the DAWN reporting system—emergency rooms, inpatient units and crisis centers—is not complete. That is, within these communities many phencyclidine-related problems are treated that are never reported to DAWN.

Those phencyclidine cases which are reported frequently lack complete information. The victims are often not in sufficiently stable condition to respond properly to questions and are not commonly reinterviewed upon recovery.

From September 1972 through March 1973, phencyclidine was ranked as the twenty-third most abused drug in the DAWN system. During the period from April 1973 through March 1974, it rose to the twenty-first position. By the following year, April 1974 through April 1975, phencyclidine use had increased to the fifth position. For the reporting period from May 1975 through April 1976, phencyclidine continued to rank overall as the sixteenth most frequently abused drug. For the youth population between 12 and 18 years of age, however, it was in tenth place.

For this youth population between February and May 1976, there were 294 patients treated in emergency rooms, 330 patients seen in crisis centers, and 2 patients seen by coroners. During the same period phencyclidine ranked as the eleventh most frequently abused drug in Philadelphia and Washington, D.C.; seventh in Chicago and Cleveland; fifth in Minneapolis and Los Angeles; fourth in Detroit; and first in the San Francisco-Oakland area.

White males (61 percent) are twice as likely as white females (32 percent) to report to DAWN emergency rooms. For crisis centers, however, white males and females are reported at approximately the same rate, 42 percent. The use of phencyclidine by minorities accounts for only 6 percent of the mentions from crisis centers and 7 percent from emergency rooms.

Ninety-one percent of phencyclidine users seen in crisis centers reported their source as a "street buy," whereas with emergency rooms only 49 percent reported "street buys" as their source.

The prime motivation for phencyclidine use among patients seen in both crisis centers and emergency rooms is for the "psychic effects," which account for 73 percent of the mentions. Phencyclidine users from the crisis centers are much more prone (28 percent) to report dependence as their motivation than are the users from emergency rooms (2 percent).

Crisis centers data indicate that the age group of 12 to 13 years for white females seems to be at particularly high risk. Furthermore, 42 percent of the phencyclidine mentions in this age group reported dependence as their prime motivation for use.

From September 1976 to March 1977, youth from 12 to 18 years of age were interviewed on admission for drug treatment as part of the NYPS. In all, 2,750 patients from 97 treatment programs in 39 States participated in this study.

These patients represented a national sample of youth in treatment from all regions, and from the major treatment modalities. They were sampled selectively for sex, race, and ethnic grouping by geographic region. Information contained in this new data base is the most comprehensive data available on youthful abusers.

There is a high degree of similarity between the NYPS sample and the CODAP youth subsample. Hence, information obtained from the NYPS on drugs of abuse such as phencyclidine that are not reported separately in CODAP may now be estimated using this new data source.

TABLE 3.—COMPARISON OF SUBJECTS WHO "EVER USED" WITH THOSE WHO "NEVER USED" PCP, ON DEMOGRAPHIC AND BACKGROUND CHARACTERISTICS

	Used PCP	Percent	Did not use PCP	Percent	Total	Percent
Sex [1]:						
Males	534	31.9	1,138	68.1	1,672	100
Females	336	31.6	725	68.4	1,061	100
[1] X^2=.02 (N.S.); dfs=1.						
Race [2]:						
White	784	42	1,068	58	1,852	100
Black	33	8	354	92	387	100
American Indian	18	13	116	87	134	100
Hispanic	27	9	274	91	301	100
[2] X^2=282.3; dfs=3; p<.0001.						
Residence [3]:						
Urban	544	29.9	1,274	70.1	1,818	100
Suburban	194	44.1	246	55.9	440	100
Rural and small town	131	29.6	312	70.4	643	100
[3] X^2=34.2; dfs=5; p<.001.						

	$\bar{X}$	S.D.	N	$\bar{X}$	S.D.	N	t	p<
Age	16.2	1.4	875	15.8	1.3	1874	7.1	0.001
Education	9.4	2.6	873	9.0	2.5	1853	3.7	.001
Socioeconomic status	45.4	13.8	875	41.0	15.1	1874	7.6	.001

PCP USE WITHIN THE NYPS SAMPLE

Of the 2,750 clients under 19 years of age in the NYPS sample, 857 (31.8 percent) reported having ever used PCP, with 561 reporting the use of PCP during the three months prior to admission. The prevalence of PCP in this sample is the highest reported in any national sample for adults or for youth. PCP ranked seventh in prevalence among the fourteen types of drugs in the sample, and it was abused more frequently than many other well known substances such as inhalants (abused by 28.9 percent of the sample), other sedatives (abused by 28.8 percent), or cocaine (abused by 25.8 percent). A comparison of PCP users with clients who never used PCP (see Table 3) indicates that similar proportions of both males and females use PCP (32 percent); that proportionately more whites use it than other racial groups (42 percent of whites compared to 8 percent of blacks, 13 percent of American Indians, and 9 percent of Hispanics); that PCP use is more frequent in the suburbs (44.1 percent of all suburban clients compared with about 30 percent from urban and rural settings); that PCP users are slightly older at admission, with somewhat more years of education and have a higher Socio-Economic Status than users of other drugs.[2]

Frequency of Use of PCP.—Among the 561 current users of PCP (see Table 4) approximately 50 percent were found to be using it at an average frequency of at least once per week during the three months prior to admission.

The Onset of PCP Use.—The mean age of first PCP use was 14.6 years of age and the mean age of first continuous use was 14.8 years. Females reported the earlier mean age of first use for PCP: 14.4 years compared to 14.7 years for males. This

[2]The SES measure employed in this analysis was based on a formula which was especially developed for this analysis, and which was found to be more discriminating than the Hollingshead-Redlich formula. It included the educational level of both parents, rather than only that of the head of the household, and also included consideration of the subject's income, and whether or not the family was on welfare, in addition to the occupational level of the head of household.

finding is consistent with most other drug types in this study (except alcohol, marihuana, and inhalants).

TABLE 4.—CURRENT FREQUENCY [1] OF PCP USE BY SUBJECTS CURRENTLY USING PCP

	Number	Percent
Less than once a month	97	17.3
Once a month	69	12.3
2 to 3 times a month	112	20.0
Once a week	83	14.8
2 to 3 times a week	99	17.6
4 to 6 times a week	28	5.0
Daily	41	7.3
Twice a day	12	2.1
3 or more times a day	20	3.6
Total	561	100.0

[1] "Current" frequency is defined as the average frequency of use during 3-mo. period before admission.

In the comparison of age of first use of PCP across ethnic groups, American Indians were noted to have the earliest mean age of first use (13.89) closely followed by Hispanics (14.00). (The number of PCP users in these two groups, however, was too small to draw any inferences.) Whites reported the third earliest age of PCP use with a mean of 14.58, and blacks were the oldest (15.25).

Regional Distribution of PCP Use.—The National Youth Polydrug Study divided the United States into seven sampling regions. It should be stated that the sample was not stratified by region, which means the proportion of the youth population in treatment in each region was not a criterion for inclusion in the sample. It may be that certain states are overrepresented in proportion to their population, e.g., the relatively large number of cases in the sample from Illinois and Florida. Conversely, we know from the DAWN system that the San Francisco Bay area is one of the centers of PCP use, and is underrepresented in this sample.

The regional prevalence of PCP in the NYPS sample indicates that the Great Lakes and the Midwest regions show the highest rate of PCP use with 46.6 percent ($N=270$) and 46.4 percent ($N=116$) of each region's clients ever using PCP. Since the number of clients from these regions is fairly large and these clients were admitted to 29 different treatment programs these data seem to be a valid representation of PCP use in these regions. They exceed the rates reported in DAWN and probably reflect the increased trend of PCP use among youth during the past two years. Other regions show PCP to be used by 31.5 percent of the clients from the Southeast ($N=153$); by 27.2 percent of the clients from the West Coast; by 24.2 percent of clients from the Northeast; and by 23.8 percent of clients from the Southwest.

The PCP User vs. the Nonuser.—Perhaps one of the most notable differences between those who ever used PCP and those who did not is the greater involvement of the PCP users in polydrug abuse: PCP users reported using twice as many substances as the nonuser of PCP, with PCP users reporting a mean of 6.0 substances ever used (S.D.=2.6), while nonusers of PCP reported a mean of 2.8 substances ever used (S.D.=1.8), ($t=33.4$, $p<.0001$). PCP users also reported a higher mean number of drugs used during the three months prior to admission to treatment: 5.8 substances (S.D.=2.6) compared to a mean of 2.6 substances (S.D.=1.8) by nonusers of PCP ($t=28.1$, $p<.0001$). Thus, for this youth population seeking treatment for drug abuse, PCP use is an integral part of a larger polydrug abuse problem that is more serious and complex than for the nonuser of PCP.

It is of particular interest that not a single subject who used PCP in this study used only this substance. All PCP users used other substances either at other times or concurrently with PCP. Almost all of the PCP users used marihuana: 99.5 percent. Other drugs reported used by PCP users were: alcohol (by 97.7 percent of PCP users); hashish (by 77.8 percent of PCP users); amphetamines (75.8 percent); hallucinogens (72.2 percent). Aside from alcohol and marihuana, which are almost universally used in this sample, and aside from hashish, PCP is next most often used by users of amphetamines and hallucinogens.

TABLE 5.—*Correlations of client descriptors with regular use of PCP*

	Correlation with regular PCP use
Number of drugs regularly used	0.63
Race (white)	.31
Used more than one drug at a time	.31
Number of times became drunk	.22
Number of arrests for drug offenses	.19
Number of O.D.'s	.18
Number of times "picked up" by the police	.18
Number of obstacles to school attendance	.17
Listed more types of problems as reasons for entering treatment	.16
Number of arrests for violent and weapons offenses	.16
Socioeconomic status	.14
Number of arrests for property offenses	.14
Age of admission	.12
Adjudicated delinquent	.12
Treatment program located in the suburbs	.11
Admitted to outpatient drug treatment program	−.11
Referred to treatment by peers	−.10
Number of suicide attempts	.10

When looking at the use of multiple drugs from the other direction, we find that the users of other sedatives (61.7 percent), over-the-counter drugs (61.6 percent) and other opiates (61.1 percent) were most likely also to have ever used PCP.

A PROFILE OF THE PCP USER

A correlational profile of the PCP user was developed from analysis in which PCP use was correlated with each of 33 demographic, social history, and background variables. A three point scale measure was utilized for PCP use, as follows: a score of 1 was assigned for no PCP use, a score of 2 for irregular PCP use, and a score of 3 for regular PCP use. Table 5 presents the list of the 18 variables (from among the 33) which had a bi-variate correlational value of .10 or greater with PCP use. The profile of the PCP users (compared to the nonusers), which was derived from this analysis, is as follows, (listing the descriptors in rank order of magnitude of the correlation): (1) used regularly a greater number of different drugs; (2) white; (3) more often took more than one drug at a time (in combination) "to boost, balance or counteract the effects" of one drug; (4) became drunk from drinking alcohol more often; (5) had more arrests for substance related offenses; (6) were picked up more times by the police; (7) had more overdose episodes (OD's); (8) reported more obstacles to school attendance; (9) had more arrests for violent and weapons offenses; (10) listed more types of problems as reasons for contacting a treatment program; (11) more arrests for property offenses; (12) higher socio-economic status; (13) older; (14) adjudicated delinquent; (15) tended to reside in suburbia; (16) more often was admitted to treatment in hospitals and residential settings than to outpatient settings; (17) more often made suicidal attempts; and (18) less often were referred to treatment by peers.

Predicting "Regular" use of PCP.—The variables employed in constructing the profile of the PCP users were also used to "predict" regular use of PCP. Clients were divided into two groups, regular PCP users (those using PCP at least once a week for a period of at least one month) and those who did not use PCP at all. Clients who had used PCP minimally, but never at a frequency of at least once per week for a period of one month, were excluded from this analysis. The analysis was composed of two steps: first, a bivariate correlation of all the variables included in the analysis; second, a step-wise multiple regression in which the dependent variable is the regular use of PCP and the independent variables are a subset of the variables appearing in the correlation.

The bivariate correlation of the variables employed to predict regular PCP use showed that the strongest association of regular use of PCP is the number of substances regularly used ("Regsum"): $r=.63$. Since it seems reasonable to consider the relationship of demographic and other variables to PCP use separately from the question of how many other drugs the subject has used, we did not include this variable, "Regsum," in the equation of the step-wise multiple regression. The other background variables accounted for 16.8 percent of the variance in the differentiation of the regular PCP users from the nonusers (see Table 6). It might, thus, be said that it provides only one-sixth of the information that would be needed to "predict" accurately regular PCP use. The rank order of these variables, according

to their relative abilities to "predict" to regular PCP use is as follows: (1) Race, (being white), accounts for 9.1 percent of the variance; (2) "the number of times the client got drunk" was the next variable in the equation, and added 2.5 percent to the explained variance, after controlling for race; (3) the number of OD's added 2 percent to the explained variance, after controlling for the two previously indicated variables; (4) "the number of obstacles to school attendance" added 1.2 percent to the explained variance, after controlling for the above-listed variables; (5) age added 1 percent; (6) suburban residence (versus living in an urban or rural location) added .4 percent.

TABLE 6.—THE REGRESSION OF DEMOGRAPHIC AND OTHER HISTORY VARIABLES ON REGULAR USE OF PCP (STEP-WISE MULTIPLE REGRESSION PROGRAM) (DEPENDENT CRITERION VARIABLE: REGULAR USE OF PCP)

Variable	Beta	Significance (p=)	Variance (R^2)	Simple r
Race (1=white; 0=other)	0.22	0.0001	0.091	0.30
Frequency of getting drunk	.12	.0001	.025	.22
No. of overdoses	.11	.0001	.02	.18
No. of obstacles to school attendance	.12	.0001	.012	.17
Age	.08	.0001	.004	.12
Suburban (1=from the suburbs; 0=other)	.06	.001	.004	.11
Referred by peer	—.06	.002	.002	—.10
Socio economic status	.03	.20	.001	.13
Months employed last 2 years	.02	.21	.001	.11
Death of a parental figure	—.03	.13	.001	—.03
Intact family structure (0=intact; 1=broken)	—.02	.20	.001	—.02
Sex	.02	.37		.00
No. of suicide attempts	.01	.68		.09

The variables that did not enter into the equation to a statistically significant degree in explaining or predicting regular PCP use were sex, socioeconomic status, education, the number of months employed in the last two years, intactness of the family, and the number of suicide attempts. Some of these variables did not enter into the equation since they are significantly correlated with variables that had already been entered into the regression equation. For example, SES and employment are related to being white (race) and living in the suburbs (residence). Suicide attempts may have been excluded from the equation since they are correlated with OD's (r=.15). Education, which is highly related to age, was not included in the regression for the same reason. However, the sex variable was excluded from the regression equation because it was not associated with regular use of PCP; there is no difference between the sexes in their predisposition to be regular users of PCP.

The PCP User in the NYPS—A Summary.—The above review of PCP use in the NYPS indicates that the spread of this substance into the youth population occurs primarily among the white suburban population and that PCP has not as yet reached the same level of use within the inner city or among the underprivileged minorities. PCP is being added to an already existing pattern of multiple substance use and is not used by youth who do not use other drugs.

Two thirds of those young clients in the NYPS sample who ever tried PCP used it at least weekly. PCP is likely to be used by clients who have a previous history of treatment either for substance use or emotional problems. Self-destructive behavior is also much more prevalent among the PCP users as compared with nonusers of PCP. The PCP users were also found to have a more extensive involvement in the criminal justice system and more dysfunction in the education system. Lastly, the PCP users were found to be characterized by their low level of heroin use. Whether the dependence of adults on heroin is also associated with a lower prevalence of PCP, as found among youth, is yet to be determined.

HOSPITAL-BASED YOUTH STUDY

The authors conducted a study of 179 youthful (age 12–18 years) phencyclidine users seen at one county hospital in the San Francisco Oakland area between 1968 and 1976.

During the eight year period the majority of these patients (76.3 percent) were males, with a mean age of 16.8 years. The races represented were 96.1 percent Caucasian, 2.8 percent black and 0.6 percent Asian.

A large proportion of these patients were transported to the hospital by public transportation. The majority were brought to the emergency room by police vehicle (43.0 percent) or ambulance (31.8 percent). In most cases these patients were accom-

panied by police (39.1 percent), emergency service attendants (32.4 percent), parents (11.7 percent), friends (5.0 percent) and rarely by drug treatment staff (2.8 percent).

Reasons for hospital contact were primarily treatment (75.4 percent), a medical check for juvenile hall (12.3 percent), public service evaluation (4.5 percent), or a medical check for police (3.9 percent). In most cases these phencyclidine users were retained for observation (43.6 percent), admitted to the emergency room (35.2 percent), or admitted to a service (2.2 percent). Only 16.8 percent of these patients were immediately checked and released.

At the time of hospital contact, about half (49.2 percent) of the patients were disoriented, a third (31.8 percent) were uncooperative, and a quarter (26.8 percent) were either awake with decreased consciousness or were stuporous or comatose.

The majority of these patients (80.4 percent) had taken only phencyclidine prior to hospital presentation. The most popular substance taken in combination with phencyclidine was alcohol (15.1 percent), followed by barbiturates (1.1 percent).

Among this youthful population, a quarter (24.0 percent) were chronic users of phencyclidine. These patients qualified as chronic users by having taken phencyclidine on a regular basis for greater than a six month period with multiple hospital admissions for phencyclidine-related problems. The youngest chronic user was a 15-year-old female.

SIMILARITIES IN DRUG STUDY FINDINGS

A number of consistent patterns appear from an analysis of the data from the DAWN, NYPS, and the authors studies' on phencyclidine.

There is an overrepresentation of Caucasians among phencyclidine users, accounting for more than 90 percent of all identified patients. This trend is observed in all of the major data sources. However, it should be noted that in certain geographic areas phencyclidine use appears to be limited to other specific groups, such as blacks (Washington, D.C., Watts) and Mexican Americans (San Jose).

The majority of the individuals report the "psychic effects" as their primary reason for continued use of phencyclidine. Among all individuals exposed to this drug, approximately 23 percent become chronic users. Males represent the highest number of chronic users as well as hospital emergency room contacts for problems related to phencyclidine.

Phencyclidine users utilize and apparently need more medical treatment services than other drug users.

PROBLEMS SEEN WHERE PHENCYCLIDINE IS CONTINUOUSLY AVAILABLE

As the availability of phencyclidine increases in a community, there is a direct relationship with the number of emergency room contacts and community problems such as driving under the influence and violent and bizarre behavior—behavioral toxicity.

In San Jose, California, the police department has gathered data on seizures of phencyclidine for the past three years. During the first quarter of 1975 (January-March), 69.7 grams of phencyclidine were confiscated. The following year during the same period, 125.1 grams of illegal material were collected. For the first quarter of 1977, 3,951 grams of phencyclidine have been recovered.

In 1976 for the first quarter there were 69 patients treated for phencyclidine-related problems; in 1977, 100 patients were seen during this same period.

New problems have surfaced in communities (Alameda, Santa Clara, and Los Angeles) in direct proportion to the frequency and regularity of phencyclidine abuse. Violent and bizarre behavior is seen in the home, in public places, and in schools, often disrupting education. Young people exhibit unexplained speech problems, memory loss, thinking disorders, personality changes, anxiety, severe depression, and suicidal and homicidal tendencies.

An increasing number of young people appearing violent, bizarre, unresponsive, extremely confused, or acutely psychotic are being seen in local emergency rooms. With increased use of phencyclidine, an upsurge in violent crimes that culminate in homicide is observed.

Police report erratic driving and inappropriate behavior following automobile accidents in individuals who have no apparent evidence of alcohol or sedative hypnotic ingestion. On toxicological examination only the isolated presence of phencyclidine is often discovered.

Young people who are observed to be highly intoxicated in public are often arrested for sale, possession, and being under the influence of phencyclidine. In addition, an increasing number of referrals by family, friends, and the criminal justice system are made to community drug abuse programs in an effort to deal with this new drug problem.

The following are typical cases that illustrate the problems seen in youth on phencyclidine.

Case 1.—A 15-year-old Caucasian male with no clothes on was found by police in a field, hanging on to a barbed wire fence. He was disoriented and incoherent upon questioning. A physical examination revealed a confused, disoriented youth with inflamed eyes, bloody mouth with an upper incisor missing, multiple scratches of the trunk, and scratches and lacerations of extremities. Fluctuations in orientation were observed over the next seven hours ranging from cooperative and alert to unrousable. Prior to being discharged the patient stated that he had "smoked some phencyclidine and got awfully stoned."

Case 2.—A 17-year old Caucasian male arrested by police had allegedly ingested several phencyclidine joints, and over a 1 hour 45 minute period became progressively uncommunicative and withdrawn. The youth was transported from jail to a local emergency room. On admission he was observed lying quietly, eyes wide open, with a broad smile on his face. Although responsive to commands, he was only able to mouth words rather than speak. When given ipecac, he vomited green parsley flakes. Over the next six hours he alternated between quietly staring at the ceiling and being abusive, agitated, combative, and fighting restraints. Upon regaining normal orientation, he was observed for two additional hours and released.

Case 3.—An 18-year old Caucasian male ingested tablets and capsules in his possession prior to a police traffic stop. Immediately after the officers departed he was driven to an apartment where the other occupants of the automobile induced vomiting of what they believed was all of the ingested material. Later he began screaming and having convulsions. He was driven to a local hospital where he was pronounced dead on arrival. The coroner ruled that death was caused by aspiration of gastric contents due to phencyclidine ingestion. Phencyclidine (urine level of 0.5 mg/ml) was the only drug found on toxicological examination.

Case 4.—A 15-year old Caucasian male reported to be "out of hand" was seen at a local medical center for bizarre behavior. He had been involved with drugs and talked about "getting it all over." Later that month, he was found hanging by an electrical cord from a beam in his garage. Toxicological examination revealed a phencyclidine blood level of 0.10 mg/ml. No other drugs were detected.

Case 5: During the summer a youth gave a pool party while his parents were away on vacation. A 17-year old Caucasian female guest was discovered at the bottom of the swimming pool. Post mortem examination revealed no head or neck trauma and the isolated presence of phencyclidine in the urine (0.5 mg/ml).

Case 6: Distressed over a college setback, a 17-year old Caucasian male snorted phencyclidine for the first time, with friends. He lost consciousness, becoming apneic and cyanotic. On admission to the emergency room this semiconscious patient was agitated, had writhing movements of all extremeties, vomited, and had copious nasal and oral secretions. Within three hours he appeared alert; three hours later he was cooperative and completely oriented.

Case 7: A 16-year old Caucasian female smoked "a crystal joint" while at school and began acting bizarre. School authorities notified her mother who brought her to a local hospital. On admission she was dazed and unable to recall who gave her the drug or how much she had taken. The patient was oriented to person and place. A blood sample taken on admission was negative for sedative hypnotics. Urine obtained at the same time for toxicology was positive only for phencyclidine, with a value of 0.5 mg/ml. The patient became fully oriented 2½ hours later and was discharged.

Case 8.—A 16-year old male, acting belligerent and combative, was brought to the hospital from a party where he had smoked "crystal" and drunk beer. On admission he was drowsy but responsive to verbal stimuli. There were abrasions on his right arm and face. Over the next three hours he became verbally abusive, belligerent, and uncooperative and was transferred to the county hospital. Initially violent, he alternated between periods of sleep and moaning. Toxicology screen obtained at this time revealed a phencyclidine urine value of 1.1 mg/ml. Over the next 15½ hours the patient became alert and oriented and was subsequently discharged.

HOMICIDES

In addition to hospital presentations for complications related to phencyclidine intoxication, recently there have been several homicides committed by youth in which phencyclidine was implicated (San Jose and Los Angeles, California; Las Vegas, Nevada; Kansas City, Kansas). The defense attorneys in the majority of cases claim that their clients were not guilty either by reason of diminished capacity or of insanity (drug-induced psychosis). With defendants showing bizarre and violent behavior and sometimes defendants claiming amnesia to the event, (given the unique

properties of phencyclidine) and the circumstances of many of these homicides, it appears that the legal issues raised will require much further debate and study.

DEATHS

A large number of deaths have occurred in association with phencyclidine intoxication. In the majority of cases the immediate cause of death was asphyxia by drowning, or trauma, circumstantial evidence suggesting that death was secondary to the "behavioral toxicity" of phencyclidine. The user could not indicate where his limbs were in relation to three dimensional space or could not respond appropriately to imminent danger.

Other individuals have been found dead without apparent cause, the presence of phencyclidine in high concentrations constituting the only positive finding. The most probable cause of death in high dose phencyclidine intoxication is primary respiratory depression.

Phencyclidine users report going swimming while intoxicated because they experience an unusual but pleasant sensation from the water. Sensory disturbances, incoordination, and muscle rigidity resulting from "street" doses of phencyclidine may seriously interfere with the user's ability to swim, drive, climb at heights, flee from a fire, or sense imminent danger.

Suicide by self-inflicted trauma or a massive oral overdose of phencyclidine has occurred in the chronic user who became moody or severely depressed. It is the chronic user who is in possession of large amounts of phencyclidine. Threatening behavior or violence has resulted in provoked homicide.

Blood levels of phencyclidine as low as 100 mg/ml may be associated with behavioral effects leading to death by injury or trauma. Levels greater than 1.0 mg/ml are associated in most individuals with coma and may result in death secondary to medical complications or respiratory depression and seizures. Doses of 2.0 to 2.5 mg/ml and greater are probably uniformly fatal, producing primary respiratory depression and seizures.

Phencyclidine deaths nationally appear to be on the increase. In Los Angeles alone the Coroner's Office reported 26 phencyclidine-related deaths during 1977.

CHRONIC PHENCYCLIDINE USE

Phencyclidine became available on the illicit market in 1965 and initially was taken orally in the form of tablets and capsules. Around 1972, it became available primarily in the form of a leaf mixture in California, with crystalline phencyclidine sprinkled on parsley, mint, or marihuana and sold as "joints."

After experimenting with phencyclidine, increasing numbers of young people began using it on a regular basis. This trend peaked around 1972 and subsequently declined until 1974 when the incidence of phencyclidine abuse again rose. Where phencyclidine became continuously available, it gained a preferred drug status with several "cluster" groups who smoked it on a regular daily basis in Northern and Southern California. Chronic use of phencyclidine was first reported in 1972.

CHRONIC USER STUDY

A study designed to describe chronic phencyclidine use patterns and determine evidence of chronic toxicity was carried out by the authors in the San Francisco Bay Area in February 1975. Individuals who had been treated for phencyclidine "overdose" at various music concerts were invited to participate. They in turn brought other known phencyclidine users into the study and in particular friends who had used large amounts over the longest period of time.

The final study group of twenty had used phencyclidine regularly (3 or more days per week) over a period greater than six months without concurrent, heavy use of other drugs. Phencyclidine was present in the urine samples obtained on both the initial and followup visits.

The 15 male and 5 female chronic users ranged in age from 20–43 years old with a mean age of 25. All were Caucasian. Eighteen (90 percent) were single and 19 (95 percent) had a heterosexual preference.

PATTERNS OF USE

The mean age at first use was 19.2 years, with half the group (10) individuals 18 years old or younger. The majority (80 percent) had first used phencyclidine between 1967 and 1970 at 15 to 21 years of age, with a second group (20 percent) starting in 1972 and 1973.

Most users were introduced to phencyclidine by friends (85 percent) in a social setting, and took the drug out of curiosity (55 percent) or to get "high" (45 percent).

Within one year, half were using phencyclidine regularly 3 or more times per week; by three years, 75 percent used phencyclidine regularly.

The cumulative period of regular use from first exposure to the time of the study ranged from 6 months to 5½ years, with a mean of 27½ months. The longest period of daily or almost daily (5 or more days per week) use averaged 10.3 months and the maximum period of abstinence averaged 5.9 months. The period of recent uninterrupted use of phencyclidine prior to the study averaged 9.9 months. Two to four times per month, users would go on 2–3 day "runs," taking phencyclidine repeatedly without sleeping. Seventy percent continued to use marihuana and 50 percent used alcohol on a regular basis during their use of phencyclidine.

By 1972 the availability on the illicit market of nearly pure phencyclidine in amounts of 1 gram or more allowed the individual to prepare joints for smoking of chosen strength, guarantee a long term or continual supply for the user. With possession of large amounts of phencyclidine, users started taking the drug on a regular basis.

The razor shavings from the "rock" crystal or the powder is sprinkled on parsley and smoked in the form of a joint. The amount of street-purchased material used in the preparation of one joint varies from 50 mg for a "street" joint to about 100 mg for a "regular" or "good" joint. Up to ¼ gram was used in a "killer-diller," "heavy" or "party joint," which is often shared by many people.

The primary mode of taking phencyclidine was by smoking (90 percent) or snorting (10 percent) the drug. All the chronic users had taken phencyclidine at least once by smoking. The majority had also snorted phencyclidine (75 percent) and taken it by mouth (60 percent). Only 6 (30 percent) individuals had used phencyclidine intravenously. Five out of the 6 used it intravenously not more than five times.

Smokers reported using the equivalent of 1 to 2 street joints or about 80 mg of street-purchased material 2 to 3 times per day. The average daily intake was about 216 mg by smoking. The reported maximum amounts used in a 24 hour period ranged from ¼ to 1 gram and averaged 500 mg. The two individuals who regularly snorted phencyclidine estimated the 2 "lines" dose to be about 5 mg of street-purchased material. They would snort the drug 4 to 6 times per day. Toward the end of a prolonged period of daily use of phencyclidine, these 2 individuals would place amounts of up to ¼ of a gram of powder (layered with parsley or as a crystal) in a pipe, and smoke it in one sitting.

Phencyclidine users reported that the subjective effects "come on" within 1 to 5 minutes of smoking a typical "street" joint and reach a "peak or a plateau" over a 5 to 30 minute period. They report staying "loaded" or "high" for 4 to 6 hours, followed by the "come down" which lasts 6 to 24 hours after taking the drug. Following a 2-3 day "run," the time before the user felt normal again was approximately 48 hours to one week. A more rapid onset of 30 seconds to 1 minute followed insufflation of a street dose in powdered form. The time course of the subjective effects otherwise did not appear to differ.

THE PHENCYCLIDINE EXPERIENCE AND WHY IT IS REPEATED

Eighty percent of the chronic users considered their first phencyclidine experience to be pleasant and wanted to take the drug again. They found it "fun," "exhilarating," and felt "happy" or "euphoric." It seemed to be a "perfect escape" or "a dream world."

Fifteen percent disliked their first experience feeling "scared" or finding it "terrible," while one individual (5 percent) characterized the experience as "strange," "weird, but interesting."

In 95 percent of the cases, first use occurred in a social setting, with 70 percent smoking and sharing a joint at a party or with a small group of friends (mean of 5) at someone's house. Four users (20 percent) related minor injuries, repeated vomiting, or arrests by the police as problems occurring with the first use. Three of these individuals had either snorted phencyclidine or taken it by mouth.

The phencyclidine "high" was reported to be very intense, several times stronger than marihuana, comparable to LSD, although shorter in duration. Most individuals compared it with LSD, but insisted that it was different, "in a class by itself."

The drug had a pronounced effect on the subjects' thinking, time perception, sense of reality, and mood. Thinking was described as "speeded" or "wired," the mind going faster while time was slowed down, with "no more reality." Everything was reported as being different, in another dimension, and seen from a new point of view. Life was dramatized, a fantasy world where "you don't have to dream, your wishes are fulfilled" and "what you want to happen comes true."

Everything was felt to be complete and make more sense. The mind could focus on one object and see beauty in the smallest thing. A sense of community, oneness

with others and with animals was reported. Religious thoughts and the experience of death were frequently mentioned. Mood states were also intensified, with users in most cases feeling happy or euphoric, although everyone had also experienced severe depression and had recognized the drug's potential for bringing one to either "the heights or the depths of being." Music was "absorbed," light was "felt," and space and depth were "distorted," "seen in 2D." Frequently users reported feeling like they were "floating." Rarely did they relate visual hallucinations.

Users also experienced a feeling of strength and endurance. They described feeling "powerful," "superior," "arrogant," with "bursts of energy," "like God was with you, and you could move mountains." There was also a loss of inhibitions. It was felt to be difficult to do things; one had "to think about moving or talking." In addition, they described feeling restless and nervous.

Chronic use of phencyclidine also took place in a social setting with the sharing of joints. Individuals would join in with 2 to 5 others at a friend's house or at home. The membership of a group who shared in the use of phencyclidine remained quite stable over long periods of regular use. They would listen to music, talk, dance, and enjoy sex together while "high." Less often they would go to a rock concert or go out in public. They took phencyclidine as frequently during the daytime as in the evening.

The majority (60 percent) continued to use phencyclidine because they enjoyed or liked the "high." Frequently all their friends used phencyclidine and "it had become a life style." At times the availability of phencyclidine or making money from phencyclidine sales played a role. For 80 percent of the users, phencyclidine was their drug of choice. Three individuals preferred heroin and one preferred seconal. Nonavailability, incarceration, or hospitalization were the major factors interrupting the regular use of phencyclidine. Participation in a drug treatment program or moving out of the area also interrupted the pattern of phencyclidine use.

TOLERANCE, PSYCHOLOGICAL DEPENDENCE, AND SIDE EFFECTS

Tolerance to the psychic effects of phencyclidine was reported by chronic users. Initially they would get "high" after two or three puffs on a phencyclidine joint; following a 1-week period of daily use they required one-half to one joint. After smoking for a period of 2 to 6 weeks, most individuals used one or two joints at a time. Some users reported being able to smoke up to ¼ gram of street-purchased material at one sitting, following several months of regular, daily use. Psychological dependence, described as craving, was noted by chronic users, but no withdrawal symptoms were reported.

Phencyclidine taken in typical "street" doses was reported to prevent sleep for 8 to 12 hours, decrease appetite, and to cause constipation and urinary hesitancy. Chronic users averaged one meal or less per day and lost 10 to 35 pounds during periods of regular use.

CHRONIC TOXICITY

Chronic phencyclidine users reported persistent problems with memory and speech, and difficulty with thinking following long periods of regular use of the drug. Recent memory capability appears to be primarily affected. Users complain of stuttering, inability to speak or blocking, and difficulty with articulation. Speech and memory difficulties lasted as long as 6 months to 1 year following prolonged daily use of large doses of phencyclidine.

Several chronic users complained of anxiety or nervousness during and following periods of regular phencyclidine use and sought psychiatric care. Some individuals became severely depressed, and attempted suicide on repeated occasions after chronic exposure to phencyclidine.

Chronic users reported personality change, social withdrawal, social isolation, and divorce resulting from their use of phencyclidine. In some cases, violent behavior was one of the effects.

Employment has been lost and education disrupted as a result of the effects of phencyclidine with chronic patterns of use. Frequent arrests for being under the influence of phencyclidine or for possession result in a criminal status.

Chronic phencyclidine use has culminated in a picture of violent and aggressive behavior, paranoia, delusional thinking, and auditory hallucinations. In most cases no known behavioral disturbance or psychiatric problems preceded the use of phencyclidine. Typically, the individual had used phencyclidine over several months or a few years with the same group of friends. For no apparent reason a sudden development of paranoia and auditory hallucinations was accompanied by violent, unpredictable behavior. Friends and family often became fearful and brought the user to medical attention.

LABORATORY AND NEUROLOGICAL FINDINGS

Fourteen (70 percent) individuals reported using phencyclidine within 24 hours of the clinical examination and 85 percent within 48 hours (see table 7). All urine samples obtained just prior to the physical examination were found to contain detectable levels of unchanged phencyclidine by gas chromatography-mass spectrometry and the majority of serum samples (85 percent) obtained were also positive for phencyclidine. Phencyclidine levels were higher in cases where the last use of phencyclidine by history was within a 48-hour period (see table 8).

Eight (40 percent) individuals reported using phencyclidine within 6 hours of the examination and had a "blank stare" appearance and slurred speech. Ptosis, conjunctival infection, and vertical and horizontal nystagmus were present. They had an ataxic gait and were unable to tandem walk. One-third appeared lethargic and were disoriented for time and place.

Individuals reporting no phencyclidine use for 24 to 48 hours prior to the examination had unsustained vertical and horizontal nystagmus and difficulty with tandem gait (see chart A).

On electroencephalographic study, one chronic user showed bursts of spike and slow wave activity associated with observed myoclonic twitching in response to photostimulation (see photograph A). Three chronic users selected for electrooculographic study showed jerk nystagmus, saccadic pursuit, and hypometric slowed saccades (see photographs B, C, D). Urine samples concurrent with test procedures were positive for phencyclidine.

TABLE 7.—HISTORY OF PCP USE PRIOR TO PHYSICAL EXAMINATION

Last use (hours)	No. cases	Cumulative percentage
6	7	35
7 to 24	7	70
25 to 48	3	85
49 to 72	1	90
97 to 120	2	100

TABLE 8.—CHRONIC USER'S URINES COLLECTED PRIOR TO PHYSICAL EXAMINATION

Last use (hours)	No. cases	Urine level (μg/ml)
1 to 12	8	1.73
13 to 24	4	0.85
25 to 48	4	1.24
48	4	0.13

CHART A.—PHYSICAL EXAMINATION FINDINGS

Vital signs	Less than 6 hr	7 to 24 hr	25 to 48 hr	More than 48 hr
Blood pressure:				
Systolic	132	132	115	109
Diastolic	79	71	65	65
Pulse	88	79	78	72
Respiratory rate	15	17	14	16
Altered state of consciousness:				
(Lethargic, somnolent, "high"	+	−	−	−
Disorientation (time, place)	+	−	−	−
Speech (slow, slurred, repetitive, intermittently unable)	+	+	−	−
E.O.M.M.:				
"Stare" appearance	+	+	−	−
Disconjugate gaze	+	+	−	−
Nystagmus:				
H	+	+	+	+
V	+	+	+	+
Sustained	+	−	−	−
Pupils:				
Size (millimeters)	4.4	5.7	5.0	5.3
Light reaction (sluggish, decreased amplitude)	+	+	−	−
Corneal reflex (decreased or absent)	+	+	−	−
Motor system:				
Movements:				
Repetitive	+	+	−	−
Restlessness	+			
Catalepsy	+	−	−	−
Rigidity	+	+	−	−
Hyperreflexia (L/e)	+	+	−	−
Gait (Ataxic, broad based)	+	+	−	−
Coordination: Tandem standing (difficulty or unable)	+	+	+	−

The Acute States of Phencyclidine Intoxication

HISTORY AND PRESENTATION

The spectrum of signs and symptoms and the pattern of recovery in acute intoxication with phencyclidine vary with the dose and route of administration.

Individuals are most frequently brought to a hospital emergency room when found unresponsive or when exhibiting bizarre or violent behavior (see table 9). Others are brought in after having been observed to be grossly incoordinated, driving erratically, or acting inappropriately after an automobile accident. Some individuals present with minor or major trauma.

CLINICAL PICTURE AND COURSE

A confusional state delerium lasting less than 8 hours appears to follow a typical street dose after smoking one "joint." Individuals who either smoke greater amounts or take a higher dose orally or by "snorting" may present in stupor or coma. This initial state lasts less than 3 hours in most cases and a confusional dose-related state follows for 24 to 72 hours. Massive oral "overdose" involving up to 1 gram of street-purchased material has resulted in periods of stupor or coma of several hours to 2 weeks in duration. This initial stage is followed by a prolonged recovery with a confusional state persisting up to 2 weeks (see table 10).

The confusional state delerium induced by phencyclidine is characterized by immobility and a "blank stare" appearance in a patient who is noncommunicative. The patient is disoriented and apprehensive, becoming easily agitated or excited. These patients are grossly ataxic and exhibit horizontal and vertical nystagmus and catalepsy on testing. Muscle rigidity may be present. Most patients are communicative within 1–2 hours, and appear alert, oriented, and exhibit normal behavior within 5 hours of admission to the emergency room.

In phencyclidine stupor or coma, the eyes may remain open although the patient is responsive only to deep pain. Hypertension and tachycardia are present, and in all but the more massive oral "overdoses" respiration is normal. The pupils are initially miotic but reactive to light. Spontaneous nystagmus, "purposeless" movements, facial grimacing, and muscle rigidity on stimulation are characteristic findings. Repeated episodes of vomiting, increased bronchial and oral secretions, and

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profuse diaphoresis are frequently observed. An initial stage of stupor or coma lasting less than 4 hours may be followed by a period of confusion or delirium lasting up to 2½ days (refer to table 11).

TABLE 9.—PRESENTING PICTURE AMONG 18 CASES OF ACUTE PHENCYCLIDINE INTOXICATION

Presenting picture	Cases	Percent
Unresponsive	11	61
Bizarre behavior	4	22
Automobile accident	2	11
Violent behavior	1	6

TABLE 10.—COURSE OF RECOVERY OF 16 INDIVIDUALS BY STATE OF CONSCIOUSNESS ON ADMISSION

Presentation cases		Duration of initial state (hours)		Period of delirium or confusion (hours)		Time required until "normal" (hours)	
		Mean	Range	Mean	Range	Mean	Range
Group I: Confusional state and history of smoking 1 street joint	4	5	3–8	.....	.....	5	3–8
Group II: Initial state of stupor or coma (<6 hr)	6	3	1–4	34	5–62	37	14–66
Group III: Initial state of stupor or coma (>6 hr)	4	50	6–103	163	75–288	212	114–360

TABLE 11.—SUMMARY OF INTOXICATION

	Acute confusional state or delirium (N=7)	Stupor or coma (N=11)
PART I: VITAL SIGNS		
A. Respiratory rate (normal or slightly increased).	24 mean	21 mean.
B. Blood pressure (increased)	18–32 mean	16–25 mean.
Systolic	142 mean; 116–160 range	155 mean; 100–180 range.
Diastolic	85 mean; 76–100 range	94 mean; 60–110 range.
C. Pulse (increased)	105 mean; 88–140 range	88 mean; 60–112 range.
D. Temperature (normal or slightly increased).	100.1° F; 98.8°–101.4° F range	99.3° F; 97.0°–100.8° F range.
PART II: CLINICAL FEATURES		
A. Responsiveness	Appears awake; initially uncommunicative may respond to commands or respond to simple questions with nodding or eye movement; later incomplete verbal responses and then becomes communicative/talkative.	Unresponsive to verbal stimuli, responds with movement to deep pain.
B. Orientation	Disoriented for time and place; appears confused and fearful; amnesia for episode.	
C. Behavior	Agitated excited, combative; regressive; selfdestructive or "bizarre" behavior; insomnia, anorexia, incontinence; followed by depression, irritability, and emotional lability.	
D. Speech	Dysarthria (slurred), preservation may be intermittently anarthric.	Vocalizations; "moaning," "groaning," "grunting;" followed by anarthria and dysfluency, initially with automatic speech.
EYE SIGNS		
A. Eye lids	Eyes open ("stare" appearance) with ptosis.	Eyes open ("awake" appearance) or eyes closed.
B. Eye position and movements	Paucity of spontaneous eye movements appearance, may be fixation instability dysconjugate gaze or hypometric saccades.	May be roving eye movements; dysconjugate gaze; doll's eye movements present.
C. Nystagmus	Bilateral horizontal jerk nystagmus; may be vertical nystagmus (upward-downward).	Intermittent horizontal and vertical nystagmus at rest.
D. Corneal reflex	Decreased or absent	Decreased or absent.
MOTOR SYSTEM		
A. Gait	Grossly ataxic (sensory), unable to tandem stand/walk; may be component of muscle rigidity.	
B. Muscle tone	Rigidity (catatonia), catalepsy (waxy rigidity).	Muscle rigidity, on stimulation, opisthotonic posturing, decerebrate rigidity.
C. Movements	Motor restlessness, repetitive movements, facial grimacing.	Spontaneous "purposeless movements," muscle tremor, muscle twitching, fasiculations.tl
D. DTR's	Increased	Increased.
E. Seizure activity		Generalized motor seizures may be early or delayed in appearance and repetitive.
OTHER		
A. Vomiting (central)	Repeated episodes	Repeated episodes over ½ to 3-hr period.
B. Increased secretions (lacrimation, salivation diaphoresis, bronchorrhea).	"Drooling," diaphoretic	Secretions in posterior pharnyx at nares and mouth; tearing, diaphorsis.
C. Evidence of minor trauma	Abrasions, lacerations, ecchymoses	Abrasions, lacerations, ecchymoses.

Urine phencyclidine levels of 26.2–151.9 mg/ml were found in samples collected within 12 hours of admission in four patients who remained in coma for greater than 6 hours and required between 7–15 days for recovery to normal.

Status epilepticus followed by cardiopulmonary arrest without recovery has been reported with a blood phencyclidine level of 7 mg/ml.

DIAGNOSIS

Drug use is frequently considered to be the etiology of symptoms when a young person presents acutely confused or delirious with no focal neurological findings.

But encephalitis, head injury, postictal state, and metabolic causes must be ruled out.

The "blank-stare" appearance and catatonia-catalepsy appear to be unique to phencyclidine as effects of commonly abused drugs. The absence of mydriases, and the presence of ataxia and nystagmus rule out the central nervous system stimulants and LSD when considering the acutely excited and confused patient.

In coma with or without respiratory depression, hypertension and hyperreflexia differentiate phencyclidine intoxication from a sedative hypnotic "overdose." If, in addition, decerebrate posturing or repetitive generalized seizure activity is observed phencyclidine intoxication should be suspected, although other serious causes producing a similar clinical picture must be ruled out.

Cases involving the ingestion of large doses of phencyclidine present with coma which may last several hours or days. The prolonged recovery with a confusional state lasting up to 2 weeks is characteristic of phencyclidine intoxication. If persistent paranoid or depressive psychosis follows recovery, phencyclidine intoxication should be suspected.

In combined intoxications involving phencyclidine and barbiturates, normal or low blood pressure, hyperreflexia and respiratory depression may be observed.

MANAGEMENT

The acutely confused patient is best managed by sensory isolation with observation at a distance. Minimizing verbal and tactile stimulation does not preclude the monitoring of vital signs. Important functions to monitor are respiration, blood pressure, muscle tone and activity, renal function, and temperature. Ideally, the patient would be placed on a cushioned floor in a "quiet room" with a monitor present. In most settings, protection of the patient and staff necessitates the use of restraints.

The early management of the stuporous or comatose patient involves gastric aspiration-lavage and nasopharyngeal suctioning. In view of the recovery of large amounts of phencyclidine from the stomach contents in fatal "overdoses," gastric lavage is indicated in oral ingestions.

Intubation is often difficult because of increased muscle tone. Laryngeal reflexes are maintained and active and attempted endotracheal intubation may precipitate laryngospasm. More responsive patients fight intubation by biting the tube off or spitting it out. However, respiratory depression may be delayed in appearance and necessitate a prolonged period of ventilatory assistance. Positioning and intermittent suctioning will preclude respiratory distress secondary to secretions in the posterior pharnyx.

Urine and blood samples should be collected at the time of admission and screened for phencyclidine, sedative hypnotics, ethyl alcohol, opiates and amphetamines. Urine samples should be capped to prevent loss of phencyclidine, which is volatile.

THE RECOVERY PHASE

Most acutely confused patients are communicative within 1–2 hours and alert and oriented within 6 to 8 hours of admission after ingesting the usual street dose. After they are alert and oriented, patients should be monitored for a minimum of 2 hours. Patients who remain oriented and alert and exhibit normal behavior can then be discharged.

If a patient remains stuporous or comatose, responding only to deep pain for greater than 2 hours, a minimal observation period of 24 hours is indicated. The recovery phase may vary from several hours to days depending on the route and the dose ingested.

Suicide has been reported during the "come down" period, 6 to 24 hours after taking phencyclidine. Patients should be informed about depression, irritability, feelings of isolation and nervousness that often accompany this period, and may last up to 48 hours.

All patients in whom coma is followed by a prolonged period of confusion should have a psychiatric evaluation prior to discharge. Persistent paranoia or depression may require transfer to a psychiatric unit.

TREATMENT

No agent is known to be specific for antagonizing the toxic effects of phencyclidine. However, some experience has been gained in the symptomatic treatment of seizures, hypertensive crisis, and aggressive and violent behavior.

Intravenous diazepam (Valium®) in doses of 10–15 mg followed by intravenous diphenylhydantoin (Dilantin®) has been effective in the control of seizures. In some

cases it has been necessary to give an acutely confused patient 10–20 mg. of Valium[R] orally to prevent injury to both the patient and staff. During the confusional phase of the prolonged recovery period, some patients have received repeated doses of 10–15 mg of Valium[R] to control motor restlessness and agitation. These therapeutic doses of sedative hypnotic agents do not appear to produce significant respiratory depression in phencyclidine intoxication.

Diazoxide (Hyperstat[R]) has been used to reduce blood pressure during a hypertensive crisis associated with acute phencyclidine intoxication. Hydralazine hydrochloride (Apresoline[R]) has also been suggested as a possible substitute agent.

Phenothiazines are contraindicated in acute phencyclidine intoxication where a confusional state is associated with hypertension, tachycardia, ataxia and nystagmus. It has not been demonstrated that phenothiazines shorten the recovery phase or antagonize the behavioral effects of phencyclidine. In some cases they have produced prolonged, severe hypotension.

SUMMARY

Phencyclidine use appears to be in a growth phase nationally. Factors contributing to the increasing popularity include the user's ability to control the dosage, an understanding of the immediate effects, and its availability. Those most at risk appear to be young Caucasian males.

Phencyclidine-related problems are often like tips of icebergs, the underlying causes of which are hidden from public view. The problems often surface in the form of speech difficulties, memory loss, thinking disorders, personality changes, paranoia, severe depression, violence, accidents, suicides, and homicides. Of particular concern to law enforcement personnel is the upsurge in phencyclidine-related violent crimes and carrying of weapons by users to protect themselves from their imagined persecutors.

The evidence currently available supports the assumption that if there is a solution to the problem of phencyclidine abuse, that solution is prevention. Therefore, medical personnel and others within the helping professions must be alerted to the fact that phencyclidine is not just another drug problem. The findings from users we have already studied strongly suggest that phencyclidine is not an upper or a downer, but perhaps an insideouter, with long-term implications.

TABLE 12.—CLINICAL INTOXICATION

	Case 1	Case 2
Age	22	22.
Sex	Male	Male.
Estimated dose	1 g "street" material	1 g + "street" material.
Route	By mouth	By mouth.
Coma	25 hr	103 hr.
Confusion delirium and somnolence	71 hr	77 hr.
Depression, irritability and emotional lability.	84 + hr	32 hr.
Alert and oriented	Transferred to psychiatric unit	178 hr.
Cardiovascular system:		
Blood pressure (mean)	147/92 (84 hr)	151/98 (108 hr).
Pulse (mean)	94	111.
Respiratory status	Excessive mucous/secretions on admission hypoventilation every 15 hr, tidal; volume 100 cm^3; irregular respirations with 5 s periods of apena every 15 hr; required ventilatory assistance every 27 hr; complications: Right upper lobe pneumonitis.	Excessive mucous/secretions, hypoventilation on admission; hypoventilation every 60 hr. tidal; ume 50 cm^3; lapnea every 4 hr; required ventilatory assistance every 107 hr; complications: bilateral basilar pneumonitis.
Seizure and motor activity	Decerebrate rigidity; opisthotonic posturing; muscle tremors, twitching; generalized motor seizures at 66 and 78 hr; treatment Valium and Dilantin.	Decerebrate rigidity; opisthotonic posturing; muscle tremors; twitching; focal motor seizures at 3 and 21 hr; generalized motor seizures at 3½ and 89 hr; treatment: Dilantin.
Toxicology	On admission: 26.2 μg/ml PCP (urine)	On admission: 151.9 μg/ml PCP (urine),
Day 1	26.2 μg/ml	151.9 μg/ml.
2	18.2 μg/ml	
	18.5 μg/ml; 20.0 μg/ml	
3	15.9 μg/ml; 18.0 μg/ml	
4	4.7 μg/ml; 1.3 μg/ml	
	0.5 μg/ml	
5	1.2 μg/ml; 0.1 μg/ml	
6	0.4 μg/ml; 0.3 μg/ml	

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Program Overview of Second Genesis, Inc.

(By Dr. Sidney Shankman, Executive Director)

Second Genesis, a private, nonprofit, professional treatment agency, specializes in providing rehabilitation-treatment services to drug abusers, offenders, and others who have established non-coping, irresponsible lifestyles. Such treatment is provided through both outpatient and inpatient components, with therapeutic community, residential treatment being our primary rehabilitation approach. Treatment in a therapeutic community consists of a highly structured, thoroughly supervised, twenty-four-hour-per-day, chemical-free residential program which typically takes eighteen to twenty-four months to complete.

The Second Genesis program has often been described as a school which educates people who have never learned how to live and feel worthy without hurting themselves and others. Second Genesis helps people who have tried again and again to get what they wanted from life and have continually defeated themselves. The principle combines the basic and universal human values of knowledge, love, honesty and work with the dynamic instrument of intense group pressure in order to recognize and help correct the personality defects which prevent people from living

by these values. The results are rehabilitation so that the individual may reenter his or her community as an independent and productive person.

The Second Genesis program had its origin in June, 1969, as the drug abuse component of the Alexandria Community Mental Health Center. At that time, the Center received a contract from the National Institute of Mental Health for a community-action oriented aftercare program for narcotic addicts from Northern Virginia who were committed to the Narcotic Addict Rehabilitation Act (NARA) Program by a Federal Court.

It was early recognized that in certain instances outpatient care, with urine surveillance checks, was not enough. A residential therapeutic community program was initiated in mid-March of 1970. Named by its occupants, The Second Genesis, this program had as its goal the complete rehabilitation of its residents to a productive rather than an enslaved way of life. This goal was accomplished through its rigorous therapeutic regimen, a highly structured, nonpermissive, self-help program.

Because of the essential expansion of and demand for the services of the Second Genesis therapeutic community, not only from Alexandria but from the adjacent jurisdictions, it became necessary to separate this vital component of services from the Alexandria Community Mental Health Center to permit the regionalization of programming. At its January 11, 1971, meeting, the Advisory Board of the Alexandria Community Mental Health Center endorsed the separation of the Second Genesis from the Alexandria Community Mental Health Center; the Board further endorsed the concept of transfer and continuation of the drug treatment and rehabilitation program (including the NARA contract) within the framework of a private, nonprofit corporation, Second Genesis, Inc. Thus, Second Genesis was incorporated under Section 501C of the Federal Internal Revenue Code, and in June, 1971, it was formally established as an independent organization.

Second Genesis now provides treatment rehabilitation services primarily to the Washington, D. C., Maryland and Virginia areas.

The program is staffed by a multidisciplinary professional group which includes a staff psychiatrist, a Ph.D. level clinical psychologist, master's degree mental health and vocational rehabilitation counselors, learning disabilities specialists, addiction specialists and a research analyst. The facilities are staffed by individuals, many of whom have completed treatment communities like Second Genesis and have gone on for further training as mental health professionals. This diversity of specialized skills permits the selective application of group therapy and individual counseling, educational and vocational services.

The Second Genesis therapeutic communities are residential rehabilitation centers which provide a family-like setting for persons regardless of age, sex, race, ethnic group, or socio-economic status, all striving for the common goal of self-reliance and at the same time discovering love and self-respect.

Residential treatment is implemented through two treatment phases with each phase usually lasting about a year. During Phase I, the resident's entire functional routine takes place within the facility, with treatment emphasis being placed on the development of responsible behavior and attitudes. Each resident is responsible for an in-facility job function, the nature of which changes regularly according to the therapeutic value of the specific job. Each resident participates in regular, three-times-per-week, encounter group therapy, and individual therapy is provided on an as needed basis throughout the day. During Phase II, encounter therapy is reduced and weekly psychodynamic group therapy becomes a new part of the therapeutic regimen. In addition, residents receive vocational assessment and counseling, followed by vocational assistance in defining and implementing an occupational plan. Prior to entering Phase III, the outpatient phase of the rehabilitation process, a resident must have stable, income producing employment, an ample savings account, an approved residence outside of the program, and the individual must be considered clinically ready for responsible, independent functioning. Phase III individuals are required to participate in weekly outpatient group therapy and urine surveillance for a three to six month period prior to graduation from the program.

Second Genesis is funded primarily through contractual arrangements with six different sources: (1) The National Institute on Drug Abuse through the Narcotic Addict Rehabilitation Act (NARA) of 1966, (2) Montgomery County, Maryland, (3) Prince George's County, Maryland, (4) The State of Maryland, Department of Juvenile Services, (5) The State of Maryland, Drug Abuse Administration, and (6) The State of Virginia, Department of Corrections, Division of Youth Services. Payment for services is rendered according to the specific terms of each contract; further, each funding source has its own specific administrative eligibility criteria which

must be met by the individual in order to be funded. Supplementary funding is received in the form of cash and in-kind contributions from the general community.

The rehabilitation program at Second Genesis consists of the following:

A. Diagnosis and evaluation

Second Genesis, Inc., offers a wide range of diagnostic procedures. These procedures include comprehensive social histories, psychiatric examination, psychological testing and assessment, and vocational-educational histories.

Referrals are generally accepted from authorized representatives of federal, state and local governments; although any individual interested in rehabilitation may contact Second Genesis directly. Each candidate will first be interviewed by a staff counselor in order to collect background data and to conduct a preliminary screening of suitability for participation in the program. Next, the candidate will be seen for a psychiatric and psychological evaluation in order to assess the degree and extent of psychiatric-psychological disability as well as to measure the motivation of the candidate for rehabilitation. The data collected will then be discussed at a regular diagnostic conference with a psychiatrist, psychologist, counselor, addiction specialist and other professionals present. Based on this conference, a clinical disposition-recommendation will be made as to whether or not the candidate is suitable for treatment. This recommendation when necessary, is then presented to an official of the court system for disposition.

If the candidate is found suitable for treatment, he/she will then be provided with a general physical, including routine laboratory tests. If the findings of the physical examination are unremarkable, including a determination that the candidate is without a physiological need for detoxification, residential treatment will be initiated. For those candidates requiring detoxification before entering the facility Second Genesis staff will assist the individual and/or the authorized representative in arranging for detoxification.

Residents placed in the program by the court system come to us after a comprehensive joint evaluation and mutual recommendation. Full cooperation and communication are present throughout the treatment process.

B. Treatment and rehabilitation

The primary modality for treatment utilized in the residence is the therapeutic community interaction. The daily activities of the facility are under the direction of experienced addiction specialists, who in turn are supervised by a psychiatrist and clinical psychologist. This team meets frequently during the week for patient staffings in order to continually monitor the psychological growth of each resident. Each facility has twenty-four hour coverage provided by professional staff and responsible older residents.

Therapy is a twenty-four-hour-a-day process in the community. Beginning with morning meeting at 9:00 a.m., every moment of the resident's day is designed to enhance, stimulate, and accelerate personal growth leading to self-responsibility, freedom from chemical abuse and elimination of antisocial behavior. Following morning meeting, the resident reports to his job assignment until lunch. After lunch, all residents attend seminars, designed to broaden the scope of the socially handicapped drug abusers. Returning to his job function after seminar and remaining there until dinner, which is held at approximately 5:30 p.m., the resident prepares himself for encounter therapy three times a week on Monday, Wednesday, and Friday evenings. If an individual has not finished high school, he will attend classes in the facility on Tuesday and Thursday to obtain the General Equivalency Diploma (GED).

Throughout the resident's stay in the facility, unscheduled urine samples are collected and analyzed to insure a chemical-free environment. Direct counseling is provided for personal, educational, social and vocational problems on either an individual or group basis.

Special treatment, counseling, and orientation services are scheduled for the families of residents.

Wherever possible, emphasis is given to the continuance of education even while a resident of the house. This takes the form of preparation for the GED, or actual matriculation, while a resident, in a local high school or university.

When, in the opinion of the professional staff of Second Genesis, a patient is ready to begin his gradual reentry to the community, he will be provided with vocational counseling directed toward career development and job placement or further educational endeavors. Budgetary planning and guidance will also be afforded him as he prepares himself to live outside the therapeutic community facility.

When the patient has graduated from the Second Genesis, Inc., therapeutic community, follow-up will continue until such time as the professional staff considers him ready for discharge from the program.

C. Administrative services

(1) At regular intervals, patient progress reports on all residents are forwarded to the appropriate court and governmental officials, when required.

(2) Special reports will be sent whenever significant change takes place in the patient's status, i.e., when he leaves the program before treatment is completed or is dropped from the program, when he graduates from the therapeutic community and when he is discharged from the program. Those to be notified of such changes by Second Genesis, Inc., will include, when appropriate, the family, probation officer, and the court system.

D. Family and community participation

An important goal of Second Genesis is to create community awareness and understanding of its concepts and ideals as well as of the characteristics and problems of its residents. Following are some of the provisions made toward this goal:

(1) Twice each month, the parents of residents and other interested citizens meet in what we term "cerebration sessions." In these sessions, concepts of group interaction similar to those used inside the house are applied toward the understanding of such topics as drug abuse, behavioral problems of residents, and emotional growth;

(2) Once a month, the residents of Second Genesis hold an open house. This gives friends, relatives, businessmen, and interested citizens the opportunity of meeting the staff and residents, and the opportunity to see and learn about what we are trying to accomplish;

(3) The staff and residents of Second Genesis readily accept invitations to speak to sponsored groups who wish to know about our program. Many times this provides an opportunity for an open dialogue between Second Genesis and the community. We have spoken to many different groups of people, at grade schools, high schools, colleges, and various youth, church and civic organizations;

(4) Second Genesis participates in many charitable community endeavors on a regular basis, such as sponsoring Christmas parties for underprivileged children;

(5) Second Genesis' staff provides formal group therapy to the spouses or parents of the residents. The goal is to assure the level of communication and growth necessary between a resident and his or her family for the transition from inpatient to outpatient status to be successful;

(6) Twice a month, families and interested people from the community are provided an opportunity to meet with the staff in order to gain an understanding of the level of communication and growth being developed in the treatment process.

REFERRALS

Anyone can make referrals by contacting the Intake Counselors located at the following addresses:

Second Genesis, Inc., 4720 Montgomery Lane, Suite 800, Bethesda, Maryland 20014 (301) 656-1545, Mon.-Fri. 8-4.

Second Genesis, Inc., 1204 Prince Street, Alexandria, Virginia 22314 (703) 683-4610, Mon.-Fri. 9-5.

[From the Washington Post, June 11, 1977]

"Angel Dust": Schizophrenia Epidemic Here Linked to Youths' Use of PCP

(By Alice Bonner)

One day last month, Rudolph Shannon was taking a shower when he suddenly leaped out of a second floor window in his Southeast home and charged toward a small creek nearby.

Shannon, 23, later said he had been out all night smoking the drug PCP, which is known as "angel dust" on the streets. The drug made him want to get into "more and better water," he said.

He was stopped by a patrol car several blocks from his house, naked and dripping wet. It took police reinforcements to subdue him and take him to St. Elizabeths Hospital where his condition was diagnosed as "acute schizophrenic psychosis," an illness characterized by inability to control thoughts and actions.

Shannon is one of at least 1,000 Southeast young persons treated at St. Elizabeth's Area D Community Mental Health Center over the last three years for schizophrenia after using PCP.

Phencyclidine, the scientific name for PCP, is legally produced as a tranquilizer for animals. It is a white powder that is sold illegally on the streets for users who mix it with marijuana and smoke it or sniff it into the nostrils. Sometimes it is dissolved in water or alcohol, forming a clear fluid that is sprayed on parsley flakes and smoked.

Unlike the euphoric "highs" associated with marijuana, cocaine and other substances, users describe the effects of PCP as sensations of numbness, extreme paranoia, feelings of isolation, loss of body image, and the inability to control their thoughts and actions.

"When I did angel dust, my head was like it wanted to get somewhere else," Shannon said. "My eyes got real big and I moved a lot slower. I moved around talking a lot of trash. I would run to the bathroom a lot, and sometime when I would come down I had headaches."

In late 1973, staff members at Area D, which serves the southeast section of the city, noticed an "epidemic" of schizophrenia, the leading mental illness, among young mostly male patients which they later linked to PCP use.

Dr. Paul V. Luisada, deputy medical director of the center and author of two reports on the phenomenon, said he saw a "dramatic increase" in the number of patients who had hallucinations, acute paranoia, extremely violent outbreaks and other classic symptoms of schizophrenia.

"They acted like a lot of patients we get, making noises, screaming, talking to the walls and seeing things we didn't see," said supervisory psychiatric nurse Catherine Reddick, who assisted Luisada in the studies.

Unlike the usual schizophrenics, however, the new admissions generally have no history of psychosis, respond much slower to treatment, and show none of the "characteristic personality changes," that usually follow the illness, Luisada said.

Like Shannon, many of the patients were brought to Area D by police because of their "bizarre and violent behavior," Luisada wrote. One man "attacked everyone in sight," another was found "singing naked in a supermarket," and a third was "choking a boy in an apartment corridor," thinking the boy was his son, although he had no son, according to Luisada.

PCP is a "fascinating and bewildering" drug to researchers, because taken in various amounts it can be a stimulant, a depressant, or an hallucinogen, a report by the National Institute on Drug Abuse has noted.

NIDA warned that PCP can be mixed in almost any substance, and buyers often think they are getting LSD, pure marijuana, or some other drug and become PCP users unknowingly.

A report completed last week by the federal Drug Enforcement Administration said PCP has replaced LSD as the primary hallucinogen sought by drug abusers. Emergency rooms, medical examiners and drug crisis centers report to DEA that it has risen from being the cause of 13 percent of adverse reactions from drug use in 1973 to 43 percent in late 1976.

The PCP abuse figures are probably much higher because medical persons often incorrectly diagnose its symptoms, DEA officials said.

Washington, Detroit and San Francisco are the leading PCP abuse centers, and rank highest among cities where illegal laboratories making the drug have been discovered.

Southeast is apparently the only section of Washington where any information on PCP use has been developed. The community mental health center there is run by the federal government under the direction of staff of St. Elizabeth Hospital.

The three other mental health centers in Washington are run by the D.C. government's Department of Human Resources.

DHR's narcotics treatment administrator, Fred West, the city's highest drug abuse official, said he has not information on PCP abuse.

"We haven't done a study on drug usage and I'm not ware of any," said Catherine Briggs, supervisor of DHR's emergency mental health services. Nor did Dr. George Franklin, head of DHR's Area C center, located at D.C. General Hospital have any knowledge of the problem, he said.

"I know it's a problem throughout the hospital (St. Elizabeths)," Luisada said. "It is a problem throughout the city and its beginning to be a bigger problem in the suburbs."

Luisada said that for "nearly two years, PCP was the leading cause of admissions" to the St. Elizabeths mental health center. The epidemic appears to have subsided in the last six months, he said.

"I think around here PCP is beginning to get a reputation as a drug that makes you crazy," Luisada said. However, a number of previously treated PCP patients have been brought to the hospital in psychotic condition after several bad experiences with the drug, he said.

Shannon, who was hospitalized for 12 days after his leap from the shower, was brought in again a few days after his release, after trying to jump from another window.

"I had a lot of things on my mind. People at work were hassling me, giving me a hard time," Shannon said explaining why he took the drug again.

He said he first tried "angel dust," because he "wanted to experiment," after being freed of a heroin habit last year.

"Truthfully speaking, I mainly smoked 'angel dust' with women. It makes them defenseless, makes them easy to get along with. I would talk a little bit more. My rap was stronger," Shannon said.

Shannon said he had no trouble getting PCP because he "used to test it for a friend up in Northeast who would get it by the pound in plastic bags. I didn't always have money but I could still get it."

When he was first brought to the center, Shannon "walked, screamed, banged and talked to the walls," nurse Reddick said. Like most of the PCP psychotics, he refused food, and did not sleep for three or four days, staff members said.

"I don't even remember how I got here. I had hit my head and I didn't even know how I got the stitches," Shannon said as he was being released for the second time on Wednesday.

"We've never seen problems like this with any of the other drugs in the streets, amphetamines cause paranoia and some psychosis, but not like this, not as bad," Luisada said.

Reddick added that the "saddest thing is the type of person who enters into it—the youngsters."

[From the Washington Post, July 3, 1977]

PCP: Killer Weed Is Status Drug

(By Robin de Silva)

PCP, Amoeba, Angel Dust, Hog, Weed. These are the street names for phencyclidine, an animal tranquilizer. Its use in the D.C. area is second only to that of marijuana. It can knock out an elephant, but it can turn a person into a raging semblance of a cornered wild animal.

Developed as an anesthetic in the late '50s by Parke-Davis, its use on humans was discontinued when many post-operative patients awoke with severely psychotic symptoms. According to Dr. Paul Luisada, deputy medical director at Saint Elizabeth's Hospital, it caused an "epidemic" of paranoid schizophrenics who were admitted to the mental hospital in 1973–74.

These severely paranoid and violent patients were highly resistant to normal calming drugs, Luisada reports, and they were extremely dangerous owing to their excessive paranoia. The patients had to be isolated initially and remained in the hospital from five days to four weeks. All had used PCP prior to admission. None had had a history of psychotic episodes.

One had become so violent in his paranoid fears that he "attacked everyone in sight," one 17-year-old broke all the windows and furniture in his house before he could be stopped. Another was shot by police who were unaware of his condition—he had failed to heed their orders to halt. PCP, Luisada says, "has no equal in its ability to produce psychoses nearly indistinguishable from schizophrenia."

Not a true hallucinogen, PCP causes misperceptions rather than actual visions. One PCP-intoxicated man was found in his apartment hallway trying to strangle a boy he thought was his son. He had no son, but his marriage was wavering over a dispute to have children. Another was found by police "singing naked in a supermarket."

Luisada says that PCP-induced psychoses are still the number-one admittance type at St. Elizabeth's. He said that sensitivity to the drug varies from person to person and that its effects are long-lasting, sometimes causing a slow build-up of paranoia with accompanying dangerous misperceptions.

Patients isolated during the first part of their hospital stay intermittently screamed, shouted, banged or stared at the wall. They didn't sleep and frequently misinterpreted innocuous stimulii as threatening. They were suspicious of their food and of those who brought it, and out of the ward, several PCP patients perceived a

senile old lady who made repetitive motions in a wheelchair as threatening. One man attacked her.

Montgomery County narcotics agents have attributed several murder/suicides and some homicides to PCP-intoxication. Persons with growing paranoia begin carrying a gun and, miscued by the drug-induced perceptions, they misuse them.

Called Killer Weed because it causes numbness in arms or legs, it makes some users feel "dead." It can create manic agitation, paranoia, restlessness. It can masquerade as other drugs since its effects simulate stimulants, hallucinogens and depressants, depending on what it's mixed with.

PCP comes in a multitude of forms. It can be sprayed on marijuana or ordinary cigarettes or mixed with parsley and smoked. In capsule form it is called Hog, and when bought in film tins to sprinkle on other substances it is known as Angel Dust. When it first appeared in the Haight-Ashbury area in 1967, it was not considered a drug of choice, but it was recycled by underground pushers to spike their numerous impure wares.

It is now frequently used, by choice, in its straight dust or capsule form, and considering its frequent unpleasant effects, police and doctors are mystified as to why it has become a status drug. It is not addictive, but its users tend to ingest it more than once. For example, almost half of the PCP patients at St. Elizabeth's returned a second time. They all said they "thought they could handle it."

A contradiction since its inception, the flower children called it the Peace Pill. Until they tried it. The misnomer stuck, but the Peace Pill is now recognized as the most insidiously dangerous of the underground mindwares. It has been on the streets since the mid-'60s availed by a growing network of illicit laboratories. It is cheap to make, the chemicals are common—thus, hard to trace—and laboratories can be housed in vans.

Laboratories can gross up to $4 million a week. The profit is in the drug's diversity since it can "spike" almost any otherwise mediocre or unsaleable substance.

The National Institute on Drug Abuse frequently found PCP to be the active ingredient in drugs sold as LSD, THC (the active ingredient in marijuana, which NIDA says has never existed on the street) and in mescaline and cocaine. In Milwaukee in 1970, five kinds of "mescaline" were analyzed—four contained mostly PCP and the fifth was LSD. An analysis of the alleged THC sold at rock concerts and around the Philadelphia area proved to be mainly PCP.

Keith Stroup, national director of NORML (National Organization for the Reform of Marijuana Laws) says that while technically NORML deals only with marijuana, he finds PCP to be "a terribly dangerous, foolish, *idiotic* drug to take.

"It completely debilitates people, and I've seen a lot of it. Not just kids . . . successful adults, too. One man I know who has made a couple of million—he was young, quick, competent—started on PCP and the last time I saw him he couldn't concentrate on anything, didn't do anything. He just smoked one PCP joint after another."

PCP clearly falls into the category of very dangerous drugs, Stroup said, and though he says he cannot understand how it became a drug of choice, he is well aware of its ability to simulate other drugs—in particular the rock concert specialty, THC. THC is almost always PCP, Stroup confirmed—sometimes LSD; THC is chemically unstable and must be kept at a specific temperature, an impossibility in street sales.

While most kids don't want to destroy themselves, he said, they don't trust government information and don't realize that what they learn on the streets is no more valid. Ten years ago the government produced ridiculous drug literature that no one could take seriously. Now, having spent $4 million a year on drug research, there has been an accumulation of honest information that, in some cases, supports discouragement of chronic marijuana use, especially for young people, Stroup said.

With an 8-year-old daughter of his own, Stroup is concerned with any drug use involving children.

"We're known as the dope lobbyists," he said, "but giving two million marijuana smokers who are otherwise law-abiding people criminal records hasn't abated the problem. We would like to approach drug abuse from a 'help' standpoint rather than an accusatory one and would like to give people well-researched facts rather than propaganda.

Most drug-users, particularly young ones, have no precedents for distinguishing a personality-induced "bad trip" from a drug-induced one. In fact, drug-induced unpleasant episodes are hardly recognized since users are conditioned to believe that their mind-expanding experience is entirely their own and is dependent upon their

own state of mind. This attitude has made PCP's effects hard to spot as its use in drugs of other names could be discerned only by laboratory analysis.

PCP is available in most major cities in the United States, but the Drug Enforcement Agency has called the metropolitan area the nation's PCP capital.

[From the Manchester Guardian Weekly, Aug. 14, 1977]

ANGEL DUST DEVILS: CHRISTOPHER REED REVEALS A FRIGHTENING AND EASILY PROCESSED NEW DRUG HITTING THE STREETS OF AMERICA

A terrifying drug, as easy and no more expensive to prepare at home than a cordon bleu recipe, is being sold on the streets of America. It is being used mainly by young people at a rate now described officially by experts as of epidemic proportions.

On the West Coast, where it is most popular, the drug is known as angel dust, rocket fuel, surfer, mist, or goon but in a symposium this month at the Sixth International Congress of the World Psychiatric Association in Honolulu, it will be discussed under its formal name of phencyclidine, or more familiarly, PCP. The assembled experts will learn some horrific details about its effects.

In a court case in California recently, a young man who took too much PCP was found guilty of a grotesque murder and is awaiting his term of imprisonment. He still claims no memory of his crime and refuses to believe the gruesome details.

Charles Peters, a jobless drifter of 29, stumbled into a house in San Mateo and grabbed a carving knife from the kitchen. Then, "growling and grunting like a tiger," he repeatedly jabbed and slashed at the abdomen of a young mother who was seven months pregnant. Hearing a child's cry from the next room, he stabbed her 22-month-old boy to death, leaving the bent blade lodged in the child's neck. Police arrested Peters in the street, where he had taken off his clothes and smeared with blood, was shouting: "Glory, hallelujah."

An emergency surgical team delivered the foetus but it (he) died 10 days later when life supporting equipment was removed. The mother survives.

In another case in California, a young telephone worker has recently been sentenced to life after a court heard how he went suddenly berserk in the family home with a .22 rifle. He shot to death his mother, father and grandfather. In both cases the jury apparently ignored defence pleas that the young men were, as medical witnesses testified, so in thrall to PCP that their responsibility was diminished, if not destroyed. The theory is that the jury, so horrified by the magnitude of the crimes, chose to disregard this evidence because it could have meant a lighter sentence.

Those working on drug abuse are convinced that both murders were committed under the influence of phencyclidine overdoses. It is believed that five brutal murders in the San Francisco Bay area in the past year can be pinned on the PCP compound, and in Los Angeles it accounts for 10 per cent of drug overdose cases. PCP excess is also blamed for accidental or negligent deaths in which the victims drowned or were immolated.

The drug, which seems to have an appeal for the dispossessed, minorities, the racially oppressed, or those with a deep grudge against established society, is now approaching heroin as a major social problem. It has yet, however, to gain the same notoriety.

What exactly is this stuff? In a paper by two of the leading authorities, Dr. Stanley Burns and Mr. Steven Lerner of San Francisco, it is "a white crystalline powder which can be taken orally, by smoking (inhalation), by snorting (insufflation) and by the intravenous route, though this is rare. Powder forms are generally sprinkled on 'joints' of marijuana, or on mint or parsley, or sometimes sniffed."

An overdose, anything from five milligrams can produce violent and bizarre behaviour, unexplained loss of memory and speech, thought disorders, personality changes, anxiety, severe depression, suicidal tendancies, delirium up to 15 days, stupor, and coma. First signs can be a blank stare or nystagmus—rapid vertical and horizontal eye movements. Victims may suffer breathing or kidney irregularities, or even seizures and heart failure. Or they may just go crazy, berserk.

PCP is used officially only as a tranquilliser for monkeys. It became illegal officially in 1970 after trials on humans were abandoned in 1965 by the developers, Parke, Davis and Company because of "recurrent, prolonged delirium" in some cases. Its street popularity comes from a combination of properties undreamed of, unfortunately, by its synthesisers.

It is cheap and the ingredients well known. What an amateur chemist can produce in a basement laboratory for one cent can be sold on the corner for ten to

fifteen dollars a dose, anything from two to 20 milligrams. "Once you know how you just add a bit of this, a bit of that, and stir," said a chemist.

It can be easily "cut" or mixed into less dangerous or harmless drugs and passed off as them. Innocents have bought PCP as THC, the active ingredient of cannabis, although THC is impossible to produce as powder (it would be an oil).

Carmen Helisten, a chemist and director of the Street Drug Analysis, a group in Palo Alto, California, which tests your street purchases by mail for five dollars—and has saved many from a killer trip—describes PCP as "Scarey." She says: "It's really nasty and unfortunately those who use it heavily seem to have some grudge against society and don't care how bad the stuff may be."

She also emphasises that some of the PCP's worst effects could be caused by impurities and toxics from clumsy processing—"a factor not considered enough on this and other drugs by the authorities and the anti-drug establishments." But like others she notices an alarming and recent increase in PCP and it worries her.

In forthright words for scientists, Burns and Lerner say: "PCP is one of the most dangerous street drugs now being used."

[From the Chistian Science Monitor, Oct. 7, 1977]

New Alarm Heard on Drug Abuse; Officials Cite Dangers of PCP

(By Brad Knickerbocker)

San Francisco.—It carries many names: angel dust, hog, crystal, peace pill. Chemists call it phencyclidine, or PCP, and drug officials say it is causing abuse problems of major proportions around the country.

This new and growing problem is particularly acute, experts say, because PCP is cheap, easily produced, and can have unpredictable, long-lasting, and perhaps even permanent effects on the user.

In some cases, defense attorneys have cited PCP use as a defense for accused murderers who had never before been violent.

"I'm very concerned about it," says Robert DuPont, director of the National Institute on Drug Abuse. "It does seem to me to be the No. 1 new area of concern."

Federal drug studies underline the recent rapid increase in the use of hallucinogenic drug, particularly among young people of junior-high and even grade-school age. Data gathered by the federal Drug Abuse Warning Network (DAWN) from hospital emergency wards, medical examiners, and drug crisis centers show PCP's share of all hallucinogenic incidents increasing from 13 percent in 1973 to 43 percent last year.

"Increases in hallucinogenic abuse almost entirely are due to an upsurge in the use of PCP," said David Hoover of the Federal Drug Enforcement Administration (DEA).

New York, Detroit, Washington, D.C., and the San Francisco Bay area account for a large part of the reported PCP incidents (overdoses and arrests for possession and sale). But officials say use of the drug has spread to all 50 states.

The only legal use for PCP is as an animal tranquilizer. In addition to publicizing the dangers of the drug and cracking down on illegal sales, a proposal to tighten up federal manufacturing and storage restrictions has been made by the U.S. Justice Department to the department of Health, Education, and Welfare.

San Francisco psychologist Steven Lerner, a nationally recognized expert on PCP, points to studies showing more young people using the drug. One study completed in March put the average age for PCP users at just under 15, compared with 19 less than three years ago.

"What this really indicates is that in many parts of the country it's reaching epidemic proportion. There's just been a tremendous escalation," he said.

Drug enforcement and medical sources say PCP is particularly dangerous because reaction can range from violent attacks on others to comas and suicide. The effects often remain much longer than other drugs, reports Mr. Lerner, even up to 2½ years.

Unlike other illegal drugs which must be imported or require complicated manufacturing procedures, PCP can be made from relatively simple "cookbook formulas you can purchase on the street," said Mr. Lerner.

Doses can be bought for as little as a dollar or less, and the relative ease with which young people can make or obtain PCP makes the drug "particularly menacing," said Dr. DuPont.

Sophisticated large-scale producers, some supported by organized crime, are increasingly getting into PCP production and trade. DEA arrests for PCP abuse

jumped 43 percent between 1974 and 1976. In the first six months of this year, the DEA raided 28 illegal PCP laboratories, compared with 17 for all of 1975.

[From 60 Minutes, vol. X, No. 7, as broadcast over the CBS Television Network, Sunday, Oct. 23, 1977]

ANGEL DUST/PCP

(With CBS News Correspondents Mike Wallace, Morley Safer, and Dan Rather)

MIKE WALLACE: Angel dust is PCP—phencyclidine hydrochloride. The Drug Enforcement Administration tells us that, second only to heroin, it is the most dangerous drug in the country today. Yet the recent spread of PCP has come so quickly that few people outside the drug scene have even heard of it.

PCP is made from chemicals. It is a white power. And sprinkled onto mint, or parsley leaves, sometimes onto marijuana, it is smoked in a cigarette. In heavy doses, the drug numbs the senses, so effectively that time was doctors wanted to use it as a surgical anesthetic. But in street dosages now common, the drug propels the user into a world of hallucinations within a couple of minutes. It can also trigger uncontrollable violence. Law enforcement officials around the country report its use is approaching epidemic proportions.

The county fair at San Jose in California, a burgeoning city that has been dubbed by narcotics officials the PCP capital of the United States. Hereabouts, PCP is sold by the individual cigarette. It's known on the street as 'crystal' or 'KJ'. Narcotics officers who've seen how dangerous its users can become are concentrating on putting the sellers out of business.

NARCOTICS OFFICER: You're under arrest. Just stay cool. Stay cool.

SELLER: What's this?

OFFICER: Police. Put your hands on the hood of the car. You just sold it to narcs.

WALLACE: From a small van, we watched as undercover narcotics agents made a buy. The local rate for one PCP cigarette—ten dollars.

MAN: Here, I got the money. It's cool.

WALLACE: The drug is so powerful that just one drag from a cigarette can get a smoker high. And five or more persons can get high from just one joint. Officials estimate there are over 500 of these dealers in San Jose. They arrested four that night.

NARCOTICS OFFICER: There's cops all around. You're under arrest.

NARCOTICS SELLER: Police! Police! Narcs!

WALLACE: But by all accounts, nothing has stopped the market from growing, not even the threat of a prison sentence that can go as high as four years.

Undercover narcotics officer Ted Keech.

TED KEECH: We have a lot of people that we're arresting, not only using but selling PCP that are your middle-class kids; they're coming from good middle-class homes. They decide that by smoking PCP they can—they can go into a high where they completely lose track of reality. They completely escape from—from whatever problems they may have. A lot of it also is peer group pressure. You have so much PCP abuse in this area that it's hard for a young kid, say 16, 17, 18 years of age, not to come in contact with it.

WALLACE: The problem is worst in San Jose's Chicano community. Three users, who are under treatment because they can't seem to get off the drug by themselves, are Guy, Geneva, and Rosie.

GUY: Well, you know, I do as much as I can get a hold of, as much as I can afford.

WALLACE: You mean once a day?

GUY: Four times, five times a day, if I can afford it.

ROSIE: It's a trip. It plays with your mind.

WALLACE: But does it play happily with your mind?

ROSIE: To me it does. It depends——

GENEVA: It makes you feel, you know, like dancing and everything, you know. It all depends on the mood you're in, you know. It—And you——

ROSIE: Yeah, and it depends on the person, too.

GENEVA: And it depends on the person, you know.

GUY: Well, I just like the high. I like the way it affects me, what it does to me.

WALLACE: What?

GUY: Well, I just like to be, you know, bombed out of it.

WALLACE: A dream world. The trouble is the user doesn't know where his habit can lead him. The effects of PCP are at best unpredictable. While some can handle it, others cannot.

And doctors here in the emergency room at the Valley Medical Center in San Jose see a steady stream of those who cannot. They are brought here by family or friends or by the police because they are seen talking incoherently or hallucinating or behaving in a bizarre fashion. And many of them become violent while using PCP.

The California State Prison at Vacaville. We went there to meet Barry Bresky, 21 years old, a regular PCP user. One day a year ago, he found out how violent you can become.

What happened, Barry?

BARRY BRESKY: I was in my room, and I had my rifle with me. And I came downstairs, and I walked into the family room and the family was watching the TV set with their back to me.

WALLACE: Hm-hmm.

BRESKY: And then I started firing the rifle. And I was standing behind my—my dad, and I shot him.

WALLACE: Through the head?

BRESKY: Yes.

WALLACE: And then right away——

BRESKY: Almost instantly, my mother.

WALLACE: Before the crime took place, how much PCP were you smoking?

BRESKY: Well, you know, at least three times a week. And the last time I had it before my arrest was the Sunday before, and I think I split a quarter-gram between me and one other person.

WALLACE: And that was how long before the killings?

BRESKY: A day.

WALLACE: Are you really persuaded that it was PCP, that it made you in effect do what you did?

BRESKY: Yes, I am.

WALLACE: What makes you so sure of that?

BRESKY: Because I couldn't go along with that idea now. I mean, it had to have been the constant saturation to my brain of that drug that made me actually go along with the idea. I did go along with it.

WALLACE: And had you ever done anything else violent?

BRESKY: No.

WALLACE: Are you satisfied that Barry Bresky killed his mother and father under the influence of PCP?

STEVE LERNER: There's no doubt in my mind about that.

WALLACE: Researchers Steve Lerner and Dr. Stanley Burns are the country's leading experts on PCP.

LERNER: Barry had been chronically using the drug, and at the time of his arrest he had a detectable level in his urine.

DR. STANLEY BURNS: Anybody—I feel anybody who's exposed to the drug over a long enough period of time is going to become severely depressed and ultimately is going to be some—become psychotic.

WALLACE: And how much violence is involved with the chronic PCP user?

BURNS: Predictably, almost anybody who used it on a chronic or regular basis became paranoid, became fearful of others, became socially withdrawn, and started to exhibit unpredictable violence or aggressive behavior against family, friends, or anybody.

WALLACE: That happened to this man, Charles Peters. His random victims—a 22-month-old child and an unborn infant, a crime he doesn't even remember committing, for amnesia can be one of the drug's bizarre effects. He, like Barry Bresky, is in prison.

CHARLES PETERS: Just all of a sudden something just came over me, told me to leave out of my home. And I walked out of my home. That's all I can remember about it.

WALLACE: For that reason, we asked Peters' attorney, Tom Nolan, what happened. Information he'd been able to piece together from witnesses and the victim.

TOM NOLAN: He came across the freeway; there are eight lanes there. He crossed the freeway, down a path. He entered the back door of a house, someone he didn't know. It was open. Mrs. Singaris was standing at the dishwasher, or the—the sink, doing the dishes. He apparently picked up a long kitchen knife. She is pounded against the wall, and in the mean—middle of this attack, he hears the sound of a child. She has a 22-month-old child. He immediately went in and proceeded to stab the child. She came into the room, saw the stabbing, yelled at him "Stop!" He turned and looked at her, in her words, as if nothing unusual was going on, and then proceeded to stab the child to death.

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WALLACE: Mrs. Singaris was also stabbed. At the time, she was pregnant. Because of the attack, she gave birth to a premature infant who died eight days later.

PETERS: I tell them, like, that couldn't be me. I couldn't have did it. But they told me that I did.

BURNS: I don't think it's that infrequent that violence or aggressive acts are carried out under the influence of PCP. In talking with chronic users, several of them suddenly with—really unpredictably became violent.

LERNER: So I think what we're seeing are people that are chronically using the drug that have a greater likelihood of getting into difficulty with it. But you may only use it one or two times and become violent or unpredictable.

WALLACE: That hasn't frightened many of the users. In almost every disco in San Jose, there is PCP for sale. At one, this young man told us he was on the drug. That spacey look and the inability of users to control their minds and bodies while under its influence has led to some tragedies for the users.

Eve Torres runs a drug project in the Chicano community. She has first-hand knowledge of what can happen.

EVE TORRES: I think there's a lot of violence that goes on that is not reported. A lot of rapes when the girls are at parties and they get so high or they get ozoned, where they become the victim then. They have no control of defending themselves.

LERNER: One woman's driving down the street erratically. The police pull her over, and as they attempt to arrest her, she resists arrest. She is taken to a jail setting and part of the booking process is she's left unattended in a shower. She drowns in three inches of water.

BURNS: The drownings really represent the—the—the major way that people have died under the influence of this particular drug. To the best of our ability to understand that, the drug interferes with your sense of movement and space. In other words, you can't walk properly. You look incoordinated. You can't move properly, and in the water I'm not certain that they can move properly or that they even know which way is up and which way is down.

WALLACE: So they lose control and drown.

BURNS: Yes. Yes.

KEECH: I would say it's probably the most devastating drug that we have that we're working with in this area right now. And I include heroin as being less of a devastating drug than PCP. People are manufacturing it on a—on a large level, and there obviously is some money behind it. There's—there's obviously people behind the distribution of it.

WALLACE: Lake Houghton in Michigan. What appears to be a small lakeside cottage is instead a makeshift PCP lab. When agents from the DEA—the Drug Enforcement Administration—and the Michigan State Police moved in, they found jars of liquid and chemical paraphernalia in the trunk of a car outside the house. Chemists ran tests on the spot, and later found the liquid chemical was one of the main ingredients of PCP. The agents arrested Patricia Joseph and Joseph Thomas on charges of manufacturing PCP. Thomas had been arrested four months earlier for operating another clandestine PCP lab. The drug is easy to make, and the cost is low. In this case, the equipment and chemicals cost $200. Estimated street value of the PCP involved—$200,000. Two hundred thousand dollars' profit for just a few days work. There is so much money to be made, authorities suspect organized crime is already involved in the drug's production. Labs, the DEA told us, are springing up faster than narcotics agents can shut them down. And the street sellers are doing all they can to push their product, sometimes slipping it into marijuana cigarettes to hook unsuspecting new users. Other times, paying regular users to entice other young customers.

BURNS: It's in a growth phase. There's no question that now we're seeing significant use, significant numbers of people being exposed to this drug, which was not in existence two or three years ago. So we're saying over two or three years there's been a tremendous increase in the numbers of people.

LERNER: We've seen PCP in 39 states recently, and what we've seen is the average age of first use is about fourteen-and-a-half years. The average age of continued use is about fourteen years eight months.

WALLACE: Fourteen?

LERNER: Right. Although we've seen kids nine, ten, and eleven that have initiated the use of PCP. It's a very social drug.

WALLACE: But it's an expensive drug. One joint may cost ten, twelve dollars.

LERNER. And what the kids are typically doing is pooling their quarters, and are able to buy a joint for let's say five or ten dollars, and then at recess time go out in the school yard and smoke it, and stay high for the remainder of the day.

BURNS. I think it's a—it's a drug fraught with danger, that ultimately you can't guarantee somebody that they won't have persistent or prolonged or maybe irreversible kinds of damage. In other words, it—there's no guarantee that if somebody experiences difficulty with memory or difficulty with speech, or—or bizarre thinking or slowed thinking, there's no guarantee that that ever disappears.

TORRES. There was a man that the police had picked up down on First Street. And he was acting very crazy; he was very hostile, very angry, was breaking windows. So they took him to a cell and they booked him in. They left him there for a couple of hours, and all the man kept saying was help me, help me. When they returned back, the man—it's the assumption that he had been seeing something horrible—took out both of his eyes with his hands. He just tore them out.

WALLACE. If you know—and you say that you know—that it eats your brain, burns your brain, and yet you keep on using it, why?

GENEVA. I don't know.

WALLACE. I mean, what does it do for you that—that—that would persuade you to keep on using it, if indeed it does what they say?

GENEVA. I don't know.

[From Time, Dec. 19, 1977]

PCP: "A TERROR OF A DRUG"; SNORTED, SWALLOWED, OR INJECTED, ANGEL DUST CAN KILL

Angel dust is the most common name. It is also known as goon, busy bee, crystal, hog, elephant tranquilizer and superjoint. By any name, phencyclidine (PCP) is the most dangerous drug to hit the streets since LSD became widely available a decade ago. Its use is growing rapidly; a National Institute on Drug Abuse (NIDA) study found that nearly a third of the young patients reporting to drug-treatment centers have tried PCP and one-fifth used it regularly. Angel dust has been linked to hundreds of murders, suicides and accidental deaths—214 last year in the Detroit area alone. Says a Boston drug hotline worker about new PCP users: "They don't know what they're getting into. They think it's just some easy high. Man, are they surprised!"

A user in California walked into a house that he had picked at random, killed a baby and stabbed a pregnant woman in the stomach. Under influence of the drug, a man in San Jose, Calif., tore out both his eyes with his bare hands. In the Chicago area, more than a dozen cases of drownings have been attributed to PCP use: victims lose a sense of direction and space and cannot fight their way out of the water.

The effects of the drug are so unpredictable that users call it "heaven and hell." Irrational or violent action is typical of chronic users, but even dabblers are not immune to sudden rages. A small dosage of PCP can produce a high that resembles drunkenness and can lead to anything from euphoria and a sense of bouncing to depression and hallucinations. Larger doses can bring convulsions, psychosis, uncontrollable rage, coma and death. "It's a real terror of a drug," says NIDA Director Robert DuPont. "Everything people used to say about marijuana is true about angel dust."

Developed in the 1950s as an anesthetic, PCP was banned for human use after tests showed erratic side effects, and it is now legal only as a tranquilizer for monkeys and apes. It can be snorted as a powder, injected as a fluid or swallowed as a pill. But usually the drug is dusted or sprayed over parsley, mint leaves or marijuana and smoked. Some dealers doctor low-quality marijuana with it. Others simply sell it to naive youngsters as LSD, THC (the active ingredient in marijuana), mescaline or even cocaine.

One reason for the rapid proliferation of PCP is that the drug is cheap and available. For $100, a handy amateur can manufacture PCP worth $100,000 on the street. "It's a terribly easy thing to do," says Hugh Shanahan, a federal Drug Enforcement Agency official in Los Angeles. "It requires no sophisticated equipment. Even someone without a chemistry background can do it." Thus PCP is churned out in hundreds, possibly thousands of makeshift labs around the country, often in remote areas, where there is less chance that its telltale ether odor will be detected.

Though police often track down these producers through tips from shocked and disgruntled PCP users, they have another way of finding the labs. Some solvents used in turning out PCP are so volatile that L.A. police have zeroed in on several labs simply by following up fire-department reports of suspicious explosions.

PCP may require an entirely different enforcement program. Officials who were trained to cope with limited imports of natural drugs are now facing an array of new synthetics that can be easily concocted at home. Some 20 variations of PCP are probably already on the streets, most of them perfectly legal because authorities have not got around to banning them. "We're heading into a new, dangerous era," says Dr. Mitchell Rosenthal, head of Phoenix House, a drug-free program in New York City. "The natural substances—opiates and so forth—are not going to be the problem of the future."

Government planners are belatedly mapping a campaign to educate the public about the dangers of angel dust. But one official is frankly puzzled about how to approach PCP users. Says he: "It's hard to understand why people are taking PCP. They don't take it to get high. They don't take it to make sex better. They take it to zonk themselves out. In a way, it's a disguised death wish."

[From The Today Show, Feb. 21, 1978]

PCP

(By NBC)

TOM BROKAW. You remember on the Today program earlier this year when we brought you news of the spreading popularity of a drug called PCP or angel dust? Well now, during the next few months, the National Institute on Drug Abuse will be carrying on a major educational national campaign against PCP. The government says that angel dust can kill you if you take it, or it can cause you to kill others. Even so, millions of young Americans have used it.

We get more on the drug now and the campaign against it from NBC News correspondent Don Harris in Los Angeles.

DON HARRIS. Actor Robert Blake, filming a plea to potential users of a drug called PCP.

ROBERT BLAKE. Hi gang. I want to talk to you about dope, bad dope, PCP. Yeah, you know what I'm talking about: animal trangs, angel dust. It's bad news. It'll do you in. I wish I could . . .

HARRIS. Bobby Blake was once a junkie. He's hoping other drug users will listen to him.

BLAKE. PCP is a rattle snake. It'll turn around and it'll kill you. So please, please stay away from it and keep your friends away from it.

I love you. And that's the name of that tune.

HARRIS. Phencycledine hydrochloride is known by a great many names: PCP, angel dust, crystal, cyclone, peace pill. It's sold in crystal form, sometimes in tablets.

Most often it's sprinkled on marijuana or oregano or dried parsley or mint. In that form it's smoked as a cigarette or a joint.

The National Institute for Drug Abuse says that five million Americans between the ages of 12 and 25 have used PCP at least once.

This man has used PCP more than once. He's a chronic user. When this film was made by a San Francisco company called IOO (?) Productions, the man was slightly intoxicated on PCP.

MAN [WITH SLURRED SPEECH]. I like it. I hallucinate, I see things. I like it. It's a good drug.

HARRIS. That's the most puzzling aspect of the growing use of PCP. It is not a good drug.

When PCP first appeared on the streets in the San Francisco area in 1967, users quickly put out the word that the peace pill, as it was most often called then, was a lousy trip. After a brief flurry, it disappeared from the streets almost entirely.

But now, a new generation of drug users, often unaware that they're getting PCP is beginning the experiment all over again.

STEVE LERNER. For somebody that has used, for three or more days per week for a period of six months or more and then discontinues their use, then they have problems which persist for as long as five years out. That they have difficulty with speech, memory, abstraction, concentration. Then they have brief periods where they're bizarre or violent or suicidal or homicidal or amnesiac, five years after their last dosage.

HARRIS. Steven Lerner has been studying the effects of PCP through a clinic in San Francisco.

STEVE LERNER. Somebody may stumble into a house; a person intoxicated on some cycledine, sees a 22 month old infant, stabs the infant to death and then turns the knife on the child's mother who is seven months pregnant, and splits her down the

middle. Or a young man that's well under the influence shoots his mother and father. Or somebody else who, again, stumbles into somebody's house he doesn't know, finds a hammer, bludgeons the person to death, removes both eyes and then sits down and has breakfast.

HARRIS. Those things actually happened. Those acts were committed by heavy PCP users.

Obviously the cases studied by Lerner are the extreme, the most severe cases. Obviously, not all of the five million people who have tried PCP are affected to this degree. But even those people who use small amounts of PCP develop severe and sometimes lasting problems.

At a clinic called Pride House in Los Angeles, about 35 percent of the patients have used PCP. They range in age from 14 to 22. Almost without exception, the young people I talked with here said they took PCP because it made them numb, made their minds a blank, made them unable to think or feel, made them forget their problems.

I asked this girl, a 14 year old, what sort of problems she could have that would make her want to use something like PCP.

GIRL. My grandfather, you know—you know, he did stupid things, you know, to satisfy—he used to satisfy his needs, you know. And my grandmother, she—you know, she didn't know what my grandfather was doing. I don't know. More or less, my grandmother's like a lesbian. And you know, she tried when she first got married to him. And you know, Dad wrote to me and all this.

HARRIS. Dr. Gerald DiAngeles says that most of the heavy users of PCP that he sees are trying to escape from their problems, from life, if necessary.

DR. GERALD DIANGELES. Let me go through some of the 14 year olds that I can remember off the top of my head. There's incest, about 60 percent of our girls have had incestuous relationships with their father, step-brothers, occasionally, mothers. Beatings, stabbings, divorce, separation, alcoholic parents, prostitutes for parents. Some of our 14 year olds have lived on the streets for as much as two years prostituting themselves, selling drugs.

They are—most of them are 14 years old going on to 40.

HARRIS. DiAngeles says that PCP is more dangerous than heroin or barbituates. But that until society stops abusing its children, it's children probably will not stop abusive use of drugs.

DIANGELES. If PCP were stopped tomorrow, and all PCP production was stopped, we would still be seeing the same kinds of kids using something else.

HARRIS. In the past, much has been said about the harmful effects of substances such as marijuana. Much, that simply was not true. Society tried to keep its young people from experimenting with drugs by scaring them. Now, in the case of PCP, they may simply not believe us.

Still, we ought to tell you that of all the people we talked to, users, doctors and researchers alike, they were in agreement on one point. If you're going to experiment with a drug, pick something other than PCP.

MAN. Without question it is the most dangerous drug available.

HARRIS. If you knew your brother was about to use PCP, what would you tell him?

SECOND GIRL. I'd do anything to stop him. Knocking him in the head to—I don't know. I—you know, he'd better not. [words unintelligible].

Don Harris, NBC News, Los Angeles.

BROKAW. One of the problems in controlling PCP or angel dust is that it can be made, in effect, in basement laboratories, and it can be made cheaply. The elements that are required for the production of PCP are available to just about everyone.

There is another problem, however, in the production of PCP—one of the byproducts often in the production of it. It's cyanide gas. And there have been cases in this country where people have been killed merely producing PCP or angel dust.

So it is something for everyone, no matter where they live, to be aware of.

[From the Daily News, Feb. 23, 1978]

ANGEL DUST, THE NEW KILLER IN TOWN

(By Marcia Kramer)

James Howerton said that there were two things that made life worth living—his mother, with whom he shared a tiny flat on W. 119th St., and smoking marijuana.

Then last year, the 26-year-old Howerton smoked angel dust, a new "weed" on the New York drug scene. He smoked two "nickel" bags—about four joints—and then he went home.

There, his mother was attacked with a knife and killed. Howerton's own hand was badly gashed, but the next day, he said that he did not remember the murder.

That was odd, because Howerton had written on the living room wall with a red marking pen: "I love my mother and didn't mean to kill her."

Police who detailed the Howerton case, which is still pending in the courts, said that this was not unique.

City police and federal drug agents say that in the past six to eight months, violence and psychosis among area teenagers have skyrocketed. The cause, police say, is angel dust.

It is a cheap high, the newest and most dangerous drug in town.

Angel dust is the street name for the drug phencylidine (PCP), which was developed as an anesthetic in the late 1950s. But its use on humans was discontinued when many patients awoke after surgery with severe psychotic symptoms. Its only legal use now is in tranquilizing monkeys and elephants, whose systems appear immune to the drug's side effects.

Angel dust goes by dozens of street names, some of them indicating the form in which it is sold and others as trade names coined by individual street sellers. Peace pills, white powder, superjoint, bosy bee, hog, elephant tranquilizer, crystal, and green tea are some of the more popular names.

It also is called killer weed because it causes numbness in the arms and legs and because it makes some users feel "dead."

It can create paranoia, restlessness, manic agitation—and it can masquerade as other drugs because its effects sometimes resemble hallucinogens like LSD, or stimulants or depressants, depending on what it is mixed with.

Although angel dust is snorted, taken orally or injected, it is most often sprinkled on marijuana, mint leaves or parsley, then smoked. This is the root of the crisis.

The reason, drug rehabilitation workers say, is that some kids using it consider angel dust as just another type of marijuana.

"That's the tragedy of the drug," says Dr. Mitchell Rosenthal, the head of the Phoenix House drug rehabilitation program. "The country has gone soft on grass, so kids think that angel dust is not dangerous, that it's just a kind of superjoint."

Experts also say that there is no way to predict just how the drug will affect users. One user told The News that she halucinated. "Flies were attacking me," she said. "A bowl of soup smiled at me."

David Hoover, a spokesman for the federal Drug Enforcement Administration in Washington, says the halucinations, and violent or aggressive behavior, are the mild effects of the drug.

"They're the easy one to deal with," Hoover said. "In some cases the drug can induce comas lasting a few hours to several weeks, or cause psychosis that closely resembles paranoid schizophrenia."

Hoover, who says that one dose is enough to effect a user, reported that the amount of angel dust on the street has doubled in the past year.

"The trouble," he said, "is that the drug is do damned unpredictable."

Charlie (not his real name) knows all about angel dust and violence. His best friend nearly died after Charlie stabbed him four times while on a "dust high."

"I didn't know I did it until the next day when my girl friend came over to my house and told me that my friend was in the hospital and that I put him there," Charlie said.

Charlie, who has spend four months in the Phoenix House program, remembered something else about angel dust. "The first time I smoked it," he said, "I thought it was a reefer (marijuana). I didn't know it was dust until after I smoked it and felt funny. I had to ask somebody what it was."

Sally (another alias) began smoking angel dust three times a week when she was 13. Her father, a computer executive in another state, and her mother, a secretary, did not know about her habit.

"On a dust high," said Sally, now 17 "you do things you don't know about. We used to rob places, small stores and gas stations. The most we got from one job was $500."

Like most users, Sally has flashbacks even though she has not touched the stuff in months. Her manner is hesitant, withdrawn, spaced out. She speaks in a whisper. Her case workers at Phoenix House say that this is possibly because of her large, continuing doses of angel dust.

Medical research into angel dust poisoning indicates that Sally's problem—the flashbacks and the almost catatonic mood—is related to the drug's affinity for the fatty tissues of the brain.

A series of medical tests on rats, reported in the August 1976, issue of "Clinical Toxicology," showed that elements of the drug are retained in the brain cells rather than passing out of the urine and bloodstream. In humans, the study concluded, this can cause flashbacks and mental symptoms that resemble schizophrenia.

Who uses angel dust?

Local prosecutors, like Queens District Attorney John Santucci, say that users are mostly teenagers, 14 and older. Federal drug agents agree that users are either young, or are unsophisticated about the types of drugs on the market.

At Phoenix House, 17 of the last 20 admissions to its program for adolescents said that they were angel dust users.

And findings reported by SPARK, the Board of Education's drug prevention program, estimated that 30 percent to 40 percent of local high school students use or have used angel dust at least once. This can include taking a drag on a dust cigaret in a schoolyard.

Community workers in Brownsville, the South Bronx, lower Manhattan, East New York and other parts of the city all report that the use of angel dust has gone up sharply among teenagers in recent months.

But the drug is not restricted to lower-class kids or to teenagers from any ethnic or racial group. Santucci says that white middle-class youth in Queens are heavy users. Reports from Nassau and Westchester counties say the same thing.

In short, angel dust knows no social or geographic class. Rich kids use it. So do the poor. And they are equally in danger.

"They are way over their heads, using a drug that they are not equipped to handle," a Phonix House counselor said. "What we need is some way to get the message out that angel dust is a real bummer."

[From the Daily News, Feb. 24, 1978]

Angel Dust—Not a Heavenly High; The City's New Killer Drug is no Bargain at any Price

(By Marcia Kramer)

"Buy my dust
"It's a must;
"Guaranteed
"Your head will bust."

—Bryant Park angel dust spiel.

It was cold in Bryant Park behind the main New York Public Library. Very cold. But the scarfaced man shifting his weight from foot to foot was trying not to mind. He kept his eyes on the 42d St. traffic, looking for cars with out-of-town license plates, the ones that might contain customers.

After about 15 minutes, a car stopped. Two teenagers were inside. A girl, about 17 years old, got out and the scarfaced man went into his sales pitch.

He was selling angel dust, the newest and most dangerous drug in New York.

"Buy my dust," the man said. I'll sell you a joint for $3, or a nickel bag (about four joints) for $10."

"Dust heads," as users are called, say that $3 for a marijuana cigaret laced with the hallucinogenic-like drug is a pretty cheap high. Especially cheap when compared with the skyrocketing cost of cocaine, mescaline and peyote (as much as $100 a hit). Also, angel dust makes a joint so potent that two or three people can get high on the same cigaret.

Kevin McEneaney, the community relations director for the Phoenix House drug rehabilitation program, says that the relatively low cost of the drug is one of the reasons that teenagers are attracted to angel dust.

But the fact that teenagers use the stuff is only one reason that local officials are alarmed. The greatest danger of all, they say, is the chemical effect of the drug on the brain.

A study by The News and interviews with several angel dust users document the effects: paranoia, changes in body image (feelings, for example, that the limbs are floating away), and violent acts against other persons.

A man strangled a baby after smoking angel dust, another bit off a woman's breast, a 16-year old caused thousands of dollars worth of damage to his parents' home, and one kid thought he could fly and jumped off a building.

Respiratory problems are often reported by users who overdose. Last year in Queens, one user passed out and drowned in a bathtub after smoking angel dust.

An overdose is sometimes a wild and mentally debilitating experience. Emergency room personnel at Harlem Hospital, where as many as eight angel dust OD cases turned up over one three-day period, say that victims who do not go into a coma are usually catatonic.

The Payne Whitney Clinic and Bellevue, Metropolitan and Kings County hospitals all report substantial increases in angel dust cases over the past year.

At Jamaica Hospital and other medical facilities in Queens, the number of angel dust admissions during the first six months of last year was more than double the combined totals for all of 1974, 1975 and 1976.

A survey of area hospitals suggests that some personnel may still be wrongly diagnosing cases involving angel dust poisoning. This despite a memo issued last Nov. 7 by City Health Commissioner Pascal Imperato alerting emergency rooms to the symptoms and proper treatment of angel dust overdoses.

Finding the drug is no trouble. It is everywhere.

"There's a virtual epidemic of the stuff in our high schools," says District Attorney John Santucci of Queens. "There are angel dust pushers in just about every Queens high school."

With several illegal laboratories producing the drug. Queens even has a street in Bellerose that is known in the drug culture as "Dust Street."

"That's not its real name," said Brian (a former user who once sold angel dust in his Westchester high school). "But when the sellers are out, they put up a sign that says, 'Dust Street is open for business.'"

Drug workers say that angel dust is so readily available that some grocery stores in Brooklyn sell it along with candy and soft drinks.

In the Bronx, it is sold chiefly around Westchester Square and at 169th St. and Webster Ave.

The main Manhattan sales areas include Times Square, the Trinity Church area downtown, 14th St. and Third Ave., 112th St. and Fifth Ave., and the McGraw-Hill park on Sixth Ave. where publishing bigwigs hang out on their lunch hour.

Bryant Park is another outlet, but "smart" buyers avoid it. They say that dealers there sell fake joints, using talcum powder instead of angel dust or spraying a real joint with roach spray to make it smell like angel dust when lighted.

Known by its chemical name, phencyclidine (PCP), angel dust is relatively easy to make, and requires little more than a knowledge of high school chemistry, a few readily available (and fairly inexpensive) chemicals, and a recipe.

That is why there is so much of the stuff around town.

Recipes are easily obtained. One of the more popular ones was printed in several underground publications. It calls for five chemicals, heat, and ether (used as a solvent).

Santucci, whose office closed five labs last December, warns that production is dangerous. "Ether is highly combustible," he said, citing the case last August of a lab in the basement of an Ozone Park building. The lab blew up, he said, and killed a dust maker.

Cyanide gas is another danger. The chemical sodium cyanide is one element of angel dust, and if not handled properly it can kill anyone inhaling it. Santucci reported one cyanide gas death in Queens last year—at one of the dust labs.

There also are often impurities in homemade angel dust that experts warn can produce comas or cause brain damage if large enough doses are taken.

Despite all its danger, large-lot batches of angel dust are manufactured in the city. Officials say one reason is the lure of big money. Santucci says that $400 worth of chemicals can translate into $50,000 worth of street sales. The labs closed in Queens last December, he said, were capable of producing $12 million worth of angel dust.

Who makes the stuff?

According to officials of the federal Drug Enforcement Administration manufacturers come from all sections of society, from a Harvard Ph.D. who set up a lab in a Winnebago camper to students with no chemistry background at all.

[From the Washington Post, Feb. 27, 1978]

EDITORIAL—PCP: INFERNAL ANGEL DUST

Phencyclidine is a powerful synthetic drug that is legally produced and highly valued for use as an animal tranquilizer. It was not intended for use by humans. Now, however, it is being illegally manufactured for human consumption and has

rapidly become a new and dangerous addition to the drug culture. It goes by the name of PCP—or sometimes "angel dust." But its effects on people are anything but heavenly.

Part of the drug's danger is its unpredictability. Taken in various amounts, it can be either a depressant, a stimulant or an hallucinogen; no one knows what amount of the drug will cause what state of being. Nor do we know whether the drug has any lasting biological or psychological effects. What is known is that PCP is easy to produce, that it is taken largely by adolescents and young adults, that it can be combined with or "hidden" in alcohol or other drugs, and that it can cause temporary amnesia, hallucinations, acute paranoia, delusions of superhuman strength, extremely violent outbreaks and other symptoms of schizophrenia.

Usuage of the drug has risen sharply in recent years, according to officials of the National Institute for Drug Abuse, who freely acknowledge that their statistics on PCP-usage probably are very conservative. The Drug Enforcement Administration, responding to the increasing evidence of high drug usage and abuse of PCP, is about to reclassify it as a significantly dangerous drug. Drug officials also say that the Washington area is one of the centers for the illegal manufacture and sale of PCP. Montgomery County prosecutors have said that PCP is "the drug of preference" for illegal drug users there. And during the last three years over a thousand southeast Washington youths have been treated at St. Elizabeths Hospital for schizophrenia after using the drug. Dr. Paul V. Luisada, a hospital official who's done research on the effects of PCP, has said that PCP "is the most dangerous drug there is. . . . It's in a class by itself in its ability to cause people to become violent and dangerous and otherwise act in unpredictable ways."

The growing litany of horror stories about PCP-usage argues persuasively for supporting two bills now before the Maryland General Assembly. Both the bill in the House of Delegates and a companion measure before the Senate would increase the penalties for manufacture and distribution of PCP. The House measure would increase the maximum penalties from 5 years in prison and a $15,000 fine to 10 years and a $20,000 fine; the Senate measure calls for a maximum sentence of 20 years in jail and a $25,000 fine. We have no strong preference for one measure over another; the get-tough stance regarding PCP is the important thing. The laws in both the District of Columbia and Virginia and in most States regarding the illegal manufacture and sale of PCP basically follow the Federal statutes—relatively lenient prison sentences and fines. But we suspect that as the terrifying effects of PCP become better known, more States will want to consider the thinking behind the Maryland proposals: That is, that, given the ease with which PCP can be illegally produced and the profits that can be realized from its sale, it's important now to up the stakes for those who are either now in or considering this illegal line of work.

[From Newsweek, Mar. 13, 1978]

The Deadly Angel Dust

(By Matt Clark with Susan Agrest)

A 21-year-old Washington, D.C., man stepped out of his shower, climbed naked down the wall of his second-story apartment and started running to New Jersey. The police stopped him several blocks away.

A young California girl and her fiancé decided to go for a swim. While he was changing, she went into the pool. When her fiancé returned, he found her lying dead at the bottom.

A 17-year-old New Jersey boy and his girlfriend decided to rob a nearby summer home at the seashore. Instead, the youth chose to bludgeon to death the elderly woman who lived in the cottage. He awoke the next morning covered with blood and with no recollection of his brutal act.

These bizarre and tragic events have a common thread: three people were high on the latest—and probably most dangerous—street drug to come along since heroin and LSD. The drug is phencyclidine (PCP), but it is better known to its users by such colorful names as "angel dust," "super weed," "busy bee," "mist," "goon," "crystal," "hog," "tic" and "tac." So pervasive has its use become that the National Institute on Drug Abuse and the Department of Health, Education, and Welfare convened a priority meeting of drug-abuse experts in Monterey, Calif., last week to exchange observations on PCP and decide how to cope with it.

Federal officials estimate that nearly 7 million people, most of them from 12 to 25, have tried PCP. Last year alone, the drug sent at least 4,000 of its users to

hospital emergency rooms, took 100 lives and triggered an untold number of strange, suicidal or homicidal acts. "It's the most toxic of all the substances. I've seen since I started working with street drugs in 1965," says Dr. David Smith, founder of San Francisco's Haight-Ashbury Free Medical Clinic. Adding to PCP's special dangers is the fact that the drug is easy to make and can cause severe reactions with a single dose.

PCP was developed by Parke, Davis & Co. as an anesthetic in 1956. It was effective enough, but it also produced postoperative symptoms of agitation, delirium, and disorientation and was thus unacceptable for use in humans. PCP is approved, however, as a veterinary anesthetic. During a "summer of love" concert in June 1967, San Francisco's flower children took up the drug and Smith treated 30 cases of toxic reactions. The drug then fell out of use until a sudden re-emergence in the mid-1970s. Aware of its great popularity, the Federal Drug Enforcement Administration last month classified PCP as a "schedule II" drug, putting it in the same legal category as barbiturates.

Wired: PCP can be synthesized by anyone with a modicum of laboratory skill from ingredients obtainable at any chemical-supply house. The major illicit labs are centered in Washington, D.C., Detroit, Los Angeles, and Philadelphia. But labs have sprouted in basements and garages all over the United States. Last year, the DEA put 42 such operations out of business.

Users rarely inject liquid PCP. More likely, they spray the liquid or sprinkle crystals of PCP on plants such as marijuana, tobacco, mint and parsley and smoke it. The drug can also be snorted, or pressed into tablets or capsules for oral use. Although it was originally used as a booster or additive to other street drugs, in recent months at least half of the users of PCP have been taking the drug as their sole means of attaining a high.

Reactions to PCP are totally unpredictables. According to San Francisco psychologist Steven Lerner, most users report that their first experience was a pleasant one. "I feel wired," "I feel powerful," "I feel superior," are typical testimonies. But there are plenty of bad trips. Angel dust, says Dr. Beatrice Kresky of New York's Jamaica Hospital, can make "Grimm's fairy-tale characters come to life. Parents, nurses, and doctors appear as monsters or witches, and police cars take on the form of dragons."

Psychotic reactions to PCP mimic the symptoms of paranoid schizophrenia, with hallucinatory voices and combative or self-destructive impulses. The drug can also give users a distorted sense of their own bodies; people often feel their arms or legs are growing or shriveling. Users may also suffer loss of bowel or bladder control, slurred speech, inability to walk, jerky eye movements and grimacing. Acute toxic reactions can last up to a week after a single dose, and the mental effects can linger for more than a month, often recurring in sudden episodes while the patient is apparently recovering. Taken in larger doses, PCP can induce seizures, coma, and death.

The sudden emergence of PCP as a major drug has caught doctors without surefire methods of diagnosing and treating its ill effects. The drug tends to lodge in fat and brain tissue, and some poison-control centers are using large doses of vitamin C to acidify the urine and hasten its excretion from the body. Mental disturbances have been treated with tranquilizers such as Valium, but physicians can't agree yet whether these drugs reduce the effects of PCP or may actually accentuate them.

Until some of these questions have been answered, the experts at Monterey agree that the best course is to try to educate physicians on diagnosis and treatment. To reach consumers, NIDA is distributing a message about PCP to be aired by television stations throughout the country later this month. It is delivered by Robert Blake, star of TV's "Baretta." "Don't go near it," warns Blake. "It's a rattlesnake and it will kill you."

(From New Times, Mar. 20, 1978)

Angel Death: Angel Dust, or PCP, is the Most Misunderstood Drug in America; Not Even its Users can Explain why They Take it

(By Peter Koper[1])

Charlie Innes, a Johns Hopkins undergraduate, was cooperating nicely with the Baltimore cops who were searching his apartment until he suddenly remembered a little aluminum film cannister that he'd left on a table. In a desperate attempt to destroy the evidence, Innes snatched the cannister off the table and swallowed its

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[1]Peter Koper is a freelance writer who lives on a farm in Maryland. He teaches at the University of the District of Columbia.

entire contents. The police took Charlie to Union Memorial Hospital to have his stomach pumped. It was a vain effort; whatever he swallowed was irretrievable, and he was released.

Five days later the police discovered Innes standing buck naked on a fire escape. He was taken this time to Mercy Hospital, where doctors pronounced him "psychoneurotic" and released him in police custody. The cops transported Charlie to the Baltimore central lockup. The charge: disorderly conduct, a misdemeanor.

Late that night the turnkey went to check on Innes, whom the police now considered a "flipped-out hippie." He found Charlie stretching his arms through the bars of his cell. What remained of his eyeballs was dripping down his cheeks. Innes had plunged his fingers into his eyes and had succeeded in blinding himself for life.

"It's my drug of drugs," says Allan C. "It's my favorite." Mr. C. is 43 years old. He has seven children and three grandchildren. He was an advertising executive before he dropped out to explore his "higher consciousness." Six years ago he was turned on to the drug, and now he uses it on the average of once a week. "It gives me a clarity," he says. "A sort of speed trip. I feel motivated, I feel self-confidence."

Bear grew up in the Latin American community of East Los Angeles. He's 16, and he's been using the drug for 2 years. Today Bear is stoned, and he reaches for words. "It's a beautiful high. You'll be tripping out on a lot of different things * * * you know, you'll be thinking of death, not only once but many times * * * I would go out on the roof and think to myself, 'jump off!' I don't know what held me from jumping, but when I came down I said, 'That was the most stupidest thing I ever did in my life.'"

A few weeks ago, Ned T. York, a 37-year-old Hollywood actor who had been arrested in connection with the Hillside Strangler case, was released in police custody. To reporters clamoring for a statement, York said: "I was smoking Angel Dust, and I'm not in control of my speech."

The drug is l- (l-phencyclohexyl) piperidine hydrochloride, or phencyclidine, or simply PCP; and it has slowly found a burgeoning market—in schools, homes and on streetcorner hang-outs in some 39 States—since it was first used to get high back in 1967. Sketchy medical knowledge about PCP, not to mention its frequently bizarre effects, has helped perpetuate a variety of myths: PCP causes users to kill and maim; it damages brain cells; it makes you commit suicide; it enhances sex; it's made with formaldehyde; it's rocket fuel; it makes you get down on all fours and bark like a dog * * * or drool like an infant. Some of these myths are just that, while others are close to fact.

PCP was first synthesized in the mid-fifties, and then was manufactured and tested on humans as a surgical anesthetic under the Parke-Davis trade name "Sernyl." Although Sernyl was an effective anesthetic, patients who used it experienced several disturbing side effects: severe problems with speech and vision; delirium; and agitation. Early in 1965, Parke-Davis took the drug off the market and suggested that its use on humans be discontinued. Two years later Parke-Davis reintroduced the drug as Sernylan, billing it as an animal anesthetic and tranquilizer and cautioning that it was for "veterinary use only."

At present, the only legal manufacturer of PCP is Bio-Ceutic Laboratories, but the use of Sernylan, even in veterinary medicine, is quite rare. "Your average run-of-the-mill vet wouldn't recommend it," says Dr. Harry Schultz, a Baltimore vet associated with the Carney Animal Hospital. "The drug is just too strong."

"Sernylan is no longer widely used," says Dr. Charles McPherson of the Animal Resources branch of the National Institutes of Health in Washington, D.C. "Ketamine (a related drug) is used in surgery instead because it's smoother. Sernylan is used as an agent in restraining monkeys so they can be handled." And do research monkeys trip out on PCP? "It is not obvious that they are on any kind of trip when they come out of the drug," McPherson replies.

PCP first came to public attention in San Francisco in June 1967, when about 5,000 of what were referred to, in the vernacular of that era, as "Peace Pills" were distributed at a rock concert in Haight-Ashbury. Dr. David Smith, a physician and toxicologist who founded and still runs the Haight Free Clinic, remembers that: "We had a whole bunch of freak-outs. Our clinic was filled with bad trips. We didn't know what it was, or how to treat it. We sent samples to a lab for analysis and found out it was PCP."

After the freak-outs in the Haight, word went out among drug-wise hippies that "Peace Pills" were garbage; few people actively sought PCP as their drug of choice, and its usage entered a dormant stage. But PCP was easy to manufacture and cheap to produce, so dollar-wise dealers began selling it under different names like "THC" or "cannabinol," or in combination with mescaline, psilosybin or LSD, a deceptive practice which continues on the street today.

"Sometimes I mix cannabinol with dust and then smoke it," says Bear, explaining how he likes to get high. A drug counselor tells him that in doing so "you've got twice as much dust as when you started," because the "cannabinol" is just a variant of the name dealers use for PCP; it is, literally, more PCP.

THC (delta-9-tetrahydrocannabinol), the psychoactive ingredient in marijuana, has never been available on the street because it is extremely expensive to make and must be kept refrigerated to remain stable. This ersatz "THC" can easily be purchased on the streets of New York City at $2.50 a tablet, although the PCP content is now so low one user says he has to take five or six to get a "buzz." In a similar scam, PCP in combination with LSD is sold as "mescaline"—despite the fact that true hallucinogens are rarely found on the street anymore. Samples analyzed by the Street Drug Analysis Program in Los Angeles County show that 92 percent of the drugs collected over the last 6 years using names like THC and "cannabinol" have been PCP. Chances are, if there's a new or unusual name for a drug on the street, it probably contains PCP. And PCP is sold under any one of a laundry list of names: Angel Dust, Dust Joint, Hog, Crystal, KJ, Parsley, Flakes, Goon, Killer Weed, Rocket Fuel, Animal Tranquilizer, Super Weed, Peace Pill, *ad nauseam.* By the same token, PCP is rarely—if ever—sprayed on ordinary grass, despite reports to the contrary in Time magazine and on CBS. According to Sally Montgomery, coordinator of the L.A. Street Drug Analysis Program, "In all the years we have been analyzing drugs, we've only seen two cannabis samples that contained traces of PCP." And in the dealing world, using grass as a vehicle for PCP makes no economic sense: cheap Mexican grass at, say, $100 a pound, costs more than a pound of flakes.

The main reason for the confusion surrounding PCP is that virtually no clinical research has been done with human users since Parke-Davis Co. pulled out of the picture in 1965. Subsequently, only a few grants to study the growing problem have been handed out by the federal government. And the National Institute on Drug Abuse (the federal agency responsible for drug treatment and research) has been asleep at the wheel. In a July 1977 internal memo prompted by concern over "the increase in inquiries" about Angel Dust, director of resource development Laurence T. Carroll grandly listed ten research projects dealing with PCP. A close reading of the document, however, shows that only *two* of the projects had been funded, and that many of the others were only marginally concerned with PCP. In the intervening months, NIDA has awakened to the problem and has started to educate the public and drug abuse professionals to the dangers of PCP.

Why hasn't NIDA known what's been going on in the streets? Probably because its Drug Abuse Warning Network (DAWN)—charged with gathering emergency room, medical examiner and drug treatment data from across the country—doesn't work. In fact, DAWN is generally regarded as a joke among drug abuse workers. "It's a worthless report, as thick as a phone book, but it doesn't tell you what's happening," says an East Coast drug treatment worker.

Displaying its profound lack of street smarts, the DAWN report lists PCP in the hallucinogen category along with LSD, which is a bit like comparing Manischewitz with Chateau Margaux. To be more accurate, "PCP is in a brand new category, both pharmacologically and behaviorally," says Steve Lerner, a drug researcher who works with Dr. Stanley Burns, a resident in neurology at the University of California at Irvine. Burns, who first became interested in PCP when he saw people tripping out on it at a concert at the Oakland Coliseum in 1974 notes that, "One can only speculate, at this point, but I think it is biochemical in nature. The drug probably affects, in some unique way, the neurotransmitters—the chemical processes that allow impulses to travel from one nerve cell to another."

Haight-Ashbury's Dr. Smith agrees. "I don't like to go beyond the evidence," he says, "but the proposed mechanism of the drug's action is the disruption of the proprioceptive, or sensory, impulses from the body which then do not reach the brain." The medical guess is that PCP acts on nerve cells, preventing stimuli from different parts of the body from being correctly processed by the brain.

It has been ascertained that Angel Dust is rapidly taken from the blood and passed out of the body in urine. But perhaps its most disturbing property is that it leaves minute traces in the fatty tissues of the body, including the brain. These remnants become "active" over time periods of differing length, like some malevolent and unpredictable Contac capsule, enabling PCP to have a prolonged effect, in a heavy "duster."

"Chronic users report that it takes as long as two and a half years before they feel normal again," reports Steve Lerner. "During that period they have problems with memory, speech and concentration."

"We can definitely say that the effects among chronic users are prolonged," Dr. Burns attests. "But if it is irreversible, then it is much more serious than we have thought. I suspect the effects are reversible, but it's going to take some more studies to prove."

If what goes on inside the body remains a mystery, objective symptoms and user behavior are readily discernible. Severity of symptoms—the difference between the sought-after "floaty high" and a freak-out—vary in direct relationship to the dosage. But determining dosage is a major problem. Dust can be smoked, eaten, taken in tablet form, injected into veins or muscles, or snorted, and the "duster" rarely knows what or how much he's using—quality control is hardly the underground chemist's strong point.

"One of the problems with dust on the streets is what's pure and how much is how much," points out Stan Blair, a volunteer with the Do It Now Foundation, a drug counseling center in Hollywood. "Analysis," he says, "often shows that one end of a bag is different from the other end of a bag."

Smoking is generally regarded as the safest way to do PCP because the user can best judge how high he is and if he wants more. Of course "pinroll" joints cause another problem: they look like marijuana joints. And although they are usually smaller and have a metallic or chemical taste, many people have had the unpleasant experience of taking several puffs of what they mistook for grass.

A manageable high is delivered by about three to eight milligrams of PCP—the average dosage of most street preparations—and the observable symptoms of such a low-level dose seem relatively harmless. There is a general "spaciness"; sometimes there are mild problems with perception and coordination; numbness; increased blood pressure; bloodshot eyes; speech may become garrulous.

Sometimes the dosage is dangerously high. A "crystal" joint analyzed in Los Angeles last year contained 161 mg. of PCP. In cases such as this, using phencyclidine is tantamount to playing Russian roulette. Another problem with PCP is that tolerance develops rapidly among steady users. "Within four to five days, people who are using steadily have to increase their dosage to get the same effects," says Lerner. "Some are smoking half a gram without dying, so there's no question about tolerance."

A high-level dose (10–20 mg.) produces some awesome side effects: indifference to pain; sweating and flushing; drooling; distorted vision; bulging eyeballs; and the beginnings of a muscle rigidity that users call "moon walking" or "zombie walking." The user may start speaking very slowly, just grunt, or stop speaking altogether. Time and place become hopelessly confused in the user's mind as the normal mental processes that sort external and internal events are blocked. Thought flow occurs randomly, and the brain literally short circuits, producing a kind of epileptic attack without muscle seizure. There can be intense fear and, notes Lerner, a state that closely resembles sensory deprivation.

With these dosages, the "peak" usually lasts from about 45 minutes to two hours, and the effects begin to wear off in stages. Usually, in about 12 hours users begin to feel normal again, although some report feeling spaced as much as 48 hours later; and because information processing is disturbed by the drug, amnesia may result.

Dosages higher than 20 milligrams will produce seizures or a coma that sometimes lasts a week, and the catatonic posture (or muscular rigidity) can be acute. "I remember seeing a guy at a rock concert being carried away by paramedics," Lerner recalls. "This guy was so stiff he looked like he was being carried on a stretcher, but he wasn't."

Despite the severity of the objective symptoms, deaths from pharmacological overdose are rare; Lerner has uncovered only nine in the Bay area since 1970. Most fatalities involving PCP result from its influence on the user, from what is called behavioral toxicity.

Typically, police will pick up people who have freaked out on PCP and take them to a hospital emergency room. The Metropolitan Police delivered so many "schizophrenics" to St. Elizabeth's Hospital in Washington, D.C., that one doctor became suspicious, investigated the situation, and found out they had been using dust. Dr. Paul Luisada, director of the Area D Community Mental Health Center, which treats patients from the largely black area of Anacostia, says that during a recent "schizophrenic epidemic," "it was our leading reason for admission"; the hospital was taking in five severe cases a week from an area with a population of 48,000.

"PCP mimics schizophrenic psychosis perfectly," says Luisada. "People are very paranoid, very violent, extremely assaultive. They think they're the devil, they hear voices, they think God is talking to them." Luisada has had to keep patients hospitalized for as long as a month; he has also noticed that some patients come back as *bone fide* psychotics even though they've been off the drug—which leads

him to believe that PCP may trigger mental disorders in "pre-psychotic" users. "There's no way of telling how the drug is going to act," Luisada says. "It's a very individual reaction."

Dr. Luisada's treatment of what he's beginning to call "phencyclidine psychosis" consists of placing the patient under observation in a "quiet room" with a minimum of stimuli, then sedating them. Dr. Gerald Crary, who runs the emergency room of the L.A. County Hospital, says the ideal treatment for freak-outs is talking them down; but in a busy hospital emergency room there's too little time, and the usual treatment is an injection of tranquilizer or, in exceptionally bad cases, the use of five-point restraints.

*"The body is that of a slender, well-developed, adult white female, appearing the stated age of 21 years, weighing 93 pounds, and measuring 61 inches * * *"* This is a coroner's report, the details of a life reduced to property inventories and funeral parlor body receipts; it is not pleasant reading, but it is the last chapter in some PCP users' lives. Victims such as these become so disoriented on dust that they forget where they are and step off roofs; or go swimming and breath water. More commonly, they are involved in automobile accidents; or inadvertently step in front of cars; or are shot or knifed or beaten to death.

Roland W. Prahl, chief deputy coroner for Alameda County (California), has seen 36 deaths connected with PCP since 1970. He says that his office does not look for PCP in every case because it is an expensive procedure. In suspicious "trauma" deaths, blood and urine are analyzed, but, he adds, "there are definitely cases that slip through our hands." In Los Angeles, Dr. George Nakamura says, the medical examiner's office found 41 "definite" PCP deaths in 1977 and "we suspect more." In Baltimore, 23 cases have been found since pathologists first began checking two years ago. In many other cities, however, no such PCP checks are being run on "unusual" deaths.

In the early 1970's, Hayward, California, became known in drug circles as the "PCP Capital of America." The nickname, like most, fits the myth more snugly than the reality. There *was* a Hell's Angels chapter across the bay from Hayward in Oakland, but Dennis Downum of the nearby Oakland P.D. narcotics division maintains that it's as hard to link the Angels directly to dust as it is to ascertain how many can dance on the head of a pin. "I've never traced a righteous Angel to a PCP deal," Downum says. "They have a franchise on amphetamine, but it's hard to get them on PCP."

Although "friends" of the Angels' Oakland chapter were busted last year for selling a pound of crystal, the Angels themselves have lowered their profile. They rarely wear their colors anymore and have gone in for quieter, more subtle criminal activity by buying out a number of Oakland catering firms as fronts for their business. From time to time, other biker gangs around the country have been identified as dust pushers. Sources indicate that people on the periphery of the Pagans Motorcycle Club in Maryland are involved in PCP "cooking." But the stereotyping of PCP as a "biker drug" is a fairly gross exaggeration.

Angels or not, Hayward was pretty gross for a while; dust became so popular that some local grocery stores stopped selling large quantities of parsley for fear that it would be used in crystal (PCP) joints. From as far away as Oregon and Nevada, people came to Hayward's bucolic Weekes Park to join the milling crowds of kids who gathered there in the evenings. Joints were smoked openly; gram bags sold for $20.

What was it about Hayward that made dust so attractive? In a word: nothing. Hayward's streets splay through the usual fast food joints, used-car lots, shopping centers and one-story single-family houses that insult the eye in thousands of towns across the country. Kids with no jobs and few skills hang out and get bored; their parents don't do much better. "The common thread of this drug is a bad family situation," says Chico Marcus of Project Eden, a drug counseling center which has handled some 2,000 PCP freak-outs in Hayward since the drug first appeared there. "The parents are alcoholics, or divorced, or fighting all the time," he says. "So the kids want to get ——— out of the house, and they use the drug to do that. It crosses cultural lines, racial lines, economic lines."

"It's the same kids that in my generation went out and got drunk on beer and were raising hell," offers Roger Power, a detective with the Hayward P.D. narcotics division.

After four murders in Weekes Park and a series of drownings at nearby Lake Chabot were linked to dust, the cops broke up the scene. Today you can score crystal from kids hanging out at the Tennyson Shopping Center parking lot, or from dealers on Tyrrell Avenue * * * but things aren't like they used to be in Hayward. "There's still a lot of it [dust]," says Detective Power, "but it's not quite as bad as

the past. The price shot up, and a lot of kids can't afford it. It's gone from twenty dollars a bag to twenty, twenty-five a joint."

If PCP has outpriced its market in Hayward, it has just begun to burn a hole in other pockets across the country.

In South Baltimore, the use of "parsley"—sold in film cannisters at $25 a throw—is rampant. "They turn down pot to take flakes," says Tim Schlauch, a street worker with the Carruthers Mental Health Center. "You can't go out with a chick down here without a can of flakes."

"There's no question it's picking up," says Roy Tansill, a drug counselor in the quiet, tree-lined suburb of Catonsville, Maryland. "Fifteen percent of our clients are now heavy users; we only had about 5 percent in 1975."

The Phoenix, Arizona, branch of the Do It Now Foundation reports a rise of PCP use among middle-class white kids, down to the junior high level.

Hershel Garden, a program analyst with the Wayne County Department of Substance Abuse in Detroit, attributes more than 20 percent of their drug crisis center business to PCP abuse, with 58 cases recorded last March alone—the high mark for 1977.

In Macomb County, a blue-collar, middle-class area on the outskirts of Detroit, the Substance Abuse Information Center reports that PCP is the drug of choice there, although experimental rather than chronic use is the pattern.

In Chicago (where it's called "tic" by whites and "tac" by blacks, both shorthand for dust's deceptive THC moniker), PCP is "the easiest drug to get on the streets aside from marijuana and alcohol," according to Randy Weber of Alternatives Inc., a drug counseling and information center. He added that a high proportion of drug-induced psychoses reported by psychiatrists in Chicago-area hospitals is caused by PCP use.

Kim Cutler of Evolution, a community group in the racially and economically mixed northeast Baltimore area, points out that PCP use was once confined to poor white youth, but now has started making inroads in the black communities of the inner city. "There are a lot of people out there running around as goofy as ——— rats," says Bill Thomas of the Maryland Department of Health and Mental Hygiene. "This is the most dangerous drug on the street, and it's reaching epidemic proportions."

Los Angeles has seen Angel Dust use for quite some time, but in the past three years seizures have jumped some 2,000 percent to 5.1 million dosage units, according to Mike Guy, a member of the L.A.P.D. narcotics division, and in the first two months of this year 3.8 million units have already been confiscated. "It has become the drug of preference in some high schools, particularly in the black and Chicano communities," says Leslie Bragg, director of Do It Now in Hollywood. "It's taking the place of barbiturates because it's easily obtainable."

In the largely white communities of the San Fernando Valley, reports show that 10 percent of the kids surveyed call it their preferred drug; another 40–50 percent say they've used it.

Even with the addition of older users to the roster of people who "want to get —— on PCP," the majority of users remain out-of-work, mostly male, high school kids. On the other hand, everybody—from former heroin dealers to well-heeled college grads—has been making it.

"If you've got two years of college chemistry and can follow directions, you can make it," says Dr. Smith. The necessary lab equipment is minimal, and recipes for PCP abound in such books as *The Whole Drug Manufacturers Catalog.*

Moreover, PCP has one of the highest profit margins of any drug. The basic chemicals needed for "cooking" a pound run to about $150; it then wholesales for about $16,000. A gram of pure PCP wholesales for about $130. Buffed, or cut, that one pure gram will yield $400 on the street; and with 28 grams in an ounce, and 16 ounces in a pound, a heavily cut pound of PCP now represents $58,000.

The weirdest things about PCP remain beyond the ken of government agencies, psychiatrists, street workers. One must turn to the users themselves.

Herman, a 42-year-old who hangs out in L.A. and collects welfare checks, says, "I know my memory is shot, and I know it's from Angel Dust. Every time I smoke I'm very paranoid—I want to say that. Pleasure-wise, though, I have, hey, I've enjoyed it. But still I say it's not for people. Animals, fine. But anybody who manufactures this stuff should be behind bars for life."

Will Herman smoke it again? "Sure," he says, "if someone offers it to me."

Jim, a 29-year-old New Yorker who has moved to San Francisco, used PCP on an occasional basis. "I was suffering from a complete loss of identity," Jim says about his PCP trips. "I had no idea what I was doing. Physically, I was separated from my body. Everything was on a flat surface, like cardboard cut-outs. I was on a roof once,

and I felt I could step off the roof with my foot and touch the ground. I couldn't talk; I saw people on the floor like they were dead, but I created this barrier, so it was like watching everything and not being in it."

The Angel Dust depression, widely reported even among light users, is now suspected of leading to psychological dependence. "What they say is that 'I can't stop,' and apparently they have a pretty heavy dependence," says Leslie Bragg. "As in all drug abuse, the psychological effects, the underlying cause of a person's drug use, is really what keeps him strung out and using."

"I don't know," says Steve Lerner. "This drug is so weird. This is the first time I've seen people take a drug, tell me what a horrible experience it is, and then go right back to it. I just don't know why. Nobody does."

One might also ask: Why did William S. sexually attack his daughter? Why did James M. hang himself in jail? How did Patricia J. drown in a shower? Why did Ricky C., a good swimmer, sink like a stone when he jumped into a pool?

Even more baffling are the murders that have been perpetrated by people under the influence of PCP, murders that have provoked disturbing issues in the courtroom. Charles Peters, a chronic PCP user, barged into a stranger's house and stabbed her 22-month-old child to death, then stabbed the woman (who subsequently lost her seven-month-old fetus). Peters then took off his clothes and wandered around the neighborhood covered with blood, shouting, "Hallelujah, I'm Jesus!" Dr. Smith, who testified for the defense, says that "they want to charge first degree murder, which requires premeditation, malice aforethought, and the ability to judge right from wrong—which these people don't have." The jury voted him guilty of second degree murder. Another case involved Barry Braeseke and David Barker. The two teenagers, in an off-the-wall scheme to inherit some money, killed Braeseke's parents and grandfather. Psychologist Lerner, who testified for the defense in that case, blames "hypersuggestibility, which is seen in many chronic users. Defenses you would normally have, where you would maturely deliberate the possible consequences of an action, are all thrown out the window." The jury found the pair guilty of first degree murder.

The PCP story is a labyrinthian one; murder, death and mayhem play only a small part, and there are thousands upon thousands of PCP users who don't go berserk on the stuff. According to Art Stickgold, chairman of the board of directors of the Do It Now Foundation, "It seems clear to me from the number of labs they're closing down that there are, I don't know, maybe 300,000 users in the L.A. and San Francisco areas. Maybe more. And they're not *all* having bad trips."

Stickgold has a point. The hospitals, morgues, shrinks, cops and drug counselors see only the tip of the iceberg—the casualties. The vast majority of "dusters" are "maintaining"—smoking recreationally and in small doses to get the high they want. And, there will be more of them, no doubt. Throwing an 18-year-old small-time dealer who uses the drug himself into jail on a first offense is not the way to deal with the PCP problem. Education—factual, calm, and to-the-point—is what's needed right now, especially for parents and judges whose panic is the most immediate—and dangerous—reaction.

In the absence of a spiritual center in America, drugs have become a rite of passage for the country's youth. Some drop by the wayside; some make it through. The question, then, is not what drug it is, but why so many of us want to get fucked up.

As for PCP: A society gets the drug it deserves.

Precursors, Analogs and the Law

PCP has several unusual characteristics which distinguish it from other illicit drugs: the ease with which it can be synthesized; the availability of precursors (chemicals from which another substance is formed) needed to make it; and the fact that there may be as many as 36 analogs (drugs in the same family) that seem to produce the same psychoactive effects. All of which add to the aura of chaos and mystery surrounding Angel Dust and make law enforcement efforts difficult.

PCP's two basic precursors are piperidine and cyclohexanone, both of which are widely used in industry and can be readily purchased from chemical supply houses. If one were to request the chemicals in combination it might raise eyebrows, so they are often purchased separately, sometimes in Canada or Europe. Sources indicate that the Drug Enforcement Administration is keeping track of sales of both, piperdine in particular; so far neither has been proscribed by law.

Some chemical supply houses insist on identification or verification of the buyer's background, but untraceable piperidine or cyclohexanone is not terribly hard to acquire. Some of the stuff comes from warehouses where drums are reported accidentally "damaged"; or from forged bills of lading; or the chemicals simply get

"lost" in the big industrial plants where they are normally used. If a criminal chemist wants to cut down on his overhead, he can sometimes buy a five-gallon drum of piperidine for $425 over-the-counter at one of these warehouses. Some PCP "cooks" are nervous enough to spend up to $1,000 for a kilogram bottle of untraceable piperidine, enough to make roughly 60,000 doses of PCP withh a strength of 10 milligrams each. Multiply that by, say, a bargain price of five dollars a hit, and you can see why some chemists would rather be self-employed than work nine-to-five for Dow Chemical.

"We would like to see the precursors made illegal," says Bob Nickoloff, DEA acting special agent in charge of the San Francisco district. "It would knock out the marginal operators and opportunists," says "Ted," a DEA agent working in the field. "Yeah," adds "Ted's" partner, "Joe." "Then they would just start making the precursors, and the field would be left to the professionals."

A California law that's been in effect since January 1977 makes it illegal to possess the two precursors with intent to manufacture PCP, but finding a lab with both precursors and some PCP present—or proving intent—is not easy. Dennis Downum of the Oakland P.D. tells a story about the lab he tried to bust in Oakland last fall: A group of people were arrested with 11 ounces of PCP crystal, but "couldn't be charged for manufacture because one of the precursors was missing."

Analogs of PCP are an alphabet soup of psychoactive drugs: TCP, PCE, PHP and ketamine, to name only a few. Some are known to have the same psychological effects as what is called Angel Dust, but, again, it is unknown how many of the estimated 36 analogs can produce a high in human users. And of all the possible analogs, only TCP has been placed on the DEA's Controlled Substance Schedule, where it is listed as having no medical use and a high potential for abuse. After it was first discovered and identified in San Francisco in 1972, street use of TCP—reputedly *more* powerful than PCP—began to spread; it was made illegal in July 1975.

Another analog was spotted in the Los Angeles area in 1969 and is referred to as the N-ethyl analog, or PCE. PCE was sold on the street, and apparently it has the same disassociative effects as PCP. If animal studies are anything to go by, it is also more powerful than PCP. At the time of this writing, PCE is perfectly legal.

A cousin of PCP is ketamine, currently being used in many hospitals as an operative anesthetic of short duration. Ketamine has also found its way into illicit use, chiefly among members of the medical profession and in elite drug circles in the Hollywood Hills. According to Con Dougherty, DEA public information officer in Washington, there are no criminal sanctions against its use, possession or manufacture other than those which the Food and Drug Administration has on its books.

The more sophisticated "cooks" who are making drugs illegally are well aware of the situation with PCP, its analogs and the statutes that are being enforced. They follow technical literature and changes in the drug laws with the scrupulousness of Talmudic scholars. "They have been in the drug business all their lives," says Tom Ferris, a member of the L.A.P.D. narcotics squad who's been chasing them for years. "If they're not making PCP," Ferris adds, "they'll do something else."

Alex Shulgin a chemist who's been studying psychoactive drugs for a long time, also notes that the cooks have "an unending line of experimental subjects who, knowingly or unknowingly, can be called on to determine the properties of an unknown drug."—P.K.

[From the Juvenile Justice Digest, May 26, 1978]

PCP Use Skyrocketing as Drug Attracts More and More Youths; PCP Poses Threat To Police Faced With Subduing User With Super-Human Strength

IN L.A. COUNTY, AVERAGE AGE OF FIRST-TIME USER HAS DROPPED FROM 19 TO 14.5 YEARS

"Experts tell us that PCP, or 'Angel Dust', is not an upper, nor is it a downer. It is more like an inside-outer. It produces for all practical purposes a void," declared Los Angeles County Sheriff Peter J. Pitchess in an attempt to describe the effects of Phencyclidine, an animal tranquilizer rapidly increasing in popularity among young drug abusers.

Continuing with his description of the drug's effects, Pitchess said recently a young, five-foot, nine-inch, 160-pound man walked through the plate glass window of a store in south Los Angeles.

"Responding deputies attempted to take the man into custody, they could not," Pitchess said. "A total of eight deputies were punched, bitten and kicked in the attempt in which standard police restraining holds and equipment were useless.

Only the combined weight of six deputies lying prostrate on top of the man rendered him helpless. It was determined he was under the influence of PCP."

Unusual case? Unfortunately, no. In fact, similar events are occurring almost daily around the country and most law enforcement agencies are simply not prepared to deal with the problem.

According to Pitchess, "Never has the law enforcement officer faced a more serious threat to his personal safety. A physical encounter with a suspect under the influence of PCP is as potentially dangerous as confronting an armed suspect. The main difference is that the officer, by way of good training and experience will know what moves to make with an armed suspect.

"Inappropriate handling of PCP users, however, can result in death, injury and, all too often, lawsuits arising out of alleged excessive force used in overcoming the suspect under the influence of PCP."

While the general press, politicians and much of the public express outrage at the need for six deputies to subdue a suspect, many police departments are finding that PCP-related injuries to officers are stretching their thin blue line to the limit. One Los Angeles area police department, in just 3 months, had a total of 12 officers taken off duty to recuperate from broken ribs, jaws, fingers and concussions received while attempting to apprehend PCP suspects.

USERS START YOUNG

Sheriff's Department Sgt. Bob Hussey, told Juvenile Justice Digest in an interview that PCP is being sold in Los Angeles schools by students. "Three years ago the average age of the first-time PCP user was 19," Hussey told JJD. "Today the average age for the first-time user has dropped to 14.5 years."

Hussey said the usual beginner's dose of PCP is 3 to 5 milligrams. It takes 3 to 5 minutes for the drug to begin taking effect. Typically, the user feels a preliminary "rush," followed within 15 to 30 minutes by a high that remains for 4 to 6 hours. The body returns to "normal" within 24 to 48 hours. (Medical sources argue whether the brain ever actually returns to normal after PCP use.)

Hussey, a member of the department's narcotics bureau, conducts seminars on PCP effects in area schools. "We have made some progress with the kids," he said. "Many, we feel, are beginning to realize that PCP is deadly. This is true not only for the effect it has on the user but also for the threat the PCP user poses for those around him."

Hussey said the average PCP user is in his/her mid-20s. "Users begin early and develop a psychological dependency on the drug. Their bodies also develop a tolerance. Experienced users often must take up to 100 milligrams to achieve the same high they started out with."

LOSS OF PAIN

Juvenile Justice Digest was told PCP users are actually taking an anesthetic, which for all practical purposes, totally eliminates the body's ability to feel pain.

Sheriff's Department officers have been alerted to the following characteristics of the PCP phenomenon:

PCP produces violent behavior, memory loss, personality changes, severe depression, and suicidal and homicidal tendencies.

Researchers and users agree that PCP produces more violent behavior than any other illegal substance.

Officers frequently encounter PCP users in zombie-like states, yet when they attempt to take action find themselves faced with hyper-violence and superstrength.

Regardless of whether it is the user's first experience with PCP or his 400th, the drug is totally unpredictable.

Users frequently feel they are God or stronger than God. Apparently because of high body temperature, users sometimes disrobe completely and often seek water (a fountain or pool).

PCP unquestionably heightens the body's normal pain threshold and renders usual police restraints useless.

MULTI-MILLION DOLLAR RACKET

Hussey told JJD that a pound of PCP crystals sells for between $4,500 and $12,000 in the Los Angeles area. He said that in 1975 the department closed three PCP labs. Since that year the department has closed 80 labs and in January of 1978 alone, closed 18 labs. In December, the biggest lab ever discovered was closed with over $300 million in PCP crystals on the premises.

"Experience has shown us that most PCP labs are located in densely populated areas," Pitchess said. "They are usually poorly equipped, disorganized and operated by a ramshackle collection of people ranging from graduate chemists to high school students * * * some with no more expertise than what they can muster from a collection of crinkled instruction notes."

THE FIFTH HORSEMAN

Pitchess speaks of a "mental death" for PCP users. "* * * We went through it during the LSD craze. It took tens of thousands of destroyed minds before we acted in earnest. There is a difference, however, since PCP is the most dangerous and destructive substance ever to surface in the illicit market. Law enforcement, health officials, and drug treatment people agree at least on that point."

Measuring the extent of the PCP problem in Los Angeles County alone, Pitchess said phencyclidine accounts for 35 percent of all illicit narcotics analyses at the sheriff's department criminalistics lab. "And considering the fact that the drug had its origins on the west coast, the rest of the Nation can well expect they will soon reap a similar harvest. Law enforcement agencies will find themselves facing what one investigator has called The Fifth Horseman of the Apacalypse.

Anyone discovering a clandestine PCP lab should be aware that extreme caution must be taken at all times to prevent a lethal accident. Ideally, a trained chemist should be on hand when efforts begin to dismantle the drug factory. The following rules apply:

Make sure the lab is well ventilated by opening all available doors and windows.

Do not turn on lights at the location until it is well ventilated.

Never smoke while at or near a PCP lab.

Never allow hydrochloric acid and cyanide (used in making PCP) to become mixed. The fumes from such a mixture will quickly kill anyone in the immediate area.

Do not remove any flasks from ice baths.

Do not use flashbulbs for picture taking until the lab is completely ventilated.

WIDE RANGING EFFORT NEEDED

"The public must be made aware of the PCP threat in no uncertain terms," Pitchess declared. Advising police and juvenile justice officials and administrators, Pitchess added that health experts and drug program people "could do much to assist * * * in your efforts.

"We must work with the media, with schools and with civic and social groups to quickly educate as many people as possible to the bizzare and violent episodes one can expect from use of the drug. No holds should be barred in getting this message across."

EDITOR'S NOTE:—For more information, contact Sheriff Peter J. Pitchess, County of Los Angeles, Hall of Justice, Los Angeles, Cal., 90012 Tel: 213-974-4101.

[From the Washington Post, Apr. 4, 1978]

PCP PENALTIES ARE INCREASED BY MARYLAND LEGISLATURE

(By Felicity Barringer)

ANNAPOLIS—The Maryland legislature, reacting to statewide concern over teen-agers' increasing abuse of the synthetic drug PCP, enacted legislation yesterday to double the maximum prison term for those convicted of its sale or manufacture.

PCP is beginning to rival marihuana as the drug of choice of teen-agers in both Montgomery and Prince George's counties, officials claim, and it is reportedly being produced in large quantities in clandestine chemical labs throughout the Washington area.

"Right now this is one of the most serious drugs in the state of Maryland," Timothy E. Clarke, a deputy state's attorney from Montgomery County, testified before the legislature recently. "Kids seem to think it's the thing to take this drug * * * and the effects can be 4 to 8 hours of extensive motor and physical damage to the body."

The bill, passed by the Senate yesterday after clearing the House earlier this session, is expected to be signed by Acting Gov. Blair Lee III. It would make anyone who is convicted of making or distributing PCP subject to a maximum prison term of 10 years and raise the maximum fine from $15,000 to $20,000.

One of the reasons for the increase in the drug's use in the community is the ease with which it can be manufactured, according to Richard L. Hamilton, director of Maryland's drug abuse administration.

All that is needed, according to Hamilton, are ordinary chemicals "you can pick up at any drug supply house." He said they can easily be mixed to produce PCP, the popular abbreviation for the drug phencyclidine, "in your kitchen."

Another reason for its popularity is that it comes in a variety of forms, according to researchers who have studied the drug and its abusers.

"Angel dust," as it is sometimes called by its users, can be snorted like cocaine or dissolved in a liquid and sprayed on marijuana which in turn is smoked, researchers say. In fact, according to the National Institute on Drug Abuse, PCP can be mixed with virtually anything and consumed.

More commonly, the drug is sprayed on a dried herb such as parsley, rolled into cigarettes on cigarette paper, and then smoked. Used this way, it can produce disorientation, fearful and restless states, or mild euphoria, according to a study shown to legislators by Deputy State's Attorney Clarke.

The drug's adverse effects when taken in other ways, such as by snorting through the nose or orally, range from brief spells of amnesia and possible seizures to prolonged amnesia, vomiting, repeated seizures, and even comatose states, according to Clarke's evidence.

"The whole problem with PCP is that there's so little actually known about it," said Del. American Joe Miedusiewski, who has sponsored another bill that would change the classification of PCP from "Schedule Three'—the category under which a drug that may be prescribed by a physician, such as an amphetamine or barbiturate—to the more restrictive category of "Schedule Two."

"Schedule Two" drugs are defined as having "a high potential for abuse, no accepted medical use in the United States, and a lack of accepted safety for use under medical supervision." Forty-three other drugs are included in this category.

"The effects are bizarre," said Grenville B. Whitman, the former head of a Baltimore city drug abuse clinic, "Man Alive." Whitman said he did not believe that the drug has been shown to be addictive, although "it always has been considered a drug to avoid. There are no benign effects associated with it."

Miedusiewski's bill to change the classification of PCP was scheduled to come up for a vote late last night.

Notwithstanding the drug's effects, prosecutors have testified that it has become a quick money-maker for those who go into the manufacturing business. "Anyone with a high school chemistry course behind them can make it," Deputy State's Attorney Clarke said at the hearing. "It takes six hours to turn $125 worth of noncontraband drugs into $37,000 worth of contraband drugs," he said.

The Federal Drug Enforcement Administration said last year that PCP, which is legally manufactured as an animal tranquilizer, has replaced LSD, the hallucigenon of the 1960s and early 1970s, as the most commonly sought synthetic drug.

[From The Plain Truth, April 1978]

Angel Dust: Another Bad Trip

(By D. Paul Graunke)

A boy in Detroit, Michigan, is picked up by police, screaming that one of the policemen has turned into a giant bat. A man in Washington, D.C., is arrested while singing naked in a supermarket. A San Francisco Bay Area man kills his mother, father and grandfather.

The common denominator in these bizarre behaviors is that each person was under the influence of angel dust or PCP—the latest fad drug to capture the fancy and consciousness of young people. Called by various names on the street—hog, superweed, lovely, goon, and superkools—the technical name for angel dust is phencyclidine hydrochloride. (PCP for short.) It was first developed as a tranquilizer in the 1950s, but the drug was abandoned because it led to unpredictable and violent side effects. During the youth revolution of the '60s it made a brief appearance on the drug scene. It is believed to have first been used for fun and freaking out at the 1967 Monterey Pop Festival. But its undesirable side effects were too frightening: it quickly faded from popular use within a year.

MORE PREVALENT THAN POT

About three years ago it started to make a comeback, leading to a gradual rise in the number of PCP-induced "bad trips" treated in emergency wards of hospitals. By

the beginning of 1977 its use was widespread enough to constitute a major drug problem. During January and February of that year, an average of 80 PCP-related emergencies were reported each month in Los Angeles County. That compares with 51 monthly in 1976 and 10 a month in 1975. In New York City, reported incidents of emergency treatment for PCP usage rose from 13 percent of all drug emergencies in 1973 to 32 in July-August of 1975, and to nearly 43 percent in the last three months of 1976. Similar sharp rises in its use were soon being reported elsewhere.

Today, drug officials say that PCP is becoming in white neighborhoods what heroin has been in the black ghettos. "It's clearly the drug of choice among white suburban teenagers," says Theodore Vernier, director of the Federal Drug Enforcement Agency in Detroit. "Our undercover information is that PCP is more prevalent than marijuana in some high schools," reports Los Angeles drug officer Michael Guy. In the San Francisco Bay Area, authorities attribute over a dozen deaths last year to overdoses of PCP. Nearly a third of San Diego's 126 overdose deaths in the past year are linked to the drug. In Montgomery County, Maryland, police connect several killings and suicides to PCP use. (Authorities believe many PCP-related deaths are overlooked in coroners' reports because they appear to be accidents—drownings, deaths by fire, falls, etc.—involving people whose judgment and coordination have been adversely affected by the drug.

CHEAP, SIMPLE TO MAKE

Why the popularity of PCP? For one thing, it is cheap, especially when compared with other illicit drugs such as cocaine and heroin, whose prices have risen sharply in the past year. Typically, a dose of PCP can be bought on the street for $1, a half gram for about $10 to $12.

Another factor in its favor is the ease with which it can be produced. PCP can be made locally and quickly with simple equipment and readily available ingredients. Lt. D.D. Williams of the Houston, Texas, drug squad says, "Unlike heroin, which comes from out of the country, it is a domestic phenomenon. It's obviously simple enough that a first- or second-year chemistry student can make it." Fly-by-night chemical plants—known as "pig outfits"—have sprung up across the country. Their profits are enormous, according to John Van Diver, Western regional director of the Federal Drug Enforcement Administration.

Then there is the factor of novelty—young people looking for a new drug experience, a different high. PCP has that, all right, but the price that may be paid in terms of baneful effects on the human mind may not be worth the "trip."

UNPREDICTABLE SIDE EFFECTS

Usually produced as a white powder, PCP can be sniffed, like cocaine, smoked as an additive to marijuana, oregano or parsley, chewed on mint leaves or injected. Those who have taken PCP describe its more benign effects as like that of very strong marijuana. One user said it is like "a combination of taking LSD and sniffing glue." At best, it provides a mellow sensual or dreamy experience. Users feel the effects within two to five minutes after smoking a small amount, and the feelings peak in about 15 to 30 minutes. The high continues for four to six hours, but the user does not feel normal for 24 to 48 hours.

Unfortunately, there is no way that one can guarantee a good trip with PCP. "The tragedy is that most people experience angel dust as some unusual form of marijuana and associate it with the benign patterns of marijuana, but it's anything but that—it's a real terror of a drug," says Dr. Robert L. Dupont, director of the National Institute on Drug Abuse.

In truth, PCP can have bizarre and totally unpredictable effects on the mind of the user. "The extreme unpredictability of behavior is one of the most frightening things about angel dust," says Steve Lerner, a psychologist at R. Stanley Burns and Associates, a San Francisco-based group that has been studying the drug for almost four years. In controlled experiments using moderate doses, PCP has produced periods of stupor or even coma lasting for hours or days. In acute cases, according to the Drug Enforcement Administration, the drug has caused some users to be in a confused state of mind for up to two weeks, followed by a psychosis that lasts for several weeks. The psychosis closely resembles paranoid schizophrenia. These results were obtained from PCP manufactured legally under rigid controls and purity standards and administered under supervision. How it affects the user in the uncontrolled, unsupervised conditions of the street was summarized in a recent article in the Journal of the American Medical Association: "unpredictable destructiveness," with users "running aimlessly, performing bizarre actions, striking bystanders," or attempting to commit suicide.

"People can use terrible, terrible judgment when they have been using PCP," says Dr. Gerald Crary of the Los Angeles County-USC Medical Center. "They think they can stop a train with their finger, or they can fly. Many of them are really terrified, frightened, confused," he states. "Some people will flip out on a low or normal dose.

Physicians say that there is no direct antidote for PCP, and its toxicity, unlike that of other psychoactive drugs, can last for weeks.

Because of its unpredictable effects, many hard-core drug users scorn it as a "freak drug," and some street dealers misrepresent the drug to be cocaine, LSD, heroin or THC, the active ingredient in marijuana, in selling it to unsuspecting users.

Recently, PCP has also been used to "boost" cocaine and heroin that has been diluted or "cut" to two to three percent purity to produce higher profits.

A youth emerging from a five-day PCP coma in San Diego said he thought he had been buying bargain-priced cocaine. He remained in a psychotic state for a month and is still confined to a mental hospital with frontal-lobe brain damage.

Although many youngsters may be unsuspecting users of the drug, which can be detected only by chemical analysis, others have acquired a bravado craze for it.

"Even though they're gambling with death, many high school kids consider PCP to be very macho," says Howard D. Young of the San Diego Department of Substance Abuse. "If you can handle it, then you're supposed to be a man."

PCP is another in a long list of psychoactive drugs used for fun and pleasure by a large number of young people and adults since the drug revolution of the 1960s. A lot of drug use is—and always has been—experimental. It's something people do maybe once or twice out of curiosity or peer pressure, without becoming habitual users.

DRUG ABUSE SYNDROME

But a significant minority of young people and adults continue to use drugs over and over. Once upon a time, drug cultists were tripping on LSD, then floating high on cocaine, then spaced out on marijuana. The drug fads come and go, but the underlying problems remain the same. Drug abuse is a symptom of a society that is failing to meet individual human needs. Drugs stand in for whatever is missing in life. They are a buffer from problems people don't know how to cope with in real life. They provide stimulation when there is nothing else stimulating to do. They are a dramatic way of killing time—and maybe killing oneself.

[From Woman's Day, June 14, 1978]

ANGEL DUST: THE DEVIL DRUG THAT THREATENS YOUTH

(By David Black)

Easy to make and easy to come by, this street and schoolyard drug packs a wallop that can sedate an elephant. It can also blow a human mind to the far reaches of fear and panic, trigger acts of savage violence and create delusions that lead to the user's death.

"The first time I had angel dust was at a party," said Robert. "I thought it was regular marijuana. So I smoked some, and I felt like I was on a cloud. I thought, 'Hey, what is this?' I knew it wasn't just grass. It was very nice. My friend said it was 'superjoint.' I said, 'If you say so.' "

Robert is young, in his twenties, but he looks like a wizened old man. His hair is very short, almost a Marine cut. When he talks, he blinks as though he has just been startled awake. He chain-smokes cigarettes while he tells the story, punctuating his sentences with frequent coughs, which sound like the rattling of seeds in a dried-out gourd.

"A couple of days later, I smoked some angel dust again, and I got very paranoid," he said. "I was with some people, but I had to leave. I thought they were trying to get me. I went running down the street seeing shadows chasing me. Later I was smoking some more dust and drinking wine with a friend in the park. My friend tried to take the wine bottle away. I stabbed him with my knife four times. The next day the girl I was with asked me if I remembered what I had done. I didn't remember anything." Robert's friend survived; Robert was arrested, convicted and sentenced to a relatively short term in jail. "I never smoked angel dust again. But now everywhere you go, all you hear is 'I got dust.' Everywhere."

Cheap and easily obtained, this new mind-blowing street drug has many other cynically descriptive names: Killerweed. Elephant dust. Cadillac. Superjoint. Cyclone. Goon. Hog. DOA—the police blotter's grim acronym for "dead on arrival."

But no matter what it's called, it's all PCP—phencyclidine—a drug that is used for tranquilizing elephants and primates in zoos and experimental laboratories. It comes in tablets and crystals but most frequently in powder form. Like cocaine, it can be "snorted," or inhaled through the nostrils. Like heroin, it can be injected into a vein. But because it is so commonly mixed with marijuana, anyone who smokes an occasional "joint"—or whose children do—should be alerted to the fact that PCP is not merely a new form of marijuana, but an additive that can have serious, long-lasting and perhaps even lethal effects.

"Since angel dust is being distributed and used mainly in conjunction with marijuana, the aura of so-called respectability that has become associated with marijuana has been extended to PCP," says Dr. Michael Pawel, director of psychiatric emergency services at St. Luke's Hospital in New York City. "And this respectability by association is unfortunate, because PCP is quite clearly a much more dangerous drug. I remember the first patient I saw who had a bad reaction to it. A runaway. She was clearly toxic. When I asked her what she had taken, she said, 'Angel dust,' and nobody knew what it was. Since then we've been seeing a number of PCP cases every month. They're often violent. Out of control. Delusional. Afraid the police or a cab driver or everyone in the city is out to get them. And people who are as frightened as that can be dangerous. If a kid who is armed takes PCP and decides that people are trying to shoot at him, he's liable to shoot back."

The same horror stories make the circuit of both the users of PCP and its critics. There was the boy who stepped off the roof of a building, thinking that angel dust had given him wings. There was the boy who climbed down onto the subway tracks and wandered into the tunnel as the train came shooting out of the dark. There was the young man who stabbed his mother to death and had no memory of having killed her. And there was the boy who bit off his girlfriend's breast.

Everyone who takes the drug does not necessarily become violent, of course, but violence and panic are common. The drug affects the sensory cortex, the midbrain and the thalamus, causing—in various cases—numbness of the cheeks and extremities, an increase in blood pressure and heart rate, loss of muscle coordination, disorientation, confusion, sweating, flushing, blurring of vision, dizziness, nausea, a sensation of weightlessness, a distorted awareness of time and space, a feeling of shrinking or growing in size, the illusion of being outside one's body, depression, paranoia, a fixation on death.

People obviously do not take PCP because they want to induce nausea, violence and panic. But they may take it to experience other more pleasurable or intriguing sensations—to feel what it is like to have their consciousness leave their body, to fly or levitate, to move through fluctuating space and time, or to increase sexual desire.

"I smoked angel dust because everyone else was smoking it, and I wanted to try it," said Jill, a fifteen-year-old who was wary about being questioned. She kept glancing around the small room in which we sat, plucking at her beaded necklace and fiddling with the three empty cigarette boxes someone had left on the table as though she were playing some kind of shell game with herself. "When I smoked it, it made me—you know—want to have sex. You feel so sort of mellow. It just helps you like it more."

Whether used as an aphrodisiac or as fuel for a psychedelic joyride, PCP has recently become the drug of choice among teens and young adults. Ten years ago it was virtually unknown, even to many professionals in drug-abuse programs. But the National Institute on Drug Abuse now estimates that between six and seven million individuals—mainly between the ages of twelve and twenty-five—are using or have used this dangerously unpredictable drug. Last year, 50 percent of all hospital emergency cases involving hallucinogens were attributed to PCP. More alarming is the fact that it was the known cause of at least one hundred deaths.

The figure for deaths, like that for emergency treatments, is "probably a gross underestimate" in the opinion of Mary Carol Kelly of the National Institute on Drug Abuse. "Let's say that someone who has taken PCP dies in a swimming pool," she explains. "That's probably listed as a death by drowning, not PCP. We know there was a case of someone who took PCP and drowned in a bathtub. We also know of instances in which people who took PCP sat and watched themselves burn to death, but cases like that might be listed as a death by fire. So the statistical figure of one hundred people dying of PCP during 1977 is likely to be substantially less than the actual figure would be if the true cause of death had been known in all cases."

PCP was originally synthesized in 1957 for use as an anesthetic, but its capacity for triggering violent psychotic reactions in patients made it unsuitable for human therapeutic use. When it first surfaced as a street drug in 1967, Mary Carol Kelly recalls, it was not smoked or inhaled. "It was swallowed, ingested. And the side

effects of swallowing PCP are less controlled and of longer duration than those you get from inhaling it. The effect may last four to six hours with an even longer 'coming down' period. Because of this PCP lost its popularity and went out of fashion, though it never entirely disappeared. Then, more recently, it developed that you could mix it with marijuana and smoke it, and it gained popularity. Today the National Institute on Drug Abuse considers it the number-one problem drug in the country."

People who use angel dust have bad "trips"—or reactions—five times as often as those who use other psychedelic drugs. And the bad trip may recur in flashbacks over a period of several weeks. The damage, it should be noted, can be physical as well as psychological. A 1975 report in the *Journal of the American Medical Association* states that in some cases people using PCP may suffer a "fatal hypertensive crisis" that will blow not just their minds but their entire life-sustaining system.

One insidious aspect of the problem is that PCP is so cheap and easy to manufacture, it's difficult to control. As David Hoover of the United States Drug Enforcement Administration puts it: "A high-school kid with two hundred dollars and a little chemistry experience can mix up a batch easily." Since the recipe for PCP has been published in several underground publications, and the two-hundred-dollar investment can be parlayed into street sales of anywhere from twenty thousand to fifty thousand dollars, it's little wonder that the number of people making the drug is increasing. According to the Drug Abuse Warning Network, significant production and use have been evident in no less than twenty-one major cities, coast to coast—among them, San Diego, New York, Washington, D.C., and San Francisco.

Although PCP has a very specific formula, there are thirty-two variations of the drug which have similar effects. "If a kid making angel dust cooks the mixture too long or doesn't have the proportions right, he's going to get something a little different," says Kevin McEneaney of the Phoenix House Foundation. "And, of course, if the guy making it isn't careful, there is always the danger of the chemicals exploding and killing whoever is standing too close—which recently happened in New York City."

Some dealers don't even try to manufacture PCP. As substitutes, they mix marijuana with talcum powder, or doctor it with hair spray, roach spray or other hazardous substances. "A lot of things might be passed off as PCP," says Tom, a twenty-year-old, who until recently used the drug. "Chemicals I never even heard of are added to marijuana as angel dust * * * Jet fuel. I don't know where they get it. Even embalming fluid. People go out in back of funeral homes and drain it out of discarded cans."

When mixed with marijuana, PCP or any of its spurious substitutes is difficult to detect—and unless they are having a bad trip, so are its users. Parents who suspect their children of using angel dust should not snoop in search of proof, experts say. Kids who feel guilty about using drugs want to be caught and will provide parents with clues—physical evidence left in the open, bizarre behavior or conversations intended to be overheard. Others may reveal clues inadvertently.

Once the clues are verified, parents are advised to react calmly, speak reasonably and try to learn why their children are using drugs. It may be to gain the acceptance of peers, or it may be out of curiosity, rebellion or a simple desire to get high. One young man I spoke with confided that the only time he doesn't want to use drugs is when he is skiing. For him, drugs are a substitute for the thrills of a challenging sport—a way of skiing down the slopes of his brain.

When a child manifests the symptoms of a bad trip, parents should immediately obtain professional help from the neatest hospital emergency room or poison-control center or their family physician. Medical treatment is imperative if a prolonged reaction and recurring flashbacks are to be prevented.

For help in dealing with continuing drug problems, parents should consult professionals who work in the field of drug-abuse therapy. Phoenix House Foundation, whose address is Box 333, New York, N.Y. 10024, will send free information on drug abuse and refer parents anywhere in the country to qualified professionals in their area. The phone number is 212-595-5810.

As Dr. Mitchell Rosenthal, head of Phoenix House Foundation, sees it, the problems of juvenile drug abuse have been aggravated by the growing acceptance of drugs in our society. "If a fifteen-year-old daughter were having two martinis at lunch every day, her mother would be horrified," he observes, "but that same mother may not be horrified to learn that her daughter is smoking marijuana and getting stoned during the school day. And that is a very significant change that has occurred in the past few years.

"There has been a chemicalization of life's processes, and it has changed something about the values of the society in which we live. The children are reflecting

the values that they see around them. * * * I don't see that the kids who are finding new ways to get high and tranquilize themselves are too different from the pharmaceutical industry that spends a lot of money on research every year in order to find new ways to tranquilize its customers."

This year angel dust is the street drug of choice. But the drug culture's underground chemists can vary compounds with as much virtuosity as a jazz musician improvising on a tune, and other hazardous drugs will be found to replace it.

Unless we adults reexamine the values by which we live and learn to handle the stresses and frustrations that lead us to legally and promiscuously pop pills in order to get through our days, we will have a younger generation that will increasingly smoke, snort and pop drugs for fun. And every year there will be more drugs to smoke, snort and pop.

[From Human Behavior, June 1978]

High on PCP

(By R.W. Dellinger)

The dream is the only thing that's real to Philip anymore. The aggravated assault charge, the days lying on a cement floor in a jail cell wanting to tear his eyes out, the woman in court with a 10-inch purple scar ringing her neck like a collar—they don't mean a thing.

In the dream, Philip always saw a man standing under a tree in some far-off land. Because it was early in the morning and very foggy, he couldn't quite make out who it was. But when it cleared up, he could see a good-looking dude with blocklike features and porkchop sideburns. And he knew this human being. It was himself.

The man in the dream had two monkeys deep inside him, arguing, fighting, trying to get hold of his mind. After a while, Philip realized that one wanted to trap him—not in a cage, but in his own words and logic. He soon learned he had nothing to worry about, though. For whenever he found himself cornered, the other monkey would show him a way out.

Philip, a tall 6-footer, has just finished his Friday afternoon therapy with Dr. David Smith, founder and medical director of the Haight-Ashbury Free Medical Clinic. At his side is a friend with upswept hair, dressed in a white turtleneck and a camelhair coat. Her name is Jeannie.

"One afternoon last September, they say I cut a woman downtown around 6 o'clock," Philip says in a soft baritone. "She was sitting in a car talking to her boyfriend, and I walked past and cut her with a straight razor. And she had a 100 stitches put on the side"—he brings his hand up to his throat and makes a 5-inch slash—"right here."

There's a reason why Philip doesn't remember any of this. For three weeks before it happened, he had been smoking five joints a day laced with PCP.

All Philip says he knows is that when he came to, after dreaming the dream, he was in a patrol car, then in a dark cell. When he heard the cell door opening and slamming, he rubbed his eyes and saw his new roommate, a drunk. "The first thing that hit my mind was that the cops put this guy in to hurt me," says Philip.

Philip couldn't shake his paranoia. He got to feeling so badly that he asked for a doctor. All he got was a transfer to the county jail, where they took his black leather jacket away and put him inside a strip cell. There was nothing in there except a hole in the floor for a toilet. Philip wanted to tear his eyes out because he didn't want to see any of this.

Later, when he was released—amazingly, on his own recognizance—Philip went home. He stayed there. He lost 27 pounds and thought he was losing his mind. So did other people.

"I called him up, and he didn't even know what day it was. He didn't know what month it was," says Jeannie. Thinking that Philip was having a nervous breakdown, she went to her family physician.

Philip wound up in San Francisco General Hospital, where it was discovered that his problem wasn't mental. It was physical. It was "angel dust."

Since Philip got out of the hospital, he and Jeannie have been coming to this three-story Victorian house on narrow Clayton Street to see Dr. Smith, an expert in drug treatment.

"He says it'll make you go off and do things that's unbelievable, but at the time, to you, are real," says Philip. "So you cannot act. You cannot make no decisions. You have to be awful careful and find somebody to talk it out with. You can't try to deal with it by yourself. It'll hurt you if you try to deal with it.

"I didn't believe, you know. So I said, 'Now I know I got to find out what happened." "When told what he had done, "I had tears all over my eyes. I said, "I don't want to hear it no more.' "

Jeannie can't contain herself any longer. "It wasn't him. It was not him," she says. "I mean, it wasn't." Philip is 38. He works as a hall aide at a San Francisco school, a job he enjoys because he likes kids. Philip smokes grass but says he's never dropped acid, shot up smack or taken speed.

Last September, some friends came calling on Philip with some "green dust," which piqued Philip's curiosity because a long time before he had smoked some really good grass called green dust.

"After I bought it, first I sampled it, and I knew that the weed was too strong," he says. "This is the way I looked at it: it was some good weed, but it was too strong. So what I'd do is buy me a little bit and sprinkle it over my other weed and then smoke it.

"And then, the next thing I know, I was involved. And I don't remember nothing next until I came out of it.

"There's no way heroin would make you do ——— that. Heroin won't make you trip like that. I mean, I've talked to people, you know, who've been on heroin. I have a brother who's been on heroin. I still got one on heroin, And he'll tell you right now—do not mess with angel dust!"

The following Tuesday, at 2 o'clock in the afternoon, the law would start deciding whether or not Philip should be held responsible for what he did.

"I don't even know what the trial is all about," Philip says. "I don't even care, because they're telling me something that I don't know nothing about."

According to David Smith, a case such as Philip's isn't all that rare. "Well, I don't see anything but the bad part of it," he snaps. "I think it's the most dangerous drug I've seen. I've been in this business full-time for 12 years, and I've seen every imaginable drug. And the worst reactions I've seen have come from PCP."

Smith has attended to some 200 cases. About Philip he simply says: "He got into it accidentally but had a really horrible reaction to it."

Twenty-one years ago, after pharmacological, toxicological and metabolic tests on mice, rats, and monkeys, the U.S. government decided that PCP or Phencyclidine could be used as an anesthetic. At first surgeons thought PCP was one great drug. Administered intravenously in doses of .25 mg per kg of body weight, it induced an unresponsive state and total anesthesia, although the eyes remained open and the patient appeared to be awake. It didn't interfere with breathing or decrease blood pressure as had a number of other anesthetics.

Parke-Davis & Co. who put out PCP under the trade name Sernyl, soon cornered the market. And in 1963, the Detroit-based pharmaceutical house got the U.S. patent.

A not-so-funny thing happened then. Patients started waking up after their appendectomies wondering where their heads were. Or why the surgeon who operated on them had turned into a South American vampire bat with a 10-foot wingspan and 4-inch claws.

So, on January 22, 1965, Parke-Davis wrote to the Food and Drug Administration asking that the clinical use of PCP on humans be stopped. Two years later, the Federal Government got around to ruling that the drug, now under the trade name Sernylan, could be made and sold only as an animal tranquilizer.

But the story of PCP doesn't end there.

In the summer of 1967, it popped up in the Haight Street area of San Francisco. The hippies called it the peace pill. A year later, it appeared in New York City as hog. But most of the time during the late '60s and early '70s, PCP was passed off on users as LSD, cocaine or THC.

PCP is no longer a drug of deception. It has come out of the closet as "angel dust" or "crystal." It has broken out of black ghettos and brown barrios and moved into lily-white neighborhoods.

"It's clearly the drug of choice among white suburban teenagers," Theodore Vernier, director of the Drug Enforcement Agency in Detroit, told the U.S. News & World Report. In March of 1977, a study of drug users in 39 states found out that teenagers first tripped on PCP at an average age of 14. In 1976, it had been 19. Seventh and eighth graders have walked into David Smith's clinic, and he thinks that there's a PCP teenage culture forming based on a kind of daredevil challenge. "It's like the fastest gun in the West," he says. "If you can handle PCP, you can handle anything."

There's a thin line between getting off and getting psychotic on PCP. Last year 4,000 Americans were treated in emergency rooms because of the drug. The Drug Abuse Warning Network, which samples emergency rooms, crisis centers and medi-

cal examiners across the country, not long ago reported that PCP, either alone or in combination with other substances, increased from 13 percent of all hallucinogens recorded in the summer of 1973 to 43 percent during the last 3 months of 1976.

Last year, the National Youth Poly-drug Study found that a third of the youngsters in the drug-abuse treatment programs had tried it. Girls used it as much as boys.

When the National Institute of Drug Abuse—NIDA—reviewed the client records last year at a psychiatric facility, it discovered that 15 percent of the clients had used PCP. The institute promptly put out a statement that as much as 20 to 30 percent of admissions to mental hospitals in America may be linked to its use.

The Phoenix House Adolescent Drug Rehabilitation program in New York City reported in the fall of 1977 that almost half of its last 50 admissions were for PCP.

Twenty to 30 dust overdoses are treated at crisis centers and emergency rooms every day in the East Bay area near San Francisco.

Early this year, a disgruntled Los Angeles assemblyperson named Maxine Waters put the problem in terms she knew her constituents would understand. "In 1977, the taxpayers of Los Angeles County spent an estimated $2½ million on 'angel dust'-related services—2,500 arrests, over 275 deaths. God knows how many medical patients, police injuries, auto accidents and court costs," she reported.

Also early in this year, California's Governor Jerry Brown announced that PCP will be his State's number-one dope target for the next 2 years. Brown wants to spend $3 million of his next budget to fight dust.

The Drug Enforcement Administration states that in the last 4 years PCP has become a major drug of abuse overtaking LSD as the big hallucinogen on the street. Dr. Robert DuPont, director of NIDA, says: "It appears that PCP use has become epidemic."

Phencyclidine behaves like both a hallucinogen and a central nervous system stimulant. But pharmacologists aren't sure where or how the drug works. Many think it acts on the sensory cortex, thalamus and midbrain to scramble internal stimuli.

David Smith says the drug can produce mind-body dissociation, catatonic rigidity, psychoticlike symptoms and amnesia. There are three stages that users go through, he says. The initial acute toxic state can last up to 24 hours. After that, the person can have a psychoticlike reaction that can go on for a week. The user may then slip into a condition that is almost indistinguishable from schizophrenia. Smith knows one person who's been in a San Francisco hospital for over a month in such a state.

"You don't become physically dependent upon it," he says. "But there are people who are using it chronically and have developed a psychological dependence."

During the fall of 1973, Dr. Paul Luisada, a deputy medical director for the National Institute of Mental Health, noticed something strange. All of a sudden, the admission rate for what seemed to be long, severe and treatment-resistant schizophrenic psychoses tripled at the Area D Community Mental Health Center at St. Elizabeth Hospital in Washington, D.C. Many of the patients were violent and aggressive when they came in.

After 3 or 4 weeks in the hospital, each of these people admitted to having smoked something called angel dust. Similar epidemics occurred at the end of 1974 and in 1975 and 1976.

Ever since the first case—an 18-year-old high school senior who kept muttering that he had a knot in his head—caught Luisada's attention, he's taken note of the PCP psychosis. Eventually, he wrote a paper about it entitled, "The PCP Psychosis: A Hidden Epidemic."

"Behavior is extremely unpredictable," wrote Luisada. "These patients may be reluctantly cooperative one minute and violently assaultive the next. Some carry lethal weapons to protect themselves from their imagined persecutors. Bystanders have often been furiously, unpredictably and unremittingly attacked without provocation because the psychosis may include both extreme global paranoia and delusions of superhuman strength."

Dr. R. Stanley Burns used to be on the staff of both the rock medicine section of the Haight-Ashbury Free Medical Clinic and the San Francisco Polydrug Project. He quit both jobs to start R. Stanley Burns, MD & Associates with Steven Lerner. The organization has one purpose—to study PCP.

Burns and Lerner have closely observed some 400 people who used dust daily for 2 to 6 years. Two clinical patterns of intoxication emerged, depending on the dosage.

Low-dose users, who were brought to the emergency room by the police often because they were driving erratically or acting strangely after a car accident, were usually confused, restless, agitated or excited. They stared blankly and purposeless-

ly. They didn't know where they were or what time it was. They were euphoric, combative or regressive. Their ability to speak came and went.

Their muscle tone was rigid. Hardly any could feel a pinprick. Their blood pressure was up when PCP was the only drug used. They also always had both horizontal and vertical nystagmus, a condition in which the eyes move up and down or back and forth much like those of a doll.

A few vomited again and again for three hours. Many drooled and sweated. They bumped into things and fell down.

Users who took a higher dose—say 10 to 20 mg—arrived in a stupor or coma. If they had just been smoking dust, they might be on their feet and talking in 30 minutes. But the people who swallowed a really massive dosage were out for as long as 72 hours. And it took some of these patients 15 days to recover completely.

Although Burns admits that PCP can be pharmacologically toxic, he says that this probably accounts for less than 20 percent of all deaths. "We find more and more confirmation that the drug's behavioral toxicity is the really great danger," he told the magazine *Emergency Medicine*. "Under its influence people fall off cliffs and die of the trauma or into the sea and drown. They paddle out to sea on inner tubes or rafts and fall off and drown, they even drown in swimming pools. They die in fires, they die in auto accidents or while walking blindly on the freeway. They don't decide that they can fly and dive out of windows—but they certainly do commit suicide when their comedown depression is severe enough, either by shooting themselves or taking an overdose of anything they can find."

Burns says that in a group of 28 chronic users he and Lerner studied, three died in a 4-month period. Two drowned in swimming pools; the other one burned to death in a fire. All were high on PCP.

Gloria Keyes has been interested in drugs ever since she became a psychiatrist in 1969. For the past 4 years, she's taught psychopharmacology to residents at Martin Luther King Hospital in Los Angeles. Trained in community psychiatry, Keyes is currently director of a Los Angeles County committee that meets once a month to keep informed on the growing angel dust problem.

"Actually, PCP has a multisystems effect as far as the human body goes," says Keyes. "For example, it has an effect on the eyes. An individual may also have ataxia, a kind of neurological disorder where persons lose their balance or can't determine if they step down how far it goes before you touch the ground."

But the biggest neurological problem, she says, is memory loss. The larger the doses, the worse the loss.

The main thing is the schizophrenic-like reaction with delusions and paranoia. "They have false beliefs like something is going to hurt them or somebody's going to do something to them. Or maybe you might look like a monster to them."

All of this amounts to quite a problem for clinicians—how do you tell the difference between a schizophrenic reaction that's due to PCP an done that is a true functional disorder?

"Some of my colleagues will say: "Well, gee, I know because they're crazier than a schizophrenic person." " says Keyes. "But you can't always tell. You have to go by history, and you have to have an adequate examination." But this is complicated by the fact that you can't talk with them, she says. They have no judgment or reason, especially the chronic users or those who have had a large dose.

"One thing about PCP is that you don't feel any pain," says Keyes, because the drug acts as an anesthetic and analgesic. And this is important because pain monitors behavior, because when a person is hurt, there is a kind of withdrawal. But a PCP person does not have that capacity to withdraw. And that puts the person in a dangerous position.

"After you see some of these people on PCP, you begin to think that it causes an irreversible brain damage," she says. "I'm not certain that anybody has documented this, but you get the feeling that it does because for extended periods of time they do not use their mentation in a normal fashion.

"I guess when I think back over what I have seen, the thing that perhaps impresses me most is the emptiness and the vacuousness in the lives of people who have been on the drug any extent of time. In terms of your whole process, your ability to function, your ability to care about yourself and be concerned and to be involved in life has been removed. And there's a possibility that you'll never get it back again."

Keyes is somewhat surprised to see PCP in the black community, because blacks have always stayed away from mind-altering drugs. LSD was never big in the ghettos. She thinks PCP has both political and psychological implications.

"If you wanted to eliminate being bothered by a whole group of people, then just dust everybody out," she says. "They would just withdraw. And that's what's hap-

pening with these people. They can't make any decisions. They don't know what's happening in the world. They couldn't care less.

"The most frightening part is that you make a nonperson. You make an automaton. You make a person who doesn't feel anything. Who cannot remember anything. And who is not in control. That's scary."

Each of these professionals thinks we are playing catchup as far as our knowledge about PCP goes. The National Institute of Drug Abuse, the research agency that's supposed to know more about dust than anyone, admits it has a lot to learn. "We don't know why some people seem to have a sensitivity to it or will have adverse side effects, psychotic reactions, and other people don't," says Mary Carole Kelley, NIDA's press officer. "We also don't know why some people can smoke it for a very long time and then have a reaction and other people will have a reaction the very first time. These are unanswered questions. There is a lot we do not know about this drug. There's no question about that."

Although the police knew what PCP could do a couple of years before social scientists did, they still haven't figured out how to deal with it. Part of the problem is the tremendous strength the users seem to have. "I don't know what you do with them," says Lt. Dan Cooke, spokesperson for the Los Angeles Police Department. "They're [the users] throwing a lot of people around like ten pins."

The LAPD had a case recently where a nude man, high on PCP, raped a woman. As he was making his getaway, four of L.A.'s finest confronted him. The suspect grabbed one of the officers' batons. All four officers wound up in the hospital.

"Two of the major problems are the violence that accompanies it and their inability to feel pain," says Cooke. "They're just impervious to pain."

Cooke hasn't the slightest idea why people are using it right now. All he knows is that more and more of them are, and that LAPD officers are having more and more problems.

All we're left with is just the result of it," he says.

"Yes, it's creating some problems," says Sgt. Eugene Rudolph, the Los Angeles County Sheriff's Department's resident angel dust expert. "Now you take an individual who's under the influence of PCP. What is it affecting? It's affecting his ability to reason. All right then, when he's put into a situation where authority—not necessarily the police, but any type of authority—challenges him in any way, he's going to resist it."

Rudolph is a narcotics training officer. He lectures at a patrol school to officers who are just going out into the field. They were all worried about PCP users. They all want to know how to handle someone who is loaded.

Rudolph didn't have any special PCP techniques to lay on them. He says there aren't any. You just protect your ass and make the collar.

"I said—and I've said this ever since I've been a policeman for 22 years, and I was told this when I first became one—'Man, if you can talk, use your mouth, 'cause you're not paid to fight. And there's guys out there that can whip you.' "

PCP powder, anywhere from 1 mg to 100 mg, is sprinkled on dried parsley and mint leaves or marihuana. In the last year or two, it's more likely to be dissolved in a liquid and then sprayed onto the leaves or grass. A really strong joint—called superkools or Sherman's—is made by dipping the organic base into liquid PCP. Sometimes people swallow tablets or capsules. But most chronic users smoke it so they can control the dosage.

The first effects from a joint hit in about two minutes and peak in 15 to 30. The high lasts for about four to six hours. It usually takes between 24 to 48 hours before the user is back to ground zero.

Dust is cheap. A quarter of a gram of mint leaves sprayed with the liquid makes one joint. It sells for a buck or two. Two people who put up $20 apiece can stay loaded for a month if it's good stuff.

"The PCP on the street today is not diverted from legitimate sources—it is manufactured in clandestine laboratories," says Robert DuPont of NIDA. "It is a frightening model of what can happen when a potent drug is easily synthesized at a low cost from easily available chemical processors."

According to the Drug Enforcement Administration [DEA], the major illicit production centers are Washington, D.C., Detroit, Los Angeles and San Francisco.

"Dave," who prefers to remain anonymous, is a narc—a DEA agent, who says he's 35 going on 90. He's spent the last 5 years busting up PCP labs, which run the gamut from small garage operations that make a pound or two a week to big commercial operations. Dave says the typical setup is two to six people churning out 6 to 10 lb. a week.

"Generally, a case will start with information—either it can come from neighbors complaining about strange and unusual odors in their area or the lab will blow up, which is happening more and more of late around here.

"The thing that's distressing me now is we're starting to see shootings. There was a case in Inglewood—I was talking to the officers last week—where when they kicked in the door and the guy tried to throw a beaker of chemicals in one of the officer's face, they had to shoot him. And that was the third PCP incident like that in the last month that I know of.

"You've got toxic chemicals or caustics like lye—sodium hydroxide. You've go acids—hydrochloric and sulfuric acids. Now a fistful of those chemicals in your face can really cause some problems. And this apparently is what some of these people are doing. When the door goes down, they're getting the chemicals and starting to throw them at the officers. So this is going to require riot-type face shields to be worn. And it does present a problem—especially for the first one or two guys in the door, usually me."

There's another danger from PCP labs that keeps Dave awake at nights: explosions. "What I would hate to see," he says, "and it's going to happen, is some turkey's going to be making this in one of these highrise apartment buildings, and it's going to blow an apartment building up."

The people who make PCP are in it for the money—pure and simple, according to Dave. Just $150 will buy all the chemicals needed to make a pound of the stuff. That pound can be sold for at least $8,000. And unlike heroin or cocaine, there's nobody to be paid off to get it through customs, there's no smugglers to be hired.

Dave thinks the Drug Enforcement Agency is doing its job, but the courts aren't doing theirs. The DEA has to catch a guy cooking PCP red-handed three or four times before a judge will send him to jail.

Working labs has been a real education for Dave. There's one thing that sticks in his mind. "I've learned that if I don't do my job, then my kids might be exposed to it when they go to school—and I've got three boys. My job is to prevent some yoyo from selling dope in the schools. And I think that's what the bottom line is."

"Donna" works no more than 30 feet from Dave's desk. She's 5'2", 115 lb., and doesn't seem like much of a match for big-time dope dealers. Since July 1976, Donna's been working back a network that distributed PCP in Detroit. The trail eventually led to Southern California.

It started in 1969 when a young man from San Francisco moved to Los Angeles and set up a PCP lab. More importantly, from 1970 to 1977, he gave or sold the formula for PCP to at least 10 other people. The new people would open up their own labs in Los Angeles, but by 1972, many of their distribution networks had branched out to Chicago, New York, Miami—and Detroit. The operation spread so far and so fast, the DEA couldn't keep track of—let alone stop—it.

But last December, Donna and her co-agents made an attempt. In a simultaneous, citywide, bust, 15 of the biggest PCP people on the West Coast were arrested, including the young man from San Francisco.

All this should make Donna happy. It doesn't. "Say you have a heroin organization," she explains. "Because of the distribution, it always starts in Mexico. Someone makes it in Mexico, and someone slips it across to someone over here. It's pretty easy to identify the organization.

"With PCP, you start out with like in our case one guy that had the formula. Then he taught Peter and Peter taught this person, who in turn taught these three people, who in turn each taught four other people. You can't. You just can't stop it."

But there's another reason why Donna is discouraged. After giving two years of her life to this case, the 15 men she arrested are facing maximum sentences of five years.

A two-story building at 2249 South Hobart, Los Angeles, is a detoxification induction center run by a Christian organization called Teen Challenge. Through its door go heroin addicts, alcoholics, glue sniffers and PCP freaks.

Inside, in the back in an office that holds three desks but should only hold two, Rich Bills, who is in charge of induction, and Ernie Martinez, his assistant and an exaddict, are rapping about angel dust.

"I remember my first experience with it," says Martinez. "We were smoking dust, you know, and I don't know how much I was smoking at the time. But the next thing I knew, I woke up the next morning, and I couldn't talk. I was stuttering. That whole day I didn't smoke any dust, but it was still in my system. And I was lost in my own hometown."

Bills says he tried it when he was 18, and again at 21 when it became more fashionable. He can recall the last time he took it.

"After smoking a joint about two inches long, after taking one or two hits, I remember it actually felt like nerve cells on my spine. I just felt a rush up there. And then there was a mass disorientation—time, space.

"I remember walking outside. And walking seemed really hard to do. And there was extreme paranoia associate with it also—a lot of paranoia. I felt that I was going to get caught and that something was going to happen to me. It kept on lasting. And there was paranoia of 'when am I going to come down from it?' But there were also times when there was an elation. I felt very relaxed. It went through stages. It wasn't just one kind of thing."

Bill says it was a good high. Better than grass. A little like a hallucinogenic trip. The walls seemed high. He felt tall, then short. His senses were more aware. All of this lasted six hours.

"There's no concentration on time," says Bills. "I remember walking. Walking seemed very difficult. Almost as if my feet were shackled. You know how shackels are? How you've got so much play. I couldn't take a full stride. Things were really slow."

Martinez interrupts: "I always felt tall."

Both young men agree that what effect each person gets from the drug depends upon many factors—some physical, some social. Bills thinks the person's mood is important. Every time he smoked dust, it was different depending on whom he was with and how he felt.

Bills hasn't found many people over 30 who are using it on any regular basis. Most of the PCPers he works with are under 21. But that's the only commonality. "I talk to homosexuals, they use it," he says. "I talk to high-income blacks, low-income blacks, white middle class—all kinds of whites—transients, Mexicans, Indians. And they all use PCP."

Both agree it's the drug of the '70s.

"It's a way of escaping reality, and nowadays everydody is looking for that easy out," says Martinez. "And for a dime, $10, maybe you get five joints out of it or six. And it take you one joint to escape reality."

"A lot of people don't want to take acid anymore," adds Bills, "so they go to PCP. But there's a whole thing, that hallucinogenic value, people like. Remember in the late '60s, you'd take a hallucinogenic to become more aware of yourself and all that stuff. I guess they feel the same way now. But about PCP."

Sam Heilig also believes that PCP is the drug of the '70s. But unlike the Teen Challenge workers who say they've never witnessed the violent part of it, Heilig has seen too much. He says the unpredictableness of the drug is one of its real peculiarities. He would guess that over 90 percent of the time users get what they describe as a good high. They might get a little crazy. But they don't do anything violent. They just feel mellow.

"Maybe 95 percent don't have any problem," says Heilig. "Maybe 98 percent. But there's some percentage we know.

"If you monitor the coroner's office, as I have, you will find that in '75 I think there were 13 deaths that were picked up with PCP-involvement—not just PCP overdose, but there were 13 deaths related to PCP. There were 26 in '76. In '77, I count 66. So it's more than doubled, you see.

"It's a large number of deaths. And those are the ones that are found. It's a significant number of people."

Heilig has just started looking at how the two are connected. He thinks many users are looking to get themselves killed. Heilig hopes to study 50 cases where people died because of PCP. He wants to interview families, friends and lovers. He wants to trace back lives to find out why.

"I've got 17 of them analyzed with some meaning," he says. "You find a lot of crazy behavior, which is very threatening to whoever witnesses it. And people get killed. A lot of people get killed. It's not an unusual kind of event where somebody just acts bananas, scares the shit out of whoever is there—most often it's the family and friends, not police.

"Now 8 of the 17 that I've looked at this far were homicide deaths. They were killed. They got themselves killed. Four were suicides. And one-quarter were accidental deaths. One was a natural death.

"I was interested in the homicides. One was killed by his roommate. One was killed by a friend at a party. One was killed in a barroom brawl. One was killed by his stepfather. One was killed by a neighbor. Two by strangers, street acquaintances. And one by the police."

Heilig thought all the PCP fatalities would be kids. But 25 percent of the 66 people who died in 1977 were over 30. One was a 77-year-old woman. The racial mix was about what he expected—six out of the 17 were black. So was the male-female

ratio—14 males to three females. Heilig thought it strange that three of the fatalities involved drownings.

"These are police reports of investigators who are on the scene," Heilig says as he leafs through a batch of papers in front of him. "There's a case in here where a guy was busting windows down Hollywood Boulevard with an ax handle. The cops tried to stop him. He threatened them with the handle, and they blew him apart. And that's a common sort of event. People get wild, threatening, unpredictable. And there's no restraining them."

There's one more homicide case Heilig wants to read. He says it tells people a lot about what the drug can do. A security guard discovered a 23-year-old man hiding inside a parking lot. When the guard asked him what he was doing there, he said that he was stronger than God. The man then reached for the guard's revolver. The guard, backing away, pulled his gun and fired once into the air as a warning. He fired again. The man laughed and reminded the security guard that he was stronger than God. He then lunged at the guard who in turn fired once into his chest. The man fell to the ground but rose to attack the guard. At point-blank range, the guard fired another shot. The man fell dead.

"He thought he was God," says Heilig. "You talk about the superhuman strength of people on PCP. It's not superhuman. It's that they're crazy. And that scares people. You can imagine what this guard was thinking. He warned him. He tried to subdue him. He shot him once. The guy kept coming. That's PCP."

The other kind of angel dust death that intrigues Sam Heilig is suicide.

He says human beings—especially Americans—use drugs as a self-medicating way to deal with depression or anxiety. The middle and upper classes take Valium. People on the street take anything they can get their hands on.

In another study, Heilig discovered that 75 percent of a group of addicts said they were using heroin to keep from killing themselves. He suspects there's some of that going on with PCP. And he wants to find out so he can intervene.

Heilig tells of one more report: an alcoholic woman with a stomach disorder, chronic back pain, an ulcer, who had had one operation after another during the past year. For two months she talked about killing herself because of her health. The night before her death, she had been over at her boyfriend's apartment. He thought she was in good spirits. At 11:30 the next morning, he found her lying in his kitchen. The coroner's office hasn't filed a complete toxicology report yet. But one of the drugs in her was PCP.

Heilig picks up a yellow pencil. He spins it, then passes it back and forth between his hands. He says there's no way to measure the number of problems this drug is causing people and society. "There are guys who get off on the dust, who beat their wife and kids. Nobody knows about that. But you know damn well that happens a lot, the same as with booze. How many rapes occur with PCP? Is the Hillside Strangler a PCP user? Who the hell knows?"

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