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SAFE DRINKING WATER ACT OVERSIGHT

GOVERNMENT

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HEARING

BEFORE THE

SUBCOMMITTEE ON
ENVIRONMENTAL POLLUTION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

NINETY-FIFTH CONGRESS

SECOND SESSION

JULY 18, 1978

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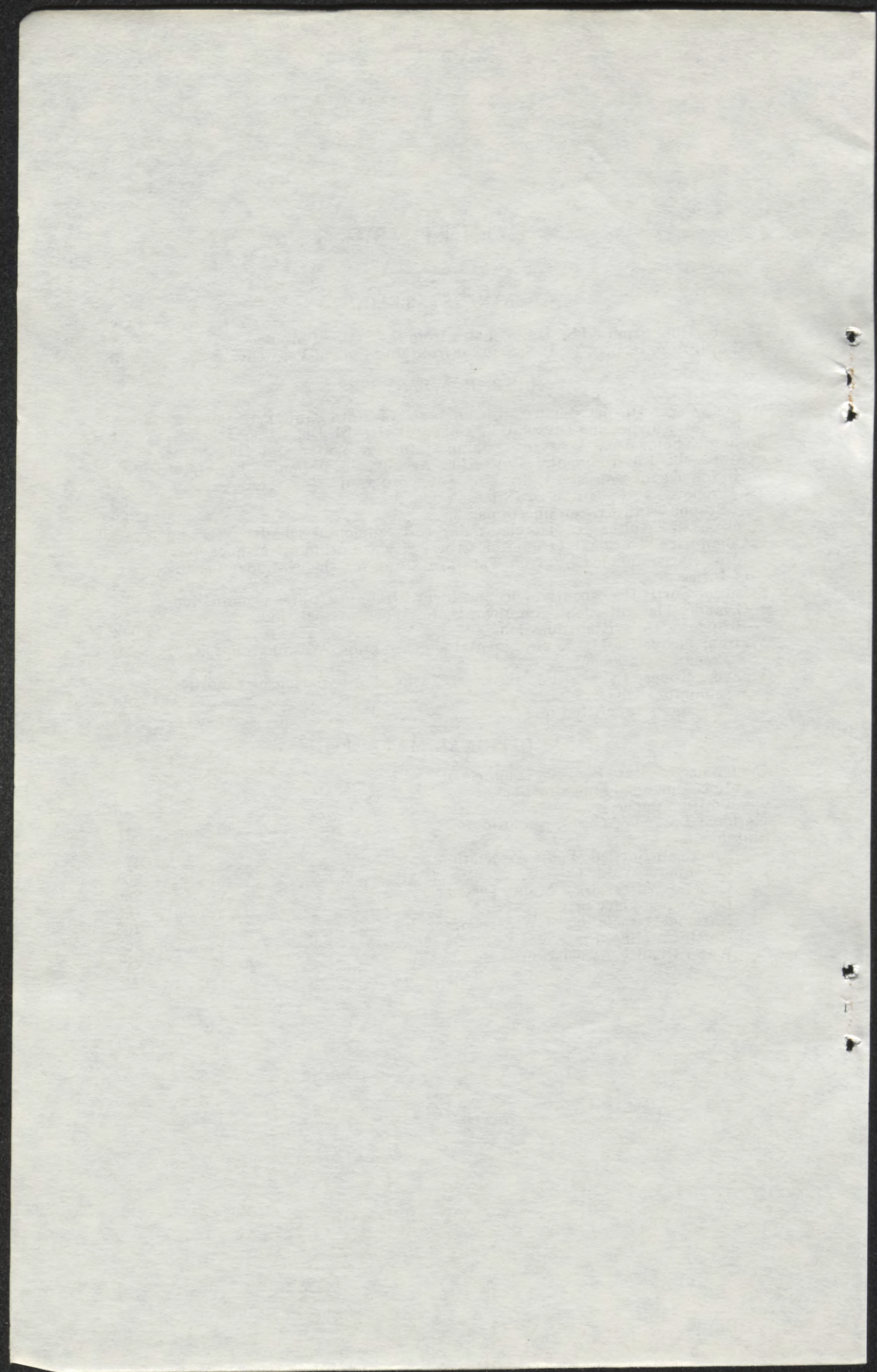
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SAFE DRINKING WATER ACT OVERSIGHT

TUESDAY, JULY 18, 1978

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION,
Washington, D.C.

The subcommittee met at 10:15 a.m., pursuant to call, in room 4200, Dirksen Senate Office Building, Hon. Edmund S. Muskie (chairman of the subcommittee) presiding.

Present: Senators Muskie and Stafford.

OPENING STATEMENT OF HON. EDMUND S. MUSKIE, U.S. SENATOR FROM THE STATE OF MAINE

Senator MUSKIE. The subcommittee will be in order. Today we are opening oversight hearings on the progress of the implementation of the Safe Drinking Water Act of 1974.

We are not here to discuss a new piece of legislation or amendments which must be acted on with any great urgency. I am sure we can all agree that any urgency discussed today should be directed toward enforcing the law and guaranteeing the safety of the one-half to five quarts of water the average American ingests every day.

The reasons for holding an oversight hearing on the implementation of the Safe Drinking Water Act are twofold: First, the members of this Subcommittee on Environmental Pollution are now responsible for a law which did not originate from within the Environment and Public Works Committee's jurisdiction.

The Senate reorganization of 1977 transferred the responsibility for protecting America's drinking water from the Commerce Committee to the Environment and Public Works Committee. We must learn the issues involved with drinking water—and familiarize ourselves with the people affected by the law and responsible for carrying out the important regulations. We are here to listen and to learn and to ask questions.

Second, this hearing is meant to be a forum for the water works industry, the administration, concerned citizen groups, and local governments to air their views about the success or failings of the law since enactment. We must be willing to make corrections if important changes are needed.

Many of the problems with the Nation's drinking water that were present in 1974 are still problems in 1978:

—The National Cancer Institute has announced that 23 carcinogens or suspected carcinogens, 30 mutagens, and 11 promoters of carcinogens have been found in supplies of American drinking water.

- Trihalomethane, which the Environmental Protection Agency has determined to be reasonable at a level of 100 parts per billion, has been found at levels as high as 784 parts per billion in some water systems in this country.
- Approximately 4,000 incidents of illnesses caused by impure water still occur each year in this country.

Recent findings by the National Cancer Institute have indicated that exposure to even small amounts of cancer-causing chemicals pose risks which may not be manifested for 20 years or more. Thus our goal of providing clean drinking water faces a new and complicated problem.

Congress produced a mechanism in 1974 for addressing these problems. The Safe Drinking Water Act gave primary responsibility for establishing national standards for safe drinking water to the Environmental Protection Agency, and gave the States the primary responsibility for enforcing the standards and supervising public water supply systems and sources of drinking water.

But the implementation of the Safe Drinking Water Act—and more specifically the proposed regulations to control the synthetic organic chemicals which may have adverse impacts on human health—has raised a spirited debate.

I am hopeful we can explore here today some of these questions which have been raised:

- Has there been enough experience with the granular activated carbon treatment technology which has been proposed?
- What are the possible health effects of exempting small communities from the regulations applied to larger water systems?
- What are the cost ramifications of the regulations, and how will Proposition 13 affect State participation?
- What relationship does the implementation of the Safe Drinking Water Act have with the implementation of other Federal laws, like the Federal Water Pollution Control Act and the Toxic Substances Control Act?
- Are the incentives to States great enough to encourage participation in the Safe Drinking Water Act?
- What will be the effect of the jurisdictional overlap between the Environmental Protection Agency and the Food and Drug Administration in the implementation of the law?

Before we begin this hearing, I want to reemphasize my strong support for the goal of providing safe drinking water for this country. I believe this subcommittee's past role in the development of the Clean Water Act can attest to the fact that there is genuine concern for the quality of our water supplies.

President Carter recently called for a revitalization of our cities in his urban policy statement—and asked that all levels of government work with the private sector to make our cities livable. If we are to succeed in our attempts at urban rebirth, one of the first things we must do is guarantee our large population centers an environment relatively free from health hazards.

Nothing is more basic than drinking water—and the Safe Drinking Water Act of 1974 is a major step toward protecting one of our most important necessities of life. I look forward to learning more about the act today, what the problems have been with its implementation,

and what we must do to secure a rational program of cleaning the water we all drink.

We are fortunate to have as our first witness today Thomas Jorling, the Assistant Administrator for Water and Hazardous Materials, of the Environmental Protection Agency.

Before we turn to him, I would like to invite my good friend, Senator Stafford, to speak.

OPENING STATEMENT OF HON. ROBERT T. STAFFORD, U.S. SENATOR FROM THE STATE OF VERMONT

Senator STAFFORD. Thank you very much, Mr. Chairman. I want to commend you on initiating these important hearings on clean water. I think you stated quite well the problems that we face.

I look forward to the testimony of Mr. Jorling and the other witnesses that will be before us this morning. I have no other opening statement except to say, Mr. Chairman, that I am almost afraid to take a drink from my glass of water here this morning.

Senator MUSKIE. Please proceed, Mr. Jorling.

STATEMENT OF THOMAS C. JORLING, ASSISTANT ADMINISTRATOR FOR WATER AND HAZARDOUS MATERIALS, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY VICTOR KIMM, DEPUTY ASSISTANT, DRINKING WATER PROGRAM

Mr. JORLING. Good morning, Mr. Chairman.

You have already noted the newness of this statute to this committee, which I am responsible for managing within the Environmental Protection Agency.

I think the record has been quite good and the Agency has prepared a full statement reviewing the implementation of the Safe Drinking Water Act, and commenting on a number of current issues warranting the attention of this committee.

I am submitting that statement for the record and request permission to summarize its principal points and provide some background that will serve as a context for evaluating our progress to date.

Senator MUSKIE. Without objection, the full statement will appear in the record. (See p. 69.)

Mr. JORLING. The Safe Drinking Water Act was enacted because of congressional interest in three areas:

1. Concern about the quality of the Nation's water supplies in relation to the traditional contaminants of concern, infectious pathogens;
2. Concern about trace organic contaminants and their possible link to cancer rates; and
3. Concern over the safety of present and future groundwater resources.

A community water supply study in 1969 produced some eye-opening results:

- In the vast majority of systems surveyed, monitoring for bacterial safety was not being carried out at the recommended frequencies; 98 percent of the systems actually exceeded the bacteria standard; 30 percent exceeded the chemical standards.

- State supervision was limited; 50 percent of the operators could not remember ever being inspected.
- The condition of treatment plants was clearly below minimum standards; more than half of them had inadequate capacity for disinfection or clarification of the water they served to customers.
- The level of professional expertise and training among operators was seriously deficient.

It is no surprise, then, that the incidence of waterborne disease was actually on the rise. The Center for Disease Control reports about 4,000 cases each year attributable to drinking water—a figure considered to be below the actual extent of the problem.

In response to these concerns and problems, Congress enacted the Safe Drinking Water Act in 1974. The statute provided for two major programs: the supervision of public water supplies and the protection of our groundwater resources.

Under the first program, EPA was mandated to set national standards for drinking water in a three-step process.

First, the agency was to promulgate interim regulations based primarily on an update of the 1962 Public Health Service standards including both maximum contaminant levels and minimum monitoring frequencies. This requirement has been fulfilled.

The National Interim Primary Drinking Water Regulations became effective in June 1977, setting limits for bacteria, turbidity, and a number of inorganic chemicals, pesticides, and radiological contaminants.

Since that date, utilities have been required to monitor the water they serve on a prescribed frequency to insure compliance with the standards and to notify the public if they do not meet the regulation's requirements. If a utility cannot meet a given standard for economic or technical reasons, the act provides for temporary exemptions or variances.

Second, recognizing the limitations in our knowledge about health effects related to drinking water contaminants, EPA was directed to contract with the National Academy of Sciences to conduct a 2-year investigation of all of the contaminants in drinking water that may have an adverse impact on man. This study has been completed and will be commented on later in this statement.

Third, EPA was directed to promulgate comprehensive revised drinking water regulations drawing upon the outcome of the NAS study and the results of the agency research program.

At this time, we are situated between the second and third phases of this process, that is, between the NAS study and the revised regulations. In addition, two other regulatory initiatives should be noted.

The agency has proposed secondary drinking water regulations for parameters that are not health-related—taste, odor, color, and other factors important for consumer acceptance. These are not nationally enforceable.

We have also proposed amendments in the interim regulations, to add a measure of control over organic chemical contaminants in drinking water. These regulations will be discussed later in this statement.

The act envisions that the States will exercise primary enforcement responsibility over the safe drinking water program, with EPA as-

suming this task only where the States are unable or unwilling to meet minimum requirements contained in the regulations.

Therefore, through Federal or State authorities, this program covers an estimated 50,000 community water supplies serving year-round residents and some 200,000 noncommunity supplies serving the traveling public and other intermittent users.

With regard to the second program initiative, the act also requires the Agency to take several actions to protect underground sources of drinking water.

First, EPA is to formulate minimum requirements for State programs to control underground injection practices which endanger existing or potential sources of drinking water. The Administrator is, from time to time, to list those States which in his judgment based on practices, need such programs. It is expected that the lead in administering and enforcing underground injection control programs will be taken by the States.

Second, the Administrator of EPA, on his own initiative or upon petition, is to designate areas which are served by aquifers as the sole or principal source of drinking water.

No Federal financial assistance may be committed to a project which the Administrator determines may contaminate a sole source aquifer so as to create a significant hazard to public health. Four such aquifers have already been designated.

Third, the act recognized that more information is needed about ground water if this resource is to be protected adequately. Under the authority of section 1442(a)(8)(c), the Agency has initiated a \$5 million program of grants to States to inventory surface impoundments (pits, ponds, and lagoons) and to assess their potential impact on ground water.

For both the public water supervision program and the underground injection control program, Federal grants to the States are provided, but continuing eligibility for such assistance is tied to specific deadlines for the assumption of primary enforcement responsibility.

The program grants for the former program are distributed among the States according to a formula based upon the number of public water systems in the State, the population and the land area.

A table showing the fiscal year 1979 grant awards and expenditures and the fiscal year 1979 tentative allotments for the States is appended as attachment I to the statement we have submitted.

In addition, the act provides for research, technical assistance, demonstration grants, training and a number of special studies designed to provide important information related to our efforts to insure the safety of the Nation's public water supplies.

The Safe Drinking Water Act, therefore, expanded the scope of environmental legislation beyond the reduction of water pollution and the regulation of solid waste disposal. It launched a new national public health program aimed at insuring safe drinking water for all Americans.

What have the results been? The progress during the 3½ years since the act was passed has been striking. Drinking water standards have been established nationally.

The first nationwide program of monitoring public water supplies is underway. The States have become genuine partners in this effort.

Thirty-six of them have changed their laws and regulations to match Federal requirements, thus making them eligible for primary enforcement responsibility as provided in the legislation.

Fourteen more are expected to achieve primary enforcement responsibility before the end of fiscal year 1979. Since the program began, \$45 million in State program grants have been awarded. State staffs have doubled and their programs have been substantially expanded.

Utilities have begun the phase-in of routine monitoring. Tens of thousands of operators have been trained in the regulatory requirements and in the skills and knowledge they need to achieve compliance.

This informational and educational program has been conducted by EPA and the States through the grant-supported assistance of the American Water Works Association, Conference of State Sanitary Engineers, the League of Women Voters, and other nonprofit organizations of State and local governments.

Public notification is a fact. Violations of the regulations are being reported to consumers. Corrections are being planned or implemented in large part due to the increased public awareness generated by the legal requirement for public notice.

The National Drinking Water Council, mandated by the statute, has played an important role in the development of regulations and program activities, insuring that the program move forward with the active participation of the States, the industry, and the general public.

The efforts of this group have contributed greatly to the public recognition of the fact that this program is generally responsive to outside suggestions.

In short, much has been accomplished in the few years since the act was passed. However, the legislatively mandated research and other studies have clearly established that we are a long way from being on top of the problem.

Much more effort will be needed to bring State staffs and program capacities to their optimum levels. Upgrading utilities and operators to acceptable levels of proficiency will require an ongoing program of technical assistance and training.

We know that the scope of the interim drinking water standards will have to be expanded to include organic chemicals and other revisions indicated by accumulated data and ongoing scientific research.

The act, in fact, requires revised standards to be promulgated, based on recommendations of the National Academy of Sciences. Since the NAS report did not provide the data and guidance Congress and the Agency expected, EPA will have to conduct additional evaluation as part of the process of developing more comprehensive standards.

Before moving on to a report on the groundwater protection program, let me dwell for a moment on a particularly significant current activity: our proposed regulations to limit organic contaminants in drinking water.

The question of organic chemical contamination of drinking water, as mentioned above, was one of the motivating forces in the passage of the act. Since 1975, it has been a major focus of our program. About one-half of our research effort has been invested in monitoring techniques, health effects, control technology, and costs and economic impacts.

In February of this year, the Agency proposed a regulation to control organic contaminants, addressing the two parts of the problem: the formation of trihalomethanes, including chloroform, during the process of disinfection with chlorine; and the presence of hundreds of other harmful synthetic compounds caused by industrial pollution and agricultural and urban runoff. We are now in the public comment period of the rulemaking process, which closes September 1.

Generally speaking, water utilities and State regulatory agencies have been skeptical of the health problem involved and of the new direction in water treatment technology proposed in response to the presence of synthetic compounds—the use of granular activated carbon.

The Agency is persuaded that there are serious long-term health risks from the ingestion of organic compounds and that these risks call for regulatory action under the statute.

This view is supported by the National Cancer Institute, National Institute of Environmental Health Sciences, the Food and Drug Administration, and Occupational Health and Safety Administration. We hope to obtain the cooperation of the States and the industry in formulating final regulations which will be perceived as reasonable by all concerned and get on with the job of reducing human exposure to these contaminants.

We noted a significant change in the strident positions taken during the public comment period on these regulations during the most recent hearings held in Washington on July 11, 12, and 13. We hope to build on this improved communication in the immediate future.

Finally, it should be noted that the proposed organics regulation is not the only issue in the protection of the public health through drinking water. The future is studded with issues and questions that must be researched and responded to: the control of corrosion in distribution systems, which adds heavy metals to some water supplies; a better understanding and control of viruses and contaminants that contribute to cardio-vascular disease (for instance, today's New York Times carries a report on a study performed on salt in drinking water in New England and high blood pressure in teenagers); asbestos and other harmful constituents of some drinking water sources.

All this means that the safe drinking water program is in the early stages of a new era in water treatment standards and technology. We do not have all the answers, nor do we know all the questions. We do know that the Safe Drinking Water Act has caused us to begin to define more precisely the complex relationship between drinking water and the public health.

Launching the groundwater protection program has been more difficult and time-consuming than anticipated at the time the legislation was enacted. The major obstacles have been:

- our limited resources in staff and budget; hopefully this will be overcome by the increases included in the fiscal year 1979 budget;
- a lack of basic data on almost every aspect of the problem;
- the complexity of coordination with other environmental statutes, most recently the 1977 Clean Water Act Amendments and the Resource Conservation and Recovery Act; and
- the fact that there are literally hundreds of thousands of wells, surface impoundments and landfills used by industry, agriculture, and municipalities which dictates great care in designing

controls and projecting their probable social and economic impacts.

Time, however, has aided our efforts in this area. Several important studies, mandated by the Congress, have been completed and have contributed much to our understanding of the problem.

Three actions in the groundwater protection program merit your attention.

First, regulations to control the underground injection of contaminants were proposed in August 1976. Based on extensive public comment, they have been substantially revised, especially in relation to oil and gas injection practices and shallow wells. We expect to repropose these regulations in 30 to 60 days.

At the same time we plan to propose the designation of States requiring such programs and to promulgate the grant regulations required to begin the flow of Federal program grants to the States.

Second, we have launched a nationwide assessment of surface impoundments (pits, ponds, and lagoons) and their potential for contaminating ground water.

Third, final regulations governing the designation of sole-source aquifers will be promulgated within the next month or so.

In short, we have now reached the threshold of a comprehensive program of action to protect the Nation's groundwater resources. Getting to this point has been tedious and difficult but we believe an effective, coordinated Federal-State effort has been developed and made ready for implementation.

Turning now to the problems and issues that will confront the program in the coming months and years. I shall touch on four matters worthy of the committee's attention.

The first picks up on what I said earlier about organic chemical contamination. The Agency believes that research in this area must continue and that extensive technical assistance will be required by the States and by utilities as they undertake major modifications in treatment plant operations and technology.

On a broader front, this regulatory and program effort should be seen as but one element in the Agency's strategy to reduce human exposure to toxic and hazardous materials under the Toxic Substances Control Act, the Resources Conservation and Recovery Act, and the Water Pollution Control Programs.

Second, the issue of subsidies for construction; there appears to be a great deal of pressure for the Agency to initiate a subsidy program for small systems to defray the cost of meeting the interim primary drinking water regulations.

This interest is evidenced by the introduction of H.R. 12131 and H.R. 11967 regarding the establishment of a construction grants program for water supply systems. It is the Agency's position that such a program is premature. A more conclusive basis for decision-making will be available upon completion of the subsidy study currently being conducted by the Office of Drinking Water.

In the interim, the Agency is working with the Farmers Home Administration, the Department of Housing and Urban Development and the Economic Development Administration, to provide priority funding to substandard water systems under the existing budgets and mechanisms of those agencies.

Third, there is a problem of control of direct and indirect additives to drinking water. As part of its concern with toxic contaminants, EPA has formed an interagency task force with the Food and Drug Administration to explore the problem of controlling the inadvertent contamination caused by the use of certain paints, coatings, equipment and chemicals. This effort may result in the recommendation of new regulatory and/or legislative initiatives.

Fourth, there is the matter of possible modifications in the legislation. Practical field experience with the act has revealed several problems that would require legislative action to correct.

Because they may impose what experience has revealed as unnecessary difficulties on the State and affected utilities, I would like to call them to your attention. None of these are urgent and are only highlighted to begin to focus attention. EPA will submit specific legislative recommendations at a later date, in parallel with the subsidy study mentioned above. That might be an appropriate occasion for the Congress to consider these and other possible amendments.

The public notification provision in the act, which has generally proven to be so effective, is considered to be too rigid in some respects. Under the current requirements any one or a combination of the following conditions may result:

- notification occurs several months after violation;
- notification occurs after remedial action to correct the problem has been taken; and
- notification occurs for all violations even if they are not a real danger to public health at the time of notice.

It is the Agency's position that the public notification requirements should be altered to allow more flexibility to the States and to EPA where it has primacy in order to avoid unwarranted public notices.

Variances and exemptions are means of deferring compliance with a particular maximum contaminant level in situations in which the delay will not cause an unreasonable health risk and in which there are compelling economic or technical obstacles to compliance.

The act requires a compliance date for exemptions of January 1, 1981 and January 1, 1983, if the system is joining a regional system. However, due to the delay in promulgation of the interim primary drinking water regulations, water suppliers now have less time to seek an exemption and, if granted, to make the modification in their system to comply with the regulations and the 1981 or 1983 dates.

If major construction is needed and is part of the compliance schedule, more lead time is required for completion of construction and placing the facility in service. This provision of the act could be made more effective and responsive to the actual field conditions by extending the time limit—that is, changing the 1981 and 1983 dates—to an absolute number of 5 years after the effective date of the regulations.

Any change in the provisions of the Safe Drinking Water Act and/or its associated regulations requires a concomitant alteration of the States' authority if the respective State is to maintain primacy. Such changes at the State level require time for State procedures to be carried out.

It is important that the act reflect this problem by allowing States a sufficient amount of time to adopt new regulations in response to

changes in the Federal regulations without losing primacy and their entitlement to continued Federal program grants.

Specific recommendations in this matter will be developed in cooperation with the States.

There is considerable confusion caused by the statute's lack of distinction between community and noncommunity water supplies. The regulations recognize the difference between the long-term exposure one has to his residential water supply and one's occasional use of a noncommunity supply such as a campsite or a roadside service station. It would be useful to have this distinction clarified in the act.

Similarly, the act presumes that enforcement will be carried out by the States in relation to all violations as they occur. In practice, the volume of violations at any given time may require the States to set priorities in enforcement according to the seriousness of the problem, the numbers of people exposed, and other considerations. The need for such a priority-setting system should be recognized, otherwise we place the States in a position of noncompliance.

To conclude these summary remarks, let me emphasize to the committee that the Agency believes the safe drinking water program has been well launched. With the cooperation of the States and the water supply industry, the door to a new dimension of public health protection has been opened.

However, the program is in its startup phase. Much work must be done to bring water treatment practices throughout the country up to national standards. And some difficult issues remain to be resolved. We shall do our best to keep you abreast of developments so that you can follow the progress of this important legislation.

If there are any questions, I would be pleased to try to answer them.

I should add that the deputy in charge of the drinking water program has been unavoidably delayed, so he may join me later, but I do have additional staff here.

Senator MUSKIE. Do you have the legislative program of that program?

Mr. JORLING. We have not submitted any at this point. We hope to do it upon the completion of the studies being conducted. At the present time we have no urgent problems with the statute, nothing that requires any immediate attention.

Senator MUSKIE. Is that view generally held among those affected by the legislation?

Mr. JORLING. I think for those affected by the legislation, those problems are a limitation of it.

Senator MUSKIE. There are occasions to legally seek legislative relief against the improper implementation?

Mr. JORLING. That is correct.

Senator STAFFORD. But you see no such signs in this case?

Mr. JORLING. There have been, I think, efforts to apprise Members of Congress by our rulemaking staff and we have spent considerable time working with the staff, the Appropriations Committee, to apprise them of the rulemaking, especially the organics provision. To my knowledge, there are no formal questions to have legislation considered which would in any way affect the rulemaking.

Senator MUSKIE. Is the organics problem the most pressing disagreement between all those who would be affected?

Mr. JORLING. Yes.

Senator STAFFORD. Mr. Jorling, I wonder if you would summarize the hearings held last week on this?

Mr. JORLING. The hearings last week contained the primary thrust of the comments that we have received in the present set of hearings. They fall in several categories.

The first category is whether or not our action is justified in the act, given the available health data. The second issue is the cost of the proposal that we have made. A third issue relates to the concern over granular activated carbon in two respects. One simply is the newness of the technology and the uncertainty surrounding it and second, a subconcern is that carbon may contribute to other health problems in drinking water.

Because these comments were so consistent during the public hearings, we undertook, prior to the public hearings in Washington, to publish a supplemental analysis which we did in July 1978. That analysis went into each of these concerns.

The hearings in the future will focus on two issues; namely the health effects and the cost. Studies that we have made on granular activated carbon seems to suggest that those sets of problems are not the pressing concerns. I think the pressing concerns are cost and health.

The question concerning the health effects is whether or not there is sufficient empirical data to support action at this time. Should a preventive statute be applied in areas where there is a reasonable health risk?

We are confronting many questions of this sort, including the effects of carcinogens and mutagenic material. We cannot investigate these effects on human beings. Therefore, we must use animal studies and epidemiological studies with respect to the relationships between possible health effects and various chemicals.

We believe the evidence seems to support our position that substantial exposure should be reduced, especially where there is reasonable technology to abate it. We have concurrence from major Federal health agencies.

There is still concern expounded on the opposite side from States and cities and communities, but we believe that the level of possible adverse health effects compels us to act as provided in the statute.

With respect to the cost area, we published a cost analysis at the time we published the proposed regulations back in February. At that time we estimated that the cost would be about \$6 to \$10 per residence per year.

The utilities very strongly contested our cost data and there were figures generated that were as much as 10 times our cost estimates. We then concluded that an effort should be made by the agency to examine the two cost estimates, which we did, and generated another analysis of the data, one that more people could agree on.

Then in July, we published additional cost estimates, and a specific review of two utilities. We have generally revised our costs upwards rather than maintain our \$6 to \$10 estimates per residence per year.

There were several factors to adjust upwards. The first was inflation, which was not included in the earlier analysis. We also included an increase factor of 30 percent for contingencies. We included additional factors which we thought necessary to be conservative.

We feel that there is still some disagreement, so we are trying to focus on why the disagreement exists. These are the areas that our review will focus on and we will continue to review comments as they come in prior to developing the final regulation that will be published in the Federal Register. The additional information we published in July, I think, will be helpful to the full economic analysis.

Senator STAFFORD. Several public interest groups have stated that 100 parts per billion of the trihalomethane standard is too high.

Mr. JORLING. The analysis that we have performed, including the so-called national organics monitoring survey, is our best judgment of the problem at this time. We consider the figures to be a target. We have indicated in the proposal that possible further information will be generated that might cause us to lower the figures, but we think the 100 parts per billion level is a prudent one as a first step in the control of this problem.

Senator MUSKIE. You mean organic contaminants continue to be a risk?

Mr. JORLING. With respect to synthetic organics, yes, our primary concern is based not epidemiological studies, but on animal studies.

We have through our surveys identified more than 700 synthetic organic chemicals in the drinking water across the country; that is not to say that all 700 are in all water supplies. Doing epidemiological work, with the present state of the art, is impractical; so what we are focusing on is the effects of some of these compounds on animal tissue. Twenty-two of this group have been identified by the National Cancer Institute as carcinogenic.

Senator MUSKIE. In testimony submitted for the record, the National Association of Water Companies indicated that trace amounts of some organic substances may prolong life. Do you feel that this evidence lessens the case for the organic legislation?

Mr. JORLING. I think it is safe to say we do not know enough to know what the effects of each of these compounds may be. When people can generate evidence of what the possible health effects are, that would be appropriate to consider.

Senator MUSKIE. If it is above 100 parts, is the installation of granular activated carbon the only way to reduce it?

Mr. JORLING. Not necessarily. There are other possibilities. One alternative is to change the point of disinfection of the drinking water supply; that can have the effect of reducing the level of trihalomethane. The second alternative is to change the source of the water supply. A third would be a change in the use of disinfectants, namely, an alternative such as ozonation which has been used in Europe.

Senator MUSKIE. What about the fact that granular activated carbon did not prove effective in the demonstrated projects?

Mr. JORLING. There are 40 places in the United States that use activated carbon in ways that we would admit do not always meet the standards that we are setting forth in the regulation.

There are some 20 communities in Europe that do use it in a very refined way, a method beyond what we are considering. However, we recognize that it is a new technology to the American drinking water community. It requires monitoring to determine whether or not a community is in fact vulnerable. Namely, the monitoring identifies the presence of a large amount of a few compounds or the presence of a wide array of organics. This is followed by a pilot study of approxi-

mately 18 months which would, in fact, impact the design and construction stages and provide the basis for responding to the uniqueness of each situation with the appropriate types of granular activated carbon treatment.

So, we think we have adjusted our regulations to accommodate the new technology in this country. We have also made some other studies, the results of which we expect will be coming about the same time as the rulemaking process.

Senator STAFFORD. Will the chairman yield?

Could you explain to me actually what the phrase activated carbon means? How does it become activated carbon?

Mr. JORLING. It is a process in which a source of carbon—namely coal, although other substances can be used—develops in an oxygen safe environment to produce a substance which, when used as a filter, is an absorbent of organic molecules of both high and low volatility.

This is now used mainly by food processors and the beverage industry in this country; in industrial uses it is tremendously important. The activated carbon is a filter medium which attracts this organic material.

Senator MUSKIE. I think it would remove other chemical contaminants in the drinking water.

Mr. JORLING. Yes; it can. The investigation whether or not granular activated carbon is sufficient or whether additional filtering substances will continue to be used will be ongoing.

We believe, I think it is safe to say, that both will be continued to be used in a typical drinking water supply. But the activated carbon filter does have the effect of removing a broad array of organic compounds across the entire spectrum. We have, I think, sufficient evidence, including some actual testing that occurred in Cincinnati when the carbon tetrachloride spills occurred a little more than a year ago, which shows that.

Senator MUSKIE. What part of the GAC will be consumed by the average city and how frequently must the filter system be reactivated?

Mr. JORLING. Those are all factors that will vary from site to site. In our economic analysis and technical projections we projected a low regeneration time and a high one. The factors that influence the frequency of regeneration are the number and concentration for organic chemicals as well as some other characteristics of the drinking water.

The pilot study is designed to identify exactly the depth of carbon, contact time, and regeneration times that will be required. Those are cited specifically as considerations in our regulations.

Senator MUSKIE. Is it going to be an expensive program?

Mr. JORLING. It is expensive in the context of the drinking water supply. In the context of water pollution control, it is very inexpensive.

Senator MUSKIE. Does it have significant energy costs?

Mr. JORLING. There are energy costs. Our analysis, which we published in the Federal Register, showed it would be at the highest option, the first case option, still less than 20.22 percent of the oil equivalent energy use.

Senator MUSKIE. How about air pollution?

Mr. JORLING. The air pollution study is reported in the same analysis and was worked out in conjunction with the air programs in EPA; it concluded that there will not be a non-attainment problem.

There are high-temperature incinerators working with very light-weight molecules and the efficiencies are very good.

Senator MUSKIE. Because of California droughts last year, they separate out water used for drinking and water used for bathing, lawn, garden, car wash, and so on. Is that a practical solution to the problem? Preparing drinking water is going to become increasingly expensive.

Is there a way of separating out the drinking water from these other purposes for which water is used and for which use of similar purification is not needed?

Mr. JORLING. I think with established communities the separation of the drinking water supply from other water uses would not—except in very extreme cases—prove to be a cost effective solution to protecting the quality of drinking water. I think our experience with protection of drinking water from infectious pathogens has indicated that central treatment is essential.

We do have evidence, however, that the American people are in effect separating their water supply. The growth of industry in bottled water and treatment devices is very high. We have evidence now that the two together represent in excess of a \$300 million industry, growing between 12 and 20 percent per year. That is a solution which the affluent can afford, but we think it is the duty of Government to provide safe drinking water for all citizens not just those who can afford these alternative protection systems.

Senator MUSKIE. I have a long list of other questions that I will submit for the record in order to save time this morning.

I yield to Senator Stafford at this point.

Senator STAFFORD. Thank you, Mr. Chairman. I think I will start, Mr. Chairman, by saying I have some questions here for Senator Chafee.

I will, in view of time constraints, ask you to respond to them in writing, if I may, Mr. Jorling. In my own case, I will start with this: EPA has adopted a system which phases in the various requirements, monitoring, for example.

The requirement for synthetic organics control is mandatory only for communities of 75,000 or more, which leaves out about half the population. Coming from a rural State, I am constrained to ask what is the agency doing to assist and promote safe drinking water in the rural areas of the country?

When do you anticipate that regulations will be required in these areas?

Mr. JORLING. Senator, that is a very legitimate criticism of our proposed regulations.

Let me see if I can summarize the basis of the use of 75,000 as an initial cutoff for the purpose of both the trihalomethane and the synthetic organic regulation.

Senator MUSKIE. That figure includes the entire population of Maine, for one.

Mr. JORLING. I am aware of that.

Senator MUSKIE. I thought you would be.

Mr. JORLING. The concerns are as follows. First, small drinking water systems, as a generalization again, tend to draw their water from underground sources. Those sources tend to be free from tri-

halomethane problems and from synthetic organics. There are exceptions to that, I should acknowledge.

Second, we are embarking on a new program. The recognition that these chemicals exist in drinking water is not one with long roots in our drinking water history. These programs require new types of monitoring and new types of analytical skills and technology. They also require or could require adjustments in disinfection. We felt it was prudent to launch this regulatory effort first in those communities of sufficient size to have the professional capability, the regularly available professionals, both operators as well as researchers, to manage this program so as not to create additional problems while we solve the new ones. So there was a professional judgment that the communities above 75,000 tend to be fully staffed with the required professionals.

With small communities, however, the water systems generally operate by themselves, literally. It is not infrequent to have the person who is responsible for the drinking water system in small communities be, for example, the gas station owner, whatever. Often he is not fully qualified to handle the broad range of these responsibilities.

We also think that our economic analysis shows that the present technologies take advantage of economies above 75,000. We expect that experience will lead to new technology and innovative technology which will enable its application to small communities at a future time.

We don't have any fixed program to lower the population number for communities at this time. We think that is going to depend upon the experience with this program and the types of data and technology that will be generated.

There are a series of factors that we have used to support the 75,000 person cut-off point. In the case of trihalomethanes, however, I should point out the regulations call for monitoring of the THM levels by communities between 10,000 and 75,000; but it does not require compliance within 18 months.

We think that the small community problem is going to be solved for the moment mostly with technical assistance. I think it is also true that at the present time, the small communities including some of the communities in your State, Senator Stafford, exhibit problems with bacterial contamination that we need to solve first, prior to launching into this new program.

Senator STAFFORD. Thank you. I think we do have to be careful in the safe drinking water program that we don't make what appears to me to be a mistake in the sewage treatment system for the Nation when all of the technology and all of the money were directed toward large communities because that is where the problem was.

No systems were devised that would work satisfactorily in a town of 500 people or 1,000 people or 2,000 or 3,000 people, the kind of communities that are scattered across the northern tier of the Nation.

I think you are alert to this part of the problem. I just mention it in passing.

How far into the future do you anticipate that small systems will have to be covered by regulations, in a year, 5 years, or when?

Mr. JORLING. Certainly, it won't be a year. Whether it is 5 years will be dependent upon whether or not continued surveys on the part of our agency and the States reveal that contamination of synthetic

organics is a problem in small communities. Our judgment at this time is that they are not; that these small communities tend to have protected water supplies, normally underground. Therefore, they are not drawing from sources like the major rivers where the bay cities have no choice, where the volumes they require are so great they must continue to depend on surface waters.

Senator STAFFORD. Could you go into some detail about how the Agency will go about developing the data for the revised regulations in view of the hesitancy of the National Academy to recommend specific levels of pollutants in drinking water?

Mr. JORLING. Senator, the study by the National Academy called for under the statute assumed that the report of the Academy would include recommendations of maximum contaminant levels for pollutants. The National Academy was unable to do that; in part, because of the paucity of knowledge with which to feel comfortable about establishing a safe level for a carcinogen which would be valid. As a result, the Agency must analyze chemical by chemical to determine whether or not any of the organics merit maximum contaminant level standards. This is going to take some time. We will not be able to do it with large numbers of organics in any one year. So it is going to be a phased program over time.

Senator STAFFORD. Thank you very much.

I have a number of other questions that are of interest to me and to the committee, but in the light of the witnesses that are still unheard, I think I will ask that you might be willing to answer them in writing on a fairly expeditious basis.

I wonder, Mr. Chairman, if Mr. Jorling would be willing to stand by while we hear some other witnesses in the event some subject comes up?

Mr. JORLING. I will try to stay some time. I do have another appointment with another Member of Congress on this subject at 11:30, but I will have staff here during the entire hearing.

Senator MUSKIE. I note Mr. Kimm has found it possible to arrive. We understand the reasons why you could not be here earlier, Mr. Kimm. I think Mr. Jorling has presented a very useful overview of development since the passage of the 1974 act, the issues that have arisen; he has tried to define a reasonably objective analysis of those provisions, the objectivity of which may be challenged by some of the other witnesses this morning.

In any case, since we are embarked on a learning experience on a piece of legislation which we did not originate, I think his testimony has been an excellent beginning.

There will be other questions submitted for the record. We would like them answered reasonably expeditiously, so we can have the benefit of your answers as these hearings proceed.

Mr. JORLING. We will be happy to do so, Mr. Chairman. (See. p. 89.)

Senator MUSKIE. I might invite Mr. Kimm to make whatever brief comment he might like to make at this point just to get his name for the record.

Mr. KIMM. Thank you.

First of all, I am sorry for being late, but it was somewhat beyond my control. At any rate, I think, as Tom has doubtlessly said before me, I think we have made significant progress in implementing what I view is a very important piece of health legislation.

Yet, we have lots of problems to deal with. I think that we have gotten the program started; perhaps our most important accomplishment thus far has been a general cooperative attitude with the States for participating in the implementation of the program.

The next sets of issues in front of us clearly are broader implementation of the program, standards for new contaminants, and an effective implementation of our protection program.

Senator STAFFORD. Mr. Chairman, before Mr. Jorling leaves, since he has referred a couple of times to a problem in Vermont, I think it should be pointed out that the problem has been concentrated in the town of Bennington, in the southwestern part of the State.

We think by various stringent efforts the problem has been alleviated. There was for a time a suspicion that the traveling Ex Lax salesman, including his collection of samples, had fallen into the town reservoir.

Mr. JORLING. Mr. Chairman, Bennington has had two problems, shared by many older New England communities especially. First, in the past, lead and other heavy metal materials were used in soldering. Second, the aggressive nature of New England water has taken that heavy metal material off of the pipes and distributed it to the consumers. We have worked with the State of Vermont and have adopted a program to inject sodium bicarbonate. It has succeeded in reducing the level of heavy metals from the one milligram per liter that we had been experiencing down to .02 milligrams per liter.

I think that is an important success story. The bacterial contamination program in Bennington witnessed this spring was a very unusual one. The bacteria that actually contaminated the water was unique and had never been seen before.

Fortunately, the center for disease control in Atlanta was able to isolate the bacteria and identify it effectively. Now the community is embarked in building a new filter plant which will be on line before the end of the year. Bennington will then be protected from future episodes of that type.

Senator MUSKIE. Gentlemen, thank you very much for testifying this morning. We will be back, I am sure, with questions.

Mr. JORLING. Thank you, Mr. Chairman.

Senator MUSKIE. The next witnesses, I would ask they would all come to the witness table and undertake to condense their presentations so we might have time for questions.

Mr. Curtis Stanton, president of the American Water Works Association; Ms. Jacqueline Warren, Environmental Defense Fund; Walter Rockenstein, chairman of Environmental Quality Steering Committee of the National League of Cities; Mr. Oscar Adams, past chairman, Conference of State Sanitary Engineers; Mr. Robert C. Weaver, associate director, Environment and Energy, National Association of Counties.

We can proceed in the order in which I read the names: Mr. Stanton, Ms. Warren, Mr. Rockenstein, Mr. Adams, and Mr. Weaver.

STATEMENTS OF CURTIS H. STANTON, EXECUTIVE VICE PRESIDENT, ORLANDO UTILITIES COMMISSION, ORLANDO, FLA., PRESIDENT, AMERICAN WATER WORKS ASSOCIATION; JACQUELINE M. WARREN, ENVIRONMENTAL DEFENSE FUND, WASHINGTON, D.C.; WALTER H. ROCKENSTEIN II, CHAIRMAN, ENVIRONMENTAL QUALITY STEERING COMMITTEE, NATIONAL LEAGUE OF CITIES, CITY COUNCILMAN, MINNEAPOLIS, MINN., ACCOMPANIED BY TOM TATUM, COUNSEL FOR THE NATIONAL LEAGUE OF CITIES; OSCAR H. ADAMS, PAST CHAIRMAN, CONFERENCE OF STATE SANITARY ENGINEERS, DIRECTOR, ENGINEERING DIVISION, VIRGINIA STATE HEALTH DEPARTMENT; AND ROBERT C. WEAVER, ASSOCIATE DIRECTOR, NATIONAL ASSOCIATION OF COUNTIES, WASHINGTON, D.C.

Mr. STANTON. Mr. Chairman, my name is Curtis H. Stanton. I am executive vice president of the Orlando Utilities Commission in Orlando, Fla., which has the responsibility of furnishing electricity and water to the population in and around Orlando, Fla.

I am here today to speak to you as president of the American Water Works Association. Most of our 30,000 members live in the United States and would be directly affected by the Environmental Protection Agency's proposed regulations under the Safe Drinking Water Act.

In addition to my comments, we are filing a great deal of information with the committee to help explain how the act came into being and why serious review of it is so necessary now. Among other things, we have copies of special education materials that EPA contracted with our association to develop.

These materials explain the basic elements of the act on several different levels. There is one set for city officials, another for water utility managers, and a third very detailed one for the plant operators.

We have also written for EPA a new home study program for operators and are creating another one to help noncommunity water systems understand what the act requires.

In other words, we have been deeply involved and have worked very closely with EPA from the beginning to encourage general acceptance of the Safe Drinking Water Act as a necessary and highly beneficial law for the American public.

But the situation has changed. Somehow, the basic priorities that were evident when the law was passed have been overlooked, superseded by high visibility issues that frighten and intrigue the public; issues that siphon money and manpower from areas that are more important, but less able to stimulate public concern.

You may be aware that we have had some differences of opinion with EPA recently regarding their proposed regulation on organic contaminants in water. That is why we are here today, not so much because of the regulations which we do not disagree with, but because of the law that seems to have required them. We think some basic revisions are necessary.

The Safe Drinking Water Act's basic provisions resulted from a survey in 1969 that suggested serious deficiencies in a great many water systems, mostly small ones. The deficiencies were not only in relation to deterioration of facilities, but in education and manpower.

The cities and towns hired people at very low pay scales to do work they were not adequately trained for. Testing and laboratory procedures were inadequate. State surveillance of the water systems was inadequate.

Unfortunately, these faults were not very exciting to the public, and the Safe Drinking Water Act languished in unpassed House and Senate bills for several years. The great New Orleans cancer scare shook it loose.

One of the special interest groups involved in the issue unfolded some sensational statistics that purported to show a relationship between organic contaminants in New Orleans water and the incidence of cancer there.

The news media recognized a good thing and generated immense amounts of scare publicity. And the Safe Drinking Water Act sailed to passage on the waves of public concern that resulted. The issue of cancer has been in the forefront ever since.

Let me make clear at this point that the American Water Works Association is in favor of the Safe Drinking Water Act. We supported its goals and we encouraged its passage. Our ultimate aim is the same as EPA's—to see that the public gets the best possible, safest possible drinking water at a reasonable price. There is no disagreement about the end result we both want—only about ways to achieve it.

The basic problem in reconciling our differences is contained in a key phrase of the law's opening paragraphs. It requires EPA to regulate contaminants that in its judgment may have an adverse effect on human health.

That one word "may" is causing most of the difficulty. If a reasonable modification could be approved by Congress, the way would be paved to renewed cooperation between the utility-State-Federal team that overcame waterborne diseases as a general threat to the public decades ago.

What has happened is that EPA has said quite truthfully that organic contaminants in water may be a threat to human health. There is no conclusive proof either way. But the law doesn't allow for additional research; for time to reach a reasonable consensus that can reassure the public its best interests really are being protected.

In effect, it is another case of good intent being twisted by observation of the letter, not the spirit, of the law. Like the Endangered Species Act—and the Snail Darter/Tellico Dam situation—experience is demonstrating clearly that certain phrases in the law have to be changed in order to achieve what Congress actually intended.

A Federal court already has ruled the EPA has no leeway in this matter, no room for accommodation of other opinions. A lawsuit was filed against EPA when it quite properly declined to regulate organics due to insufficient information about them or about controlling them.

The U.S. court of appeals here in the District of Columbia said, much as the Supreme Court said of the Endangered Species Act, that

the intent of Congress seemed clear. Based on the history of the Safe Drinking Water Act's development, said the court:

The incomplete state of our knowledge, and the imperfect nature of available measurement and treatment techniques cannot serve as justification for delay in controlling contaminants that may be harmful.

What we would like to suggest for your consideration is a proposal by the Conference of State Sanitary Engineers, the people who generally conduct the water supply surveillance in our United States.

More than 90 percent of these professionals agree with AWWA's proposition that EPA has been premature in proposing its regulations, and that there are, in fact, higher priority problems in the water supply field than the over-publicized organics issue.

What we and the Conference feel Congress should make a major achievement of these oversight hearings is modification of the law so that for any contaminant regulated, there must be more than a suspicion that it may cause an adverse health effect.

EPA's Administrator must have the flexibility not to proceed with regulation of contaminants when the preponderance of professional opinion suggests—as it does now—that the regulation under consideration is unwise or inappropriate.

The law also directs the Administrator to specify a treatment technique if he finds it impossible to set a maximum contaminant level. This is not the best way to obtain the result we feel Congress wanted.

It is highly unlikely that any treatment technique will ever be appropriate for all locations or all situations in a nation as vast as ours. We believe Congress should direct the Administrator to tell water utilities what result is required, and leave it to the utilities to determine the technique that will best achieve that result for their own systems.

EPA outlined the situation as clearly as anyone when it published this observation in the Federal Register of July 14, 1976:

EPA is deeply concerned about the health of consumers of drinking water, but it does not wish to regulate frivolously without more knowledge of costs and benefits.

We submit that reasonable costs and a much greater benefit to the public will result if EPA is not only allowed, but directed to get back to the priorities it originally established namely, the upgrading of operator capability, improvements of monitoring and testing equipment and techniques, and revitalization of State surveillance programs for water supply.

Originally, EPA said correctly that the greatest problems were to be found in small water systems. But the current organics issue stresses costly changes for large systems.

Originally, EPA said surveillance of water systems was absolutely essential and it offered a formula that would cost only about \$5 million to pay for an adequate surveillance staff in the United States.

Inflation and better statistics on water systems would likely raise that figure to about \$20 million today, but that is far less than the capital outlay needed for only one of the dozens of new activated carbon filters EPA says will be required for organics.

As a matter of fact, speaking of potential expenditures, I am sure you are aware that EPA has raised its own estimates of the cost of

installing carbon filters by almost 100 percent. A consultant retained by our association believes the figure should be close to 100 percent higher than that.

And the best estimate of a coalition of some 85 utilities, which surveyed the industry, is conservatively placed somewhere around 600 percent higher than EPA's original estimate.

Our conclusion is that an enormous expenditure is being called for and that very little, if any, benefit to the public will result, unless certain changes to the law can be accomplished.

Why, after all, are we so anxious to reach the alleged level of safety these EPA organics regulations are supposed to achieve. Almost anything else we do in the course of ordinary existence is more dangerous.

The risk of death from household accidents is far greater, for instance. The risk for steelworkers, airline pilots, agriculture, and railroad workers is much greater. In fact, statistically, you face a greater risk of death by simply living in a location east of the Mississippi for 1 year than from a 70-year lifetime of drinking water filled with organic contaminants.

Unfortunately, the fear of cancer has been waved like a red flag before the public. And the reaction has been predictable. It is a hot issue, one that attracts far more attention and interest than education, training, laboratory equipment, and surveillance.

But now that the Safe Drinking Water Act has been passed and is in operation, we can afford to reassess our priorities and put them in proper order.

Should research continue in potential danger to the public from organics in water? Of course it should, but realistically and not under a forced draft crisis atmosphere.

Congress should also revise the public notification clauses of the law to preclude a rash of announcements that will be seen by the public as false alarms, and will result in disregard of the notification process. I am very happy to tell you that we certainly agree with Mr. Jorling and his recommendation in that regard.

By all means, maintain the requirement for water systems to report any violation of any regulation under the law. But have the report made to the State regulatory agency so its trained experts can judge whether the violation is only a technical matter relatively unimportant and easily corrected, or a matter of danger to the public that calls for and alert.

In addition, we think Congress should request an independent study of utility experience in public notification since the law went into effect last year. We are sure information about how utilities are handling this controversial requirement, and what the effect on their customers has been, will support our proposition that there is a better way to do it.

More than anything else, we would like to see Congress lead the way back to an effective team concept in this national effort to provide the best drinking water possible. More than a dozen States have not accepted primacy for administration of the act, which leaves the Federal Government conducting State programs. This is not what Congress intended, and we are sure it is not what EPA would prefer.

The nonprimacy States have identified overwhelming administrative and financial obstacles that preclude their cooperation. But we think an objective study could lead to resolution of the impasse and

reestablishment of State control. A situation in which States find reason to reject primacy should not be allowed to exist.

These changes in the law are critical to the future success of the Safe Drinking Water Act: First, giving EPA's Administrator more flexibility in judgment on contaminants;

Second, requiring him to specify treatment results, not treatment techniques;

Third, changing the public notification provisions; and

Fourth, redirecting EPA's attention to its original priorities for improving water supply in the United States.

We want very much to maintain our close and effective working relationship with EPA and to cooperate fully with its efforts to serve the public as Congress has directed. Our association and its members are at your service to help research and redraft the necessary modifications to the Safe Drinking Water Act that will make this possible.

Thank you very much.

Senator MUSKIE. Mr. Stanton, I want to hold off questions until all of you have made your presentations. But I want to ask one question for clarification, so that I may understand, maybe the other statements, better. With respect to treatment results and treatment techniques, as I understand the 1974 law, that approach was written into law with respect to contaminants as to which it was not possible to specify maximum contaminant levels.

So the treatment technique was mandated for the purpose of reducing contaminants, notwithstanding the fact that a prescribed level could not be established. What results could be mandated into law in that kind of situation?

If you can't establish a level and simply mandate a reduction, those are insufficient results, what other results could be mandated that would meet your objection?

Mr. STANTON. What we are saying, in this case, of course, is that the proposed regulation gives a number of 100 parts per billion for total trihalomethanes (TTHMS). If this comes to pass, we would have to abide by the regulations and reduce TTHMS to 100 parts per billion.

Granular activated carbon is only one of the ways by which that can be done. But EPA in this case as we understand it, is specifying the treatment. We are saying, just say get it down to that level; whatever level they put, and let us determine the way to do it.

Senator MUSKIE. But that provision of the law provides not only for that particular contaminant but others. And it was written into the law because it was anticipated in many cases a contaminant level could not be identified.

Mr. STANTON. I understand.

Senator MUSKIE. If a contaminant level could not be identified, what other measure of result could be written into the law that would obviate simply the requirement for treatment techniques? In other words, the law seems to say even when you can't establish a level, you ought to reduce the concentration of contaminants that are determined to be harmful.

So what other measured result could you produce? You can't establish a level.

Mr. STANTON. Yes, sir; I understand.

I have just been handed a statement here by one of our staff which points out, as far as we are concerned, we don't feel that unidentifiable levels are particularly harmful.

We, therefore, feel that if the regulation said that we should reduce contaminants to at least identifiable levels, let us decide how we do it. This is what I am saying.

Senator MUSKIE. Could I suggest for the moment, without taking more time now, I would like to see some certain language implemented so we can evaluate that.

Mr. STANTON. Yes, sir. Thank you.

[The following was received subsequent to the hearing: an additional statement and responses to written questions may be found beginning at p. 291.]



American Water Works Association | 6666 West Quincy Avenue | Denver, Colo. 80235 | 303 794-7711

July 25, 1978

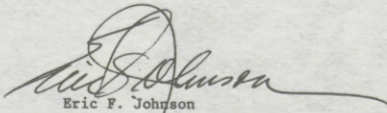
The Honorable Edmund S. Muskie
United States Senate
145 Russell Senate Office Building
Washington, DC 20510

At the suggestion of Bob Van Huevelen of your staff, I am writing to clarify one point of Association policy that is pertinent to the final statement you made during the oversight hearings on the Safe Drinking Water Act on July 18.

In your statement you took issue with urgent proposals of needed legislation and regulations from the grass roots that were followed, when the proposals were acted upon, by demands for federal funding of the local action required to meet the requirements mandated. I want to assure you that the American Water Works Association and the great majority of water utilities that are members of the Association are in full agreement with you in this respect. As you will see from the attached policy statement, the Association opposes federal construction grants as counterproductive. Furthermore, if such grants were made available, more than 50 per cent of water utilities, including primarily the smaller ones where the greatest problems exist, would be ineligible for such grants as private or investor-owned operations.

The public water supply field is ready, willing, and able to fund from the revenues from its operations the treatment necessary to provide safe and high quality water to the public, but it is neither ready nor willing to call upon its customers to pay the cost of unproved solutions to problems that, according to the scientific community, may or may not exist. We can think of nothing more inflationary than that.

We did appreciate the opportunity to testify and stand ready to provide further information concerning the water supply field and its capabilities upon your request.


Eric F. Johnson
Executive Director

EFJ/jw
Enclosure

President: CURTIS H. STANTON, Orlando, Florida
President-Elect: DONALD K. SHINE, Wyoming, Michigan
Vice-President: JEROME B. GILBERT, Sacramento, California
Past-President: ROBERT R. PETERS, Norfolk, Virginia
Secretary-Treasurer: GRANT A. COLTON, Pittsburgh, Pennsylvania
Executive Director: ERIC F. JOHNSON, Denver, Colorado

Governmental Assistance For Water Utility Construction

Adopted by the Board of Directors on May 8, 1977

The American Water Works Association believes that governmental grants to aid water utilities in the construction of necessary facilities are undesirable in that they destroy the financial and managerial independence necessary to self-sustained business-like operations.

Recognizing, however, the unforeseen heavy burdens that will be placed upon some utilities, small and large, by the requirements of PL 92-500 and 93-523, the Association agrees that financial assistance may in some instances be necessary to permit timely compliance with the laws. In such cases, where utilities find it impossible to attract private capital, without incurring burdensome and unreasonable rates, the Association believes that governmental assistance furnished in the form of loans with deferred principal payments and minimal interest rates that will permit utilities to phase in the rate increases required to pay back the loans on a reasonable schedule, or guaranteed loans by private lenders as provided by PL 93-523 is the best means of providing this assistance. Inasmuch as many of the utilities in critical situations will be privately or investor owned, it is particularly important that such loans be available to them as well as to community-owned systems.

Senator MUSKIE. Ms. Warren?

STATEMENT OF JACQUELINE M. WARREN

Ms. WARREN. Thank you, Mr. Chairman. I am a staff attorney with the Environmental Defense Fund. It is a nonprofit environmental organization which has since its creation in 1967 been involved in efforts to reduce exposure of the population to hazardous chemicals in the water and the air, consumer products and the general environment.

EDF was an active participant in EPA proceedings leading to cancellation of the registrations of the carcinogenic pesticides DDT, aldrin, dieldrin, mirex, heptachlor and chlordane. EDF scientists and lawyers have also worked for the control of toxic substances in the air, water and consumer products, and for improvement in the quality of our drinking water, which is the subject of today's hearing.

Regulation of Organics in Drinking Water

The quality of the drinking water provided to the American people is directly related to the quality of our surface and ground water supplies. Because of this subcommittee's long-standing involvement in legislation designed to control water pollution, the expertise you will bring to bear in exercising oversight over the Safe Drinking Water Act is greatly welcomed.

The problems to be addressed, especially the issues of controlling organic chemicals in drinking water and of protecting our ground-water supplies from industrial and other contamination, are in reality extensions of the same problems you have already addressed in the Federal Water Pollution Control Act and the Resource Conservation and Recovery Act.

On behalf of an organization which worked very hard for passage of the Safe Drinking Water Act, and has monitored closely the Environmental Protection Agency's implementation of the act, we are glad to be here and are very appreciative of your interest in the subject of drinking water quality.

EPA's implementation of the Safe Drinking Water Act has a very checkered record so far. While the Agency promulgated the interim primary drinking water regulations in an almost timely fashion, the regulations did not cover organics, despite the fact that the presence of organic chemicals and especially organic carcinogens in drinking water, was of paramount congressional concern when the Safe Drinking Water Act was passed in 1974.

Because of EPA's failure to include control of organic chemicals in the interim regulations, which presently govern drinking water treatment practice and will do so for the foreseeable future, EDF sued EPA in December 1975. A copy of the court's opinion, issued February 10, 1978, is attached.

I would point out that the preventive approach which is inherent in the Drinking Water Act is not a creation of the U.S. Court of Appeals. It is in the law. The purpose of it is to prevent exposure to cancer causing and other hazardous materials.

It would appear that the AMWA prefers that people be shown to be dying of cancer from drinking water before steps would be taken to

regulate exposure to carcinogens. I think Congress rejected that approach.

If the Agency has a reasonable basis to believe that exposure to a contaminant in drinking water will pose adverse health effects they are authorized to regulate that contaminant. They are not required to, but they are authorized to regulate.

The controversy over whether concentrations of organic chemicals in drinking water are hazardous to humans has raged since before the statute was passed. As this subcommittee is very well aware the problem of industrial and agricultural pollution of our waterways has been well documented.

It is also well documented that EPA had not moved to regulate the discharge of toxic materials into water until very recently. The toxic pollutants consent decree, to which EDF was an active party, and the 1977 amendments to section 307 of the FWPCA are testimony to the Agency's past failure to act on this problem, a problem which this committee and the rest of Congress have recognized as a very serious one.

The Safe Drinking Water Act itself was passed largely because of concern arising from widespread detection of the same industrial and agricultural pollutants in drinking water supplies throughout the United States.

Prompting this concern was a large body of evidence that water treatment facilities were not equipped to remove organics from drinking water. Indeed, the vast majority of water utilities did not and do not monitor for organics and were therefore ignorant of the existence of a problem.

Their principal focus for the past half century has been on eliminating waterborne disease such as cholera and typhoid, principally by chlorination of the water. They have certainly done a very good job with that.

The more recent problem of contamination of drinking water by synthetic organics, and by trihalomethanes, which are halogenated organics produced by the process of chlorination, was not being addressed by municipal treatment plants anywhere in the country, with a very few limited exceptions.

The inability of public water suppliers to protect against organic contamination appeared especially serious in light of the fact that to date more than 700 organic chemicals have been identified in drinking water. This is possibly only 10 percent of the number of organics that are in the water.

Of those, the National Academy of Sciences identified 21 categories of organics chemical as known or suspected carcinogens. In their testimony before the EPA hearings, the National Cancer Institute identified 23.

The NAS list, which is appended as attachment II, includes vinyl chloride, benzene, chloroform, carbon tetrachloride, PCBs, dieldrin, kepone, heptachlor, and many other familiar hazardous chemicals which have been found in drinking water.

In recognition of the potential human health risk posed by exposure to these and other contaminants in drinking water, the language of the Safe Drinking Water Act is preventive. It authorizes the Adminis-

trator of EPA to establish regulations for any contaminant which "may have any adverse effect on the health of persons."

When the U.S. Court of Appeals included that statement in their opinion they were simply citing with approval the language of the House committee report on the Safe Drinking Water Act, which stands as the only piece of legislative history of the Act in the form of a committee report.

Despite these expressions of concern that steps be taken immediately to improve the safety of drinking water, EPA failed to include a standard for organics in the interim primary regulations.

Indeed, a proposed organics standard was withdrawn prior to publication of the interim regulations in December, 1975. They had proposed one but under pressure from the water supply community and the States, it was withdrawn and the drinking water regulations were published without it.

However, a combination of factors including the EDF lawsuit, additional monitoring and research, and a change in administrations led EPA to propose in interim organics regulation in February of this year.

The details of the proposal have been gone through. Granular activated carbon is the best available technology for the reduction of organics in water. It has been used successfully for the past 20 years. It is widely used in the food and beverage industries and by the sugar refining industry; it is not a new technology.

The proposal to require application of the best available treatment technology for reduction of a broad spectrum of organic contaminants has met with strong opposition from the water works community.

Their principal objections challenge the health risk posed by long term exposure to carcinogenic chemicals in drinking water, the efficacy of GAC to remove organic chemicals, and the cost of installing the technology where high concentrations of organics are detected.

Their objections have been voiced loudly with much misrepresentation and distortion of the facts. If the National Cancer Institute and the EPA, the National Institute of Environmental Health Sciences, the Occupational Safety and Health Administration and the Food and Drug Administration tell the public that there is a cancer risk from continued exposure to cancer-causing chemicals in drinking water, I think the public would be better served by believing them than by listening to the sanitary engineers.

There are 12 epidemiological studies showing a statistically significant association between increased cancer rates and consumption of organically-contaminated water. The AWWA's continual references to one sensational study are really a diversion from the major issue because many other studies have been done, not only in New Orleans but also along the Ohio River and in New York; they all document the same effect.

I think EPA would be derelict in its duties if it ignored both the epidemiology and the animal data indicating that there are cancer-causing materials in drinking water, and withdrew their proposal to regulate organics.

EPA's position is clearly justifiable as a prudent public health measure, and the record of the hearings on the proposal recently concluded by EPA shows that representatives of scientific institutions

and other Federal regulatory agencies concerned with human health offered strong support for the organics proposal on this basis.

EDF also testified at those hearings and a copy of our testimony is attached.

The record on the utility and efficacy of carbon filters in removing organic contaminants is similarly substantial. Although opponents of the proposal have raised a number of extraneous and wholly unsupported arguments regarding the safety of GAC, in fact there is much evidence supporting the technology as available, reasonable in cost, and effective.

The only genuine issues as to this proposal are how much it will cost to implement and how those costs will be financed.

EPA's estimates of economic impact show that the costs to residential consumers will range from \$10 to \$20 a year—a modest increase by any measure.

If small communities with contaminated water supplies have difficulty financing the necessary improvements, perhaps new funding mechanisms should be established. But safe water should be provided for all citizens regardless of the size of the community they live in. If anything, EPA is to be chided for proposing a regulation which, when implemented, will protect only 52 percent of the population.

The 100 parts per billion maximum contaminant level proposed for trihalomethanes is merely the average concentration which has been measured around the country. It is not related to any assessment of potential health effects.

EPA's preamble to the proposed regulation used only a chloroform animal study and estimated 200 excess cancer deaths for levels above 100 ppb. In fact, there are many more chemicals than chloroform in drinking water. If the epidemiological studies were taken as true, not saying they are true, the number of cancer cases among consumers of contaminated water would be in the tens of thousands and not 200 a year.

The solution to the organics problem is not to deny that there is one, or to clamor against EPA before the Congress, or to ridicule those supporting the Agency's proposal.

Yet, these are the techniques adopted by the opposition who have combined to fight the regulation. They are calling themselves the "Coalition for Safe Drinking Water," which is a grotesque misnomer.

A more productive approach would be to resolve whatever technical problems may remain, to seek from the legislative and executive branches the financial assistance to bring safer water to communities who cannot afford to do so, and, most importantly, to get on with the task of protecting our water supplies against the discharges, spills, and contaminated runoff to which they are now entirely vulnerable.

There are a number of other matters about which we have been less than pleased with EPA's performance in implementing the Safe Drinking Water Act. Two issues which were involved in our lawsuit against the Agency which have still not been resolved involve requiring monitoring for contaminants for which no maximum contaminant level has been established, such as sodium, which is a serious problem in the water supplies of New England and many other places, and improving monitoring for heavy metals.

Sodium is a contaminant. For individuals with hypertension and a number of other diseases, the sodium content of their water is of very

serious concern. We had asked EPA to establish a requirement that water utilities monitor for sodium and notify their customers what the levels are so those persons with reason to be concerned can look for alternative sources of water.

To date, even though in recent amendments to the Safe Drinking Water Act the specific authority to require such monitoring and notice was included in the statute, the Agency has not done it.

The second issue is the problem of heavy metals coming into the water through corrosion of lead pipes. Lead and cadmium have been found in cities of the Northeast and Northwest at seriously high levels.

EDF sued EPA over the inadequacy of their monitoring requirements for heavy metals. These requirements are inadequate to detect a problem of heavy metals contamination where one exists. In one of the monitoring surveys EPA conducted, they measured in Boston for lead contamination of drinking water but didn't find it in excess of the public health service guideline.

Then the Agency did a more in-depth monitoring and found out that 25 percent of the households in Boston had concentrations of lead at a very high level. It is only with an adequate cross-section of households and points where the distribution network is monitored that a problem of corrosive water and the leaching of heavy metals into that water can be detected.

But to date, those monitoring requirements have not been changed.

In cities like Boston, there remains a 75 percent chance of missing the problem if the monitoring is not done adequately.

The third problem area of great concern to us is protection of ground water. Seventy-seven percent of the Nation's drinking water supplies are dependent in whole or in part upon ground water.

Ground water is extremely vulnerable to contamination by land and water disposal of soluble toxic materials, by storage of such materials below ground but above the water table, and by the disposal, storage, and extraction of hazardous materials below the water table.

A number of Federal statutes are applicable to the problem. The Clean Water Act is applicable to ground water insofar as a direct relationship to surface water can be shown.

The Safe Drinking Water Act addresses the relatively narrow problem of deep well injection as it impacts on the quality of ground water used for public water supply. Section 1421 authorizes the establishment of State permit programs to control underground injections which may endanger ground water.

More significantly than either of these, the Resource Conservation and Recovery Act (RCRA) contains authority to control the land disposal, storage and transportation of hazardous wastes, of which an estimated 30-35 million tons are dumped into the ground annually.

The leachate of hazardous materials from dumps, pits, ponds, lagoons, sludge and numerous other sources adversely affect the quality of ground water, which lacks the self-cleansing capacity of surface water provided by circulation and aquatic organisms.

As a result of unrestrained disposal of hazardous materials, ground water has been contaminated on the local level throughout the United States.

My statement contains numerous examples of ground water contamination. A recent one occurred in Gray, Maine, where eight

families, because of organic chemical contamination of their water supply have now filed suit against an industrial waste processing plant, charging that toxic chemicals discharged by the plant permeated the water table and contaminated their wells. EPA is not addressing this problem.

Ground water pollution may cause permanent and irreparable harm unless control mechanisms are effectively utilized. Not only does ground water need to be regulated as a direct source of drinking water, but where ground water discharge is the source of inflow to surface waters, it must be controlled as well.

It is shortsighted to regulate surface waters and not regulate the adjacent and upbasin ground water which is its source. Yet legislation, aimed primarily at surface waters and drinking water supplies, has proven ineffective in controlling ground water pollution.

Even though the Safe Drinking Water Act as presently written deals with only one source of ground water contamination, EPA is charged with implementing and coordinating all three statutes and could be making a much more comprehensive and effective effort.

So far, the Agency has shown few signs of so doing. For example, the Safe Drinking Water Act authorizes the Administrator of EPA to establish minimum requirements for State underground injection control programs (UIC) and to publish a list of States for which such programs may be necessary to assure that underground injection will not endanger drinking water sources.

While proposed regulations for State UIC programs were published in March, 1976, final regulations have never been issued nor has the list of States needing UIC programs ever been published.

Thus, more than 2½ years after passage of the Safe Drinking Water Act, there remains no Federal program for protection of groundwater against contamination by deep well injection. This is July of 1978 and we still haven't seen them all. In fact I have just heard Mr. Jorling make my fifth promise of 30 to 60 days for just the reproposal of the regulation.

EPA's stop-and-go efforts to implement RCRA are equally unimpressive to date, but they should be subject of another day's hearing. Suffice it to say that apart from a few designations of sole drinking water source aquifers in response to petitions under section 1424 of the Safe Drinking Water Act, very little has been done by EPA under any of its statutory authorities to protect a major source of drinking water from chemical and other contamination. It is a situation which should not be permitted to continue.

We appreciate this opportunity to present EDF's views on implementation of the Safe Drinking Water Act and would be pleased to be of any further assistance to the subcommittee that might be requested.

Senator MUSKIE. Thank you, very much, Ms. Warren.

Mr. Adams?

STATEMENT OF OSCAR H. ADAMS

Mr. ADAMS. I am Oscar H. Adams, past chairman, Conference of State Sanitary Engineers, and as such I have been designated by the CSSE executive board to speak on behalf of the conference.

I am a professional sanitary engineer, and I am employed by the Virginia State Health Department as the acting deputy assistant commissioner for the environment. Attached is a copy of my resume.

I am here today representing the Conference of State Sanitary Engineers. This organization welcomes this opportunity to appear before this subcommittee and discuss our experience with the implementation of the Safe Drinking Water Act.

The Conference of State Sanitary Engineers is comprised of the chief State officials, or their designees, who have responsibilities for State environmental programs. It is particularly noteworthy that the conference membership represents 48 of the 50 State water supply programs, hence our interest in the implementation of the Safe Drinking Water Act is of the highest order.

The interim primary drinking water regulations became effective in June 1977, therefore, the States have had approximately 1 year of experience under the act.

To date, 34 States have been granted primary enforcement responsibility and are conducting water supply supervision programs which are equally stringent as required by the Federal regulations.

It appears that three States will not seek the authority to conduct the program: Pennsylvania, Indiana, and Oregon. The remainder of the States are proceeding to qualify and the majority will meet these requirements in another year.

The principal obstacle to States obtaining "primacy" has been the time required to enact suitable State laws and to promulgate regulations. Some of the difficulty was due to the fact that some of the legislatures meet every 2 years.

In other cases the States' administrative procedures require a legislative review of regulations before they are effective. Another factor was the reluctance on the part of some State governments to engage in another Federal program when the continued financing was unclear or not assured.

I believe that to understand the experiences of the States under the Safe Drinking Water Act there must be a description of a State program. The State of Virginia's program is typical of most States.

Currently in its inventory there are approximately 2,460 public water systems. This total can be divided into 2,123 community systems and 337 noncommunity systems. The more significant facts are the size of the systems being regulated; 82 percent serve less than 500 persons, 16 percent serve less than 10,000 persons.

There are 47 systems or 2 percent serving over 10,000 persons, but less than 75,000 persons. Ten systems or 0.4 percent serve over 75,000 persons. The importance of these data is to show the greatest number of systems are very small. These small systems are lacking in resources and trained personnel. As a result, much of the State's effort must be directed toward enforcement and technical assistance for these small systems. The larger systems usually have the resources and trained personnel to properly operate and maintain their systems with a minimum of surveillance and supervision.

Another facet of the size situation is that the Safe Drinking Water Act and the implementing regulations are written for application to the very large systems such as New York City, Philadelphia, or Washington.

The act does not permit the necessary flexibility for the Administrator of the U.S. Environmental Protection Agency or the State to address the problems of the small systems in a reasonable manner.

The Federal funding of State program through grants has increased from \$9.5 million in fiscal year 1976 to an estimated \$26.4 million in fiscal year 1979. The Federal appropriations have been approximately 50 percent of the funds authorized. The States and EPA are spending \$38 million in fiscal year 1978. State \$13.5 million and Federal \$24.5 million.

A study made by the Conference of State Sanitary Engineers and USEPA in 1973 estimated the cost of full implementation of the States' program to be \$100 million.

In order to meet the goal of full implementation of the Safe Drinking Water Act in 1982 it would be necessary for the States' share to be increased to \$50 million and the Federal share increased to \$150 million.

It is evident that considerable increase in rate appropriations for both State and Federal funding is mandated or legislative and regulatory requirements must be reduced considerably.

I might mention some of the impacts upon State programs which may be of interest. Traditionally, State agencies have provided to the water systems, monitoring services free gratis. Under the Safe Drinking Water Act there has been a need for additional or increased monitoring since the act envisions the water purveyor paying for these costs; they are not an allowable State program under existing regulations. As a result, the States have had to increase their expenditures in this area.

Public notification provisions of the Safe Drinking Water Act have been hotly discussed, pro and con. I might give you our Virginia experience. In the past year we have had approximately 669 occasions where public notification was required. Approximately 140 of this total pertained to primary maximum contaminant level violations.

The most frequent violation was of the bacteriological standards, usually a very small system where one positive sample resulted in a violation. The remaining violations have been nonprimary maximum contaminant level related and are due principally to failure to monitor.

This public notification activity has required slightly over 1 man-year of effort. We must admit the threat of public notification has caused owners to take action when other measures have not been successful.

I previously mentioned the bacteriological standards as having been bothersome for the very small systems. The bacteriological standards had never been applied rigidly to the very small systems.

Under the Safe Drinking Water Act one positive bacteriological sample results in a violation. The law and regulations do not permit the water supply agency to use reasonable judgment as to the quality of water being delivered.

Rechecks, sanitary surveys of the system and a long history of delivering safe water usually show that an error has been made either in collection, sampling or laboratory analysis. Although we are convinced that safe water is being delivered, the owner must give public notice.

In some areas of the country protected watersheds with large storage impoundments are used as water sources. The only treatment applied is disinfection. These systems have had difficulties in meeting the turbidity standards during periods of heavy runoff.

Likewise, some wells or ground water supplies have a high turbidity when the water is pumped from the ground. These supplies usually meet the bacteriological and other standards and there is no evidence of any adverse health effects, however, these systems are in technical violation of a maximum contaminant level.

One of the more vexing problems is presented by the fluoride standard. In areas of the Southeast, South and Southwest some of the ground waters contain excessive amounts of naturally occurring fluoride.

These amounts exceed the maximum contaminant level. The principal effect of high fluoride levels is the mottling of the teeth of users of such waters which may be considered cosmetic. While there are methods to remove fluoride from the water they are expensive and difficult to manage.

Basically, they are impractical or infeasible for the small water system. In these areas no other water sources are reasonably available. The dilemma results because of the provisions in the act, which when strictly applied, a variance cannot be given because there are treatment techniques available, however, they are infeasible and impractical.

There is a need for some changes in the Safe Drinking Water Act and fine tuning to make the law more workable. For example, in section 1401 (1)(B) we find the following words "May have any adverse effects on the health of persons."

This is very broad and directs the Administrator to establish a maximum contaminant level on merely a suspicion or speculation that a substance may have any adverse health effects. These words are being quoted as one of the reasons the Administrator must promulgate the proposed regulations on the "Control of Organic Chemical Contaminants in Drinking Water."

We believe there should be more substantial evidence than a mere suspicion. Time does not permit, today, a discussion of the various needed changes in the act. Therefore, we request that the Conference be allowed to submit for inclusion in the record a number of suggested changes in the Safe Drinking Water Act. (See p. 35.)

I would be remiss today if I did not tell you that the implementation of the Safe Drinking Water Act has gone, so far, remarkably well. This has been due to the excellent manner in which EPA has implemented the act.

There has been a dialog between the States and the EPA's Office of Water Supply. Let me assure you that we have had our differences but as reasonable men, we have been able to reach acceptable solutions.

In summary, the Conference of State Sanitary Engineers thanks you for this opportunity to present our observations on the Safe Drinking Water Act. The implementation is progressing satisfactorily. The States' water supply supervision programs are going to be more costly than originally anticipated if fully implemented.

The act does need some modifications and additional flexibility provided to accommodate the problems of small water systems.

Thank you.

[The recommended amendments previously referred to follow:]

CONFERENCE OF STATE SANITARY ENGINEERS

July 26, 1978

Meredith H. Thompson, Executive Secretary
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CSSE STATEMENT
Recommended Amendments to PL 93-523
and PL 95-190

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The following recommended amendments to PL 93-523 and PL 95-190 are submitted per authorization granted by the Committee Chairman during the testimony of Mr. O. H. Adams, Past Chairman, Conference of State Sanitary Engineers to the oversight hearing on these Acts by the Senate Committee on Environment and Public Works on July 18, 1978.

In presenting this information reference is made to sections of the Act with suggested changes and supporting information. Added material is underlined and deleted words are lined through.

Section 1401(4) - Amend to read as follows:

The term "public water system" means a system for the provision to the public of piped water for human consumption if such system has ~~at least fifteen service connections or regularly serves at least twenty five individuals~~ regularly serves at least twenty-five individuals, or in the case of residential consumers, serves fifteen or more dwelling units. Such term includes (A) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (B) any collection or pretreatment storage facilities not under such control which are primarily in connection with such system. A public water system is classified as either a "Community Water System" or as a "non-Community Water System".

(i) "Community Water System" means a public water system which serves at least twenty-five resident individuals on a year-round basis or in the case of residential consumers serves fifteen or more dwelling units on a year-round basis.

(ii) A "non-community water system" means a public water system which provides water for at least twenty-five non-resident individuals daily for at least 60 days per year.

The proposed changes would clarify the law regarding the "Number of Connections" vs "Population Served" that has been causing considerable concern among the states. This revision would allow the states to inventory number of connections and not census people for community water systems.

The law is further clarified by adding the community and non-community definitions. The classification of public water systems into groupings of community and non-community systems is desirable for regulatory agencies.

as a greater priority should be given to monitoring and inspecting those public water supplies which provide water to year round residents. Most of the nations' non-community systems provide water to the public on a limited short term duration basis and therefore long term effects from chemical contaminants is minimal. Basic concern with the "non-community" system is bacteriological quality.

Section 1401(1)(B) - Amend to read as follows:

"Specific contaminants which in the judgment of the Administrator may have any adverse effect on could present a significant threat to the health of persons."

Section 1412(b)(1)(B) - Amend by adding the following sentence:

Notwithstanding the provisions of Section 1401(1)(b) and those contained in this section the Administrator shall not promulgate regulations which are unsupported by factual evidence that there may be a health problem. The Administrator is provided the flexibility not to proceed with regulations on a contaminant or group of contaminants when the preponderance of evidence suggests a regulation under consideration is unwise, inappropriate, or not cost effective.

This is probably the most significant recommendation that the Conference has to make to you. It is quite evident through the debate on consideration of proposed regulations on organic contaminants in water that the legislative intent and the court action based on that intent have placed the Administrator in an almost impossible situation. Mr. Tom Jorling, Deputy Administrator, presented to the annual conference of the American Water Works Association that the Administrator really has no choice except to proceed with this proposed regulation. He made a strong point that this in his judgment was a legislative mandate, and not a question as to whether or not organics would be regulated, but a question as to the content of the regulations. We respectfully submit to you that the Administrator, EPA is under undue restraints due to the present language of the law. It would be far more appropriate for the Administrator to be given the flexibility to consider all aspects of the problem before he is forced into a regulatory position. In this respect I am including for the record a copy of a position paper of the Conference of State Sanitary Engineers on the proposed interim primary drinking water regulations "Control of Organic Chemical Contaminants in Drinking Water". It is believed that the background discussion on this and the conclusions reached by a great majority of the states is indicative that some change needs to be made in the basic law. As the law now stands it can only lead to litigation and resistance from the industry, state regulatory agencies and, ultimately, the consumers when they fully recognize the economic impact that is based on questionable grounds.

Section 1412(d) - Insert after the first sentence of this paragraph the following:

"In prescribing regulations under this section, the Administrator may provide for phased implementation taking into consideration treatment requirements, population and systems size, economics, source of water, geographical and geological differences, and other relevant factors requisite to adequately protect the health of persons."

There must be some latitude available to the Administrator in prescribing regulations, so that implementation may take into account variables which should be considered for optimum procedures to bring the new regulations into effect. Blanket application of new regulations will, in some cases, present hardships and/or increase the administrative problems in applying the regulations to the public water systems.

Section 1413 - Amend by adding a new subsection (c) as follows:

"(c)(1) Notwithstanding subsection (a)(1) of this Section, within 12 months of the effective date of any amendment of a regulation promulgated under Section 1412 revising or adding any requirement respecting the interim primary drinking water regulations and the revised national primary drinking water regulations, a state with primary enforcement responsibility pursuant to this section shall submit a schedule to the Administrator containing a timetable for the state public water system supervision program to meet the revised or added requirement.

(2) Within ninety days after the submission of the state's schedule under Paragraph (c)(1) and after reasonable opportunity for presentation of views, the Administrator shall approve the continuation of state primary enforcement responsibility or make a determination that the state no longer meets the requirements of this Section".

Many states have time consuming procedures with which they must comply in order to revise their regulations. In many states proposed regulations must be reviewed and approved by legislative committees. By providing a one (1) year period, virtually any state should be able to plot the course of proposed regulations and develop a timetable for adoption of the changes.

The 12 month period will allow states to draft their proposed changes and determine the amount of support (or non-support) that can be expected during the legislative review phase.

Section 1414(c)(1)(A) - Amend to read as follows:

(A) comply with an applicable maximum contaminant level or treatment technique requirement of or-a-testing-procedure-prescribed by a national primary drinking water regulation, after the agency with primary enforcement responsibility has made a sanitary survey or investigation to determine if a significant health hazard exists or to determine if prompt action has not been taken to insure compliance with Primary Drinking Water Regulations. When the violation has been determined to be minor or corrective action has been taken, no notice is required.

The Act as presently written does not allow for proper interpretation of laboratory results. Laboratory analyses are not infallible and there are many opportunities for errors in sampling collection technique and laboratory methods. Such poor technique or errors may give a false violation of a maximum contaminant level and require public notification when the quality of the drinking water is safe.

Public water systems are located and constructed in such a manner to safeguard the quality of the drinking water and the monitoring serves only to alert the owner of the water supply supervision agency that something may have changed or some operational procedures technique needs review. The sanitary survey of the public water system will determine if there is or is not reason for concern.

Section 1414(c)(1)(B) - Amend to read as follows:

(B) perform monitoring required by section 1445(a) or to employ a testing procedure prescribed by a national primary drinking water regulation or if such non-compliance still exists in any month after being previously notified by the agency having primary enforcement responsibility, and

These requirements are not health related since they are administrative failures. These omissions do not affect the quality of water served the public. Monitoring and testing water samples are after the fact procedures which show the quality of water at the specific instant when the sample was taken. The results of such monitoring or analysis take place some period of time after the water has been consumed. There is a need for reasonableness in the enforcement of these requirements. Therefore the enforcement procedures should permit warning letters, or informal hearings and then if compliance is not obtained public notification and other enforcement procedures such as formal or judiciary hearings, orders and the courts can be utilized. States should have some latitude in these administrative matters.

Section 1414(c)(3) (added)

(3) if a public water system has been granted a variance from a treatment technique requirement because an actual or potential health hazard does not exist, and the application of the particular treatment technique is not needed, only the initial public notice shall be given and subsequent notices may be suspended by the agency having primary enforcement responsibility.

The Administrator may impose a treatment technique requirement on various public water systems. In some cases the public health will not be endangered due to various environmental or other factors. If the Administrator or State determines there is no need to apply the requirement to the particular public water system and grants a variance there should not be a requirement for the water system to periodically notify the public that the drinking water being served is safe.

Section 1414(d) - Add the following sentence to this subsection:

"Decision as to whether to enforce national secondary drinking water regulations will be made by the agency having primary enforcement responsibility.

The secondary regulations concern themselves with esthetic and not health effects. The impact of such regulations on the consumer can best be determined by the agency having primacy. That agency needs discretion to determine if any of the secondary regulations are pertinent and should be enforced.

Section 1416(b)(2)(A) - Amend to read as follows:

A schedule prescribed pursuant to this subsection for a public water system granted an exemption under subsection (a) shall require compliance by the system with each contaminant level and treatment technique requirement with respect to which the exemption was granted as expeditiously as practicable (as the State may reasonably determine) but (except as provided in subparagraph (B))

~~(1) in the case of an exemption granted with respect to a contaminant level or treatment technique requirement prescribed by the interim national primary drinking water regulations promulgated under section 1412(a) not later than January 1, 1981; and~~

~~(1) in the case of an exemption granted with respect to a contaminant level or treatment technique requirement prescribed by revised national primary drinking water regulations, not later than seven years after the date such requirement takes effect.~~

In the case of an exemption granted with respect to a contaminant level or treatment technique requirement prescribed by interim or revised national drinking water regulations, not later than seven years after the date such requirement takes effect. Exemptions may be reviewed by the State within 90 days of their expiration date, and may be renewed after such review for additional five year periods if, in the opinion of the State,

(i) there remain adequate compelling reasons (including economic factors) to prevent the public water system from complying with such contaminant level or treatment technique requirement, and

(ii) the granting of the exemption will not result in an unreasonable risk to health.

No exemption may be renewed more than twice without the specific approval of the Administrator."

Section 1416(b)(2)(B) - Amend to read as follows:

(B) Notwithstanding clauses (i) and (ii) of subparagraph (A) of this paragraph, the final date for compliance prescribed in a schedule prescribed pursuant to this subsection for an exemption granted for a public water system which (as determined by the State granting the exemption) has entered into an enforceable agreement to become a part of a regional public water system shall -

~~(1) in the case of a schedule prescribed for an exemption granted with respect to a contaminant level or treatment technique requirement~~

prescribed by interim national primary drinking-water regulations-
be not later than January 1, 1983; and

(1)- in the case of a schedule prescribed for an exemption granted
with respect to a contaminant level or treatment technique requirement
prescribed by revised national primary drinking water regulations, be
not later than nine years after such requirement takes effect.

"In the case of a schedule prescribed for an exemption granted
with respect to a contaminant level or treatment requirement prescribed
by interim or revised national primary drinking water regulations, be
not later than nine years after such requirement takes effect. Any
exemption granted under this subparagraph may not be renewed unless
the public water system has become part of the regional system, and
that regional system has received an exemption under the provisions of
subparagraph (A) above."

Since interim primary regulations are still being introduced after
the dates contemplated in Section 1412, the January 1, 1981 and the
January 1, 1983 dates are unrealistic for regulations issued subsequent
to 180 days after the enactment of PL 93-523. Therefore changes have
been recommended to allow the time contemplated by Congress (five years for
public water systems described in Section 1416(b)(2)(A), and seven years
for public water systems described in Section 1416(b)(2)(B) to be applied
to both interim and revised primary drinking water regulations.

Since it is possible that new developments, particularly as the results
of additional knowledge, may make desirable an alternate method of compliance
not known at the time the original exemption was granted, allowing renewals
will give the public water system an opportunity to comply with the regula-
tions by using the newer, and presumably better, method. However, in order
to prevent a continuous and undesirable series of renewals, a limit is set
beyond which the Administrator's consent is necessary. Likewise, a system
which has taken advantage of its intention to join a regional system cannot
postpone compliance without joining the regional system.

Section 1442(d) - Amend by striking out the period at the end of
(d)(2); inserting ", and"; and inserting the following new subsection:

"(3) provide training for, and make grants for training water
system operators and others closely associated with the operation of
water systems for the purpose of qualifying or improving the qualifica-
tions of such individuals. Training would consist primarily of short
courses, seminars, workshops, and such, which are not provided for in
paragraphs (1) and (2)."

The water system operator is a vital part in the production of a safe
and pure water. Water quality is dependent on the operator who controls
the total treatment and distribution process on an hour by hour basis.
However, many operators, particularly those working in small cities, towns,
and private water systems do not have the financial resources to obtain
additional training or any training other than "on-the-job" experience.
The small water system does not have the resources to send an operator off
for two or more years technical training as implied in (d)(1) and (2).

Neither does it have the resources to hire a substitute for the missing person and to assure that person the return of his position after his education is completed. Making short courses, seminars, etc. available at no cost to these operators will greatly benefit the water works industry. Additionally, by furnishing instructional materials at no cost and providing transportation expenses will induce the operator to attend the training sessions. Operators tend to seek employment with those water systems that provide in-house training or send the operator to be trained at short courses and schools and avoid those systems which do not provide such fringe benefits.

Section 1442(e) - Amend to read as follows:

There are authorized to be appropriated to carry out the provisions of this section other than subsection (a)(2)(B) and provisions relating to research \$15,000,000 for the fiscal-year ending-June 30, 1975; \$25,000,000 for the fiscal-year ending-June 30, 1976; \$35,000,000 for the fiscal-year ending-June 30, 1977; and \$17,000,000 for each of the fiscal years of 1978 and 1979; and \$22,000,000 for each of the fiscal years of 1980 and 1981. There are authorized to be appropriated to carry out subsection (a)(2)(B) \$8,000,000 for each of the fiscal years of 1978 and 1979; and \$12,000,000 for each of the fiscal years of 1980 and 1981. There are authorized to be appropriated to carry out subsection (d)(3) \$7,500,000 for fiscal year 1979; \$9,000,000 for fiscal year 1980 and \$11,000,000 for fiscal year 1981.

These changes provide continued funding for subsequent years on an increased level and also provide funds for the training of water system operators as called for in new subsection 1442(d)(3).

Section 1443(a)(2) - In subsection (a)(2) add a new sentence to the end thereof as follows:

"This prohibition may be waived by the Administrator during any time that a State is in compliance with Section 1413(c)(1) which demonstrates that it is making a diligent effort to come into compliance with any amendment or revision of the National Primary Drinking Water Regulations."

The rationale for this change is presented under Section 1413(c)(1).

Section 1443(a)(7) - Amend to read as follows:

For the purposes of making grants under paragraph (1) there are authorized to be appropriated \$15,000,000 for the FY-ending June-30, 1976; \$25,000,000 for the FY-ending June-30, 1977; \$35,000,000 for FY 1978, \$45,000,000 for FY 1979 and \$60,000,000 for FY 1980 and \$75,000,000 for FY 1981.

The state regulatory agencies were very pleased to observe the actions of Congress in amending this section of the Safe Drinking Water Act in 1977 to recognize the need for increasing state program grants to fully implement the program. The step at a time strategy adopted by

Congress and EPA was indeed commendable and we wish to submit at this time that a continuation of such strategy is still in order. There have been delays in promulgation of both the Interim and the revised primary drinking water regulations which in turn has given the States more time to gear up for full implementation. The difficulty in States' recruiting qualified personnel, the uncertainty of the continuity of federal funding and the extreme slowness in EPA in awarding grant funds in a FY have all contributed to the present carrying over of state program grants to the next FY. This in no way indicates that there is being appropriated more money than is really needed. One has only to review the legislative history and recognize that in 1973 the States and EPA advised Congress that the total cost of implementing the Safe Drinking Water Act would be in the neighborhood of 100 million dollars based on 1973 dollars. The rising cost of operations until now and the great possibility of further increasing costs has raised this to a present day requirement of about 140 million dollars. It is thus evident that the presently authorized funding level of 45 million dollars is not overly high and further increases are indicated if indeed this program is to be successful. It was very disconcerting to note that while Congress has been generous in its authorization for funding that the request for appropriations by EPA has been inadequate to meet the real requirements. The expected appropriation of 26.4 million dollars for FY 1979 is only 59 percent of what has been authorized by Congress. At the present rate of appropriation the original estimate of 75 million dollars cost in federal funds would not even be reached until FY 1987. This unfortunately would not even keep up with the inflationary rate of increase so some adjustment is really needed at this time.

Section 1443(b)(5) - Amend to read as follows:

For purposes of making grants under paragraph (1) there are authorized to be appropriated \$5,080,080-fer-FY ending-June 30, 1976, \$7,580,080-fer-the-FY ending-June 30, 1977; and \$10,000,000 for each of the FYs 1978 and 1979, and \$15,000,000 for each of the FYs 1980 and 1981."

The implementation of the underground injection control program has been delayed by the inability of EPA to develop a suitable regulation. This has now been developed through communications with the States and others to the point that it is now out for public hearing. It is thus evident that there will be an increase in state participation in this program and coupled with the inflationary spiral additional funding is warranted.

Section 1444(a) - Amend to read as follows:

The Administrator may make grants to any person or small public water system serving a population of up to 2500 persons for the purpose of (1) assisting in the development of ... (2) assisting in the development of ...; and (3) assisting in the development and demonstration (including construction) of any project to investigate special problems concerning small public water systems serving a population of up to 2500 persons and to provide solutions to these problems.

Section 1444(c) - Amend to read as follows:

For the purpose of making grants under subsections (a), and (b) and (c) of this section there are authorized to be appropriated \$7,500,000 for the fiscal year ending June 30, 1975, and \$7,580,000 for the fiscal year ending June 30, 1976; and \$19,808,808 for the fiscal year ending June 30, 1977 \$15,000,000 for the fiscal year of 1980; and \$20,000,000 for the fiscal year of 1981.

Section 1444(d) - Amend to read as follows:

The Administrator during the fiscal years ending June 30, 1975- and June 30, 1976 of 1980 and 1981, shall carry out a program of guaranteeing loans made by private lenders to small public water systems serving a population of up to 2500 persons for the purpose of enabling such systems to meet national primary drinking water regulations (including interim regulations) prescribed under section 1412. No such guarantee may be made

The purpose is to more clearly define a small public water system by adding a qualifying phrase - serving a population of up to 2500 persons, and to provide for demonstration grants to enable these small systems to solve problems unique to the small public water system. The change of subsection (c) is to provide continued funding for subsequent years on an increased level and to provide additional funding for special demonstration projects involving small public water systems serving a population of up to 2500 persons.

Section 1446(a) - Amend to read as follows:

There is established a National Drinking Water Advisory Council which shall consist of 15 members appointed by the Administrator after consultation with the Secretary. Five members shall be appointed from the general public; five members shall be appointed from state and local agencies concerned with the practice of water hygiene and public water supply, at least two of these shall be individuals in responsible charge of a state regulatory water supply program; and five members shall be appointed from representatives of private organizations or groups demonstrating an active interest in the field of water hygiene and public water supply. At the time of appointment, the Administrator shall designate which of the above listed groups the new appointee represents. Each member..."

Under the present wording of the Act, EPA has included only one state regulatory agency representative on the council who has the technical knowledge and experience in program management to make the necessary contribution from the agencies that have the primary responsibility for enforcing this act. This is a serious limitation as under the organizational structure of the Council one individual cannot possibly direct his attention to all facets of the implementation of the Act.

Unless the specific group in which a council member is classified is declared it becomes impossible for persons not on the Council to know which council member is representing his interest. He thus cannot make a valid determination as to which council member his views should be presented for consideration. While this is important for those represented by any of these three classifications, it is most important for the general public.

STATEMENT OF WALTER H. ROCKENSTEIN III

Senator MUSKIE. Thank you very much, Mr. Adams.

Mr. Rockenstein?

Mr. ROCKENSTEIN. Good morning, Mr. Chairman.

My name is Walter Rockenstein. I am a city councilman elected by the residents of the 11th ward in Minneapolis, Minn. I am here today representing the National League of Cities, of whose environmental quality committee I am chairman.

With me is Mr. Tom Tatum, counsel for the National League of Cities. The National League of Cities consists of, and is the national spokesman for, approximately 15,000 municipal governments in all 50 States and Puerto Rico.

Members are represented both directly and through a network of State municipal leagues.

I am here today to testify on the proposed safe drinking water regulations. The National League of Cities has always supported providing clean safe drinking water to the public, which cities and towns throughout the country have been doing for decades.

The league commends the Environmental Protection Agency for carrying out Congress Safe Drinking Water Act mandate. However, we would like to bring to your attention a matter of concern which the National League of Cities raised with this committee prior to enactment of the Safe Drinking Water Act 4 years ago. That issue is who should pay for the costly alterations to locally managed water systems which are aimed at meeting federally mandated standards by singular federally mandated methods. Local governments cannot meet the expensive Federal mandates the safe drinking water regulation require and also meet other expensive Federal mandates in a time of reduced resources. NLC also believes the expense of this program will be detrimental to bonding capacity and therefore reduce other local programs. To provide a specific local example, let me relate the impact on Minneapolis.

The city of Minneapolis had outstanding water works bonds of \$9.6 million on January 1, 1978. The cost of the proposed facilities for granular activated carbon, if we are a city that is required to solve this, would be \$34.3 million. We would be more than tripling the bonded indebtedness of our water works for the purpose of this capital investment.

This would also involve a yearly increase in the operating and maintenance cost of \$5.3 million, which is a 50-percent increase in our yearly operation and maintenance cost. The average domestic water bill would rise not by the \$10 to \$20 estimated by the EPA, but would rise from \$46.80 to \$79.08, or over \$30 per year for the average family.

In terms of the conflicts between this and other Federal mandates with respect to the use of our bonding capacity. Minneapolis also faces particular Federal mandates in the area of handicapped accessibility, which require capital investments in public buildings.

We are also facing Clean Air Act requirements necessitating the construction of peripheral parking ramps to reduce pollution in the downtown area. The construction of those ramps must also come out of the city's bonding capacity.

So we do so see here in our city a direct conflict between our bonding capacity and our ability to meet all these Federal mandates.

Last Saturday, the NLC Environmental Quality Steering Committee met in Minneapolis to review the proposed regulations to control organic chemicals in drinking water supplies.

Following a lengthy discussion by members of the committee, we agreed to endorse the necessity to protect the public from the health effects of organic chemicals in drinking water. The committee agreed there is "a scientifically established probability of danger" that certain concentrated levels of organics found in some drinking water systems threaten human health.

This finding came after an exhaustive review of EPA's finding, as well as other findings and was a hotly debated issue. However, the committee could not and therefore NLC does not take a position on the extent of the danger.

Therefore, because of the poor financial situation of many cities plus the inability to determine the extent of the danger caused by organics, NLC cannot support this federally mandated strategy without some form of Federal financial assistance.

Attached in specific support of this position is a resolution passed by the Congress of Cities at its 1977 annual meeting in San Francisco.

Another deficiency in the regulations NLC would like to address is EPA's lack of information on alternative treatment methods for the removal of the organic contaminants. While the regulations recommend granular activated carbon treatment and also allow cities to utilize other methods if they can prove them effective, adequate information and research on alternatives is not available.

Further, the cost of obtaining the information is prohibitive for individual units of local governments. We believe that this is a proper role that the Federal Government should play—a role of providing technical assistance, research and development expertise to local governments to enable us to make a sound determination as to what method is best suited to meet the safe drinking water mandate and protect the public.

With respect to alternative approaches, committee members were concerned that limited consideration was given to systems that might treat only the water consumed by people. Since industrial uses and nonhuman consumption uses take the bulk of water currently supplied, the use of home sized treatment units and other alternatives could present resource use, energy, and financial advantages.

Another critical issue for cities is the proposed 18 month schedule for submitting preliminary designs for a treatment facility and/or obtaining a variance. We have two primary concerns in this area.

First, Minneapolis city staff informs me that it is not technically possible to prepare the most cost-effective preliminary design for a treatment system in an 18-month time frame. The required program activities including water sampling, variance assessment, preparation of pilot testing facilities, operation of the pilot units, determination of design criteria, and detailed system design, would take a minimum of 27 months and possibly as long as 3 years.

In addition, if a preliminary design could be prepared in 18 months, we would have to begin immediately. This would mean we would be expending public funds for the design, even before we knew if we qualified for a variance. This would not be a wise use of scarce public dollars.

We recommend extending the 18-month phase to 36 months to allow for preparation of the most cost-effective treatment system.

So far in my statement, I have been discussing the quality of treatment. Now I would like to address myself to equality. We believe the public health should be protected for all citizens, not just those living in large metropolitan areas.

Currently, the regulations apply only to systems serving 75,000 and over. In this context, NLC supports the phasing in of smaller systems into the regulations with the specific variances for small systems in small towns and cities which have no history of harmful contaminants.

Finally, NLC is concerned about reports from water departments in member cities that scale up of the GAC process may not work effectively in the short term. We hope that more attention will be paid to this and that the Federal Government will proceed in a cost-effective manner to find a cost-effective solution.

Earlier you asked how this legislation may relate to the Clean Water Act. It occurs to me that Federal assistance to cities to meet the Safe Drinking Water Act standards might come through the expansion of the section 201 Clean Water Act program. This is a personal view. The league resolution calls for a separate grant program.

We again thank you for this opportunity to appear before the subcommittee.

[The resolution previously referred to follows:]

RESOLUTION #22

FINANCIAL ASSISTANCE FOR SAFE DRINKING WATER MANDATED COSTS

WHEREAS, the central cities in many major metropolitan areas operate water systems that serve millions of people within their own boundaries and in surrounding suburban communities, regional systems controlled by the central cities; and

WHEREAS, many of these central cities have operated and managed their water systems effectively for decades, supplying clean and safe drinking water to all of their customers; and

WHEREAS, the Federal Government has imposed strict standards for safe drinking water, which standards these cities have consistently met and maintained; and

WHEREAS, the Federal Government is increasing its regulation of drinking water systems and system improvements throughout the United States; and

WHEREAS, many cities in this country have provided water system services to their communities and adjacent suburban communities with plants and facilities that are now rapidly maturing and have faced or continue to face similar problems in meeting the increased federal regulatory involvement in safe drinking water management; and

WHEREAS, the Federal Government now supplies 75 percent matching funds for construction of sewer treatment plants;

NOW, THEREFORE, BE IT RESOLVED that the National League of Cities hereby memorializes the United States Congress to:

- 1) Adopt legislation to provide financial and technological assistance to municipal water systems, particularly to the cities that have owned, developed, operated, and managed safe drinking water systems;
- 2) Insure that federal regulatory involvement with and assistance to safe drinking water systems does not preclude or restrict continued control by the cities of the regional water systems that they have so effectively managed in the past;
- 3) Place the improvement and support of safe drinking water systems high on the list of national priorities for the next decade.

Approved by the Membership of the National League of Cities

• Annual Business Meeting • December 7, 1977 • San Francisco

Senator MUSKIE. Thank you very much.
Mr. Weaver?

STATEMENT OF ROBERT C. WEAVER

Mr. WEAVER. Good morning. I am Robert Weaver, associate director of the National Association of Counties. We appreciate the opportunity to present our views on the implementation of the Safe Drinking Water Act.

NACo has long advocated actions which would assure safe, dependable drinking water. The American County platform supports minimum Federal standards, increased research, and Federal assistance for construction of upgraded facilities. This policy was recently affirmed during NACo's annual conference last week.

Our statement today will discuss county government activity in water supply, will recommend a stronger local role and closed coordination between the safe drinking water program and water quality management, and will support approval of Federal assistance for construction of water treatment facilities.

COUNTY WATER SUPPLY ACTIVITIES

County governments play a major role in providing domestic water supply throughout the Nation. A 1976 survey of county government functions revealed that for all respondents 40 percent exercised some responsibility for water supply on a countywide basis and 55 percent in some or all portions of the county.

For respondents over 500,000 population, 56 percent exercised countywide responsibilities and 73 percent possessed program responsibility in all or some portions of their jurisdiction. This includes responsibility as water supplier, and, through county health departments, authority to enforce State programs predating the Safe Drinking Water Act.

In anticipation of the adoption of the Safe Drinking Water Act Amendments of 1977, NACo conducted a survey of counties to determine what the likely impact of Federal standards would be and how the act should be implemented.

The results of this 1977 survey are interesting in a number of respects when compared with the implementation of the safe drinking water program. We learned that one of the greatest concerns of county officials was the issue of primacy.

A significant majority of the survey respondents, 88 percent, indicated that they wished to see the States assume responsibility for enforcement of the act rather than the Federal Government.

To date, 38 States have assumed primacy and a number of others are moving in that direction. However, survey respondents indicated that while over half of their States have been working closely with local government, less than 10 percent of the counties responding had received any Federal financial assistance provided to States.

While there are great differences from State to State in many cases local governments are being asked to assume a large measure of responsibility without being provided resources necessary to do the job.

For example, in New Jersey, the revised minimum standards of performance for local boards of health include as a "core activity" participation upon request of the State in its statutory sampling program of public water supply systems.

When New Jersey assumes primacy, counties will undoubtedly be participating in surveillance activities with no additional funding provided.

While over three-fourths of responding counties indicated that they felt that the act would help improve drinking water, 63 percent indicated that Federal funds would be needed to build and upgrade water supply systems in their communities.

ROLE OF LOCAL GOVERNMENTS

States which assume primacy are under little direction to involve local governments in the development or implementation of the State programs. In many States, counties bear responsibility for monitoring water supplies, especially for small and noncommunity systems, and for enforcing health requirements.

In those States where primacy has been assumed, counties and perhaps other local agencies could act in partnership with the State to enforce health standards.

In those States which will not assume primacy, counties and other local governments should be given the opportunity to assume primacy in cooperation with EPA and be recipients of Federal program grants now available only to States.

Under the current law, the safe drinking water program is viewed in isolation from other local, State, and Federal programs dealing with water resources and pollution control. Local governments are responsible for meeting Federal health standards using essentially their own resources. There is no incentive for coordinating water supply with water pollution control programs.

In addition, Mr. Chairman, we recommend that the Safe Drinking Water Act provide financial and technical assistance which would improve the coordination between water quality management planning at the local and areawide level under section 208 of the Clean Water Act.

Such a link is already informally underway in some areas and is important for solving ground water and rural and urban runoff pollution now threatening domestic water supplies.

TREATMENT FACILITIES

The principal impact of the Federal drinking water program to county governments will be increased costs to meet primary standards and the requirements for organic contaminants.

While NAC has no technical basis for commenting on the specific standards and other requirements, we do believe that EPA should complete a survey similar to that of the water pollution control program to determine the additional costs involved in meeting each of these health requirements.

Last week, the membership of the association again called for a Federal sharing of the burden for upgrading water supply treatment

facilities. While local officials recognize and support fulfillment of the public health objectives of the drinking water program, they are also concerned about the capital and operating costs to their constituents and they believe that the Federal Government should help meet costs mandated by the Federal standards.

The National Association of Counties supports the enactment of a Federal construction grant program which would help to meet capital costs. Priority for such a program should be judged against needs and priorities for water resource development projects.

Such an effort would present the opportunity to develop and introduce water saving and reclamation technology for treatment of domestic supplies.

EPA estimates that capital costs for granular activated carbon (GAC) filters will be on the order of from \$350 to \$450 million and operation costs are estimated at \$60 million. A number of counties facing the prospect of installing these filtration systems project costs to be much higher than EPA estimates.

These new costs will be significant. Dade County, for instance, estimates a 50 percent increase in water rates to meet costs associated with granular activated carbon filters. The total additional cost for Dade County is projected to be \$50 million.

That concludes our formal statement, Mr. Chairman. I would be glad to respond to any questions you and the committee might have.

Senator MUSKIE. It seems we can't afford to be healthy.

Mr. Adams, would you comment on how the recent spill of kepone in Virginia affected the water supply at Hopewell?

I understand there was granulated activated carbon in the treatment plant. Would it be credited with protecting the water supply?

Mr. ADAMS. Mr. Chairman, the intake to the water treatment plant is in the Appomattox River, just upstream from the bay area into which kepone was discharged.

When we found out about this, we immediately started a sampling program of the Hopewell water supply, both raw and finished water. We have found kepone in the raw water but we never found it in the finished water. It happens that we had, by luck, the right carbon in the filters there and that it had an affinity for the heavy kepone molecule.

We have checked other organic contaminants, and that carbon does not take them out; the point being that carbon is good for specific substances, but it is not a cure-all. This is one of the technical considerations that we feel has been missed in the organics regulation.

Senator MUSKIE. I often hear claims from citizens about the tendency of the Federal Government to spend more and more money to expand its role. Here is an instance in which the Federal Government was asked to act because no one else was acting adequately to protect drinking water.

The pressure for Federal action didn't originate here in Washington. It originated out in the country. So the Safe Drinking Water Act was passed.

Now the Federal Government undertakes to set standards as to what will be safe drinking water and immediately it is criticized because it is setting standards that are too tough, unrealistic, unwise.

In addition to that, I hear the argument here this morning that since it is the Federal Government that is setting these standards—which it was asked to do—therefore, the Federal Government ought to pay for it. So I am puzzled as to where the pressure for more Federal spending comes from: here in Washington, or the grassroots? This to me is a typical example of how these new spending programs at the Federal level originate. No. 1, there is a problem. It isn't being taken care of, affecting public health. No. 2, when the people in Washington begin to make judgments as to what is required to protect the public health, there are complaints that the Federal requirements are too stringent, they are unrealistic, they are unwise. No. 3, when the Federal Government undertakes to mandate answers, technologies, well, they are too expensive for us, so, since you are mandating them, Mr. Great White Father in Washington, why don't you pay for them? Isn't that typical, Mr. Adams?

Mr. ADAMS. Senator, I am for protecting the public health. I guess I would fight to the ends of my strength for public health.

The problem is the fact that through the last years before the Safe Drinking Water Act, there was little or no research and development on drinking water supplies. We enacted the Safe Drinking Water Act. We then became aware that we have got chemicals in our environment. We admit that there are chemicals in our environment. And we have got a lot of technology to tell us how little chemicals are in that water, but we have no means to tell us what the effect is on the human body. The health effects piece is not there at the present time.

We have not had the research on activated carbon to show that that was the best and only treatment technique that we should use. Our point is that we feel that there are technical problems which may be more dangerous than the problems we are correcting. We suggest delay in the control of trihalomethanes and organics until EPA has done research and has shown through demonstration projects, the practical applications and feasibility of these control methods. Then, everybody would be happy to go ahead with them.

Senator MUSKIE. I find a couple of human tendencies all wrapped up in what you have to say. No. 1, I don't know when anybody would be satisfied that the research and development of the effects of these contaminants was so conclusive that action to prevent its occurrence would be justified. Preventive medicine is an experimental thing in many ways, even with respect to diseases that are peculiar to a particular individual. We all have health problems to which the doctors to some degree try a range of approaches and they don't guarantee the result of any one of them. If we were to wait until it was conclusively proved that some percentage, some significant percentage of water quality were affected in very specific ways by the existence of particular contaminants, we would be a long time waiting before action of any kind would be taken; if you are talking about preventive medicine, preventive action.

No. 2, with respect to the development of technology, I find as I view the private sector with the development of all the technology that we as Americans enjoy today, we didn't wait to enjoy them until today's perfected models were produced. The Model T is a far cry from today's automobile. We didn't insist that they be perfected before

we started buying them. We started buying Model T's at \$500. The technology has been improved as we have advanced.

With respect to controlling emissions from automobiles, if we had waited until the automobile industry was ready to say to us, "All right, now, Mr. Senator, we have a final complete perfect technology," we wouldn't be controlling auto emissions today.

The companies tell us that the air quality is improved. Yet in this hot summer across the country, we are getting some of the worst air pollution alerts in history, notwithstanding the fact that we have taken some steps and I think some significant steps to improve the performance of the automobile with respect to cleaning up that technology.

We haven't reached the ultimate. And the technology that the automobile companies are using, that is the catalytic converter, is something that they resisted, and denigrated and criticized until finally they had no choice under the law but to use it. Now you read their advertisements and they boast about the technology they have developed and how good it is, and how it solved the problem.

So, you know, there are some very human reactions that are involved in all of this. When you come to the Federal Government and you join and are encouraged in the enactment of a piece of legislation like the Safe Drinking Water Act, you impose on the Federal Government a responsibility to see to it that drinking water is made safe. That is not an "iffy" responsibility, it is a positive responsibility, and a responsibility which from all the testimony I have heard today and before was not adequately being met by anything before.

The minute you move beyond what was being done before, to require that something more be done, then immediately you are venturing into areas of the unknown and the uncertain and the unproved altogether, and you advance as firmly as you can on the basis of the best evidence that you have if you expect to get anywhere.

If in passing the City Treatment Water Act all you wanted was the sanctification of the status quo, well, you didn't need the act. So somebody has got to make some judgments, take the risk of criticism, take the risk of moving into experimental riches that don't move out, take the risk of imposing requirements that may prove burdensome and less than cost-effective, but unless we do that sort of thing, how are we going to make any progress?

The testimony of all of you is understandable. Mr. Stanton says, let's make sure that water systems are adequately staffed, adequately equipped, with people adequately trained, with monitoring systems. Well, by your testimony most of these systems are so small that even if you limited your requirements to that, they wouldn't be able to meet it, as I understand it.

How can a community of 500 people or less afford the technology to do simply what Mr. Stanton says was all that was really envisioned by the Safe Drinking Water Act of 1974? I don't know. I raise these questions, not just because in this first hearing that I suddenly acquired wisdom, but I just want to find answers. I want to point out that I have been dealing with this public policy area for 25 years, and every time a government, whether it was the local government or the State government, when I was involved with those, or the Federal Government, whenever government is asked to take on a responsibility that

public opinion suggests ought to be assumed, the inevitable reaction is, by God, government is getting too big. It is unreasonable. It is arrogant. It is bureaucratic. It makes us do things we shouldn't have to do. Inevitably you get that.

The final result is an accumulation of public resentment that results in proposition 13.

If local government, as reflected in proposition 13, is unwilling to support their own services, which until 1974 included the provision of drinking water, is reluctant to assume the financial burden for providing that service, why should we in Washington? We won't get any thanks. We get nothing but criticism, that we are asking too much, that it costs too much, that we hire too many people to do it, that our requirement is unrealistic, we change the lifestyles, the community styles too much. So why should we do it? Why should we not in the wake of proposition 13—I am trying to stimulate some thinking from the perspective of one often called a big liberal spender—why should we take on these heavies? Either drinking water is safe, or it is unsafe. If it is unsafe, why shouldn't the communities involved do something about it? Why do you come running down here? Because the minute we take it on, I predict that within 3 years, somebody will be saying, why did the Federal Government take on that responsibility which was always a local responsibility? I was Governor when the first Federal law dealing with treating local sewage was passed, and I said, "Why in God's name is the Federal Government involving itself in sewage? That was always a local responsibility."

Now I ask myself in this new atmosphere in which people say Government is too big, why should we do anything about it? Why don't we forget it all? Why should we be accepting unsafe drinking water? If people want to drink unsafe water, it is their local water supply, it is their problem. If they can't find clean water, they can move. Why should we want to worry about it here in Washington? Isn't that a legitimate question?

If, after considering it, you say, "Well, dammit, it is simply a national program because it can't be dealt with elsewhere," then you have got to accept the fact that you have given the Federal Government a serious responsibility, and that serious-minded citizens are charged and should be held accountable for the result.

If the result is not to make drinking water safe, if because of the failure to take adequate preventive measures with respect to some specific organic contaminant results in an unpredictable and unanticipated calamity for some community, then isn't the public going to hold the Federal Government responsible and say, "Why in hell didn't you do something about it?" Definitely, the Federal Government tries to take preventive action. We had testimony like this, let's move cautiously, let's not just act on suspicion. There is more than just suspicion involved, if I understand the evidence upon which EPA has proposed to move. But we will examine that further. We won't be satisfied with 1 day's testimony. But I ask these questions because I have 5 minutes left over and you always take the risk; when leaving a Senator with 5 minutes' time unoccupied, he tends to occupy them.

I appreciate the problem which has brought you here, the serious responsibilities. I hope that out of it all we can come up with some sound and wise public policy.

Mr. ROCKENSTEIN. Mr. Chairman, if I could respond briefly, probably as a person, rather than from the National League of Cities view. There are a couple of tensions here. There is definitely the tension between people demanding more service, yet demanding lower taxes. We all face that. But I think there is also a tension between responsibility, and the cost of delivering on that responsibility. It is my experience as a local official that a lot of people at the State and Federal level like to take on responsibilities, but they then like to shove the costs back on local government. That is where I have my problem. I can, in my judgment, balance what my citizens want my local government to deliver against my tax resources. I can deal with that. My problem comes when another level of government above me takes on the responsibility that has been mine, does something and then tells me to pay for it. That is where the crunch comes in. I am not here, and the league isn't here to say that we think there is a suspicion. We believe there is a danger. We think the regulations of law, perhaps in some respects moving a little quickly just from the technical standpoint, the regulations are good and should be implemented. Our problem is that has tremendous cost implications and tremendous direct implications in my city particularly for people who are poor because it is going to come out of their water rates.

I have people who, when they have a 25-cent increase in their water rate for a 3-month period, literally that takes away from the amount of food they can eat. A \$30 increase over a year is going to have an impact on those people.

If the Federal Government wants to take on the responsibility for water resources nationwide, OK, that is a decision you can make here. But I think a part of that responsible decisionmaking is to recognize the cost and having to help with the cost of having made that decision and taken on that responsibility at the Federal level.

Senator MUSKIE. Your use of the word "wants," I have seen the Federal Government grow in the 20 years I have been here, and the want hasn't originated here. The want has originated at the grassroots level. It is because people at the grassroots level want the Federal Government to take on these new responsibilities that the Federal Government grows. That has been the pattern over and over again.

But second, the fact is that the Federal Government's share of the cost of services that once were considered local and State has grown enormously since I came here. So, the cost has gone up, not down.

We pay out \$64 billion in grants to State and local governments today. When I first came to the Senate 20 years ago, it was under five. Somebody made an analysis of the Maine State government since the last year I was Governor in 1959. The cost of State government in 1959 was \$98 million. I was called a taxing spender. It is now approaching \$1 billion. Under that \$1 billion, \$300 million comes from the Federal Government today. In other words, the Federal Government contributes more than three times to the cost of the Maine State government than the total cost of the Maine State government was the last year I was Governor.

The percentage of State and local budgets that is supported by the Federal government has grown enormously since I have been down here. I don't decry that altogether, although I think there has been

an awful lot of waste, and I think we have a job to do to eliminate some of that, to solve the problems.

We have a problem to deal with, nevertheless. I think the Government has taken on what I consider to be some essential responsibilities in that event. But it has not been recognized, it has been forgotten, I guess, in this time of burdensome taxes, what has been forgotten is that the impetus for all this has originated at the place where the problems are, the local level; not that everybody wanted these problems to come to Washington, but the impetus was to bring them here and probably too many have arrived here and ought to be given a return ticket back to where they came from. But nevertheless, we can't change all that overnight.

But I just raise these questions, not that we are going to answer the history of the last 20 years today. We need a good answer to this particular problem.

I think these kinds of questions ought to be philosophically considered from time to time, not only by those of us who probably ought not to be here anymore, but by citizens as well.

[Responses to written questions follow:]

National Association of Counties

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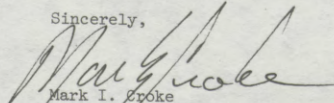
August 17, 1978

Mr. Robert Van Heuvelen
Subcommittee on Environmental Pollution
6231 Dirksen Senate Office Building
Washington, D. C. 20510

Dear Mr. Heuvelen:

Enclosed are the responses to the written questions submitted by Senator Muskie and forwarded to us on August 3, 1978. We appreciate the opportunity to provide our views on this important issue. We would also appreciate obtaining a copy of the complete hearing record once it is compiled.

Sincerely,



Mark I. Groke
Legislative Representative

1. Why should the federal government consider financial aid to State and local governments to improve drinking water when the citizens in several of those areas have indicated an unwillingness to support their own services (Proposition 13) with ad valorem taxes?

In those states where tax cutting measures, such as proposition 13, have gained their greatest impetus the movement appears to be directed against federally mandated cost, such as welfare, rather than against the costs of local services. This is particularly true in the case of California where some of the leaders of the "tax revolt" openly stated that proposition 13 was going to help get rid of "all the welfare cheats."

The requirements of the Safe Drinking Water Act represent federally mandated costs. While the regulations were promulgated taking costs into account, but obviously it was impossible to do so on a site specific basis. While larger water systems are meeting the present costs of the regulations out of current resources or through raising water rates slightly, smaller systems are not so fortunate. Smaller systems and systems that must be regionalized cost-effectively to meet the requirements are experiencing the most problems. The proposed organics control regulations present a larger problem. Should these regulations be promulgated as proposed even the larger system could not handle the financial burden.

In situations where expression of local choice would dictate that local resources be directed elsewhere, if the federal government insists that drinking water be given a higher priority, the federal government should provide some of the funding.

2. Do you feel that adequate resources have been provided to the Environmental Protection Agency to execute its Safe Drinking Water Act mission?

In those states where primacy has not been obtained by the state agencies, the answer must be no. EPA cannot possibly enforce against all non-complying systems in those states.

The refusal of some states to opt for primacy must also be taken as a signal that the drinking water management grants are considered insufficient resources to develop and maintain an adequate staff.

3. What changes, if any, would you recommend in the procedure being followed by the Environmental Protection Agency in awarding primary enforcement responsibility to the States?

In both prime and non-prime states enforcement tends to be against only the worst offenders. There have been some cases where innovative tactics have been used to increase the awareness of smaller systems to the requirements of the Act. For example, in one state, EPA threatened to issue "boil water" notices if systems did not start reporting. Not only did they begin to receive reports from non-complying systems but they also began receiving

reports from systems whose existence they were not even aware of. However, this type of approach is limited in its applicability as it will soon be clear which kinds of threats are idle ones.

One possible remedy would be to encourage the use of resources available at the county level. In many states, at least the larger county health departments or environmental management departments are already involved in some drinking water inspection and surveillance activities. Making better use of these resources could increase effective enforcement. To do this, a mechanism requiring states to pass management grant money to counties, or to their county-based health departments would be necessary. In most cases, this might require an interagency agreement between the state "EPA" and the state health agencies. Any revision in the way EPA awards primacy that would make the cooperation more feasible would extend enforcement resources.

Senator MUSKIE. Mr. Adams?

Mr. ADAMS. Mr. Chairman, would it be possible for me to submit to the committee a copy of the State Sanitary Engineer's proposed—its position paper on the control of organic chemicals and drinking water? It represents the thinking of 38 of the States who submitted comments on EPA'S proposed regulation.

Senator MUSKIE. By all means.

[The material referred to follows:]

CONFERENCE OF STATE SANITARY ENGINEERS

Meredith H. Thompson, Executive Secretary
1 Deerfield Drive
Troy, New York Telephone 518-273-7917

May 9, 1978

POSITION PAPER

PROPOSED INTERIM PRIMARY DRINKING WATER REGULATION "CONTROL OF ORGANIC CHEMICAL CONTAMINANTS IN DRINKING WATER"

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The Conference of State Sanitary Engineers in its fifty-eight years of existence has always, as its principal objective, directed its attention to the effects of the environment upon the health and well-being of man. It has been a responsible professional organization which has impacted greatly on the recognition of the need for federal legislation to bring about national programs directed at environmental control measures. The members of this organization have provided the leadership in this country on these issues long before the era of the environmentalist and federalism. The record will show it was the Conference of State Sanitary Engineers that first stimulated the interest in the need for a national drinking water program, gave strong support to the Safe Drinking Water Act, and aided EPA to a great degree in providing practical interim primary drinking water regulations.

The Conference has observed and studied the growing concern in this country with the impact of the growing chemical industry, the use of pesticides, the beginning of the atomic era and other influences which have affected the quality of our environment and its impact on man's health and well-being. The rather dramatic improvement in analytical technology have enabled scientists to quantify extremely low levels of contaminants in water, food, air and soils. This ability has far outstripped other technologies including man's ability to determine adverse effects upon man of such low concentrations and has amplified the problems in controlling these substances in the environment. Man's concern with one of our leading killers, cancer, has caused considerable overreaction in many circles.

The Conference recognizes that all parties concerned must give careful attention to chemical contamination in the environment, including drinking water. There is a continuing need to concern ourselves with organics in drinking water, but the Conference does submit that the proposed regulation on organics is premature and that EPA should immediately direct its attention to expanding the data base, the technology and the information that is needed to more properly address this situation. The American Water Works Association, individual states, other organizations, and individuals have made proposals for alternate actions. Since these are a matter of record with EPA this position paper will not attempt to repeat in any great depth the obvious needs for research, demonstration projects with various treatment methods, and continuation and even expansion of monitoring for organics.

This Conference has full membership from state agencies conducting the states' water supply programs in forty-eight states. Upon the publication of the proposed regulations on organics in water, the Conference undertook to survey the responses of the various states. Written comments on these regulations have been received from thirty-eight states and their observations and recommendations are most revealing.

The Conference recognizes that the USEPA is indeed seeking additional information on sixteen specific questions that would further guide the administrator in making a final determination on this regulation. The records of the National Drinking Water Advisory Council indicate that august body is still considering the ramifications of this regulation and has sent observers to each of the public hearings to elicit further information prior to their providing final recommendations to the administrator.

Most important of the observations made by the member states is that all of them have some objection to the regulation with over 90% reaching the position that USEPA has been premature in proposing these regulations. This observation is predicated on the states' considerations that:

(1) At this time, there is an insufficient data base on health effects to establish an appropriate MCL for trihalomethanes or to support the proposed treatment requirement for synthetic organics.

(2) Technology regarding removal of dissolved organics is not sufficiently advanced to support GAC as the best, the only, or even a satisfactory answer to synthetic organic removal.

(3) The compliance schedules specified by the proposed regulations are impossible for the states and the utilities to implement.

(4) The concept of phased implementation based on population is unacceptable from a health viewpoint. If, indeed, there is a significant adverse health effect from low levels of organics in drinking water then all persons served by public water supplies should be provided equal protection.

(5) Based on the present knowledge, the states consider that there are higher priority problems to be solved in the water supply field and that implementation of these regulations would divert limited resources from areas with well defined health effects.

(6) There is substantial reason to believe that EPA cost estimates for monitoring and treatment requirements are grossly underestimated.

(7) In the preamble to the proposed regulation, the threat is made that this is just the beginning, and that progressively more stringent requirements will be imposed. This demonstrates uncertainty of information. If implemented, they would present serious funding

problems for water supply systems. This situation would compromise state credibility with the water supply systems and the public as well as water supply systems' credibility with their customers in justifying the accompanying rate increases.

(8) The use of chloramines as a primary disinfectant for public water supplies has a long and successful history. Its prohibition, therefore, is not warranted.

Position papers and questionnaire responses from the member states dealt specifically with the direct impact of the proposed organic regulations on issues related to water supply. The Conference, in its comprehensive participation in the field of Environmental Health, also believes that additional attention must be given to the following:

(1) Air quality deterioration and the emission of radioactive materials which can result from the generation and regeneration of GAC.

(2) The inability of some public water systems to obtain on a timely basis the required air pollution permits because of their location in "non-attainment" or "significant deterioration" areas.

(3) The probable reappearance of nematodes and other undesirable organisms within the treatment unit processes and carbon adsorbers as a result of major changes in disinfection procedures.

(4) The effect of heavy metals and radioactive materials naturally present in the coal from which the GAC is made.

(5) The build-up of heavy metals and radioactive materials due to adsorption from the water, reactivation of the carbon, replacement of lost carbon, and subsequent return to the finished water.

(6) The allocation, distribution, and consumption of large quantities of energy, both in the manufacture of GAC and its regeneration, at a time when our nation is vitally concerned with energy conservation.

(7) The impact on the transportation systems through the increase in the movement of large quantities of raw materials used in the production of GAC and the finished product.

(8) The inflationary effect of the great expense for capital equipment and the maintenance and operation of GAC plants.

(9) Since the Act requires that costs must be taken into consideration, the use of GAC is considered unacceptable. Regeneration frequency of GAC for both THM's and synthetic organics has been grossly underestimated by EPA and may well be the governing cost criterion. Furthermore, the criteria for determining when GAC is to be regenerated are considered to be totally inadequate.

Keeping in mind the above factors, the Conference sees four alternative courses of action for the Administrator to follow at this time.

Alternative 1. Recognizing the extremely high costs of compliance with the proposed regulations to the rate payers of the water suppliers of this nation, with the tenuous basis for benefit to public health; the grave possibility that compliance with the regulations may prove to be more hazardous to the health of people; and the constraints placed on the Administrator by the definition of a primary drinking water regulation in the Safe Drinking Water Act; the Administrator should delay at this time the promulgation of any regulations on organics. He should go to the Congress with a full and complete explanation of these problems and the need to modify the law to the end that, for any contaminant to be regulated, there must be more than a suspicion that it will cause an adverse health effect as currently required. The Administrator must have the flexibility not to proceed with regulations on a contaminant when the preponderance of evidence suggests a regulation under consideration is unwise or inappropriate.

Alternative 2. In lieu of the proposed regulations, provide technology advisory documents to assist both regulatory agencies and public water suppliers in addressing this matter by reducing THM's by treatment processes on a case-by-case basis.

Alternative 3. Postpone regulation and conduct a two-year comprehensive monitoring program to determine the effect of variables such as temperature, season, rainfall, stream flow, nature of watershed, etc., on the concentration of synthetic organic chemicals and the precursors of THM's. The information gained from this study would then be used to modify the monitoring, treatment, and variance requirements to conform with actual data. Federal assistance must be available to develop nationwide the necessary analytic capability.

Much more information is also needed on health effects, the effectiveness of GAC and other organic removal processes in safely removing all types of organics, and in finding better ways of addressing the question of organics in drinking water. Demonstration projects on GAC and other processes under various operating conditions are urgently needed to better define design, operating and monitoring parameters.

Alternative 4. Modify the proposed regulations as follows:

(a) The monitoring schedule for groundwaters should be entirely an option of the states.

(b) Delete the requirement for the use of standard plate count. The insistence of EPA in requiring the use of standard plate count is contrary to the decisions made in developing the Interim Primary Drinking Water Regulations. (The EPA again is invited to readdress the CSSE position on standard plate counts.)

(c) Replace variance requirements with criteria which define those public water systems which must apply any treatment technique.

(d) Delete the interim procedure of replacing sand with GAC. This is ill-conceived, provides little benefit, would be costly, and may actually lead to the deterioration of the water quality.

(e) The frequency and locations of sampling should be determined on a case-by-case basis. The concept of averaging the THM results is acceptable.

(f) Do not require the use of GAC as a treatment technique. Leave the question of treatment techniques open until methods, demonstrated to be satisfactory, are available.

(g) The use of GAC should not be required in order to obtain a variance when the use of the best available technology does not allow reduction of THM's to a value within the MCL.

Giving full consideration to all facets of this issue and the above courses of action open to the Administrator, the Conference of State Sanitary Engineers recommends that the Administrator follow one or more of the following courses of action in order of preference.

(1) Delay any regulation at this time, and recommend to the Congress a change in the law as discussed in Alternative 1, on Page 4.

(2) Issue technology advisory documents rather than a regulation.

(3) Postpone regulation and inaugurate the monitoring programs, investigations, and demonstration projects discussed in Alternative 3, on Page 4.

(4) Modify the proposed regulations as outlined in Alternative 4 on Page 4.

CONFERENCE OF STATE SANITARY ENGINEERS

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"Control of Organic Chemical Contaminants in Drinking Water"

The Conference of State Sanitary Engineers welcomes this opportunity to appear at this hearing and present its observations and recommendations in respect to the proposed Interim Primary Drinking Water Regulations, "Control of Organic Chemical Contaminants in Drinking Water".

I am Oscar H. Adams, Past Chairman, Conference of State Sanitary Engineers. I have been designated by the CSSE Executive Board to speak on behalf of the Conference. I am a professional sanitary engineer, and I am employed as Acting Deputy Assistant Commissioner for the Environment, Virginia State Department of Health. Public water supply surveillance is one of the programs under my supervision. Virginia is a primary state for the purposes of the Safe Drinking Water Act.

The Conference of State Sanitary Engineers is comprised of the officials of each state who have responsibility for environmental health programs. It is particularly noteworthy that the conference membership represents 48 of the 50 state water supply programs. Hence our interest in the implementation of the Safe Drinking Water Act is of the highest order and our experiences in its implementation are germane to our presentation today.

The Conference has already submitted in writing to Mr. Victor Kimm, Deputy Administrator of the Drinking Water Programs, triplicate copies of its position paper dated May 9, 1978 on this subject. I am requesting that copies of that position paper also be made a matter of record at this hearing. That position paper is based on a survey of the 50 states in respect to this regulation and represents the written statements of 40 of the states.

The introduction to that position paper presents the general philosophical approach of the Conference of State Sanitary Engineers and speaks for itself. Suffice to say that the Conference is very much concerned about the chemical contamination of our environment including air, water and soil, and its impact on the air we breathe, the food we consume, and the water we drink. No one should conclude from the observations that we have and are making on this regulation that we are not concerned, for we are. We are concerned that man's ability to cope with chemical contamination of the environment be vastly improved.

If, for example, our ability to determine the adverse affect upon man of extremely low concentrations of chemicals that exist in the environment matched our laboratory technology, we would be in a much better posture today to address the issues. There is a continuing need to concern ourselves with organics in drinking water as well as other environmental contamination. We urge Congress, Federal Agencies, State Agencies, private industry, and others to accelerate their efforts at addressing this issue, better defining it and developing national policies that are attainable and achieve sound cost-benefit relations.

Our position paper in essence presented an overwhelming consensus (over 85 percent) of the states that the proposed regulations are indeed premature and contain many limitations that need further study. The Conference presented a number of alternatives to the Administrator including full recognition that he was under considerable restraint due to the provisions of the law and the action of the courts.

We had the pleasure of having Victor Kimm on our program at our annual conference in Jackson, Mississippi, at which time he advised us on some forthcoming documents they expected to receive and the fact that a white paper addressing the issues posed in previous public hearings would be published before this hearing. The Conference voted to give its Executive Board the authority to modify our position paper May 9, 1978 if the white paper and other information justified such a change.

We had the pleasure of hearing Mr. Tom Jorling, Deputy Administrator, EPA, make his presentation to the annual conference of the American Water Works Association and recognize that EPA considers they are under very severe legislative and court mandates to publish this regulation and that the major question at this time is what the content of these regulations will be. The conference after reviewing the white paper and hearing Mr. Jorling and other presenters at the AWWA Conference considers that the most important thing that needs to be done today is to go back to Congress and remove the handcuffs from the Administrator so that this matter can be more adequately and more satisfactorily addressed. We intend to testify at the oversight hearings in the Senate on July 18 and in the House on July 25 in respect to this as well as other matters that need correction in the Safe Drinking Water Act.

In respect to the white paper we wish to commend EPA on the corrective action they took on cost estimates and the additional information they added on air pollution and desorption problems on GAC. We modify our comments accordingly.

In respect to health aspects, the white paper articulated the case much better than EPA had done previously and included the positions statements of the National Cancer Institute and the National Environmental Health Institute. These provided no real solid additional information that would change the Conference's position relative to the inadequacy of the data base on health effects. With respect to the positions of Dr. Upton and Dr. Rall, I submit to you that they presented judgmental considerations rather than adding to the knowledge in the field. We are in complete agreement that prudent action should be taken on health matters but such needs to be in full recognition of cost-benefit considerations.

With full knowledge that the Administrator considers it mandatory that a regulation be promulgated the Conference would welcome the opportunity to sit in conference with EPA in addressing substantive changes that are needed.

Senator MUSKIE. May I say to Mr. Stanton that we cannot include all of that material which is very attractively packaged, I might say, in the printed record.

I compliment you on the imaginativeness. For those in the audience who would be interested in good packaging, it is a cassette and slides for the enlightenment of those of us who don't know how to read.

Mr. STANTON. That is primarily part of our educational program for the water problem. We are going to convince them that the Safe Drinking Water Act is here, they are going to have to live with it and deal with it.

Senator MUSKIE. It is a very attractive package. We welcome any other information, but will exercise the editorial license to reduce it to management proportions. But, by all means, submit any written material you like.

Thank you all very much.

[Whereupon, at 12:45 p.m., the subcommittee adjourned.]

[Prepared statements from today's witnesses and other statements submitted for the record follow:]

TESTIMONY OF
THOMAS C. JORLING
ASSISTANT ADMINISTRATOR
FOR
WATER AND HAZARDOUS MATERIALS
ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
JULY 18, 1978

Good morning, Mr. Chairman. My name is Thomas C. Jorling, Assistant Administrator for Water and Hazardous Materials, U.S. Environmental Protection Agency. I am pleased to testify on the Agency's progress in implementing the Safe Drinking Water Act. P.L. 93-523 set in motion two major program initiatives, one aimed at ensuring the safety of the Nation's public water supplies and the other designed to protect underground sources of drinking water from contamination through injection wells.

With regard to drinking water standards for public water systems, the legislation envisioned a three-step process.

First, the Agency was to promulgate interim regulations based primarily on an update of the 1962 Public Health Service standards including both maximum contaminant levels and minimum monitoring frequencies. This requirement has been fulfilled: The National Interim Primary Drinking Water Regulations became effective in June 1977, setting limits for bacteria, turbidity, and a number of inorganic chemicals, pesticides, and radiological contaminants. Since that date, utilities have been required to monitor the water they serve on a prescribed frequency to ensure compliance with the standards and to notify the public if they do not meet the regulation's requirements.

Second, recognizing the limitations in our knowledge about health effects related to drinking water contaminants, EPA was directed to contract with the National Academy of Sciences to conduct a two-year investigation of all of the contaminants in drinking water that may have an adverse health effect on man. This study has been completed and will be commented on later in this statement.

Third, EPA was directed to promulgate comprehensive revised drinking water regulations drawing upon the outcome of the NAS study and the results of the Agency's ongoing research program.

At this time, we are situated between the second and third phases of this process, i.e., between the completed NAS study and the Revised Regulations. In addition, two other regulatory initiatives should be noted. The Agency has proposed Secondary Drinking Water Regulations for parameters that are not health-related -- taste, odor, color and other factors important for consumer acceptance. These are not nationally enforceable. We have also proposed amendments in the Interim Regulations, to add a measure of control over organic chemical contaminants in drinking water. These regulations will be discussed later in this statement.

The Act envisions that the States will exercise primary enforcement responsibility over the Safe Drinking Water program, with EPA assuming this task only where the States are unable or unwilling to meet minimum requirements contained in the regulations. Therefore, through Federal or State authorities, this program covers an estimated 50,000 community water supplies serving year-round residents and some 200,000 non-community supplies serving the traveling public and other intermittent users. The Act also requires that the utilities conduct monitoring on a prescribed frequency and notify their customers in writing when they exceed the standards.

With regard to the second program initiative, the Act also requires the Agency to take several actions to protect underground sources of drinking water.

First, EPA is to formulate minimum requirements for State programs to control underground injection practices which endanger existing or potential sources of drinking water. The Administrator is, from time to time, to list those States which in his judgment need such programs. It is expected that the lead in administering and enforcing underground injection control programs will be taken by the States.

Second, the Administrator of EPA, on his own initiative or upon petition, is to designate areas which are served by aquifers as the sole or principal source of drinking water. No Federal financial assistance may be committed to a project which the Administrator determines may contaminate a sole source aquifer so as to create a significant hazard to public health. Four aquifers have already been formally designated and petitions for three other designations are currently under review.

Third, the Act recognized that more information is needed about ground water if this resource is to be protected adequately. Under the authority of Section 1442(a)(8)(c), the Agency has initiated a \$5 million program of grants to States to inventory surface impoundments (pits, ponds and lagoons) and to assess their potential impact on ground water.

For both the public water supervision program and the underground injection control program, Federal grants to the States are provided, but continuing eligibility for such assistance is tied to specific deadlines for the assumption of primary enforcement responsibility. The program grants for the former program are distributed among the States according to a formula based upon the number of public water systems in the State,

the population and the land area. A table showing the FY 77 and 78 grant awards and expenditures and the FY 79 tentative allotments for the States is appended to this statement as Attachment 1.

In addition, the Act provides for research, technical assistance, demonstration grants, training, and a number of special studies designed to provide important information related to our efforts to ensure the safety of the Nation's public water supplies.

Implementation Strategy

Early in the process, EPA announced a strategy in which we committed ourselves to developing the regulations and major policies related to implementation using an open process through which advice would be sought from all interested parties, including industry, the utilities, and the States as well as environmentalists and other interested members of the public. Since we expect the States to play a major role in implementing the program, we are especially concerned about building upon their existing expertise and providing them with as much flexibility as is consistent with our legislative mandate.

The establishment in the legislation of an independent National Drinking Water Advisory Council composed of members of State and local government, the water supply industry, and the public has been most helpful in this regard. The Council has been very active; it has provided advice and recommendations on almost all aspects of the program, particularly our regulations. The Council's public meetings have also provided a forum for interested parties outside of EPA to comment on a wide variety of issues facing the program. These functions have been very beneficial to the Agency and we expect them to continue in the future.

Update of Accomplishments

The Interim Primary Drinking Water Regulations (IPDWR) were promulgated on December 24, 1975; regulations regarding radionuclides were promulgated on July 9, 1976. The impact of these regulations is difficult to assess at this time because of the effective date of the various monitoring requirements. The effective date of the IPDWR was June 24, 1977, but only turbidity and microbiological monitoring was scheduled to begin on that date. Monitoring for inorganic and organic chemicals (pesticides) was scheduled to begin on June 24, 1978 while monitoring for radioactivity and non-community water systems is not scheduled to begin until June 24, 1979.

In the legislative history of the Act, it is clear that Congress anticipated that organic chemical contaminants would be regulated. Recently an amendment to the IPDWR for control of trihalomethanes and synthetic organic chemicals in general was proposed in the Federal Register (February 9, 1978) and we are still in the process of receiving and evaluating public comments on this proposal. Other amendments to the IPDWR, such as revised bacteriological and turbidity monitoring requirements and alternative analytical procedures, are currently being formulated. A major reevaluation of the regulations will be included in developing the revised primary drinking water regulations.

The National Academy of Sciences Report was received in June 1977 and an advance summary of the full report was delivered to Congress in May 1977. The Academy's report provided data on health effects, gave research recommendations, but did not make recommendations for safe levels for contaminants in drinking water where their scientific judgement did not allow them to support specific levels. In some cases, the Academy recommended maximum exposure levels but did not give data on

the contribution from water to our total environmental exposure. Thus an insufficient basis was provided to the Agency for the "Administrator's List" or for the revised regulations regarding safe levels for the contaminants. The revised regulations will require more time to develop because of the lack of quantifiable data delivered in the NAS Report. The necessary data will have to be developed by the Agency through additional research efforts.

As previously indicated the Safe Drinking Water Act and the associated regulations are designed for State assumption and implementation of primary enforcement responsibility (primacy). The current status of State primacy is most encouraging and exceeds the Agency's earlier expectations, making it the most successful program delegation in the Agency's history. To date 34 States have assumed primacy and 2 States have met the qualifications and are awaiting public comments and hearings prior to assumption of primacy. The most current listing of primacy States is shown in Attachment 2. Additionally, State assumption of primacy appears to be quite favorable for the future. Based on the best information currently available it is projected that 14 more States will assume primacy before the end of FY 79.

On the other hand it is estimated that seven States will not seek or be able to assume primacy until after 1979. Since State assumption of primacy depends on the availability of legislative and regulatory authorities and also on the expediency of a State's administrative initiatives, the above projections may change. Therefore, this status report will be revised and updated as required.

At this time we would like to review some of the more prominent success stories from the implementation of the Safe Drinking Water Act. Specifically, the experience with the public notification requirement has been encouraging. For example, in Oklahoma, a primacy State, there were 150 community systems which did not submit water samples for laboratory analysis as required, not even after reminder notices from the State. The State then issued "boil water" orders to these communities and announced its action in the major newspapers throughout Oklahoma. This action -- which also got extensive news coverage by radio and television -- produced the desired compliance not only by these systems but by a number of the community systems throughout the State.

In Missouri, where EPA has primacy, public notification was used as a result of turbidity violations. Public notification orders were issued to 47 cities because no turbidity meters were installed on these systems. The notices were distributed by the suppliers by means of newspapers, letters to customers, and notices on water bills. There were no further problems with compliance by these systems; all of them are procuring the necessary equipment.

In South Carolina, which has primacy, press conferences were called to announce the names of 15 utilities exceeding the bacteriological MCL which had not gone to public notice. When the State wrote to all systems which had not monitored and told them it would send their names to the press, there was an immediate and cooperative response.

Under the authority of Section 1443(a) of the Safe Drinking Water Act, as amended, EPA allotted the following dollar amounts as State program grant funds for the public water systems supervision program to the States: FY 76 - \$7.5 million; FY 76 (Transition Quarter) - \$2.1 million;

FY 77 - \$15.0 million; FY 78 - \$20.5 million; and FY 79 (estimated) - \$26.4 million. These funds are utilized by the States to implement a surveillance program which may include the following types of activities: administration and program development; surveillance and technical assistance; plan review; laboratory certification and capability; training; enforcement; data management; and other activities that are necessary and appropriate to assure the safety of public drinking water.

The utilization of these grant funds has allowed the States to increase their capability in several important areas. By general categories the relative FY 77 State expenditures were: staff - 18 percent; equipment - 18 percent; contracts - 30 percent; and other program elements - 34 percent. The growth (and indirectly the improvement) of State program surveillance is best shown by examining the State staff increases since the provision of State program grants. In 1975 the total State staff involved in water supply was 676, this was increased to 987 in 1976 and to 1287 in 1977 - an increase of approximately 91 percent in two years. This obviously has increased the States' capability to carry out the program.

Another important element initially identified as paramount to the effective implementation of the Act was the development of a data management system which could be used by both the Agency and the States. During the past year EPA has greatly expanded its data management capabilities. Progress has been made in four areas. First of all, EPA has started developing an in-house data base so that studies (such as the surface impoundment assessment) can be conducted in-house without relying on contract funds. Secondly, EPA has developed a large-scale, decentralized computer based information system called the Model State

Information System (MSIS) to help individual States and Territories meet the data handling and reporting requirements of the National Interim Primary Drinking Water Regulations. This system provides for an inventory of public water systems and the tracking of violations, variances and exemptions, compliance data and enforcement activities. As of July 1, 1978, 27 States and all Regional Offices received formal MSIS classroom training. System installation has been completed in 22 States and 6 Regions acting as surrogate States. In addition to this, EPA is completing development of the Federal Reporting Data System (FRDS) to serve the information needs of EPA Regional and Headquarters managers concerning the compliance of the various States with the law. This system, which serves as the Federal counterpart of the MSIS systems operational in many States, is the second step (following MSIS) in a two-step program under which the requisite data collection and reporting requirements of the Act will be met. And finally, EPA has also begun to develop a computer-based management information system to support the UIC program; the feasibility study has been completed and work has begun on general systems design.

Among the support activities EPA has conducted, significant progress has been made in the areas of public information, training and technical assistance. The following efforts undertaken during the last year are particularly significant:

- ° The development and distribution of a wide variety of informational materials -- including pamphlets, brochures, handbooks and a newsletter -- to State agencies, water suppliers, elected officials and the general public.

- ° The distribution of funds to various groups and organizations (such as the American Water Works Association, the Conference of State Sanitary Engineers and several public interest groups) to develop courses and training materials and to sponsor workshops for personnel required to implement the Act.
- ° The development of a laboratory certification and quality assurance program which includes the instruction of Regional and State personnel in an effort to enhance the capabilities of State and local laboratories as required by the SDWA.
- ° The awarding of a second grant to the National Rural Water Association (NRWA) to improve the operation and maintenance of rural systems; this grant now supports 24 State Rural Water Associations.

Our development of a ground water protection program has proceeded more slowly than our efforts in the public water system program. There are several reasons for proceeding cautiously in the field of ground water protection. For one thing, concern for ground water has emerged relatively recently as a major environmental issue. There is a great deal yet to be learned about the fate and transport of contaminants below the surface; the practices that represent the greatest threat to this national resource; and the economics of alternative ways of disposing of wastes in a manner more protective of the environment.

Another reason for proceeding carefully is the sheer number of facilities that seem to have the potential for an adverse impact on the quality of ground water. Literally hundreds of thousands of wells,

surface impoundments, ditches and land fills used by industry, municipalities, farmers and other private individuals are involved. Prudence dictates careful preparation in designing programs to bring these practices under control and in incurring the probable social and economic costs involved.

Finally, while ground water is increasingly recognized as a national resource that needs a coherent national program of protection, the requisite legislative authorities are scattered among seven environmental statutes covering water pollution, solid waste and the control of toxic substances. The development of a workable program requires close coordination among a number of programs that often are governed by differing imperatives.

In order to provide a consistent approach, we are first developing an Agency ground water policy statement. The purpose of the statement is to make explicit the framework within which the Agency intends to implement programs to protect ground water under various statutes. We expect to publish this policy statement in the Federal Register before the end of August.

Secondly, the Office of Drinking Water has launched a \$5 million nation-wide effort to conduct an assessment of surface impoundments (pits, ponds, and lagoons) and their potential for contaminating ground water. The purposes of the assessment are to: (1) help States define the problem posed by surface impoundments in their area of jurisdiction; (2) provide an initial screening that will enable the inventory of open dumps mandated under the Resource Conservation and Recovery Act (RCRA) to focus on the problems with the greatest potential for contamination;

and (3) provide a basis for future legislative proposals if they should prove to be necessary. A final national report will be ready by June 1, 1980.

Thirdly, under the authority of Section 1424(e) of the Safe Drinking Water Act, four areas have been designated as areas where aquifers serve as the sole or principal source of drinking water. The four designations involve: (1) the Edwards Aquifer in San Antonio, Texas; (2) the island of Guam; (3) the City of Spokane, Washington; and (4) Nassau and Suffolk Counties on Long Island in New York. Three additional petitions for designation are currently under review: Biscayne Aquifer, Florida; Fresno, California; and Ten Mile Creek in Maryland. It is projected that final regulations governing the designation of sole source aquifers will be promulgated next month.

Finally, you will recall that regulations to establish minimum requirements for State programs to control the underground injection of contaminants were proposed in August 1976. Extensive public comment brought a number of considerations to our attention. Two areas where we are reviewing options are:

- ° Oil and gas injection practices. We are weighing alternative approaches which will provide the maximum environmental benefit without creating unreasonable impediments to the production of fossil fuels or imposing unreasonable costs, especially on small operators.
- ° Shallow wells. In the case of wells that inject into or above underground sources of drinking water, we are developing a regulatory approach that will provide the necessary protection without creating unnecessary economic disruption.

I believe we are close to developing satisfactory approaches in these two areas. We plan to promulgate the list of States needing underground injection control programs at this time and the related grant regulations in late August. Revised underground injection control regulations which take local, geologic and other variations into account and minimize the disruption of existing State programs will be repropose in this fiscal year.

Mandatory Studies

It is also appropriate on this occasion to report on the Agency's progress with the several studies mandated by P.L. 93-523. We have:

- ° Completed the Preliminary Assessment of Suspected Carcinogens in Drinking Water Report to Congress in December 1975.
- ° Completed a study on Impact on Underground Sources of Application of Pesticides and Fertilizers
- ° Completed a Report to Congress -- Waste Disposal Practices and their Effects on Groundwater in January 1977.
- ° Completed the final draft of an interim report on the Rural Water Survey to be submitted to Congress in July 1978 prior to the completion of the final report in the summer of 1979.
- ° Completed a study of Underground Injection Methods Which Do Not Endanger Underground Water Sources in December 1977.

- ° Completed a study of the Impact of Abandoned Injection and Extraction Wells in Recharge Areas in August 1977
- ° Received the study by the National Academy of Sciences in June 1977 entitled Drinking Water and Health.
- ° Initiated a study on the impact of pits, ponds, and lagoons on groundwater quality to be completed in August 1978.
- ° Initiated a study on the prevention of surface spills to be completed in August 1978.
- ° Initiated a study of viruses in drinking water required by the Act -- a final report is expected in the fall of 1978.
- ° Initiated a study on the present and projected future availability of an adequate and dependable supply of safe drinking water to meet present and projected future need -- available in May 1979.
- ° Initiated a study of polychlorinated biphenyl contamination of actual or potential sources of drinking water.

Major Problems and Issues

Organics in Drinking Water

The Agency proposed regulations for organics in drinking water on February 9, 1978. Essentially the proposed regulations establish an MCL of 0.10 mg/l for trihalomethanes and require treatment (granular activated carbon) for synthetic organic chemicals. The response to the proposal has been quite extensive and mostly negative. In order to obtain a more complete picture the comment period was extended until

September 1, 1978. Also the Agency developed some supplemental information on economic impact, the health effects and carbon treatment which was published in the Federal Register on July 6, 1978. Careful study of all the public testimony and comments will be necessary before a final regulation can be promulgated.

Construction Grants

There appears to be a great deal of pressure for the Agency to initiate a subsidy program for utilities to defray the cost of meeting the Interim Primary Drinking Water Regulations. This interest is evidenced by the introduction of HR 12131 and HR 11967 regarding the establishment of a construction grants type program for water supply systems. It is the Agency's position that such a program is premature. A more conclusive basis will be available with the completion of the subsidy study currently being conducted by ODW (mandated by Section 1442 of the 1977 Amendments to the Act and scheduled for completion in May 1979). In the interim, the Agency is working with the Farmers Home Administration, the Department of Housing and Urban Development, and the Economic Development Administration, to provide priority funding to substandard water systems under the existing budgets and funding mechanisms of these Agencies.

There are several issues related to the Act itself. The Agency may request that the Congress consider various amendments but meanwhile, we want to alert you to some of our programmatic problems.

Public Notification

The public notification provision in the Act, which has proven to be so effective, is considered to be too rigid in some respects. Under the current requirements any one or a combination of the following conditions may result:

- notification occurs several months after violation
- notification can alarm citizens unnecessarily
- notification occurs after remedial action to correct problem has been taken
- notification occurs for all violations even if they are not a real danger to public health at the time of notice.

It is the Agency's position that the public notification requirements should be altered to allow more flexibility to the primacy agency, States or EPA, in determining the application of the requirements under specific circumstances where widespread notification would not be meaningful.

Variances and Exemptions

Variances and exemptions are means of deferring the compliance with a particular MCL in situations in which the delay will not cause an unreasonable health risk and in which there are compelling economic or technical reasons for delaying compliance. To prevent the over-utilization of the exemption provision and avoid a delay in achieving compliance the Act requires a compliance date for exemptions of January 1, 1981 and January 1, 1983 if the system is joining a regional system. However, due to the delay in promulgation of the Interim Primary Drinking Water Regulations, water suppliers have less time to seek an exemption and, if granted, make the modification(s) in their system to comply with the Regulations and the "81" or "83" dates. If major construction is needed and is part of the compliance schedule, more lead time is required for

completion of construction and placing the facility in service. This provision of the Act could be made more effective and responsive to the actual field conditions by extending the time limit (i.e., changing the "81" and "83" dates) to an absolute number of five years after the effective date of the regulations.

State Regulation/Statute Alterations

Any change in the provisions of the Safe Drinking Water Act and/or its associated regulations require a concomitant alteration of the States' authority if the respective State is to maintain primacy. Such alterations at the State level require response/reaction/deliberation time. It is important that the Act reflect this problem by allowing States a sufficient amount of time to adopt new regulations in response to changes in the Federal regulations and not lose primacy as prerequisite to continued Federal grants. The required time period will vary among the various States but the mandatory requirement for some States for legislative review of new regulations must be taken into consideration.

Definition of a Public Water System and Coverage

There is considerable confusion caused by the Statute's lack of distinction between community and non-community water supplies. The regulations recognize the difference between the long-term exposure one has to his residential water supply and one's occasional use of a non-community supply such as a campsite or a roadside service station. It would be useful to have this distinction clarified in the Act.

Similarly, the Act presumes that enforcement will be carried out by the States in relation to all violations as they occur. In practice, the volume of violations at any given time may require the States to set priorities in enforcement according to the seriousness of the problem, the numbers of people exposed, and other considerations. The need for such a priority-setting system should be recognized, otherwise we place the States in a position of non-compliance.

In order to provide an overview of the resources with which EPA is carrying out the Safe Drinking Water Act, we will submit a breakdown of information to the Committee.

To conclude these remarks, let me emphasize to the Committee that the Agency believes the Safe Drinking Water Program has been well launched. With the cooperation of the States and the water supply industry, the door to a new dimension of public health protection has been opened. However, the program is in its start-up phase. Much work must be done to bring water treatment practices throughout the country up to national standards. And some difficult issues remain to be resolved. We shall do our best to keep abreast of developments so that you can follow the progress of this important legislation.

If there are any questions, I would be pleased to try to answer them.

TABLE 5
ALLOTMENT OF FEDERAL GRANT FUNDS AND EXPENDITURE BY STATES
(Dollars in Thousands)

	FY 77			FY 78			FY 79 Tentative Allotments
	Grant Award	Reported Expenditure	Carry- over	Grant Award	Projected Expenditure	Carry- over	
TOTALS	19,858.0	17,293.3	2,564.7	17,264.8	16,839.1	425.5	26,400.0
REGION I	1,559.1	1,165.1	394.0	1,409.8	1,409.8	-0-	1,731.0
Connecticut	278.0	243.8	34.2	331.0	331.0	-0-	300.6
Maine	248.7	216.3	32.4	237.4	237.4	-0-	251.0
Massachusetts	359.4	359.4	-0-	277.6	277.6	-0-	263.4
New Hampshire	222.0	179.4	42.6	205.0	205.0	-0-	264.0
Rhode Island	227.1	103.9	123.2	285.0	205.0	-0-	264.0
Vermont	223.9	62.3	161.6	153.8	153.8	-0-	262.0
REGION II	1,421.6	827.6	600.0	1,350.6	1,350.6	-0-	2,299.4
New Jersey	365.2	365.2	-0-	298.6	298.6	-0-	517.5
New York	829.0	330.0	499.0	1,047.0	1,047.0	-0-	1,431.3
Puerto Rico	170.6	69.6	101.0	153.8	153.8	-0-	264.0
Virgin Islands	56.8	56.8	-0-	51.2	51.2	-0-	23.0
REGION III	1,095.7	1,095.7	-0-	1,198.6	1,198.6	-0-	2,876.9
Delaware	186.2	186.2	-0-	186.6	186.6	-0-	264.0
Maryland	328.8	328.8	-0-	244.3	244.3	-0-	316.6
Pennsylvania							1,477.7
Virginia	358.4	358.4	-0-	546.5	546.5	-0-	675.4
West Virginia	227.3	222.3	-0-	221.2	221.2	-0-	258.2
Dist. of Columbia							264.0
REGION IV	3,590.0	3,118.3	471.7	3,637.5	3,462.0	175.5	4,444.4
Alabama	270.4	245.0	25.4	319.9	319.9	-0-	358.9
Florida	695.7	478.0	217.7	692.8	692.8	-0-	918.9
Georgia	656.9	533.5	123.4	510.2	510.2	-0-	615.3
Kentucky	281.3	371.5	9.8	262.8	262.8	-0-	357.1
Mississippi	300.2	204.8	95.4	427.4	251.9	175.5	434.5
North Carolina	601.2	501.5	-0-	531.6	531.6	-0-	681.6
South Carolina	317.2	317.2	-0-	332.3	332.3	-0-	431.4
Tennessee	366.8	366.8	-0-	550.2	550.2	-0-	357.7
REGION V	2,918.8	2,918.8	-0-	2,334.2	2,334.2	-0-	3,876.0
Illinois	583.5	583.5	-0-	487.1	487.1	-0-	498.3
Indiana							460.0
Michigan	693.5	693.5	-0-	604.7	604.7	-0-	766.7
Minnesota	435.0	435.0	-0-	363.0	363.0	-0-	462.4
Ohio	844.0	844.0	-0-	512.0	512.0	-0-	772.3
Wisconsin	362.3	362.3	-0-	367.4	367.4	-0-	482.3
REGION VI	2,617.5	2,358.7	258.8	3,116.4	3,116.4	-0-	2,081.2
Arkansas	270.2	211.2	59.0	270.0	270.0	-0-	266.5
Louisiana	421.6	222.2	199.4	335.5	335.5	-0-	413.7
New Mexico	327.4	327.4	-0-	282.8	282.8	-0-	302.3
Oklahoma	315.6	315.6	-0-	312.5	312.5	-0-	405.1
Texas	1,282.1	1,282.1	-0-	1,150.7	1,150.7	-0-	1,560.6
REGION VII	1,226.8	906.3	320.0	895.6	895.6	-0-	1,572.6
Iowa	292.7	219.9	72.8	244.6	244.6	-0-	482.6
Kansas	282.3	282.3	-0-	244.6	244.6	-0-	312.1
Missouri	138.6	131.4	7.2				492.9
Nebraska	253.0	213.0	-0-	196.4	196.4	-0-	272.0
REGION VIII	1,116.0	1,041.3	74.7	570.1	570.1	-0-	1,620.6
Colorado	276.0	276.0	-0-	211.3	211.3	-0-	360.6
Montana	136.0	136.0	-0-	153.8	153.8	-0-	264.0
North Dakota	156.0	156.0	-0-	205.0	205.0	-0-	264.0
South Dakota	186.0	186.0	-0-				264.0
Utah	181.0	176.3	4.7				264.0
Wyoming	101.0	31.0	70.0				264.0
REGION IX	2,696.5	2,251.0	445.5	2,346.8	2,095.8	250.0	3,014.9
Arizona	183.2	297.6	125.6	233.9	233.9	-0-	394.2
California	1,581.7	1,581.7	-0-	1,372.2	1,122.2	250.0	1,564.7
Hawaii	245.6	45.6	200.0	250.0	250.0	-0-	264.0
Nevada	175.0	120.0	55.0	205.0	205.0	-0-	264.0
American Samoa	56.8	40.8	16.0	51.2	51.2	-0-	88.0
Tr. Terr. of Pac. Islds	217.3	125.9	91.4	183.3	183.3	-0-	264.0
Guam	79.4	79.4	-0-	51.2	51.2	-0-	82.0
REGION X	1,616.0	1,616.0	-0-	1,015.0	1,015.0	-0-	1,952.0
Alaska	461.0	461.0	-0-	297.0	297.0	-0-	512.1
Idaho	275.0	275.0	-0-	220.0	220.0	-0-	292.4
Oregon	305.0	305.0	-0-				270.8
Washington	575.0	575.0	-0-	498.0	498.0	-0-	756.3

* Northern Mariana Islands are allotted an additional \$ 88,000

Attachment 2

FOLLOWING STATES HAVE ASSUMED PRIMACY ON THE
INDICATED DATES:

1. Oklahoma	4-30-77	18. Massachusetts	12-01-77
2. Connecticut	5-07-77	19. Texas	01-30-78
3. Louisiana	5-16-77	20. Michigan	02-01-78
4. Mississippi	6-20-77	21. Maryland	02-13-78
5. Nebraska	6-23-77	22. North Dakota	02-18-78
6. Alabama	7-10-77	23. Florida	02-18-78
7. Arkansas	7-10-77	24. Wisconsin	03-02-78
8. Georgia	8-07-77	25. Nevada	03-30-78
9. New York	9-10-77	26. Kansas	03-30-78
10. Virginia	9-10-77	27. Montana	03-30-78
11. Iowa	9-23-77	28. Idaho	03-30-78
12. Minnesota	9-26-77	29. Washington	03-30-78
13. Tennessee	9-30-77	30. California	03-30-78
14. S. Carolina	9-30-77	31. New Mexico	04-02-78
15. Maine	10-07-77	32. Delaware	04-02-78
16. Hawaii	10-20-77	33. West Virginia	04-02-78
17. Kentucky	10-20-77	34. Colorado	05-07-78

FOLLOWING STATES ARE QUALIFIED FOR PRIMACY
AND ARE AWAITING PUBLIC COMMENTS PRIOR TO
ASSUMPTION OF PRIMACY ON THE INDICATED DATES:

1. Rhode Island	05-31-78
2. New Hampshire	05-31-78

Q & A's for the Environmental Protection Agency

Question:

The food processing industry has expressed concern about the shared agency jurisdiction over drinking water. There are obvious concerns that the Food and Drug Administration may be forced to regulate many food items in interstate commerce due to the so-called 'Delaney Clause. What coordination exists between EPA and FDA to remedy this problem?

Answer:

Since 1974, with the enactment of the Safe Drinking Water Act, there has existed an overlap authority between the EPA and FDA relating to the use of additives in public water systems. It is clear, however, that the Congressional intent under the Safe Drinking Water Act was that EPA be given the primary responsibility for assuring the safety of our nation's drinking water provided by the public water systems.

While an early agreement was reached in joint supervision of interstate carriers, a difficult problem is clarifying responsibilities for implementing a regulatory strategy which will deal effectively with the almost eight hundred existing chemicals, paints, coatings, etc., currently being used in the public water storage and distribution systems as well as new products as they come on the market.

The EPA and FDA are attempting to resolve the problem by drawing the jurisdictional line where we believe Congress intended it be drawn; that is, at the property line of the commercial food processor. The EPA will have responsibility for the safety of drinking water in a public water system up to that point and the FDA will assume its responsibility when the water enters the commercial food system. However, working out the details includes a number of complex legal and technical details and has some fairly serious resource implications for the future.

Staff from EPA and FDA are currently working a joint effort to develop a realistic and effective program to control additives entering drinking water and clarifying the EPA and FDA roles in this process.

Major consideration is being given to the use of the Toxic Substances Control Act administered by EPA as the vehicle for such regulation since the Safe Drinking Water Act does not contain the requisite authorities.

A final report on this matter should be available this fall and we will be pleased to report back to the Congress at that time.

Question:

If a State, having been given primacy for the Safe Drinking Water Act implementation, fails to adequately enforce or inspect water supply systems, what recourse does EPA have?

Answer:

Under Section 1413 of the Safe Drinking Water Act, EPA may withdraw primacy from any State which shows a persistent pattern of failure to implement the Act after specific provisions for notice to the State and public hearing have been met. In addition EPA may take direct action against a utility within a primacy State under Section 1414 for failure to comply.

Question:

Mr. Jorling, you indicated in your statement that the Safe Drinking Water Act does not set enforcement priorities for the States. How would you recommend these priorities be set?

Answer:

The goal of the Drinking Water Program is to assure the protection of public health from drinking water contaminants which may have an adverse health effect. The recommended enforcement strategy would have to be consistent with this goal and established through agreement between the State and the EPA Region as part of the annual grant agreement. Below is a suggested priority list which might be modified in some States in view of their varying problems and needs:

1. Emergency actions
2. Non-emergency actions
 - A. Community Water Supplies
 1. MCL violations

inorganic, organic, turbidity, bacteriological, radiological
 2. Monitoring and Reporting
 3. Variances and Exemptions
 4. Public Notification
 - B. Non-Community Water Supplies
 1. MCL violations

nitrates, turbidity, bacte.
 2. Monitoring and Reporting
 3. Variances and Exemptions
 4. Public Notification

Violations/enforcement actions can be categorized into two types, emergency actions and non-emergency actions. Emergency actions must receive the highest priority of all actions because of an imminent health hazard; non-emergency actions should be ranked second.

Non-emergency actions can be broken down into those for Community Water Supplies and those for Non-Community Water Supplies.

As a general rule, enforcement action against community systems should take precedence over enforcement action against non-community systems because short-term or a one-time exposure to less than emergency level

MCL's as in the case of a non-community system is of less concern than the longer term or continuous exposure as in the case of community systems. If a problem with a non-community system affects a substantial population at risk, this will elevate the priority of the case on a case-by-case analysis.

Because MCL's are potential health hazards, we feel this violation should receive a priority second only to emergency actions.

Due to the lack of monitoring and/or reporting of violations the health risk is unknown and therefore, rank² below a MCL violation which is a known potential health problem.

While there is no known unreasonable risk to health associated with a V&E violation, there is an MCL violation that must be abated. Also we must reduce the term of public exposure. We must insist on compliance with administrative requirements to preserve the credibility of the problem.

Notification is important but there is no immediate risk to health due to a failure to notify for a violation.

Question;

If additional resources were to be made available to the Safe Drinking Water Program, what would be your priorities?

Answer:

Safe Drinking Water Act activities differ depending upon the particularities of each EPA Region. However, the strategy that has been adopted includes the phasing of regulation based upon system size, population, source of water, health risk, and other considerations. Additional resources would be used to expend and intensify these activities to cover more systems and consequently a larger portion of the population. Below is a listing of the activities that could use additional resources.

- Provide additional technical assistance to State and local agencies in the Implementation of the Safe Drinking Water Act especially in controlling organic contaminants in drinking water and upgrading small systems;
- Provide a more comprehensive implementation and enforcement of the programs for assuring compliance with the National Interim Primary Drinking Water Regulations in non-primacy States and on Indian lands;
- Provide additional assistance in responding to, controlling and mitigating spills and other episodes that threaten imminent and substantial health endangerment to public and underground water supplies and provide increased enforcement action against public or private entities determined to be totally or partially responsible for such spills and episodes;
- Provide additional support to States in their efforts to assume primary enforcement responsibility for the underground injection control programs;
- Provide increased financial assistance to States to implement and to maintain their public water systems and underground injection control programs;
- Encourage those States that have not assumed primacy ^{to} ~~and~~ maintain primary enforcement responsibility for the public water systems supervision program;
- Increase our efforts to protect designated sole source aquifers;

- Provide more technical assistance to States on the assessment of surface impoundments;
- Develop contingency plans for designated States that indicate they will not seek primacy for the UIC program;
- Increase our efforts in applied research related to health effects, standards development treatment technology and to obtain data on toxicity/carcinogenicity of contaminants in drinking water; and
- Provide more analytical support to EPA Regional and State laboratories, and to develop protocols for quality assurance.

The overall goal of the Drinking Water Program can be stated as:

"to assure the protection of public health from drinking water contaminants which may have an adverse health effect."

To achieve this goal requires continued and increased support of all the program activities listed above.

Question:

While it may be prohibitively expensive to install separate drinking water pipes in today's cities, are there any plans to try to segregate potable water supplies from water used for other purposes (used - e.g. bathing, lawn and gardening, car washing) in new communities?

Answer:

Some discussion of dual water suppliers has been undertaken by the Agency. However, evaluation of communities that now have dual systems indicate that non-potable water systems require almost as much treatment as potable water, just to maintain the integrity of the distribution systems which suffer from corrosive water, slime and algae formation, particulate deposition, etc. Even in new communities, in many situations the treatment of non-potable water would be about as expensive as drinking water treatment. Additional studies of the economic feasibility of dual systems are planned for the future as one alternative of the study of Federal subsidies mandated under the 1977 amendments to the Act currently under way.

Question:

What steps has EPA taken to provide uniform surveillance of water supply systems?

- a. What do you estimate to be the annual operating costs for the education and support of surveillance staff in the United States?
- b. It was originally thought that some of the worst drinking water problems were to be found in small water systems. Yet, the organic regulations proposed by the Agency stress treatment changes only for large systems. Would you explain?

Answer:

EPA has promulgated regulations and guidelines on the implementation of State Programs, including surveillance of water supply systems. Uniformity comes from these regulations and guidelines, and the reporting network that has been developed to ease the Administrative component of surveillance and evaluation. Under the Act the utility is responsible for periodic monitoring although in practice many States perform these surveys for the smaller utilities.

Estimates of annual Nation manpower requirements (for Surveillance) cost out at approximately \$20 million, of which about \$14 million is born by the States. Educational and Surveillance support from EPA to the States is approximately \$1 million this year.

The concerns raised with respect to small supplies are much more basic than our current interest in organic chemicals. We feel it is more important to focus on short term threats by insuring basic disinfection and inorganic chemical control in these small systems than to concentrate on long term and less immediate risks from organics. When EPA has developed a much stronger understanding of control of organic contaminants, through large system experience under the proposed regulations, then it will evaluate strategies to deal with small systems.

Question:

Would you supply for the record descriptions of the various Federal grant programs which can be used to assist in construction of water supply systems?

Answer:

The attached information is forwarded for the record.

Federal Financial Assistance Programs
for Public Water Systems

The purpose of the Safe Drinking Water Act (PL 93-523) is to assure that water supplied to the public is safe to drink. The Act called for a joint Federal-State program to assure compliance with the National Interim Primary Drinking Water Regulations (NIPDWR), 40 CFR Part 141, dated December 24, 1975.

Unlike the Federal Water Pollution Control Act Amendments of 1972, however, no grant funds were provided for upgrading or constructing water treatment systems under the Safe Drinking Water Act. Congress felt that the ultimate responsibility and financial burden for complying with the NIPDW regulations would rest with the local public water supplier and the user through appropriate and adequate users charges.

The House Committee on Interstate and Foreign Commerce in its report No. 93-1185 recognized that reasonable costs for large metropolitan (or Regional) public water systems may not be reasonable for small systems which serve relatively few users. In order to assure the quality of the Nation's drinking water, however, the Committee advocated that water systems be organized so as to be most cost-effective.

The Committee:

- advocated regional systems and discourage small systems;
- provided through Section 1416 of the Act the authority to grant exemptions from the primary regulations thus delaying the date for compliance to allow enough time to (1) develop regional systems which can better afford the increased financial burden, (2) seek additional sources of funding such as State aid, or (3) develop a plan for otherwise serving the affected population after any existing inadequate system is closed; and
- directed EPA to study this situation and determine whether any additional legislative authorities are needed.

In response to the last mandate, EPA has adopted a four phase program, described below, to better understand the situation of small systems.

Phase 1. Develop financial profiles of small systems based upon data obtained from a survey of 1250 systems representative of the national situation. This survey, which has been endorsed by the American Water Works Association, the National Association of Water Companies, and the Conference of State Sanitary Engineers, is being conducted by Temple Barker and Sloane and is nearing completion.

Phase 2. Initiate a compliance monitoring study of 1000 small systems to determine those systems which are not in compliance with the NIPDWR. A contract for this study is being processed.

Phase 3. Work with the States to assess the cost of the improvements necessary to satisfy the requirements of the NIPDWR for those systems identified in Phase 2 as being out of compliance with these Regulations.

Phase 4. Analyze the data obtained from the previous phases and re-evaluate the financial impact of the Regulations on small systems and their relationship to water rates and availability of capital.

In conjunction with the above program, the Office of Water Supply has identified several other Federal financial assistance programs which provide grants and/or loans for public water supply systems. The attached excerpts from the Catalog of Federal Domestic Assistance describe the following Federal programs in detail:

Agency	Catalog of Federal Domestic Assistance, Catalog Number
Farmers Home Administration (FmHA)	10.418
Economic Development Administration (EDA)	11.300, 11.308
Department of Housing and Urban Development (HUD)	14.218, 14.219
Appalachian Regional Commission	23.002
Coastal Plains Regional Economic Development Commission	28.003
Four Corners Regional Economic Development Commission	38.003
Ozarks Regional Economic Development Commission	52.003
Small Business Administration	59.012
Upper Great Lakes Regional Commission	63.003

Finally, many States also have State grant funds available to assist public water supply systems to meet the NIPDW regulations.

USES AND USE RESTRICTIONS: Loan funds may be used to help local sponsors provide the local share of the cost of watershed works of improvement for flood prevention, irrigation, drainage, water quality management, sedimentation control, fish and wildlife development, public water based recreation, and water storage and related costs. The total amount of WS loans outstanding in any one watershed cannot exceed \$5,000,000.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: To be eligible for a watershed loan an applicant must: (1) be a sponsoring local organization, such as municipal corporation, soil and water conservation district, or other organization not operated for profit in the approved watershed project and (2) have authority under State law to obtain, give security for and raise revenues to repay the loan and to operate and maintain the facilities to be financed with the loan.

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Evidence of legal capacity, economic feasibility and financial responsibility relative to the activity for which assistance is requested.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applications should be reviewed under procedures in Part I of OMB Circular No. A-95 (revised). The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program. An environmental impact assessment is required for this program. An informal preapplication conference is recommended.

Application Procedure: Preapplication Form AD-621 and Application Form AD-624 are filed at county FmHA office from which assistance may be obtained.

Award Procedure: After application has been reviewed by the County Supervisor and the county committee, it is referred to the State Director who has approval authority. Following approval, payment authorization is forwarded to Finance Office which issues the check to the County office from which funds are made available.

Deadlines: None.

Range of Approval/Disapproval Time: 30 to 90 days.

Appeals: If an application is rejected, the reasons for rejection are fully stated. The applicant may request a review of the decision from the Headquarters Office listed below.

Renewals: Not applicable.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: None.

Length and Time Phasing of Assistance: Loans may be scheduled over a period of 50 years.

POST ASSISTANCE REQUIREMENTS:

Reports: Annual progress reports are made to the FmHA.

Audits: Annual audits are required when the work of improvement is in operation.

Records: Records and accounts are required to reflect the operations of the project.

FINANCIAL INFORMATION:

Account Identification: 05-75-4140-0-3-351.

Obligations: (Loans) FY 75 \$20,175,000; FY 76 est \$23,400,000; FY 77 est \$5,850,000; and FY 78 est \$23,400,000.

Range and Average of Financial Assistance: \$7,230 to \$5,000,000; \$300,000.

PROGRAM ACCOMPLISHMENTS: During fiscal year 1975, 25 loans were made for \$20,175,000. Approximately 29 loans for \$23,400,000 will be made in fiscal year 1976. It is estimated that 27 loans for \$23,000,400 will be made in fiscal year 1977.

REGULATIONS, GUIDELINES, AND LITERATURE: Watershed Loans - Farmers Home Administration - PA-406 - no charge. Farmers Home Administration - PA-973 - no charge. 7 CFR 1823. Sec. 1823.341 Thru 1823.360.

INFORMATION CONTACTS:

Regional or Local Office: Consult your local telephone directory for FmHA county office number. If no listing, get in touch with appropriate FmHA State office listed in the appendix.

Headquarters Office: Administrator, Farmers Home Administration, U.S. Department of Agriculture, Washington, DC 20250. Telephone: (202) 447-7967.

RELATED PROGRAMS: 10.409, Irrigation, Drainage, and Other Soil and Water Conservation Loans; 10.416, Soil and Water Loans; 10.904, Watershed Protection and Flood Prevention.

10.420 RURAL SELF-HELP HOUSING TECHNICAL ASSISTANCE

(Section 523 Technical Assistance)

FEDERAL AGENCY: FARMERS HOME ADMINISTRATION, DEPARTMENT OF AGRICULTURE

AUTHORIZATION: Housing Act of 1949 as amended, Section 523; Public Law 89-117 and Public Law 89-754; 42 U.S.C. 1490c.

OBJECTIVES: To provide financial support for the promotion of a program of technical and supervisory assistance which will aid needy low-income individuals and their families in carrying out mutual self-help efforts in rural areas.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: Organizations may use technical assistance funds to hire the personnel to carry out a program of technical assistance for self-help housing in rural areas; to pay necessary and reasonable office and administrative expenses; to make essential equipment such as power tools available to families participating in self-help housing construction; and to pay fees for training self-help group members in construction technique or for other professional services needed. Funds will not be used to hire personnel to perform any construction work, to buy real estate or building materials, or pay any debts, expenses or costs other than previously outlined for participating families in self-help projects.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: Must be a State or political subdivision, public nonprofit corporation or a private nonprofit corporation.

Beneficiary Eligibility: Low-income rural family.

Credentials/Documentation: Applicant must furnish evidence of the need for such services, have legal capacity to incur the obligation and operate the proposed project, and be unable to obtain the necessary funds from other sources. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applications should be reviewed under procedures in Part I of OMB Circular No. A-95 (revised). The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program.

Application Procedure: Made in the form of a letter to the County Office of the Farmers Home Administration fully documenting the need for the grant and the proposed amount needed. Attachments relating to the size of the proposed project, estimated cost, budget and need are also required.

Award Procedure: Award is made by the State Director or County Supervisor. Notification of grant award must be made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: 40 to 180 days from the time discussion begins.

Appeals: Applicants may request reconsideration on the basis of pertinent facts concerning his application.

Renewals: Applicants may reapply at any time.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: None.

Length and Time Phasing of Assistance: Not applicable.

POST ASSISTANCE REQUIREMENTS:

Reports: Quarterly progress reports are to be made to the FmHA County Supervisor.

Audits: As needed.

mately 9,500 loans for \$20,000,000 will be made. In fiscal year 1977, it is estimated that 9,500 loans for \$20,000,000 will be made.

REGULATIONS, GUIDELINES, AND LITERATURE: 7 CFR 1822.21-1822.33; FmHA Instruction 444.3 "Section 504 Rural Housing Loan Policies and Authorization," (approximate cost \$,025); Rural Housing Repair Loans, PA-1058, no charge.

INFORMATION CONTACTS:

Regional or Local Office: Consult your local telephone directory for FmHA county office number. If no listing, get in touch with appropriate FmHA State office listed in appendix.

Headquarters Office: Administrator, Farmers Home Administration, U.S. Department of Agriculture, Washington, DC 20250. Telephone: (202) 447-7967.

RELATED PROGRAMS: 10.410, Low to Moderate Income Housing Loans; 14.108, Major Home Improvement Loan Insurance-Housing Outside Urban Renewal Areas; 14.142, Property Improvement Loan Insurance-All Existing Structures.

✓ 10.418 WATER AND WASTE DISPOSAL SYSTEMS FOR RURAL COMMUNITIES

FEDERAL AGENCY: FARMERS HOME ADMINISTRATION, DEPARTMENT OF AGRICULTURE

AUTHORIZATION: Consolidated Farm and Rural Development Act, Section 306; Public Law 92-419; 7 U.S.C. 1926.

OBJECTIVES: To provide basic human amenities, alleviate health hazards and promote the orderly growth of the rural areas of the Nation by meeting the need for new and improved rural water and waste disposal systems.

TYPES OF ASSISTANCE: Guaranteed/Insured Loans; Project Grants. **USES AND USE RESTRICTIONS:** Funds may be used for the installation, repair, improvement, or expansion of a rural water system including distribution lines, well, pumping facilities and costs related thereto. The installation, repair, improvement, or expansion of a rural waste disposal system including the collection, and treatment of sanitary, storm, and solid wastes.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: Municipalities, counties, and other political subdivisions of a State, such as districts and authorities; associations, cooperatives, and corporations operated on a not-for-profit basis; and Indian tribes on Federal and State reservations and other Federally recognized Indian tribes. Facilities shall primarily serve rural residents. The service area shall not include any area in any city or town having a population in excess of 10,000 inhabitants according to the latest decennial census of the United States. The applicant must: (1) be unable to finance the proposed project from its own resources or through commercial credit at reasonable rates and terms, and (2) have the legal authority necessary for constructing, operating, and maintaining the proposed facility or service, and for obtaining, giving security for, and repaying the proposed loan. Plans and specifications must be developed to comply with State and local health and pollution regulations and other requirements. Grants are made only when necessary to reduce the average annual residential user charges to a reasonable level. Normally, grants are considered only when the debt service portion of the average annual residential user cost exceeds 1 percent of the median income for the area to be served.

Beneficiary Eligibility: Primarily rural residents in eligible applicant areas as set out above.

Credentials/Documentation: Evidence of legal capacity, economic feasibility and financial responsibility relative to the activity for which assistance is requested. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applications should be reviewed under procedures in Part I of OMB Circular No. A-95 (revised). The standard application forms as furnished by the Federal agency

and required by General Services Administration FMC 74-7 must be used for this program. An environmental impact assessment is required for this program.

Application Procedure: Preapplication Form AD-621 and Application Form AD-624 are filed at the county FmHA office from which assistance may be obtained.

Award Procedure: The State Director is the loan approval official. Notification of grant award must be made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: 30 to 90 days.

Appeals: If an application is rejected, the reasons for rejection are fully stated. The applicant may request a review of this decision from the Administrator of FmHA.

Renewals: Not applicable.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Funds are allocated to states based upon rural population and income; No requirement for matching funds.

Length and Time Phasing of Assistance: Loans may be scheduled for repayment over a period of 40 years. No repayment period will exceed any statutory limitation on the organizations borrowing authority or the useful life of the facility.

POST ASSISTANCE REQUIREMENTS:

Reports: Quarterly and annual progress reports are to be made to the FmHA county supervisor.

Audits: Biennial audits are required when the annual gross facility income exceeds \$100,000, or in accordance with state statutes or regulations.

Records: Records and accounts are required to reflect the operations of the project.

FINANCIAL INFORMATION:

Account Identification: (Loans) 05-75-4155-0-3-452; (Grants) 05-75-2066-0-1-451.

Obligations: (Loans) FY 75 \$469,986,946; FY 76 est \$470,000,000; FY 77 est \$117,500,000; and FY 78 est \$470,000,000. (Grants) FY 75 \$156,858,900; FY 76 est \$125,000,000; FY 77 est \$12,500,000; and FY 78 est Not presently available.

Range and Average of Financial Assistance: (Loans) \$50,000 to \$20,000,000; \$360,000; (Grants) \$5,000 to \$1,000,000; \$200,000.

PROGRAM ACCOMPLISHMENTS: In fiscal year 1975, 1,451 loans for \$469,986,946 and 896 grants for \$156,858,900 were made. Approximately 1,343 loans and 662 grants will be made in fiscal year 1976. It is estimated that 1,250 loans will be made in fiscal year 1977.

REGULATIONS, GUIDELINES, AND LITERATURE: 7 CFR 1823 (Loans)-Section 1823.1 thru 1823.48, (Grants) 1823.471 thru 1823.477.

INFORMATION CONTACTS:

Regional or Local Office: Consult your local telephone directory for FmHA county office number. If no listing, get in touch with appropriate FmHA State office listed in the appendix.

Headquarters Office: Administrator, Farmers Home Administration, U.S. Department of Agriculture, Washington, DC 20250. Telephone: (202) 447-7967.

RELATED PROGRAMS: 13.229, Indian Sanitation Facilities; 66.418, Construction Grants for Wastewater Treatment Works.

10.419 WATERSHED PROTECTION AND FLOOD PREVENTION LOANS

FEDERAL AGENCY: FARMERS HOME ADMINISTRATION, DEPARTMENT OF AGRICULTURE

AUTHORIZATION: Watershed Protection and Flood Prevention Act, as amended, Public Law 83-566; Section 8, 16 U.S.C. 1006a.

OBJECTIVES: To provide loan assistance to local sponsors for share of cost for works of improvement in approved watersheds.

TYPES OF ASSISTANCE: Guaranteed/Insured Loans.

RELATED PROGRAMS: 11.301, Economic Development-Business Development Assistance; 11.304, Economic Development-Public Works Impact Projects; 11.308, Grants to States for Supplemental and Basic Funding of Titles I, II and IV Activities; 15.124, Indian Loans-Economic Development; 23.001, Appalachian Regional Development; 28.001, Coastal Plains Regional Commission; 38.001, Four Corners Regional Commission; 48.001, New England Regional Commission; 52.001, Ozarks Regional Commission; 63.001, Upper Great Lakes Regional Commission; 75.001, Old West Regional Commission; 76.001, Pacific Northwest Regional Commission.

11.301 ECONOMIC DEVELOPMENT-BUSINESS DEVELOPMENT ASSISTANCE

FEDERAL AGENCY: ECONOMIC DEVELOPMENT ADMINISTRATION, DEPARTMENT OF COMMERCE

AUTHORIZATION: Public Works and Economic Development Act of 1965; Public Law 89-136, as amended by Public Laws 90-103, 91-123, 91-304, 92-65, 93-46, and 93-423; 42 U.S.C. 3142, 3171; 19 U.S.C. 2101, 2341, 2344, 2346, 2371, 2373, 2374.

OBJECTIVES: To encourage industrial and commercial expansion in designated areas by providing financial assistance to businesses that create new permanent jobs, expand or establish plants in redevelopment areas for projects that cannot be financed through banks or other private lending institutions.

TYPES OF ASSISTANCE: Direct Loans; Guaranteed/Insured Loans.

USES AND USE RESTRICTIONS: Long-term business development loans up to 65 percent of the cost may be used for the acquisition of fixed assets only (i.e., land, building, machinery, and equipment, including land preparation and building rehabilitation). Funds may be used for most kinds of new industrial or commercial facilities or to expand one already in existence. Loans for working capital needs are not limited by statute, but are available only for short periods. In addition, the Government will guarantee up to 90 percent of the unpaid balance of loans for the acquisition of fixed assets or for working capital; and up to 90 percent of the rental payments required by the guaranteed lease.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: Any individual, private or public corporation, or Indian tribe, provided that the project to be funded is physically situated in an area designated as eligible under the Act at the time the application is filed. Neither business development loans nor guarantees of any kind will be extended to applicants who: (1) have, within the previous 3 years, relocated any or all of their facilities to another city, or State; (2) contemplate relocating part or all of their existing facilities with a resultant loss of employment at such facilities; and (3) produce a product or service for which there is a sustained and prolonged excess of supply over demand. No financial assistance will be rendered to projects primarily engaged in the dissemination of news (e.g., newspapers, magazines, radio and television broadcasting), or in an activity violative of local or State law.

Beneficiary Eligibility: If an application is filed by a local industrial development corporation to establish a facility to be leased to a user (or beneficiary), the same criteria apply.

Credentials/Documentation: Applicants and beneficiaries must provide financial, engineering, and feasibility documentation supporting the viability of the project. Projects in which the Federal participation will exceed \$1,000,000 must be supported by an independent feasibility study conducted by consultant acceptable to EDA. Tourism projects and projects involving new, untried technology will also require an independent feasibility study.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applicant should contact the regional office serving the State in which the project is to be located, and an economic development representative will be assigned to the project. With his concurrence, a preapplication conference will be scheduled with the professional staff of the regional office.

Application Procedure: At the preapplication conference, applicants will be provided with all necessary forms and detailed information relating to supporting documentation.

Award Procedure: Loan and working capital loan guarantee applications from individuals, private or public corporations, or Indian tribes, in eligible areas are approved by the Assistant Secretary for Economic Development, Department of Commerce.

Deadlines: None.

Range of Approval/Disapproval Time: 90 to 120 calendar days after receipt of application if the complete supporting documentation is in good order.

Appeals: None. An applicant whose project has been denied may, however, reinstate his application if the defects leading to a denial have been remedied.

Renewals: Not applicable.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: The Federal participation in a direct, fixed asset loan may not exceed 65 percent of project fixed asset costs. A local development corporation or State Agency usually participates to the extent of five percent. Of the remaining 30 percent, 10 percent must be in the form of applicant's equity and the balance from a conventional commercial lender. Applicants are encouraged to increase their equity participation beyond the minimum. Comparable equity requirements also apply to guarantees.

Length and Time Phasing of Assistance: Fixed asset loans, 25 years, maximum; working capital loans 5 years; guarantees, life of loan or lease. EDA loan funds will only be disbursed after all other funds have been injected into project.

POST ASSISTANCE REQUIREMENTS:

Reports: Periodic financial and employment reports will be required. Initially, these may be quarterly, and, as the business becomes established, at longer intervals.

Audits: An annual audit by a certified public accountant will be required not more than 90 days after the close of the applicant's fiscal year.

Records: Not applicable except as required above.

FINANCIAL INFORMATION:

Account Identification: 06-10-2050-0-1-452.

Obligations: (Direct loans) FY 75 \$19,717,000; FY 76 est \$26,000,000; TQ est \$10,250,000; and FY 77 est \$13,300,000. (Guarantees) FY 75 \$6,152,000; FY 76 \$13,000,000; TQ est \$2,500,000; and FY 77 est \$3,500,000.

Range and Average of Financial Assistance: \$260,000 to \$5,200,000; \$1,496,167.

PROGRAM ACCOMPLISHMENTS: In fiscal year 1975, 10 business loans and 17 guarantees were made. In fiscal year 1976, 29 business loans and 23 guarantees will be made. In fiscal year 1977, 11 business loans and 21 guarantees will be made.

REGULATIONS, GUIDELINES, AND LITERATURE: "EDA Business Development Loans-Who Can Borrow-How to Apply."

INFORMATION CONTACTS:

Regional or Local Office: Refer to the appendix of the catalog for EDA regional office addresses.

Headquarters Office: Office of Business Development, Economic Development Administration, Department of Commerce, Washington, DC 20230. Telephone: (202) 967-5067.

RELATED PROGRAMS: 11.800, Minority Business Enterprise-Coordination, Management and Technical Assistance; 12.600, Community Economic Adjustment; 23.001, Appalachian Regional Development; 59.003, Economic Opportunity Loans for Small Businesses; 59.006, Minority Business Development-Procurement

ECONOMIC DEVELOPMENT ADMINISTRATION

11.300 ECONOMIC DEVELOPMENT - GRANTS AND LOANS FOR PUBLIC WORKS AND DEVELOPMENT FACILITIES

FEDERAL AGENCY: ECONOMIC DEVELOPMENT ADMINISTRATION, DEPARTMENT OF COMMERCE

AUTHORIZATION: Public Works and Economic Development Act of 1965; Public Law 89-136, as amended by Public Laws 90-103, 91-123, 91-304, 92-65, 93-46, and 93-423; 42 U.S.C. 3131, 3132, 3135, 3141, 3155, 3171.

OBJECTIVES: To assist in the construction of public facilities needed to initiate and encourage long-term economic growth in designated geographic areas where economic growth is lagging behind the rest of the Nation.

TYPES OF ASSISTANCE: Project Grants; Direct Loans.

USES AND USE RESTRICTIONS: Grants for such public facilities as water and sewer systems, access roads to industrial parks or areas, port facilities, railroad sidings and spurs, public tourism facilities, vocational schools, flood control projects, and site improvements for industrial parks. Qualified projects must fulfill a pressing need of the area and must: (1) tend to improve the opportunities for the successful establishment or expansion of industrial or commercial plants or facilities, (2) assist in the creation of additional long-term employment opportunities, or (3) benefit the long-term unemployed and members of low-income families or otherwise substantially further the objectives of the Economic Opportunity Act of 1964. In addition, proposed projects must be consistent with the currently approved overall economic development program for the area, and for the district, if any, in which it will be located.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States, local subdivisions thereof, Indian tribes, and private or public nonprofit organizations or associations representing a redevelopment area or a designated economic development center are eligible to receive grants and loans. Corporations and associations organized for profit are not eligible.

Beneficiary Eligibility: Unemployed and underemployed persons and/or members of low-income families.

Credentials/Documentation: Application must describe the type of proposed facility, estimated costs, extent of proposed project, direct job impact, estimated time for construction implementation, and assurance that the project will satisfy statutory requirements. Most important, documentation must demonstrate how the project will have a positive impact on the economic development process in the community. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: The Economic Development Administration Representative will meet with the applicant and community leaders to establish the basis for a preapplication conference. After reviewing project and local development profile information with the regional office, he will notify the applicant immediately if EDA cannot accept the project. If project appears viable, a preapplication conference may be arranged with regional office personnel. Applications should be reviewed under procedures in Part I of OMB Circular No. A-95 (revised). The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program. An environmental assessment is necessary for this program.

Application Procedure: Applicant should contact the regional office servicing the State in which the project is to be located. An Economic Development Representative assigned as coordinator of the project for EDA will provide necessary forms and assist in filling them out.

Award Procedure: Grant and loan applications from states, local subdivisions thereof, Indian tribes, and private or public nonprofit organizations or associations representing a redevelopment area or a designated economic development center are approved by the Assistant Secretary for Economic Development, Department of Commerce. Contract award should be made on the lowest base bid submitted by a responsible bidder, with a responsible bidder defined as one who can furnish 100 percent performance and payment bonds and who meets the applicable State and local statutory requirements. Notification of grant award must be made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: Normally within 90 days of acceptance of application.

Appeals: None.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: The basic grant rate may be up to 50 percent of the project cost. Severely depressed areas that cannot match Federal contribution up to 80 percent of the project cost with designated Indian Reservations eligible for 100 percent assistance. Additionally, redevelopment areas located within designated economic development districts may, subject to the 80 percent maximum Federal grant limit, be eligible for a 10 percent bonus on grants for public works projects. Long-term (up to 40 years), low interest loans may be made to the applicant when financial assistance is not otherwise available from private lenders or Federal agencies on terms which would permit accomplishment of the project.

Length and Time Phasing of Assistance: EDA grant funds are disbursed for costs incurred only after all contracts for construction have been awarded. EDA loan funds are normally disbursed when the construction of the project is 75 percent or more complete.

POST ASSISTANCE REQUIREMENTS:

Reports: Reports for specific projects may be requested.

Audits: Each recipient of financial assistance is required to keep such records as will facilitate an effective audit of the project.

Records: As necessary for above-mentioned audit.

FINANCIAL INFORMATION:

Account Identification: 06-10-2050-0-1-452.

Obligations: (Grants) FY 75 \$140,520,000; FY 76 est \$149,000,000; TQ est \$37,920,000; and FY 77 est \$100,000,000. (Loans) FY 75 \$76,000; FY 76 est \$2,500,000; TQ est \$620,000; and FY 77 est \$2,500,000.

Range and Average of Financial Assistance: No specific minimum or maximum project amount. \$5,000 to \$7,138,000; \$580,000.

PROGRAM ACCOMPLISHMENTS: In fiscal year 1975, 227 projects were approved for \$140,520,000. In fiscal year 1976, 250 projects were approved for \$149,000,000. In fiscal year 1977, an estimated 185 projects will be approved for \$100,000,000.

REGULATIONS, GUIDELINES, AND LITERATURE: Title 13 CFR Chapter III, "Building Communities with Jobs," EDA, "Grants and Loans for Public Works and Development Facilities," EDA, "Qualified Areas under the Public Works and Economic Development Act of 1965," "Guides for Overall Economic Development Programs," "Economic Development, Directory of Approved Projects."

INFORMATION CONTACTS:

Regional or Local Office: Refer to the appendix of the catalog for EDA regional office addresses.

Headquarters Office: Director, Office of Public Works, Economic Development Administration, Department of Commerce, Washington, DC 20230. Telephone: (202) 967-5265.

allocated to their jurisdictions. After selection and communication of the projects by the Governors/Mayor to the Assistant Secretary has been made, the eligibility and compliance of a project for assistance shall be determined by the Assistant Secretary in accordance with the requirements of General Services Administration FMC 74-7. The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program. Applicants must prepare and submit profile information and preapplication forms to the Regional Office and to the appropriate clearinghouse(s) in accordance with Part I of OMB Circular No. A-95 (revised) requirements, make the necessary environmental assessments to determine if an environmental impact statement is required for the project in compliance with the National Environmental Policy Act of 1970, and to arrange for a preapplication conference at which statutory requirements and regulations can be discussed in detail.

Application Procedure: Proponents should follow the application procedures of FMC 74-7. Applicants interested in obtaining 304 funds should send copies of the 101-P (Preapplication for Federal Assistance) to the Governors of their State or territory (or the Mayor of the District of Columbia). The Governor should then notify EDA that he wishes to use funds from the State's 304 apportionment for the specified project.

Award Procedure: When the Regional Director receives the acceptance of the offer of grant or loan, he will notify the Governor that a specific amount of the 304 funds apportioned to the State has been set aside for the particular project. Notification of grant award must be made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None

Range of Approval/Disapproval Time: Normally within 90 days after a Governor has submitted a proposal to the Assistant Secretary.

Appeals: None.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Supplementary grants or loans funds may be used by the Governor (or Mayor of the District of Columbia) to supplement any EDA grant or loan authorized under Title I, II, IV of the Public Works and Economic Development Act of 1965, as amended, approved after July 1, 1974. Such funds may reduce the non-Federal share subject to a statutory contribution by the State, so long as the Secretary of Commerce certifies that (1) the project meets all the requirements of the Act, and could be approved if funds were available for it, and (2) the level of the Federal and State financial assistance for the same type of projects in the State will not be diminished in order to substitute these funds. The project also must be consistent with a State planning process, if one exists. **Direct Grants or Loans:** Governors (or the Mayor of the District of Columbia) may authorize direct grants or loans under Titles I, II, or IV of the Public Works and Economic Development Act of 1965, as amended. The State must make a contribution equal to at least 25 percent of the 304 funds used for the project.

Length and Time Phasing of Assistance: Grant funds are disbursed for costs incurred only after all contracts for construction have been awarded. Loan funds are disbursed when construction is 75 percent or more complete. **Loan Terms:** Loans may be up to 40 years and shall bear interest at a rate determined by the Secretary of the Treasury when (1) funds requested are not otherwise available from private lenders or Federal agencies on terms which in the opinion of the Secretary of Commerce will permit accomplishment of the project; (2) the amount of the loan plus the amount of other available funds are adequate to insure completion of the project; and (3) there is a reasonable expectation of repayment. Request for the disbursement of funds for basic loans by a State shall be accompanied by assurances that the proceeds from the repayment of the loans will be used for economic development in a manner consistent with the Act. Assurances

shall include a contractual agreement between EDA and the State describing how repayment proceeds will be used.

POST ASSISTANCE REQUIREMENTS:

Reports: Reports for specific projects may be requested by the Governors (or the Mayor of the District of Columbia) or by the Secretary of Commerce.

Audits: Each recipient of financial assistance is required to keep such records as will facilitate an effective audit of the project.

Records: As necessary for above-mentioned audit.

FINANCIAL INFORMATION:

Account Identification: 06-10-2050-0-1-452.

Obligations: FY 75 \$13,000,000; FY 76 est \$20,000,000; TO est \$5,000,000; and FY 77 est \$0.

Range and Average of Financial Assistance: \$1,000 to \$976,000 of the State apportionments, to remain available until expended.

PROGRAM ACCOMPLISHMENTS: In fiscal years 1975 and 1976, the grants already allocated to the states will remain available to them until expended. No funds are requested for this program in fiscal year 1977 in order to help meet the President's objective of decreased government spending.

REGULATIONS, GUIDELINES, AND LITERATURE: Code of Federal Regulations, Title 13, Chapter III, Part 312 (published also in the Federal Register, Vol. 39, No. 220, November 13, 1974); "EDA Grants for Public Works and Development Facilities"; "EDA Business Development Loans-Who can Borrow-How to Apply."

INFORMATION CONTACTS:

Regional or Local Office: State Economic Development or Information Agency. Federal: Appropriate Regional Office of the Economic Development Administration; refer to the appendix of this catalog for address.

Headquarters Office: Economic Development Administration, Department of Commerce, Washington, DC 20230. Director, Office of Public Works. Telephone: (202) 967-5263; Director, Office of Business Development, Telephone: (202) 967-5067.

RELATED PROGRAMS: 11.300, Economic Development - Grants and Loans for Public Works and Development Facilities; 11.301, Economic Development - Business Development Assistance; 11.302, Economic Development Support for Planning Organizations; 11.303, Economic Development - Technical Assistance; 11.304, Economic Development - Public Works Impact Projects; 11.305, Economic Development - State and Local Economic Development Planning; 11.306, Economic Development - District Operational Assistance; 11.307, Economic Development - District Economic Development and Adjustment Assistance Program.

11.309 TRADE ADJUSTMENT ASSISTANCE

(TAA)

FEDERAL AGENCY: ECONOMIC DEVELOPMENT ADMINISTRATION, DEPARTMENT OF COMMERCE

AUTHORIZATION: Title II of Trade Act of 1974, Public Law 93-618; 88 Stat. 1978; 19 U.S.C. 2101-2487 (1975).

OBJECTIVES: To provide adjustment assistance to firms and communities seriously injured or threatened by import competition.

TYPES OF ASSISTANCE: Direct Loans; Guaranteed/Insured Loans; Dissemination of Technical Information.

USES AND USE RESTRICTIONS: Firms: Under Chapter 3 of Title II, a firm may petition the Economic Development Administration of the Department of Commerce for certification as being impacted by import competition within the context of the Trade Act of 1974. Upon certification, the firm is eligible to apply to the Economic Development Administration (EDA) for assistance. The Economic Development Administration approves the proposal by a firm for its economic recovery, and provides assistance to implement the recovery plans. Adjustment assistance from EDA for individual firms may be furnished through technical and financial assistance, to be supplied separately or in combination. Financial assistance may consist of loans for capital

Preapplication Coordination: The Economic Development Administration representative or regional office representative will meet with the applicant to establish the basis for a preapplication conference. He will notify the applicant immediately if EDA cannot accept an application under this program. If the proposed program appears viable, a preapplication conference will be arranged with regional office personnel. Plans and applications for assistance to develop a plan should be reviewed under Part I of OMB Circular No. A-95 (revised). The standard application forms as required by General Services Administration FMC 74-7 must be used for this program. An environmental assessment is necessary and environmental impact statements for specific projects may be required.

Application Procedure: Applicant should contact the regional office servicing the State in which the project is to be located. An economic development representative assigned as coordinator of the project for EDA will provide necessary forms and assist in filling them out.

Award Procedure: Grant and loan applications from states, local subdivisions thereof, Indian tribes, and private or public nonprofit organizations or associations representing a redevelopment area or a designated economic development center are approved by the Assistant Secretary for Economic Development, Department of Commerce. Notification of grant award must be made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range Of Approval/Disapproval Time: Normally within 90 days of acceptance of application.

Appeals: None.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula And Matching Requirements: A 25 percent matching share, cash or in-kind, is required.

Length And Time Phasing Of Assistance: Grants for development of a plan will normally be for a period less than 12 months. Grants to carry out a plan are usually made for a period consistent with effective implementation of the plan. Disbursements will be made as necessary to implement specific projects.

POST ASSISTANCE REQUIREMENTS:

Reports: Annual reports are required for each year that the assistance continues and for one year after final disbursement of funds.

Audits: Each recipient of financial assistance is required to keep such records as will facilitate an effective audit, which is required.

Records: As necessary for audit and as required by General Services Administration FMC 74-7.

FINANCIAL INFORMATION:

Account Identification: 06-10-2050-0-1-452.

Obligations: (Grants) FY 75 \$38,750,000; FY 76 est \$77,000,000; FY 77 est \$19,000,000; and FY 77 est \$44,988,000.

Range and Average of Financial Assistance: No specific minimum or maximum size. Estimate for development of plans: \$25,000 to \$150,000; for carrying out plans: \$200,000 to \$5,000,000.

PROGRAM ACCOMPLISHMENTS: EDA extended 50 Title IX grants in fiscal year 1975; 16 implementation grants, totaling more than \$35 million; and 34 development grants totaling more than \$3 million. For fiscal years 1976 and 1977 it is too early to determine the exact number and EDA funding levels of the implementation grants which will result from fiscal year 1975 developmental grants.

REGULATIONS, GUIDELINES, AND LITERATURE: 13 CFR 308, further guidelines and literature to be issued.

INFORMATION CONTACTS:

Regional or Local Office: Refer to the appendix of the catalog for EDA regional office addresses.

Headquarters Office: Assistant Secretary for Economic Development, Department of Commerce, Washington, DC 20230. Telephone: (202)967-5113.

RELATED PROGRAMS: 12.600, Community Economic Adjustment; 23.001 Appalachian Regional Development.

11.308 GRANTS TO STATES FOR SUPPLEMENTAL AND BASIC FUNDING OF TITLES, I, II, AND IV ACTIVITIES

(Section 304 Grants)

FEDERAL AGENCY: ECONOMIC DEVELOPMENT ADMINISTRATION, DEPARTMENT OF COMMERCE

AUTHORIZATION: Public Works and Economic Development Act of 1965, Section 304, Public Law 89-136, as amended; 42 U.S.C. 3131, 3132, 3135, 3141, 3153, 3171 and 3211.

OBJECTIVES: To provide funds which will enable governors to select projects which will assist in the construction of public facilities and other projects which meet the criteria of Titles I, II, and IV and are needed to initiate or enhance long-term economic growth in areas of their states where economic growth is lagging. Activities must be in accordance with any pre-established plan.

TYPES OF ASSISTANCE: Project Grants (Contracts), Direct Loans.

USES AND USE RESTRICTIONS: Through grants or loans monies may be used to construct such public works as water and sewer systems, industrial parks, access roads, port facilities, railroad sidings and spurs, public tourism facilities, vocational schools, and flood control projects or to provide business development loans. Projects assisted through the use of funds in supplementing EDA grants or loans under Title I, II, or IV of the Act or in providing basic grants or loans shall be subject to the same procedures and requirements relating to post-approval compliances, construction management, and disbursement as applicable to projects funded under Titles I, II, and IV of the Act. Qualified projects must fulfill a pressing need of the area and must: (1) tend to improve the opportunities for the successful establishment or expansion of industrial or commercial plants or facilities, (2) assist in the creation of additional long-term employment opportunities, or (3) benefit the long term unemployed and members of low-income families. In addition, proposed projects must be consistent with the currently approved over-all economic development program for the area, and for the district, if any, in which it will be located. Under Section 304, funds are apportioned to states based on statutory formula. Eligible projects which are selected by the states may be financed from these allocations.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States, local subdivisions thereof, Indian tribes, and private or public non-profit organizations or associations representing a designated redevelopment area or a designated economic development center are eligible to receive public works grants and loans. Corporations and associations organized for profit are eligible only for business development loans.

Beneficiary Eligibility: Unemployed and underemployed persons and/or members of low-income families.

Credentials/Documentation: Application must describe the type of project, estimated costs, extent of proposed project, direct job impact, estimated time for construction implementation and assure that the project will satisfy statutory requirements relating to post-approval compliances, construction management, and disbursement as applicable to projects funded under Title I, II, and IV of the Act. Most important, documentation must demonstrate how the project will have a positive impact on the economic development process in the community. Compliance with a State Plan coordinated with the Governor's Office is required under Part III of OMB Circular No. A-95 (revised) and under Section 304(e) of the Public Works and Economic Development Act of 1965, as amended. Costs will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Governors (and the Mayor of the District of Columbia) select projects to be funded from the monies

PROGRAM ACCOMPLISHMENTS: Not applicable, new program.
REGULATIONS, GUIDELINES, AND LITERATURE: Administrative Regulations for Community Development Block Grants, 24 CFR 570.

INFORMATION CONTACTS:

Regional or Local Office: Contact appropriate HUD Area Office (or Regional Office in Region VIII) listed in the appendix.
Headquarters Office: Community Planning and Development, 451 7th Street, S.W., Washington, DC 20410.

RELATED PROGRAMS: 14.219, Community Development Block Grants/Discretionary Grants.

14.219 COMMUNITY DEVELOPMENT BLOCK GRANTS/DISCRETIONARY GRANTS

FEDERAL AGENCY: COMMUNITY PLANNING AND DEVELOPMENT, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

AUTHORIZATION: Title I of the Housing and Community Development Act of 1974, Public Law 93-383, 42 U.S.C. 5301 - 5317.

OBJECTIVES: To develop viable urban communities including decent housing and a suitable living environment, and expand economic opportunities, principally for persons of low and moderate income.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: Generally, as in the case of entitlement grants, most activity previously eligible under the categorical program consolidated under the Act, and defined by the statute and regulations may be carried out, i.e. acquisition, rehabilitation or construction of certain public works facilities and improvements, clearance, housing rehabilitation, code enforcement, relocation payments and assistance, administrative expenses, and completing existing urban renewal projects. Communities are restricted, from constructing or rehabilitating public facilities for the general conduct of government and certain community wide facilities, i.e. central libraries, stadiums, sports arenas, cultural centers, convention centers; and from underwriting the cost of constructing new housing or of making housing allowance or other income maintenance - type payments.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: Applicant may be eligible for grants from one or more of the three sources of discretionary funds: 1. General Purpose Fund: Funds remaining after entitlement and hold harmless obligations are met: applicants are states and units of general local government, except for metropolitan cities and urban counties. 2. Secretary's Fund: Two percent of the total funds each year is set aside in a national discretionary fund for grants to communities; to assist "new communities;" to carry out area wide housing and community development programs; in Guam, The Virgin Islands, American Samoa, and the Trust Territory of the Pacific Islands; to meet emergency community development needs caused by federally recognized disasters; to carry out innovative projects; and to correct inequities arising from the formula allocation. 3. Urgent Needs Fund: a special fund intended to help in bridging the gaps between old categorical programs and the new block grants.

Beneficiary Eligibility: See applicant eligibility.

Credentials/Documentation: Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: In preparing an application, environmental factors must be taken into account, and an activity requiring an environmental review must be reviewed before funds for that activity can be released. An environmental impact statement is necessary for this program. Applications should be reviewed under procedures in Part I of OMB Circular No. A-95 (revised). The standard application forms as furnished by the agency and required by General Services Administration FMC 74-7 must be used for this program.

Application Procedure: General Purpose Metropolitan and Non-metropolitan Fund: Applicant files a pre-application and if the applicant rates high against the criteria a full application is requested. Secretary's fund and urgent need fund: Applicant files the basic entitlement application with appropriate modifications.

Award Procedure: Applicants are advised of outcome by the Area Office. Notification of grant award must be made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: General Purpose Fund: Application period, December 1, 1975 thru February 13, 1976. Secretary's Fund: application period, Federally recognized disasters, July 1, 1975 thru September 30, 1976; Innovative Projects Reserved. Area-wide Projects not yet defined; all other applicants including Urgent Need Fund: application period July 1, 1975 thru September 30, 1976.

Range of Approval/Disapproval Time: Although not required by Statute, notification will be attempted within 75 days.

Appeals: None.

Renewals: There are no automatic renewals. A complete new application process must be undertaken.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: None.

Length and Time Phasing of Assistance: Assistance is for an annual program but activities may be continued beyond 1 year until completed.

POST ASSISTANCE REQUIREMENTS:

Reports: Annual Performance Report and Financial Reports in accordance with General Services Administration FMC 74-7.

Audits: Annual audit.

Records: All information on grants must be kept.

FINANCIAL INFORMATION:

Account Identification: 25-06-0162-0-1-451.

Obligations: (General purpose discretionary) FY 75 \$29,554,000; FY 76 est \$278,785,000; TO est \$291,623,000; and FY 77 est \$437,244,000. (Secretary's fund) FY 75 \$4,000,000; FY 76 est \$49,934,000; TO est \$26,000,000; and FY 77 est \$58,960,000. (Urgent need) FY 75 \$5,460,000; FY 76 est \$94,540,000; TO est \$0; and FY 77 est \$100,000,000.

Range and Average of Financial Assistance: 1st Year of program.

PROGRAM ACCOMPLISHMENTS: Not applicable, new program.
REGULATIONS, GUIDELINES, AND LITERATURE: Administrative Regulations for Community Development Block Grants, 24 CFR 570.

INFORMATION CONTACTS:

Regional or Local Office: Contact appropriate HUD Area Office (or Regional Office in Region VIII) listed in the appendix.
Headquarters Office: Community Planning and Development, 451 7th Street, S.W., Washington, DC 20410.

RELATED PROGRAMS: 14.218, Community Development Block Grants/Entitlement Grants.

Credentials/Documentation: Authority to act as sponsor for the provision of specified housing.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Letter request from applicant for HUD assistance under SLCD Program indicating the property under consideration for provision of housing.

Application Procedure: Formal letter of request, accompanied by detailed housing plans, public body resolutions, etc., that HUD secure property for disposal under applicable authorization. HUD (a) determines that assistance under the U.S. Housing Act of 1937 is available for planned housing, (b) determines fair value for intended use, (c) requests General Services Administration to transfer property to HUD for disposal, and (d) if GSA transfers property, sells or leases land for proposed development.

Award Procedure: Not applicable.

Deadlines: None.

Range of Approval/Disapproval Time: None.

Appeals: None.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Not applicable.

Length and Time Phasing of Assistance: Not applicable.

POST ASSISTANCE REQUIREMENTS:

Reports: Not applicable.

Audits: None.

Records: None.

FINANCIAL INFORMATION:

Account Identification: 25-30-3980-0-4-551.

Obligations: No specific funds are made available for operation of this activity.

Range and Average of Financial Assistance: Not applicable.

PROGRAM ACCOMPLISHMENTS: Since enactment of the statutory authorization in 1969, four tracts of surplus property have been made available for development of low and moderate income housing and related facilities.

REGULATIONS, GUIDELINES, AND LITERATURE: None.

INFORMATION CONTACTS:

Regional or Local Office: None.

Headquarters Office: Director, Program Support and Field Liaison Division, New Communities Administration, Department of Housing and Urban Development, 451 Seventh St., S.W., Washington, DC 20410. Telephone: (202) 755-7920.

RELATED PROGRAMS: 14.146, Low Income Housing - Acquisition (Turnkey and Conventional Production Methods); 14.147, Low Income Housing - Home Ownership for Low Income Families; 39.002, Disposal of Federal Surplus Real Property.

14.218 COMMUNITY DEVELOPMENT BLOCK GRANTS/ENTITLEMENT GRANTS

FEDERAL AGENCY: COMMUNITY PLANNING AND DEVELOPMENT, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

AUTHORIZATION: Title I of the Housing and Community Development Act of 1974, Public Law 93-383, 42 U.S.C. 5301-5317.

OBJECTIVES: To develop viable urban communities, including decent housing and a suitable living environment, and expand economic opportunities, principally for persons of low and moderate income.

TYPES OF ASSISTANCE: Formula Grants.

USES AND USE RESTRICTIONS: The Block Grant Program consolidates seven former community development-type categorical programs, including Urban Renewal; Model Cities, Neighborhood Facilities, Open Space Land, Historical Preservation, Urban Beautification, the Basic Water and Sewer Facilities Program, Public Facilities Loans, and Rehabilitation Loans. Generally most activities previously eligible under the consolidated categorical programs are able to be performed under this program, i.e., acquisition, construction of certain public works, facilities and improve-

ments, clearance, housing rehabilitation. Code enforcement, relocation payments and assistance, administrative expenses, and completing existing urban renewal projects. In addition, block grant funds to pay for certain public services not otherwise available but which are necessary or appropriate to support other block grant activities. Communities are restricted from constructing or rehabilitating public facilities for the general conduct of government and certain community wide facilities, i.e., stadiums, sports arenas, cultural centers, central libraries, convention centers, and from underwriting the cost of constructing new housing, or of making housing allowance or other income maintenance - type payments.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: Cities in SMSA's with populations in excess of 50,000, "urban counties," as defined in the Act, and cities with populations of under 50,000 which are central cities in SMSA's are all entitled to receive amounts of funds determined by a statutory formula. In addition, localities which received grants under the urban renewal and model cities programs will receive "hold harmless" grants based on their level of prior participation in those programs.

Beneficiary Eligibility: See applicant eligibility.

Credentials/Documentation: Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: In preparing an application, environmental factors must be taken into account, and an activity requiring an environmental review must be reviewed before funds for that activity can be released. An environmental impact statement is necessary for this program. Applications should be reviewed under procedures in Part I of OMB Circular No. A-95 (revised).

Application Procedure: Localities file annual applications, HUD Form 7015, for their entitlement funding containing (1) a summary of a 3 year community development plan, (2) a 1 year community development program, (3) a budget, and (4) a housing assistance plan. In addition a series of certifications regarding other Federal requirements are part of the application.

Award Procedure: Applications are approved in the HUD Area Office. Notification of grant award must be made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: Applications for fiscal year 1976 must be submitted by June 30, 1976.

Range of Approval/Disapproval Time: Within 75 days.

Appeals: None.

Renewals: A new application must be submitted each year.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Entitlement formula is based on population, housing overcrowding and poverty level. No matching requirement.

Length and Time Phasing of Assistance: Assistance is for an annual program of activities but activities may be continued beyond one year until completed.

POST ASSISTANCE REQUIREMENTS:

Reports: Annual Performance Report and Financial Reports in accordance with General Services Administration FMC 74-7.

Audits: Annual audit.

Records: The applicant must maintain records with regard to financial management, citizen participation, relocation, other resources, acquisition, equal opportunity, environmental impact, labor standards and any other requirement set forth in regulations.

FINANCIAL INFORMATION:

Account Identification: 25-06-0162-0-1-451.

Obligations: (Grants) FY 75 \$1,855,008,000; FY 76 est \$2,780,000,000; FY 77 est \$599,992; and FY 77 est \$3,248,000,000.

Range and Average of Financial Assistance: Determined by Formula.

aid program shall be accepted by the Federal Cochairman with respect to a supplemental grant for any project under such program. Projects must conform to the ARC Code, the ARD Act, and the Appalachian Plan which is submitted annually. Commission regulations require the Appalachian State Development Plan must be approved and submitted by the Governors; due September 1*. Cost will be determined in accordance with General Services Administration FMC 74-4. (*Subject to change).

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: The State Alternate's Office is the coordinator for Appalachian investments. Pre-application conferences with the Appalachian local district director or the State Alternate's Office can determine within a few weeks if the project can be related to the State Appalachian development plan. The District Director or State Alternate's Office will provide guidance on specific problems and technical assistance in preparation of applications. This program requires the submission of an environmental impact statement. The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program. Coordination with the policies of OMB Circular No. A-95, Part I (revised) is required.

Application Procedure: Application must be submitted and approved by the State Member of Appalachian Regional Commission. All proposed projects must meet the requirements of the State Appalachian plan submitted annually prior to September 1*. Guidelines and forms for funding Appalachian development projects are available from the local development district director and the State Alternate's Office. A letter of transmittal signed by the State member and an executed ARC Form I is required with the submission. (*Subject to change).

Award Procedure: Upon determination that the project is eligible within a Commission approved Appalachian State Development Plan, the Federal Co-chairman determines that the project satisfies all Federal requirements. The basic Federal agency is then notified and in most cases administers the grants, disburses funds, and notifies the designated State Central Information Reception Agency in accordance with Treasury Circular 1082. The Appalachian Regional Commission makes notification of grant award to congressional offices, the Office of the Governor, and when administering grant, to the State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: Proposed projects shall be included in each of the State's approved project funding program, which is submitted annually, on or before December 1*, and projects should be submitted to the Commission by July 1*. (*Subject to change).

Range of Approval/Disapproval Time: 30 to 60 days after the receipt of the application at the Commission.

Appeals: None.

Renewals: Not applicable.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: At least 20 percent of the eligible development costs must be obtained from sources other than the Federal Government. Section 214 of the Appalachian Regional Commission Code furnishes details.

Length and Time Phasing of Assistance: Assistance is provided until completion; funds are transferred to basic Federal agency and disbursed in manner it specifies.

POST ASSISTANCE REQUIREMENTS:

Reports: Reporting and performance monitoring as required by the basic Federal agency.

Audits: Audits as required by the basic Federal agency and the Commission.

Records: Records as required by the basic Federal agency.

FINANCIAL INFORMATION:

Account Identification: 04-02-0090-0-1-452.

Obligations (Grants): FY 75 \$31,606,539; FY 76 est \$36,833,000; TO est \$0; and FY 77 est \$26,400,000.

Range and Average of Financial Assistance: \$2,648 to \$1,500,000; \$243,380.

PROGRAM ACCOMPLISHMENTS: In fiscal year 1975, 228 projects were approved of which 68 projects included ARC basic grants. The states concentrated Section 214 supplemental funds on the water and sewer need of the region (51.7 percent of the obligations). In fiscal year 1976, it is estimated that 150 projects will be approved, of which 70 projects will include ARC basic grants. It is estimated the states will concentrate Section 214 supplemental funds on water and sewer needs of the region (65 percent of the obligations.) In fiscal year 1977, 110 projects are estimated.

REGULATIONS, GUIDELINES, AND LITERATURE: "The Appalachian Regional Commission Code" (limited distribution); "Appalachian Regional Commission Project Preparation Instruction" (limited distribution); "Appalachia": a journal devoted to the special problems of regional development; Annual Reports, no charge.

INFORMATION CONTACTS:

Regional or Local Office: Refer to appendix.

Headquarters Office: Inquiries and proposals for projects should be submitted first to the Appalachian State office designated by the Governor. See appendix. Executive Director, Appalachian Regional Commission, 1666 Connecticut Ave., N.W., Washington, DC 20235. Telephone: (202) 967-4985.

RELATED PROGRAMS: 23.004, Appalachian Health Programs; 23.012, Appalachian Vocational and Other Educational Facilities and Operations.

23.003 APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM

(Appalachian Corridors)

FEDERAL AGENCY: APPALACHIAN REGIONAL COMMISSION

AUTHORIZATION: Section 201, Appalachian Regional Development Act of 1965, Public Law 89-4, as amended by Section 106, Public Law 90-103; Section 103, Public Law 91-123; and Section 110, Public Law 94-188; 40 App. U.S.C. 201.

OBJECTIVES: To provide a highway system which, in conjunction with other federally aided highways, will open up areas with development potential within the Appalachian region where commerce and communication have been inhibited by lack of adequate access.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: The grants may be used for preliminary engineering, right-of-way, and construction of highways meeting the objectives stated above. Total highway construction may not exceed 2,900 miles for the 13-State system. The highways must be accepted and maintained as a Federal-aid highway. Refer to general use restrictions stated in the Appalachian Regional Development program (23.001).

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: State governments only are eligible for development highways within their Appalachian portions.

Beneficiary Eligibility: General public.

Credentials/Documentation: Segments must be approved by the Appalachian Regional Commission and projects must be processed in accord with State Highway department and Federal Highway Administration procedures. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: This program requires coordination with the policies of OMB Circular No. A-95, Part I (revised) and requires the submission of an environmental impact statement. The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program. The State Highway department coordinates with the Federal Highway Administration, DOT as in the case of federally aided highway construction. The District Director or State Alternate's Office will provide guidance on specific problems and technical assistance in the preparation of applications.

palachian Plan which is updated annually. Commission regulations require that the Appalachian State Development Plan be approved and submitted by the Governors; due September 1*. Cost will be determined in accordance with General Services Administration FMC 74-4. (*Subject to change).

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: General Nature and Administration of Appalachian Regional Development Program. The Appalachian Regional Development program is a joint Federal-State partnership for the development of the Appalachian region. Responsibility for the development of plans and programs authorized under the act is vested in the Appalachian Regional Commission, composed of members of which are the 13 State Governors (who may appoint alternates) and a Federal Cochairman. General policies and procedures, and the allocation of Appalachian funds among the various programs and States are established by the Commission itself. Application for assistance may only be made through a State member of the Commission. The Appalachian State Alternate's. Offices are the coordinators for the Governors for Appalachian investments. Preapplication conferences can determine within a few weeks if the project conforms to the State Appalachian Development Plan. Where local development districts are established, the district director should be the first contact. The District Director or State Alternate's Offices will provide guidance on specific problems and technical assistance in the preparation of applications. When appropriate, they will advise applicants of the coordination requirements of Office of Management and Budget Circular No. A-95, General Services Administration FMC 74-7, and required environmental impact statements.

Application Procedure: Applications must be submitted through and with the approval of the State representative to the Appalachian Regional Commission (listed in the appendix). See individual Appalachian program description reports for names and numbers of required documents. A State Plan updated annually and submitted prior to September 1* is required. (*Subject to change).

Award Procedure: The Appalachian Regional Commission has delegated authority to the Federal Cochairman and the states' regional representative to approve individual projects. The Federal Cochairman determines that the project satisfies all Federal requirements. The basic Federal agency is then notified and in most cases administers the grants, disburses funds, and notifies the designated State Central Information Reception Agency in accordance with Treasury Circular 1082. The Appalachian Regional Commission makes notification of grant award to congressional offices, the office of the Governor, and, when administering grant, to SCIRA in accordance with Treasury Circular 1082.

Deadlines: None, except those imposed by each State and the general requirement of the Commission; that is, proposed projects shall be included in each of the states' approved project funding program, which is submitted annually on or before December 1*, and projects should be submitted to the Commission by July 1*. (*Subject to change).

Range of Approval/Disapproval Time: Usually within 30 days after the receipt of the application at the Commission.

Appeals: There are no formal appeal procedures as such, project review allows for full and free interchange with applicants.

Renewals: Generally renewals are not applicable except for the planning and operating grants of demonstration health projects (23.004) for vocational education demonstration grants (23.016), child development grants (23.013), and for the administrative expenses, including technical services, of local development districts (23.009).

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: See individual Appalachian program descriptions.

Length and Time Phasing of Assistance: Not applicable except for 5 years operating assistance to demonstration health projects (23.004) and child development projects (23.013). Assistance is generally provided as required.

POST ASSISTANCE REQUIREMENTS:

Reports: Reporting and performance monitoring as required by the basic Federal agency. The Commission requires quarterly reports of local development districts and housing technical assistance grants.

Audits: Audits as required by the basic Federal agency and the Commission.

Records: Records generally as required by the basic Federal agency, but see local development districts (23.009) and research and demonstration (23.011).

FINANCIAL INFORMATION:

Account Identification: 04-02-0090-0-1-452; 04-02-4190-0-3-452.

Obligations: See individual Appalachian Regional Commission programs.

Range and Average of Financial Assistance: Not applicable.

PROGRAM ACCOMPLISHMENTS: See individual Appalachian programs for output information.

REGULATIONS, GUIDELINES, AND LITERATURE: The Appalachian Regional Commission Code (limited distribution); "Appalachian Regional Commission Project Preparation Instruction" (limited distribution); "Appalachia": a journal devoted to the special problems of regional development; Annual Reports, no charge.

INFORMATION CONTACTS:

Regional or Local Office: See appendix.

Headquarters Office: Inquiries and proposals for projects should be submitted first to the Appalachian Regional State office designated by the Governor (see appendix). Executive Director, Appalachian Regional Commission, 1666 Connecticut Avenue, N.W., Washington, DC 20235. Telephone: (202) 967-4985.

RELATED PROGRAMS: None.

23.002 APPALACHIAN SUPPLEMENTS TO FEDERAL GRANT-IN-AID

(Supplemental Grants)

FEDERAL AGENCY: APPALACHIAN REGIONAL COMMISSION

AUTHORIZATION: Section 214, Appalachian Regional Development Act of 1965; Public Law 89-4; as amended by Section 116, Public Law 90-103; and Section 107, Public Law 91-123; Section 210, Public Law 92-65 and Section 115, Public Law 94-188; 40 App. U.S.C. 214.

OBJECTIVES: To provide supplemental funds to increase the Federal contribution for projects of construction, land acquisition, and/or equipment for eligible applicants, who, because of their economic situation cannot supply the required matching share of the basic Federal program and to provide special basic grants where there are insufficient funds available under the basic Federal grant-in-aid program to meet the pressing needs of the region.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: The grants may be used for providing supplemental funds under any Federal grant-in-aid programs authorized on or before December 31, 1978. To be eligible for special basic grants, projects must be of high priority in the State's Appalachian development plan and either of critical importance to a phased investment and development program for a multicounty area, or of unusual economic benefit to such area. Refer to the Appalachian Regional Development program (23.001) and Section 214 of the Appalachian Regional Commission Code for additional use restrictions.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States, and through the states, their subdivisions and instrumentalities and private nonprofit agencies.

Beneficiary Eligibility: General public.

Credentials/Documentation: Any finding, report, certification, or documentation required to be submitted to the head of the department, agency, or instrumentality of the Federal Government responsible for the administration of the basic Federal grant-in-

COMMISSION ON CIVIL RIGHTS

29.001 CLEARINGHOUSE SERVICES, CIVIL RIGHTS AND SEX DISCRIMINATION COMPLAINTS

FEDERAL AGENCY: COMMISSION ON CIVIL RIGHTS

AUTHORIZATION: 1957 Civil Rights Act as amended; Public Law 85-315, Public Law 88-352; Public Law 92-496; 42 U.S.C. 1975a.

OBJECTIVES: To communicate civil rights information to the public with emphasis on how Federal programs and policy can be used to advance equal opportunities for minority citizens and women; to achieve desegregation and integration; to receive, investigate, and refer complaints alleging denial of civil rights because of race, color, religion, sex, or national origin.

TYPES OF ASSISTANCE: Dissemination of Technical Information; Investigation of Complaints.

USES AND USE RESTRICTIONS: The Commission (CCR) seeks to further opportunities for minority group citizens and women utilizing Federal programs; the CCR investigates complaints of devices to deny equal protection of the laws in the areas of voting, employment, housing, education, and the administration of justice. The CCR uses publications, films, liaison with private and public groups, the media, and a variety of other techniques to provide civil rights information to those who have rights, those who have responsibilities to comply with Federal civil rights laws and policies, and those who implement these laws and policies, and the general public.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: Anyone can seek information; no criteria must be satisfied.

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Complaint should contain a clear statement of the facts on which it is based.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: None.

Application Procedure: Direct request to the Commission.

Award Procedure: Not applicable.

Deadlines: None.

Range of Approval/Disapproval Time: Not applicable.

Appeals: Not applicable.

Renewals: Not applicable.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Not applicable.

Length and Time Phasing of Assistance: Not applicable.

POST ASSISTANCE REQUIREMENTS:

Reports: Not applicable.

Audits: Not applicable.

Records: Not applicable.

FINANCIAL INFORMATION:

Account Identification: 30-36-1900-0-1-751.

Obligations: (Salaries and expenses) FY 75 \$6,989,000; FY 76 est \$8,169,000; TO est \$2,171,000; and FY 77 est \$9,540,000 (includes funding under Age Discrimination Act of 1975).

Range and Average of Financial Assistance: Not applicable.

PROGRAM ACCOMPLISHMENTS: The Commission received 1,926 complaints and completed 49 publications in addition to the quarterly issues of the Civil Rights Digest in fiscal year 1975.

REGULATIONS, GUIDELINES, AND LITERATURE: Statute, Rules and Regulations of the U.S. Commission on Civil Rights, no charge; Catalog of Publications of U.S. Commission on Civil Rights, no charge. All publications of the Commission are available from Office of Information and Publications, U.S. Commission on Civil Rights, Washington, DC 20425.

INFORMATION CONTACTS:

Regional or Local Office: Room 362, 75 Piedmont Ave., N.E., Atlanta, GA. Telephone: (404) 526-4391; 32nd Floor, 230 South Dearborn St., Chicago, IL. Telephone: (312) 353-7371; Room 1730, 312 North Spring St., Los Angeles, CA. Telephone: (213) 688-3437; Room 1643, 26 Federal Plaza, New York, NY. Telephone: (212) 264-0400; Room 249, 196 Broadway, San Antonio, TX. Telephone: (512) 225-4764; Room 507, 2120 L St., N.W., Washington, DC. Telephone: (202) 254-6717; Room 3103, 911 Walnut St., Kansas City, MO 64106. Telephone: (816) 374-3253; Suite 1700, 1405 Curtis St., Denver, CO 80202. Telephone: (303) 837-2211.

Headquarters Office: United States Commission on Civil Rights, Washington, DC 20425.

RELATED PROGRAMS: 14.400, Equal Opportunity in Housing; 16.100, Desegregation of Public Education; 16.101, Equal Employment Opportunity; 16.102, Equal Enjoyment of Public Accommodations; 16.103, Fair Housing; 16.104, Protection of Voting Rights; 17.301, Equal Employment Opportunity by Federal Contractors; 17.303, Minimum Wage and Hour Standards; 17.305, Women's Special Employment Assistance; 30.001, Job Discrimination-Investigation and Conciliation of Complaints; 30.002, Job Discrimination-Special Project Grants.

Assistance; 76.002, Pacific Northwest Technical and Planning Assistance.

28.003 COASTAL PLAINS SUPPLEMENTS TO FEDERAL GRANT-IN-AID

(Supplemental Grant Program)

FEDERAL AGENCY: COASTAL PLAINS REGIONAL COMMISSION

AUTHORIZATION: Title V, Section 509 of Public Works and Economic Development Act of 1965; Public Law 89-136 as amended by Public Laws 90-103, 91-123, 93-46, 93-423 and 94-188; 42 U.S.C. 3188a.

OBJECTIVES: To enable states and other entities to take maximum advantage of Federal grant-in-aid programs for the construction or equipping of facilities or the acquisition of land.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: Grant-in-aid supplements provide a portion of the local share of Federal grant-in-aid programs for the construction or equipping of facilities or the acquisition of land when the community, because of its economic situation, cannot supply the matching share. When in a fiscal year the basic grant agency has expended all its program funds and certifies that the proposed project could be approved if funds were available, the commission may provide all or any portion of the basic Federal contribution.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States and other entities within the region which are eligible applicants under the Federal Grant-In-Aid Program. Designated counties within the states of Georgia, North Carolina, South Carolina, Florida and Virginia.

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Copy of basic grant application, plus CPRC application. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Through Governor's representative for CPRC affairs. The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program.

Award Procedure: Apply for basic Federal grant-in-aid with appropriate Federal Agency and obtain determination of distribution of Federal and local share of project financing. Project application must be approved by Governor of State in which the project is located. Applicant applies through the Governor's Office for Commission assistance to meet with local share requirements. Upon State approval, the Commission considers and determines level of participation in project.

Award Procedure: Commission notifies applicant. Federal Co-chairman notifies basic grant agency of Commission's approval to assist. Basic grant agency makes award of basic grant according to its own awarding procedures. Notification of award is made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: 15 to 90 days.

Appeals: None.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Total Federal assistance cannot exceed 80 percent of eligible project costs. The State or community must finance the remaining project costs, not less than 20 percent.

Length and Time Phasing of Assistance: In the event that the work intended to be financed by a supplementary grant is not completed or committed by contract within the time limit specified in the grant offer, the Commission reserves the right at the Federal Co-chairman's option to terminate the supplementary grant and all obligations thereunder.

POST ASSISTANCE REQUIREMENTS:

Reports: As required by basic grant agency.

Audits: All records relating to the grant are subject to audit by the basic Federal Agency, the Regional Commission and by the Comptroller General of the United States, or their designee(s).

Records: As necessary for above mentioned audit.

FINANCIAL INFORMATION:

Account Identification: 06-15-2100-0-1-452.

Obligations: (Grants) FY 75 \$4,216,559; FY 76 est \$6,926,035; FY 77 est \$1,689,261; and FY 78 est \$3,220,000.

Range and Average of Financial Assistance: \$50,000 to \$500,000; \$165,000.

PROGRAM ACCOMPLISHMENTS: During fiscal year 1976 supplementary grant projects will emphasize the construction of vocational educational training facilities sewer and water extensions serving industrial sites and major tourist attractions.

REGULATIONS, GUIDELINES, AND LITERATURE: 13 CFR 560; CPRC Resolution No. 10, April 30, 1968; application for CPRC supplemental grant; CPRC brochure.

INFORMATION CONTACTS:

Regional or Local Office: None.

Headquarters Office: Coastal Plains Regional Commission, 2000 L Street, N.W., Room 414, Washington, DC 20036. Telephone: (202) 967-3753.

RELATED PROGRAMS: 23.002, Appalachian Regional Development; 38.003, Four Corners Regional Economic Development; 48.003, New England Regional Economic Development; 52.003, Ozarks Regional Economic Development; 63.003, Upper Great Lakes Regional Economic Development.

Program. Region covers the States of Arizona, Colorado, New Mexico and Utah.

Beneficiary Eligibility: Project must benefit one of public units described above, and not a single user.

Credentials/Documentation: Applicant must describe project fully, give a summary of the manner in which the project will be financed, provide a detailed economic justification for the proposal, and certify compliance with various statutory requirements of the program. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Conference before formal application submission. The Standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program.

Application Procedure: Apply for basic Federal grant-in-aid with appropriate Federal agency and obtain determination of distribution of Federal and local share of project financing. Project application must be approved by Governor of State in which the project is located. Applicant applies through the Governor's Office for Commission assistance to meet with local share requirements. Upon State approval, the Commission considers and determines level of participation in project.

Award Procedure: Governor of State affected notifies applicant. Federal Co-chairman notifies basic grant agency of Commission's approval to assist. Basic grant agency makes award of basic grant according to its own awarding procedures. Notification of award is made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: 30 to 60 days.

Appeals: None.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Total Federal assistance cannot exceed 80 percent of eligible project costs. The State or community must finance the remaining project costs, not less than 20 percent.

Length and Time Phasing of Assistance: In the event that the work intended to be financed by a supplementary grant shall not have been completed or committed by contract within the time limit specified in the grant offer, the Commission reserves the right at the Federal Co-chairman's option to terminate the supplementary

grant and all obligations thereunder.

POST ASSISTANCE REQUIREMENTS:

Reports: As required by basic grant agency and the Commission.

Audits: All records relating to the grant are subject to audit by the basic Federal agency, the Regional Commission and by the Comptroller General of the United States, or their designee(s).

Records: As necessary for above-mentioned audit.

FINANCIAL INFORMATION:

Account Identification: 06-15-2100-0-1-452.

Obligations: (Grants) FY 75 \$3,831,707; FY 76 est \$5,538,413; TY est \$1,350,820; and FY 77 est \$3,613,000.

Range and Average of Financial Assistance: \$5,000 to \$500,000; \$93,140.

PROGRAM ACCOMPLISHMENTS: Emphasis will be to provide facilities and services to areas impacted by energy development-oil shale, coal gasification, coal extraction and natural gas.

REGULATIONS, GUIDELINES, AND LITERATURE: 13 CFR 560; Application Procedures for Four Corners Regional Commission Development Grant Program available at Four Corners Regional Commission, Petroleum Plaza Building, Farmington, NM 87401.

INFORMATION CONTACTS:

Regional or Local Office: Four Corners Regional Commission, Petroleum Plaza Building, Farmington, NM 87401. Telephone: (505) 327-9626; Four Corners Regional Commission, 517 Gold Ave., S.W., Albuquerque, NM 87101. Telephone: (505) 766-3344. State Alternates: Office of the Governor, State Capitol, Phoenix, AZ 85007. Telephone: (602) 271-4331; Department of Community Affairs, Room 101, State Capitol Bldg. Salt Lake City, UT 84114. Telephone: (801) 328-5871; Director of Rural Development, 1550 Lincoln St., Denver, CO 80203. Telephone (303) 892-2178; Executive Director, North Central NM, Economic Development District, P.O. Box 4248, Santa Fe, NM 87501. Telephone: (505) 827-2014.

Headquarters Office: Four Corners Regional Commission, Petroleum Plaza Building, Farmington, NM 87401. Federal Co-chairman's Office, Four Corners Regional Commission, Office of the Federal Co-chairman, Room 1898C, Commerce Building, Washington, DC 20230. Telephone: (202) 967-5534.

RELATED PROGRAMS: 23.001, Appalachian Regional Development; 28.003, Coastal Plains Regional Economic Development; 48.003, New England Regional Economic Development; 52.003, Ozarks Regional Economic Development; 63.003, Upper Great Lakes Regional Economic Development.

TYPES OF ASSISTANCE: Project Grants (and Contracts).

USES AND USE RESTRICTIONS: To engage in: (1) investigations and studies which evaluate the needs of the region for economic development; (2) research and planning for developing the potentialities related to economic development; (3) demonstration projects and training programs which will further the purposes of the Act; and to provide administrative expense grants for substate planning and development organizations (including economic development districts). Demonstration projects include, but are not limited to, energy-related impacts, transportation, vocational education, and health and nutrition. Demonstration projects and training programs, to the maximum extent possible, are carried out through the departments, agencies, or instrumentalities of the Federal Government or of State or local governments. Demonstration Projects include, but are not limited to, energy-related impacts, transportation, vocational education and health and nutrition. All findings resulting from research and demonstration projects must be made available to the general public. Funds may not be used to cover the costs of work already performed or of services already provided.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States in the Four Corners region, alone or with another member State, as well as any political subdivisions of the states, and agencies of State and local governments.

Beneficiary eligibility: Same as applicant eligibility.

Credentials/Documentation: Applicant must describe project fully, give a summary of the manner in which the project will be financed, provide a detailed economic justification for the proposal, and certify compliance with various statutory requirements of program. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applications must be coordinated with the Governor's representative and should be consistent with the Commission's comprehensive economic development plan. The standard application forms as furnished by the FCRC and required by General Services Administration FMC 74-7 must be used for this program. Applications for this program must be reviewed under procedures in Part I of OMB Circular No. A-95 (revised). The program also requires the submission of an environmental impact statement.

Application Procedures: The applicant submits the request for assistance through the Governor's representative to the Four Corners Regional Commission. All proposed projects must relate to the needs identified in the Commission's comprehensive economic development plan.

Award Procedure: The Four Corners Regional Commission must review and approve the project. The Federal Cochairman determines that the project satisfies all Federal requirements. The Four Corners Regional Commission makes notification of the grant award to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: 30 to 60 days.

Appeals: None.

Renewals: Yes, processed in the same manner as the original application.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: None, however applicant is encouraged to provide a portion of the total project cost from local or state sources.

Length and Time Phasing of Assistance: Any funds not obligated on or before the termination of the grant will be returned to the Commission. Prior to the termination date, the Commission may extend the grant for a period not to exceed one additional quarter of a fiscal year provided the funds have been committed.

POST ASSISTANCE REQUIREMENTS:

Reports: A member of the Commission staff is designated as project coordinator to maintain liaison with the contractor and monitor and evaluate progress and performance under the contract.

Audits: All records relating to the contract are subject to audit by the Commission, the Federal Cochairman of the Commission, the Secretary of Commerce, and The Comptroller General of the United States.

Records: As required by the terms of the contract.

FINANCIAL INFORMATION:

Account Identification: 06-15-8509-0-7-552.

Obligations: (Grants and Contracts) FY 75 \$2,323,705; FY 76 est \$2,959,000; TO est \$711,457; and FY 77 est \$1,860,000.

RANGE AND AVERAGE OF FINANCIAL ASSISTANCE: \$1,130 to \$140,000; \$25,628.

PROGRAM ACCOMPLISHMENTS: Emphasis will be to provide facilities and services to areas impacted by energy development-oil shale, coal gasification, coal extraction and natural gas.

REGULATIONS, GUIDELINES, AND LITERATURE: 13 CFR 550; Handbook: Grant Program for Technical Assistance, Demonstration, and Training Projects, Four Corners Regional Commission.

INFORMATION CONTACTS:

Regional or Local Office: Four Corners Regional Commission: 238 Petroleum Plaza building, Farmington, NM 87401. Telephone: (505) 327-9626; Four Corners Regional Commission, Room 1033, 517 Gold Ave., S.W., Albuquerque, NM 87101. Telephone: (505) 766-3344; State Alternates: Office of the Governor, State Capitol, Phoenix, AZ 85007. Telephone: (602) 271-4331; Director of Rural Development, 1550 Lincoln St. Room 101, Denver, CO 80203. Telephone: (303) 892-2631; Executive Director, North Central N. M. Economic Development District, P. O. Box 4248, Santa Fe, NM 87501. Telephone: (505) 827-2014; Department of Community Affairs, 101 State Capitol Building, Salt Lake City, UT 84114. Telephone: (801) 328-5871. **Headquarters Office:** Office of Federal Cochairman, Four Corners Regional Commission, Room 1898C, Department of Commerce, DC 20230. Telephone: (202) 967-5534.

RELATED PROGRAMS: 23.011, Appalachian State Research, Technical Assistance and Demonstration Projects; 28.002, Coastal Plans Technical and Planning Assistance; 48.002, New England Technical and Planning Assistance; 52.002, Ozarks Technical and Planning Assistance; 63.002, Upper Great Lakes Technical and Planning Assistance; 75.002, Old West Technical and Planning Assistance; 76.002, Pacific Northwest Technical and Planning Assistance.

**38.003 FOUR CORNERS SUPPLEMENTS TO
FEDERAL GRANT-IN-AID**

(Supplemental Grant Program)

FEDERAL AGENCY: FOUR CORNERS REGIONAL COMMISSION
AUTHORIZATION: Title V, Section 509 of Public Works and Economic Development Act of 1965; Public Law 89-136 as amended by Public Law 90-103, Public Law 91-123; Public Law 93-46; Public Law 93-423; and Public Law 94-188; 42 U.S.C. 3188 a.

OBJECTIVES: To enable states and other entities to take maximum advantage of Federal grant-in-aid programs for the construction or equipping of facilities or the acquisition of land.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: Grant-in-aid supplements provide a portion of the local share of Federal grant-in-aid programs for the construction or equipping of facilities or the acquisition of land when the community, because of its economic situation, cannot supply the matching share. When, in a fiscal year, the basic grant agency has expended its program monies but certifies that a specific project could be approved if funds were available, the Commission may provide all or any portion of the Federal contribution to that project.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: State and other entities within the Region which are eligible applicants under basic Federal Grant-In-Aid

grams, to maximum extent possible, are carried out through the departments, agencies, or instrumentalities of the Federal Government or of State or local governments. Demonstration projects include, but are not limited to, energy-related impacts, transportation, vocational education, and health and nutrition. All findings resulting from research and demonstration projects must be made available to the general public. Funds may not be used to cover the costs of work already performed or of services already provided.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States in the Ozarks Region, alone or with another member State, as well as any political sub-division of the states, and agencies of State and local governments.

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applications must be coordinated with the Governor's representative and should be consistent with the Commission's comprehensive economic development plan. Applications for this program must be reviewed under procedures in Part I of OMB Circular No. A-95 (revised). The program also requires the submission of an environmental impact statement. The standard application forms as furnished by The Federal Agency and required by General Services Administration FMC 74-7 must be used for this program.

Application Procedure: The applicant submits the request for assistance through the Governor's representative to the Ozarks Regional Commission. All proposed projects must relate to the needs identified in the Commission's comprehensive economic development plan.

Award Procedure: The Ozarks Regional Commission must review and approve the project. The Federal Co-chairman determines that the project satisfies all Federal requirements. The Ozarks Regional Commission makes notification of the grant award to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: 30 to 60 days.

Appeals: None.

Renewals: Yes, processed in the same manner as the original application.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: None.

Length and Time Phasing of Assistance: Any funds not obligated on or before the termination of the grant or contract will be returned to the Commission. Prior to the termination date, the Commission may extend the grant or contract for a period not to exceed one additional quarter of a fiscal year provided the funds have been committed.

POST ASSISTANCE REQUIREMENTS:

Reports: A member of the Commission staff is designated as project coordinator to maintain liaison with the contractor and to monitor and evaluate progress and performance under the contract.

Audits: All records relating to the contract are subject to audit by the Commission, the Federal Co-chairman of the Commission, the Secretary of Commerce, and Comptroller General of the United States.

Records: As required by the terms of the contract.

FINANCIAL INFORMATION:

Account Identification: 06-15-8509-0-7-452.

Obligations: (Grants and Contracts) FY 75 \$1,306,912; FY 76 est \$2,500,000; FY 77 est \$609,750; and FY 78 est \$1,350,000.

Range and Average of Financial Assistance: \$1,500 to \$250,000; \$35,000.

PROGRAM ACCOMPLISHMENTS: Development of regional plan; operation of a five-state tourism program; creation of increased

trade and commerce on inland waterway system; assistance to states in public investment planning.

REGULATIONS, GUIDELINES, AND LITERATURE: 13. CFR 550; Contact the Ozarks Regional Commission, 1100 North University, Suite 109, Little Rock, AR 72207. Telephone: (501) 378-5905.

INFORMATION CONTACTS:

Regional or Local Office: Initial contacts for technical assistance applications should be made with the Office of the Governor of each of the five States of Arkansas, Kansas, Louisiana, Missouri, and Oklahoma, or to the Ozarks Liaison Officer at the Governor's Office.

Headquarters Office: Ozarks Regional Commission, 1100 North University, Suite 109, Little Rock, AR 72207. Telephone: (501) 378-5905.

RELATED PROGRAMS: 23.011, Appalachian State Research, Technical Assistance and Demonstration Projects; 28.002, Coastal Plains Technical and Planning Assistance; 38.002, Four Corners Technical and Planning Assistance; 48.002, New England Technical and Planning Assistance; 63.002, Upper Great Lakes Technical and Planning Assistance; 75.002, Old West Technical and Planning Assistance; 76.002, Pacific Northwest Technical and Planning Assistance.

52.003 OZARKS SUPPLEMENTS TO FEDERAL GRANT-IN-AID

(Supplemental Grant Program)

FEDERAL AGENCY: OZARKS REGIONAL COMMISSION

AUTHORIZATION: Title V, Section 509 of Public Works and Economic Development Act of 1965; Public Law 89-136 as amended by Public Law 90-103, Public Law 91-123, Public Law 93-46, Public Law 93-423 and Public Law 94-188; 42 U.S.C. 3188a.

OBJECTIVES: To enable states and other entities to take maximum advantage of Federal grant-in-aid programs for the construction or equipping of facilities or the acquisition of land for economic development.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: Grant-in-aid supplements provide a portion of the local share of Federal grant-in-aid programs for the construction or equipping of facilities or the acquisition of land when the community, because of its economic situation, cannot supply the matching share. When in a fiscal year the basic grant agency has expended its program monies but certifies that the proposed project could be approved if funds were available, the commission may provide all or any portion of the basic Federal contribution.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States and other entities within the Region which are eligible applicants under the Federal Grant-In-Aid Program. The Ozarks Region covers the states of Arkansas, Missouri, Oklahoma, Louisiana and Kansas.

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Application acceptable to a Federal basic grant-in-aid agency. Cost will be determined in accordance with General Services Administration FMC 74-4 and with ORC Priority Rating System.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applications for aid must be coordinated with the Governor's Ozarks Alternate in each State and the Ozarks Commission liaison officer in each State. The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program.

Application Procedure: Apply for basic Federal grant-in-aid with appropriate Federal agency and obtain determination of distribution of Federal and local share of project financing. Project application must be approved by Governor of State in which the project

OZARKS REGIONAL COMMISSION

52.001 OZARKS REGIONAL ECONOMIC DEVELOPMENT

(Title V Regional Commission Program)

FEDERAL AGENCY: OZARKS REGIONAL COMMISSION

AUTHORIZATION: Title V of the Public Works and Economic Development Act of 1965; Public Law 89-136 as amended by Public Law 90-103, Public Law 91-123, Public Law 93-46, Public Law 93-423 and Public Law 94-188; 42 U.S.C. 3181 et seq.

OBJECTIVES: To evaluate development needs and priorities; develop a comprehensive long range economic development plan reflecting local, State and Federal priorities, and promote economic development through public and private investment, through a joint Federal-State partnership in the form of the Commission representing the five-State Ozarks Region.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: In developing programs and projects for regional economic development, the Commission follows procedures that will ensure consideration of the following factors: (1) the relationship of the project or class of projects to overall regional development including its location in an area determined by the State to have a significant potential for growth; (2) the population and area to be served by the project or class of projects including the relative per capita income and the unemployment rates in the area; (3) the relative financial resources available to the State or political subdivision or instrumentalities thereof which seek to undertake the projects; (4) the importance of the project or class of projects in relation to other projects or classes of projects which may be in competition for the same funds; (5) the prospects that the project, on a continuing rather than a temporary basis, will improve the opportunities for employment, the average level of income, or the economic and social development of the area served by the project. No financial assistance may be used for: (1) finance the cost of facilities for the generation, transmission, or distribution of electrical energy; (2) finance the cost of facilities for the production or transmission of gas, or (3) assist any business establishment in relocating from one area to another.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States in the Ozarks region which includes, Arkansas, Kansas, Louisiana, Missouri, and Oklahoma, alone or with another member State, agencies of State and local governments, and political subdivisions of such states.

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Projects must be consistent with the region's comprehensive long-range economic development plan. See individual programs for the specific credentials or documents required. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Application must be coordinated with the Governor's representative. The program also requires the submission of an environmental impact statement. The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program.

Application Procedure: Application must be submitted through the Governor's representative to the Ozarks Regional Commission which is composed of the Governors of the member states and a Federal Co-chairman. All proposed projects must relate to the needs identified in the Commission's comprehensive development plan. Decisions on policy, procedures, and the allocation of funds are made by the Commission.

Award Procedure: The Commission reviews and approves the project. The Federal Co-chairman determines that the project meets all the necessary Federal requirements. In most instances, a basic

grant agency, which will administer the project, is notified and appropriate procedures, worked out between the Commission and the basic grant agency, are followed by the basic grant agency which disburses the funds, notifies the appropriate State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: Between 30 to 60 days.

Appeals: None.

Renewals: Generally only with respect to the technical assistance program, 52.002.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: See other Ozarks programs.

Length and Time Phasing of Assistance: See other Ozarks programs.

POST ASSISTANCE REQUIREMENTS:

Reports: See other Ozarks programs.

Audits: See other Ozarks programs.

Records: See other Ozarks programs.

FINANCIAL INFORMATION:

Account Identification: 06-15-2100-0-1-452; 06-15-8509-0-7-452.

Obligations: See individual Ozarks Programs.

Range and Average of Financial Assistance: See other Ozarks programs.

PROGRAM ACCOMPLISHMENTS: See other Ozarks programs.

REGULATIONS, GUIDELINES, AND LITERATURE: 13 CFR 500, 510, 520; Annual Report and "Guidelines to Federal Title V Regional Commission."

INFORMATION CONTACTS:

Regional or Local Office: Ozarks Regional Commission: 1100 North University Ave., Suite 109, Little Rock, AR 72201. Telephone: (501) 378-5903; Federal Co-chairman's Field Office, 1750 North Sioux Avenue, Claremore, OK 74017. Telephone: (918) 341-6023.

Headquarters Office: Office of Federal Co-chairman, Ozarks Regional Commission, Room 2099B, Department of Commerce, Washington, DC 20230. Telephone: (202) 967-2572.

RELATED PROGRAMS: 23.001, Appalachian Regional Development; 28.001, Coastal Plains Regional Economic Development; 38.001, Four Corners Regional Economic Development; 48.001, New England Regional Economic Development; 63.001, Upper Great Lakes Regional Economic Development; 75.001, Old West Regional Economic Development; 76.001, Pacific Northwest Regional Economic Development.

52.002 OZARKS TECHNICAL AND PLANNING ASSISTANCE

(Technical Assistance Program)

FEDERAL AGENCY: OZARKS REGIONAL COMMISSION

AUTHORIZATION: Title V, Section 505 of the Public Works and Economic Development Act of 1965; Public Law 89-136 as amended by Public Laws 90-103, 91-123, 93-46, 93-423 and 94-188; 42 U.S.C. 3185.

OBJECTIVES: To evaluate the needs of and develop the potentialities for the economic growth of the Region through planning, investigations, studies, demonstration projects, and training programs.

TYPES OF ASSISTANCE: Project Grants (and Contracts).

USES AND USE RESTRICTIONS: To engage in: (1) investigations and studies which evaluate the needs of the Region for economic development; (2) research and planning for developing the potentialities related to economic development; (3) demonstration projects and training programs which will further the purposes of the Act; and to provide administrative expense grants for substate planning and development organizations (including economic development districts). Demonstration projects and training pro-

PRESIDENT'S COMMITTEE ON EMPLOYMENT OF THE HANDICAPPED

53.001 HANDICAPPED EMPLOYMENT PROMOTION

FEDERAL AGENCY: PRESIDENT'S COMMITTEE ON EMPLOYMENT OF THE HANDICAPPED

AUTHORIZATION: Executive Order 11480.

OBJECTIVES: To promote employment opportunities for the physically and mentally handicapped.

TYPES OF ASSISTANCE: Advisory Services and Counseling; Dissemination of Technical Information.

USES AND USE RESTRICTIONS: Cooperate with Governors' committees in the 50 states and with local community committees, conduct a national publicity program and provide State and local committees with promotional assistance by cooperating with other public and private groups in promotional campaigns. Promotional aids are available to organizations of the physically and mentally handicapped, those organizations concerned with the handicapped, as well as individuals.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: State Governors' committees on employment of the handicapped, and other groups and individuals interested in promoting the employment of mentally and physically handicapped persons.

Beneficiary Eligibility: Committee does not administer direct benefits. Rather, through its promotional efforts, it helps to create broader employment opportunities for the physically handicapped, mentally restored and mentally retarded.

Credentials/Documentation: Not applicable.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Not applicable.

Application Procedure: Contact headquarters office for information and literature.

Award Procedure: Not applicable.

Deadlines: None.

Range of Approval/Disapproval Time: Not applicable.

Appeals: Not applicable.

Renewals: Not applicable.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Not applicable.

Length and Time Phasing of Assistance: Not applicable.

POST ASSISTANCE REQUIREMENTS:

Reports: Not applicable.

Audits: Not applicable.

Records: Not applicable.

FINANCIAL INFORMATION:

Account Identification: 12-25-0165-0-1-505.

Obligations: (Salaries and expenses) FY 75 est \$1,297,000; FY 76 est \$1,359,000; TO Not presently available; and FY 77 est \$1,393,000.

Range and Average of Financial Assistance: Not applicable.

PROGRAM ACCOMPLISHMENTS: In the past 29 years the President's Committee was instrumental in bringing about improved national acceptance for employment of the physically handicapped, mentally restored and mentally retarded. Also, it was a prime mover in a national effort to eliminate architectural and transportation barriers to the physically handicapped.

REGULATIONS, GUIDELINES, AND LITERATURE:

"Performance," a monthly publication; pamphlets on the establishment and maintenance of governors' and local committees on employment of the handicapped promotional materials dealing with employment, vocational rehabilitation, architectural and transportation barriers, homemaker rehabilitation, sheltered workshops, the mentally restored, the mentally retarded and the physically handicapped.

INFORMATION CONTACTS:

Regional or Local Office: Governor's Committees on Employment of the Handicapped headquartered in every State capitol. Nearly 1,000 local committees.

Headquarters Office: Executive Director, President's Committee on Employment of the Handicapped, Washington, DC 20270. Telephone: (202) 653-5044.

RELATED PROGRAMS: 13.243, Alcohol, Drug Abuse, and Mental Health Administration Scientific Communications and Public Education; 13.613, Mental Retardation Evaluation; 13.624, Rehabilitation Services and Facilities-Basic Support; 17.207, Employment Services; 27.005, Federal Employment for the Handicapped; 64.116, Vocational Rehabilitation for Disabled Veterans.

is located. Applicant applies through the Governor's Office for Commission assistance to meet with local share requirements. Upon State approval, the Commission considers and determines level of participation in project.

Award Procedure: Commission notifies applicant. Federal Co-chairman notifies basic grant agency of Commission's approval to assist. Basic grant agency makes award of basic grant according to its own awarding procedures. Notification of award is made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082 by the basic grant agency.

Deadlines: None.

Range of Approval/Disapproval Time: 3 months.

Appeals: None.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Total Federal assistance cannot exceed 80 percent of eligible project costs. The State or community must finance the remaining project costs, not less than 20 percent.

Length and Time Phasing of Assistance: In the event that the work intended to be financed by a supplementary grant shall not have been completed or committed by contract within the time limit specified in the grant offer, the Commission reserves the right at the Federal Co-chairman's option to terminate the supplementary grant and all obligations thereunder.

POST ASSISTANCE REQUIREMENTS:

Reports: As required by basic grant agency and the Commission.

Audits: All records relating to the grant are subject to audit by the

basic Federal agency, the Regional Commission and by the Comptroller General of the United States, or their designee(s).

Records: As necessary for above mentioned audits.

FINANCIAL INFORMATION:

Account Identification: 06-15-2100-0-1-452.

Obligations: (Grants) FY 75 \$5,120,151; FY 76 est \$8,744,864; TO est \$2,132,874; and FY 77 est \$4,011,000.

Range and Average of Financial Assistance: \$5,000 to \$500,000; \$85,000.

PROGRAM ACCOMPLISHMENTS: In fiscal year 1976 an estimated 50 projects will be funded.

REGULATIONS, GUIDELINES, AND LITERATURE: 13 CFR 560.

Procedures, guidelines and literature available from Commission office and from each State Liaison Officer.

INFORMATION CONTACTS:

Regional or Local Office: Ozarks Regional Commission, Suite 109, 1100 North University Ave., Little Rock, AK 72207. Telephone: (501) 378-5905; Federal Co-chairman's Field office, 1750 North Sioux Avenue, Claremore, OK 74017. Telephone: (918) 341-6023.

Headquarters Office: Federal Co-chairman's Office, Room 2099B, Department of Commerce Building, Washington, DC 20230. Telephone: (202) 967-2572.

RELATED PROGRAMS: 23.002, Appalachian Regional Development; 28.003, Coastal Plains Regional Economic Development; 38.003, Four Corners Regional Economic Development; 48.003, New England Regional Economic Development; 63.003, Upper Great Lakes Regional Economic Development.

Obligations: (Loans) FY 75 \$1,433,579,659; \$152,476,681 (direct), \$1,281,102,978 (guaranteed); FY 76 est. \$1,852,700,000; \$112,700,000 (direct), \$1,740,000,000 (guaranteed); TO est. \$25,000,000 (direct) \$435,000,000 (guaranteed); and FY 77 est. \$100,000,000 (direct) \$2,320,000,000 (guaranteed).

Range and Average of Financial Assistance: Direct Loans: \$1,500 to \$100,000; \$3,370; Guaranteed Loans: \$2,000 to \$700,000; \$14,835.

PROGRAM ACCOMPLISHMENTS: In fiscal year 1976, 10,454 loans (1,092 direct and 9,362 guaranteed) were made.

REGULATIONS, GUIDELINES, AND LITERATURE: "SBA Business Loans," OPI-18; "Simplified Blanket Loan Guaranty Plan," OPI-38; "Loan Sources in the Federal Government," Management Aid No. 52.

INFORMATION CONTACTS:

Regional or Local Office: Initial contact should be with the district offices listed in the appendix.

Headquarters Office: Director, Office of Financing, Small Business Administration, 1441 L Street, N.W., Washington, DC 20416. Telephone: (202) 498-4997. **653-6570**

RELATED PROGRAMS: 59.003, Economic Opportunity Loans for Small Businesses.

59.013 STATE AND LOCAL DEVELOPMENT COMPANY LOANS

(501 and 502 Loans)

FEDERAL AGENCY: SMALL BUSINESS ADMINISTRATION

AUTHORIZATION: Small Business Investment Act of 1958, as amended, Title V; Public Law 85-699; 15 U.S.C. 696.

OBJECTIVES: To make Federal funds available to State and local development companies to provide long-term financing to small business concerns located in their areas. Both State and local development companies are corporations chartered for the purpose of promoting economic growth within specific areas.

TYPES OF ASSISTANCE: Direct Loans; Guaranteed/Insured Loans.

USES AND USE RESTRICTIONS: Loans to State development companies are to assist small businesses with equity capital, and long-term financing. Loans to local development companies are for the purchase of land, buildings, machinery, and equipment or for constructing, expanding, or modernizing buildings. Loans are not available to local development companies to provide small businesses with working capital or for refinancing purposes. Loans to State development companies may not exceed 20 years and loans to local development companies may not exceed 25 years.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: A State development company must be incorporated under a special State law with authority to assist small businesses throughout the State. Loans are available to local development companies which are incorporated under general State corporation statute, either on a profit, or nonprofit basis, for the purpose of promoting economic growth in a particular community within the State.

Beneficiary Eligibility: Potential beneficiaries are small businesses independently owned and operated for a profit and not dominant in their fields. More specific criteria defining a small business are established by the Small Business Administration. Loans are not available to assist a charitable institution, newspaper, magazine, radio or television broadcasting company, or similar type enterprise.

Credentials/Documentation: The application should include, among other things, a copy of the development company's charter, bylaws, list of stockholders or membership, and all prescribed financial data.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Other Federal agencies, State lending authorities, and private institutions, if any, participating in financing the project cost.

Application Procedure: Application must be made on SBA Form 501 or 502 and requirements set forth thereon must all be fully complied with by the State or local development company (borrower) and the small business being assisted.

Award Procedure: Applicant is notified by authorization letter from regional or district SBA office.

Deadlines: None.

Range of Approval/Disapproval Time: 10 to 30 days from the date of acceptance of a loan.

Appeals: Request for reconsideration of a declined loan will be granted at any time within 6 months from the date of decline, providing that reasonable evidence is submitted to substantially overcome the stated reasons for decline.

Renewals: Not applicable.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Generally, 20 percent of the project cost must be provided by the local development company. Such funds are usually obtained from the sale of securities or memberships to local people.

Length and Time Phasing of Assistance: Loans to State development companies are generally on a lump sum basis; loans to local development companies are generally on a progress payment basis.

POST ASSISTANCE REQUIREMENTS:

Reports: Annual financial statements by the local development company; annual and semiannual financial information required from the small business concern.

Audits: Small Business Administration shall have the right to conduct an audit of the books of the borrower and the small business concern, at its discretion.

Records: During the term of the loan, both the borrower and the small business concern assisted, must maintain financial records and information adequately reflecting all transactions and results of operations.

FINANCIAL INFORMATION:

Account Identification: 32-45-4154-0-3-403.

Obligations: (Loans) FY 75 \$42,014,713 (direct), \$9,500,723 (guaranteed); FY 76 est. \$36,400,000 (direct), \$45,000,000 (guaranteed); TO est. \$9,100,000 (direct) \$11,200,000 (guaranteed); and FY 77 est. \$26,000,000 (direct) \$45,000,000 (guaranteed).

Range and Average of Financial Assistance: Direct Loans: \$8,000 to \$1,000,000; \$2,762; Guaranteed Loans: \$11,000 to \$600,000; \$1,674.

PROGRAM ACCOMPLISHMENTS: During fiscal year 1976, 106 local loans valued at \$13,015,347 and 2 State loans valued at \$1,000,000 were made. These represented 73 direct and 35 guaranteed loans.

REGULATIONS, GUIDELINES, AND LITERATURE: "Loans to Local Development Companies," OPI-17; "Small Business Administration- What It Is- What It Does," OPI-6; "Key Features of SBA's Principal Lending Programs," OPI-7.

INFORMATION CONTACTS:

Regional or Local Office: See appendix.

Headquarters Office: Office of Community Development, Small Business Administration, 1441 L Street, N.W., Room 818, Washington, DC 20416. Telephone: (202) 382-5301.

RELATED PROGRAMS: 59.011, Small Business Investment Companies.

59.014 COAL MINE HEALTH AND SAFETY LOANS

FEDERAL AGENCY: SMALL BUSINESS ADMINISTRATION

AUTHORIZATION: Small Business Act, as amended, Section 7(b)(5), 15 U.S.C. 636(b)(5), Public Law 93-237.

OBJECTIVES: To assist small coal mine operators in complying with Federal health and safety standards.

TYPES OF ASSISTANCE: Direct Loans; Guaranteed/Insured Loans.

USES AND USE RESTRICTIONS: To make additions to or alterations in the equipment, facilities, or method of operations of small

tain circumstances, Section 301(d) licenses may apply for the sale of a limited amount of their preferred stock to SBA.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: Any chartered small business investment company having a combined paid-in capital and paid-in surplus of not less than \$150,000 (by policy at least \$300,000 usually required of SBICs), having qualified management, and giving evidence of sound operations.

Beneficiary Eligibility: Individual businesses (single proprietorship, partnership or corporation) which satisfy the established criteria of a small business and, for Section 301(d) license beneficiary eligibility, of a disadvantaged small business.

Credentials/Documentation: Credibility as a reputable small business having the potential ability to repay its debt. Investment company must be chartered as a corporation.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: None.

Application Procedure: Request information and appropriate forms from SBA office. Complete application requirements and submit to SBA headquarters office.

Award Procedure: Applicant is notified by issuance of a license from the Investment Division of the Small Business Administration.

Deadlines: None.

Range of Approval/Disapproval Time: 60 to 90 days.

Appeals: Proponents may reapply at any time.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: \$2 or \$3 for every dollar obtained from private sources (leverage amount depends upon combined paid-in capital and paid-in surplus). The leverage is effected through (1) the purchase of the applicant's debentures carrying an interest rate not less than a rate determined by the U.S. Treasury on the basis of the market yield on comparable U.S. obligations, or (2) through SBA guaranty of the applicant's debentures sold to the Federal financing bank carrying an interest rate not less than a rate determined by the financing bank on the basis of the market yield on comparable U.S. obligations.

Length and Time Phasing of Assistance: Not applicable.

POST ASSISTANCE REQUIREMENTS:

Reports: Financial report (annual); program financing reports; any other report furnished stockholders.

Audits: Annual audit by a certified public accountant and periodic examinations by SBA personnel.

Records: Current financial records, minutes of meetings of stockholders, directors, executive committees, and time spent and charges made for management consulting services performed must be maintained for six years.

FINANCIAL INFORMATION:

Account Identification: 32-45-4154-0-3-403.

Obligations: (Loans) FY 75 \$14,748,000 (direct) \$47,465,000 (guaranteed); FY 76 est \$20,000,000 (direct), \$150,000,000 (guaranteed); TO est \$5,000,000 (direct) \$37,500,000 (guaranteed); and FY 77 est \$20,000,000 (direct) \$150,000,000 (guaranteed).

Range and Average of Financial Assistance: Guaranteed Loans: \$20,000 to \$5,000,000; \$1,150,000.

PROGRAM ACCOMPLISHMENTS: As of March 31, 1974, SBIC's had outstanding financings to small businesses in the amount of \$569,400,000; Section 301(d) licensees had outstanding financings in the amount of \$13,463,993, the annual rate of disbursements to small business by SBIC's as of June 30, 1975 was \$126,781,600. There were 261 SBIC's and 76 Section 301(d) licensees as of June 30, 1975.

REGULATIONS, GUIDELINES, AND LITERATURE: 13 CFR Chapter I, Part 107; OPI-13, March 1973, "SBIC Financing for Small Business," OPI-34, January 1974, "Starting a Small Busi-

ness Investment Company," OPI-51, April 1974, Section 301(d), Small Business Investment Company's.

INFORMATION CONTACTS:

Regional or Local Office: See appendix.

Headquarters Office: Associate Administrator for Finance and Investment, Small Business Administration, 1441 L Street, N.W., Washington, DC 20416. Telephone (202) 382-5395.

RELATED PROGRAMS: \$9,003, Economic Opportunity Loans for Small Businesses; \$9,005, Management Assistance to Small Businesses; \$9,006, Minority Business Development/Procurement Assistance; \$9,013, State and Local Development Company Loans.

59.012 SMALL BUSINESS LOANS

(Regular Business Loans-7(a) Loans)

FEDERAL AGENCY: SMALL BUSINESS ADMINISTRATION

AUTHORIZATION: Small Business Act, as amended, Section 7(a); Public Law 85-536, as amended; 72 Stat. 387; 15 U.S.C. 636(a).

OBJECTIVES: To aid small businesses which have difficulty obtaining financing in the commercial marketplace.

TYPES OF ASSISTANCE: Guaranteed/Insured Loans; Direct Loans.

USES AND USE RESTRICTIONS: To construct, expand, or convert facilities; to purchase building equipment, or materials; for working capital. Excludes gambling establishments, communications media, nonprofit enterprises, speculators in property, lending or investment enterprises, and financing of real property held for sale or investment; also excludes funds to indiscriminately relocate the business. Funds must not otherwise be available on reasonable terms, nor used to pay off a loan to an unsecured creditor who is in a position to sustain loss.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: A small business which is independently owned and operated and is not dominant in its field. Generally for manufacturers, average employment not in excess of 250; wholesalers, annual sales not over \$9,500,000; and retail and service concerns, revenues not over \$2,000,000. (See Uses and Use Restrictions above.)

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Statement of personal history, personal financial statement, company financial statements, summary of collateral.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: None.

Application Procedure: Applications are filed in the field office (see listing in appendix) serving the territory in which the applicant's business is located. For mining loans, applications shall be filed in the field office serving the territory in which the mining operation is located. Where the participating bank is in another territory, applications may be accepted and processed by the field office serving that territory, provided there is mutual agreement between the two field offices involved.

Award Procedure: Applicant is notified by authorization letter from district SBA office, or participating bank.

Deadlines: None.

Range of Approval/Disapproval Time: From three to 60 days from date of application acceptance, depending on type of loan.

Appeals: If a reconsideration is requested within six months after decline or withdrawal, no new application is required.

Renewals: Not applicable.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Not applicable.

Length and Time Phasing of Assistance: Not applicable.

POST ASSISTANCE REQUIREMENTS:

Reports: Semiannual and annual financial statement.

Audits: Not applicable.

Records: Not applicable.

FINANCIAL INFORMATION:

Account Identification: 32-45-4154-0-3-403.

when the community, because of its economic situation, cannot supply the matching share. When in a fiscal year the basic grant agency has expended its program monies but certifies that the proposed project could be approved if funds were available, the Commission may provide all or any portion of the basic Federal contribution.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States and other entities within the Region which are eligible under basic Grant-In-Aid Program. Designated counties in Michigan, Minnesota, and Wisconsin. See 63.001.

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Application acceptable to a Federal basic grant-in-aid agency. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applications for aid must be coordinated with the basic grant agency through Governors Alternate in each State. The standard application forms as furnished by the Federal agency and required by General Services Administration FMC 74-7 must be used for this program.

Application Procedure: Apply for basic Federal grant-in-aid with appropriate Federal agency and obtain determination of distribution of Federal and local share of project financing. Project application must be approved by Governor of State in which the project is located. Applicant applies through the Governor's Office for Commission assistance to meet with local share requirements. Upon State approval, the Commission considers and determines level of participation in project.

Award Procedure: Commission notifies applicant. Federal Co-chairman notifies basic grant agency of Commission's approval to assist. Basic grant agency makes award of basic grant according to its own awarding procedures. Notification of award is made to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082 by the grant agency by the basic grant agency.

Deadlines: None.

Range of Approval/Disapproval Time: 30 to 60 days.

Appeals: None.

Renewals: None.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Total Federal assistance can-

not exceed 80 percent of eligible project costs. The State or community must finance the remaining project costs, not less than 20 percent.

Length and Time Phasing of Assistance: In the event that the work intended to be financed by a supplementary grant shall not have been completed or committed by contract within the time limits specified in the grant offer the Commission reserves the right at the Federal Co-chairman's option to terminate the supplementary grant and all obligations thereunder.

POST ASSISTANCE REQUIREMENTS:

Reports: As required by basic grant agency and by the Commission.

Audits: All records relating to the grant are subject to audit by the basic Federal agency, the Regional Commission and by the Comptroller General of the United States, or their designee(s).

Records: As necessary for above-mentioned audit.

FINANCIAL INFORMATION:

Account Identification: 06-15-2100-0-1-452.

Obligations: (Grants) FY 75 \$4,077,478; FY 76 est \$4,956,067; TO est \$1,208,785; and FY 77 est \$4,000,000.

Range and Average of Financial Assistance: \$9,030 to \$250,000; \$91,000.

PROGRAM ACCOMPLISHMENTS: In fiscal year 1976, 61 totalling \$4,956,000 projects will be funded principally in the areas of industrial development, human resources, recreation/tourism and transportation.

REGULATIONS, GUIDELINES, AND LITERATURE: 13 CFR 560; Supplemental Grant Application and Commission Comprehensive Plan available through Commission Offices and State Alternates.

INFORMATION CONTACTS:

Regional or Local Office: Upper Great Lakes Regional Commission, 504 Christie Bldg., 120 North Fourth Ave. West, Duluth, MN 55802. Telephoner: (218) 727-6458.

Headquarters Office: Office of the Federal Co-chairman, Upper Great Lakes Regional Commission, Room 2093, Department of Commerce Bldg., Washington, DC 20230. Telephone: (202) 967-2845.

RELATED PROGRAMS: 23.002, Appalachian Regional Development; 28.003, Coastal Plains Regional Economic Development; 38.003, Four Corners Regional Economic Development; 48.003, New England Regional Economic Development; 52.003, Ozarks Regional Economic Development.

Economic Development; 76.001, Pacific Northwest Regional Economic Development.

63.002 UPPER GREAT LAKES TECHNICAL AND PLANNING ASSISTANCE

(Technical Assistance Program)

FEDERAL AGENCY: UPPER GREAT LAKES REGIONAL COMMISSION

AUTHORIZATION: Title V, Section 505 of the Public Works and Economic Development Act of 1965; Public Law 89-136 as amended by Public Laws 90-103, 91-123, 93-46, 93-423 and 94-188; 42 U.S.C. 3185.

OBJECTIVES: To evaluate the needs of and develop the potentialities for the economic growth of the region through planning, investigations, studies, demonstration projects, and training programs.

TYPES OF ASSISTANCE: Project Grants (Contracts).

USES AND USE RESTRICTIONS: To engage in: (1) investigations and studies which evaluate the needs of the Region for economic development; (2) research and planning for developing the potentialities related to economic development; (3) demonstration projects and training programs which will further the purposes of the Act; and to provide administrative expense grants for substate planning and development organizations (including economic development districts). Demonstration projects and training programs, to the maximum extent possible, are carried out through the departments, agencies, or instrumentalities of the Federal Government or of State or local governments. Demonstration projects include but are not limited to, energy-related impacts, transportation, vocational education, and health and nutrition. All findings resulting from research and demonstration projects must be made available to the general public. Funds may not be used to cover the costs of work already performed or of services already provided.

ELIGIBILITY REQUIREMENTS:

Applicant Eligibility: States in the Upper Great Lakes Region, alone or with another member State, as well as any political subdivisions of the states, and agencies of State and local governments. For a list of the Region's designated counties, see 63.001.

Beneficiary Eligibility: Same as applicant eligibility.

Credentials/Documentation: Application Guidelines available through Commission office. Cost will be determined in accordance with General Services Administration FMC 74-4.

APPLICATION AND AWARD PROCESS:

Preapplication Coordination: Applications must be coordinated with the Governor's representative and should be consistent with the Commission's comprehensive economic development plan. Applications for this program must be reviewed under procedures in Part I of OMB Circular No. A-95 (revised). The program also requires the submission of an environmental impact statement. The application guidelines as furnished by the UGLRC and standard application forms as required by General Services Administration FMC 74-7 must be used for this program.

Application Procedure: The applicant submits the application through the Governor's representative to the Upper Great Lakes Commission. All proposed projects must relate to the needs identified in the Commission's comprehensive economic development plan.

Award Procedure: The Upper Great Lakes Regional Commission must review and approve the project. The Federal Co-chairman determines that the project satisfies all Federal requirements. The Upper Great Lakes Regional Commission makes notification of the grant award to the designated State Central Information Reception Agency in accordance with Treasury Circular 1082.

Deadlines: None.

Range of Approval/Disapproval Time: 30 days.

Appeals: None.

Renewals: Yes, processed in the same manner as the original application.

ASSISTANCE CONSIDERATIONS:

Formula and Matching Requirements: Each application is treated individually without standard requirements.

Length and Time Phasing of Assistance: Any funds not obligated on or before the termination of the grant or contract will be returned to the Commission. Prior to the termination date, the Commission may extend the grant for a period not to exceed one additional quarter of the fiscal year provided the funds have been committed.

POST ASSISTANCE REQUIREMENTS:

Reports: A member of the Commission staff is designated as project coordinator to maintain liaison with the contractor and to monitor and evaluate progress and performance under the contract.

Audits: All records relating to the contract are subject to audit by the Commission, the Federal Co-chairman of the Commission, the Secretary of Commerce, and the Comptroller General of the United States.

Records: As required by the terms of the contract.

FINANCIAL INFORMATION:

Account Identification: 06-15-8509-0-7-452.

Obligations: (Grants and contracts) FY 75 \$1,454,300; FY 76 est \$2,652,000; TQ est \$609,751; and FY 77 est \$1,532,000.

Range and Average of Financial Assistance: \$4,200 to \$165,000; \$59,000.

PROGRAM ACCOMPLISHMENTS: The technical assistance program emphasizes the demonstration of new activities to help the regional economy and focuses on energy, recreation and transportation projects.

REGULATIONS, GUIDELINES, AND LITERATURE: 13, CFR 550; Application guidelines and Commission Comprehensive Plan are available through Commission and State Alternates' offices.

INFORMATION CONTACTS:

Regional or Local Office: Upper Great Lakes Regional Commission, 504 Christie Building, 120 North Fourth Ave., West, Duluth, MN 55802. Telephone: (202) 727-6458.

Headquarters Office: Office of the Federal Co-chairman, Upper Great Lakes Regional Commission, Room 2093, Department of Commerce, Washington, DC 20230. Telephone: (202) 647-3045.

RELATED PROGRAMS: 23.011, Appalachian State Research, Technical Assistance and Demonstration Projects; 28.002, Coastal Plains Technical and Planning Assistance; 38.002, Four Corners Technical and Planning Assistance; 48.002, New England Technical and Planning Assistance; 52.002, Ozarks Technical and Planning Assistance; 75.002, Old West Technical and Planning Assistance; 76.002, Pacific Northwest Technical and Planning Assistance.

63.003 UPPER GREAT LAKES SUPPLEMENTS TO FEDERAL GRANT-IN-AID

(Supplemental Grant Program)

FEDERAL AGENCY: UPPER GREAT LAKES REGIONAL COMMISSION

AUTHORIZATION: Title V, Section 509 of Public Works and Economic Development Act of 1965; Public Law 89-136 as amended by Public Law 90-103, Public Law 91-123, Public Law 93-46, Public Law 93-423 and Public Law 94-188; 42 U.S.C. 3188a.

OBJECTIVES: To enable States and other entities to take maximum advantage of Federal grant-in-aid programs for the construction or equipping of facilities or the acquisition of land for economic development.

TYPES OF ASSISTANCE: Project Grants.

USES AND USE RESTRICTIONS: Grant-in-aid supplements provide a portion of the local share of Federal grant-in-aid programs for the construction or equipping of facilities or the acquisition of land

Question:

The General Accounting Office is currently investigating whether EPA's interim primary drinking water regulations have had a detrimental effects on fluoridation efforts. How do you respond?

Answer:

The National Interim Primary Drinking Water Regulations, and the Safe Drinking Water Act itself, have both provided grist for the anti-fluoridationist mill. The limitation in the Act which prohibits EPA from requiring the addition of fluoride has been misinterpreted as a prohibition of fluoridation. The designation of fluoride, along with all other water constituents, as a "contaminant" has encouraged the anti-fluoridationists and caused concern among proponents of fluoridation. The Maximum Contaminant Levels for fluoride, established in the National Interim Primary Drinking Water Regulations, have had only a minimal effect on fluoridation, in that the MCL are substantially higher than levels used in controlled fluoridation. Some slight apprehension regarding fluoridation can be attributed to the mere existence of MCLS, however.

EPA has stated publicly that it supports efforts of other agencies to encourage the beneficial use of fluorides in drinking water and that our concern is merely with potential adverse effects at concentrations far above the optimum levels for tooth decay prevention purposes. Since the Safe Drinking Water Act specifically prohibits EPA from mandating the addition of any chemicals for beneficial uses, we view our current position as all the law allows.

Question:

Several States have indicated that they will not assume "primacy". What factors explain this decision?

Answer:

Four States -- Pennsylvania, Indiana, Oregon and the District of Columbia -- have indicated that they are not planning to assume primacy. One factor contributing to this decision in Pennsylvania, Indiana and Oregon is insufficient funds. These States feel that even with Federal program grants they would still lack the resources necessary to operate a primacy program. In addition, in Pennsylvania the State legislature has to change their water supply legislation to match Federal requirements; since there is not support for this at the present time primacy cannot be assumed.

The District of Columbia cannot achieve primacy since the agency responsible for primary enforcement is also the operator of the only community water system within the jurisdictional boundary.

Question:

The Safe Drinking Water Act mandated the promulgation of maximum contaminant levels for substances having adverse effects on health as identified by the National Academy of Sciences (NAS). According to the statute, these "revised primary" regulations were to be proposed within 90 days of the NAS study, which was completed in 1977. What is the status of the Regulations?

Answer:

The NAS determined that it was not technically possible for them to recommend specific maximum contaminant levels (MCL) in the report "Drinking Water and Health". In general this was because of the lack of the necessary toxicological data. For carcinogens the NAS felt that no "safe" levels could be determined and therefore, an acceptable level of risk approach was necessary.

Work is underway in the Office of Drinking Water to develop comprehensive Revised Regulations. Approximately one year will be needed. In the meantime the proposed regulations dealing with organic chemicals are being processed and a number of technical adjustments to the Interim Primary Drinking Water Regulations will soon be issued.

Variance and exemption guidance is also being recast based upon the NAS report. The NAS has been recommissioned to provide detailed assessments and recommendations on organic chemicals, granular carbon, disinfectants, epidemiology and nutrition. This report is due in March 1979.

Question:

Has EPA sponsored any study to compare costs of clean-up at the start of the wastestream with the cost of treatment in the water works plant?

Answer:

EPA has evaluated the economic impacts of discharge control, especially for those compounds identified through activities under the Water Pollution Control Act and the Toxic Substance Control Act. Similarly, it has evaluated the costs of treatment for similar compounds at the water-works plant. However, composing such costs directly is unrealistic, that is, even with stringent pollution control programs at the discharge point, some materials enter the receiving streams and almost all such wastewater treatment plants experience some upsets and periodic discharges. Where this results in the discharge of toxic or hazardous materials above drinking water intakes, added treatment within the water treatment plant is also necessary especially where some of the harmful materials also come from urban and rural surface run-off which is not easily controllable.

Question:

Several interest groups have suggested modifying the Safe Drinking Water Act so that EPA would determine only State water quality results rather than the specific treatment techniques to be used.

- a. Is such an approach practical?
- b. Are there other techniques that are capable of producing the same level of performance as the granular activated carbon in removing organic contaminants?

Answer:

From a technological perspective it is generally most appropriate to establish maximum contaminant levels and allow those being regulated to select the most cost effective technologies to meet the standards.

However, there are situations that are more reasonably dealt with by treatment requirements. Those would be where contaminants that are likely to be present are not readily detectable, either because of excessive monitoring cost or technical limitations. For example, virus and asbestos are extremely difficult to detect, thus the best regulatory approach might be to require practices that minimize or avoid such contaminants.

Synthetic organic chemicals may be a similar situation in the sense that although analytical procedures are available for many chemicals, the great variety, uneven national distribution, and intermittent nature of their contamination in drinking water may make a holistic approach more reasonable. For carcinogens it is more reasonable to reduce them to the extent feasible, rather than to some arbitrarily chosen value.

GAC is the best broad spectrum organic chemical removal technology that we know of at this time, however, the proposed organics regulations allow the substitution of alternative treatment techniques if it can be shown they provide equivalent reduction of organic contaminants to that obtained using GAC.

For example, aeration can be effective for removing volatile non-polar substances such as chlorinated ethanes. Macroreticular resins can be virtually tailor-made to remove certain types of chemicals. Oxidative processes such as ozonation can control chemically susceptible toxicants. Even conventional coagulation, sedimentation and sand filtration removes, considerable amounts of high molecular weight chemicals such as humic acids, and polynuclear aromatic hydrocarbons.

Question:

Does the agency have data on what percentage of the population relies on ground water for drinking water supplies? If so, is this available on a state-by-state basis?

Answer:

Approximately 50% of the population of the United States obtains drinking water from ground water sources. U.S. Geological Survey Circular 765, "Estimated Use of Water in the United States in 1975", tabulates this use by population and volume for each State, the District of Columbia, and Puerto Rico-Virgin Islands.

Question:

Has EPA inventoried either nationally or in individual States instances of ground water contamination by hazardous or toxic, both chemical and biological, materials? If not, what data or what information along these lines has EPA collected if any?

Answer:

A national or State inventory of ground water contamination has not been conducted. Five limited studies on surface impoundments and their effects on ground water quality have been conducted. Final reports are being printed.

Question:

Please provide representative examples of ground water contamination.

Answer:

Information on examples of ground water pollution are currently being assembled and will be provided at a later date.

Question:

In the agency's experience, what are the difficulties inherent in identifying, preventing, and restoring to safe condition ground water supplies which are contaminated?

Answer:

Limited technology to establish sub-surface conditions and the cost of large scale restoration techniques are the greatest deterrents. Coupled with cost is the amount of resources and time involved to effect solutions.

Question:

EPA proposed regulations in March, 1976 to implement the underground injection program in the States.

-- What is the status of these regulations?

Answer:

Underground Injection Control Regulations required by the Safe Drinking Water Act were proposed in the Federal Register, August 31, 1976. Public Hearings were subsequently held and based on public response the regulations have been revised. It is planned to repropose the revised regulations and promulgate final regulations in January 1979.

Question:

Mr. Jorling,

The contamination of groundwater supplies has been receiving increasing attention over the last several years. Of particular interest to me is EPA's ability to respond to such incidents under such statutes as the Safe Drinking Water Act, the Resource Conservation and Recovery Act, the Toxic Substances Control Act, and the Clean Water Act. What kind of coordination is there within the Agency to manage the interface of the various statutes with respect to ground water contamination?

Answer:

Incidents of groundwater contamination are presently responded to at the regional office level by program category on a case-by-case basis. An effort is under way in Headquarters to develop a formal agency policy to coordinate agencywide response to ground water problems within the existign legal authorities.

Question:

You indicated in your statement, Mr. Jorling, that EPA has begun its effort at designating sole source aquifers, those aquifers which are the sole source of drinking water for individual communities. How many sole source aquifers are there in the United States? Why has EPA only designated four to date?

Answer:

Section 1424 (a) of the Safe Drinking Water Act does not become applicable until the Administrator publishes in the Federal Register a list of States that should have underground injection control programs and UIC regulations are promulgated. It is conservatively estimated that sole source aquifers in the United States number in the hundreds.

It is economically and administratively impractical to initiate a program to define and designate all sole source aquifers at this time. However, the Administrator has been petitioned to designate seven sole source aquifers. Four of these have been studied and designated and two others are presently being evaluated. One petition has been denied.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 17 1978

OFFICE OF WATER AND
HAZARDOUS MATERIALS

Honorable Robert T. Stafford
United States Senate
Washington, D.C. 20510

Dear Senator Stafford:

Enclosed are our answers to the questions you forwarded to us in your letter of July 18, 1978. I trust that they will provide the information requested.

If you have any other questions concerning the safe drinking water program, please forward them and we will reply as expeditiously as practicable.

Sincerely yours,

Thomas C. Jorling
Thomas C. Jorling
Assistant Administrator for
Water and Waste Management (WH-556)

Enclosure

cc: Senator Chafee

QUESTIONS FROM SENATOR STAFFORD

Question: Does the Agency have data on what percentage of the population relies on ground water for drinking water supplies? If so, is this available on a state-by-state basis?

Answer: Approximately 50 percent of the population of the United States obtains drinking water from ground water sources. U.S. Geological Survey Circular 765, "Estimated Use of Water in the United States in 1975," tabulates this use by population and volume for each State, the District of Columbia, and Puerto Rico-Virgin Islands.

Question: Has EPA inventoried either nationally or in individual States instances of ground water contamination by hazardous or toxic, both chemical and biological, materials? If not, what data or what information along these lines has EPA collected if any?

Answer: A national or State inventory of ground water contamination has not been conducted. Five limited studies on surface impoundments and their effects on ground water quality have been conducted. Final reports are being printed.

Question: Please provide representative examples of ground water contamination.

Answer: Information on examples of ground water pollution are currently being assembled and will be provided at a later date.

Question: In the Agency's experience, what are the difficulties inherent in identifying, preventing, and restoring to safe condition ground water supplies which are contaminated?

Answer: Limited technology to establish sub-surface conditions and the cost of large scale restoration techniques are the greatest deterrents. Coupled with cost is the amount of resources and time involved to effect solutions.

Question: Would you please elaborate a bit on EPA's implementation strategy? What needs to be done from this point on? What are your objectives in FY 79? What are you planning for FY 80?

Answer: The Safe Drinking Water Act activities differ depending upon the particularities of each EPA Region. However, the strategy that has been adopted includes the phasing of regulation based upon system size, population, source of water, health risk, and other considerations. Below is a listing of the activities that will be undertaken.

- Provide technical assistance to State and local agencies in the implementation of the Safe Drinking Water Act especially in controlling organic contaminants in drinking water and upgrading small systems;
- Provide a more comprehensive implementation and enforcement of the programs for assuring compliance with the National Interim Primary Drinking Water Regulations in non-primacy States and on Indian lands;
- Provide assistance in responding to, controlling and mitigating spills and other episodes that threaten imminent and substantial health endangerment to public and underground water supplies and provide increased enforcement action against public or private entities determined to be totally or partially responsible for such spills and episodes;
- Provide support to States in their efforts to assume primary enforcement responsibility for the underground injection control programs;
- Provide financial assistance to States to implement and to maintain their public water systems and underground injection control programs;
- Encourage those States that have not assumed primacy to assume primacy and those that have primacy to improve their public water system supervision program;
- Increase our efforts to protect designated sole source aquifers;
- Provide technical assistance to States on the assessment of surface impoundments;
- Develop contingency plans for designated States that indicate they will not seek primacy for the UIC program;
- Increase our efforts in applied research related to health effects, standards development treatment technology and to obtain data on toxicity/carcinogenicity of contaminants in drinking water; and

- Provide more analytical support to EPA Regional and State laboratories, and to develop protocols for quality assurance.

The goal of the drinking water program is to protect the public health by assuring the safety of drinking water. The Safe Drinking Water Act requires (1) primary health related drinking water regulations requisite to protect the public health, (2) public water systems supervision programs (PWS) to assure compliance with the regulations, (3) underground injection control programs (UIC) to protect underground sources of drinking water, and (4) the provision of emergency assistance. The Act envisioned that the States would have primary enforcement responsibility for both the PWS and UIC programs. Moreover, the Act is designed to encourage voluntary compliance with the regulations.

The program activities for FY 79 and FY 80 will focus on implementation of the primary drinking water regulations in non-primacy States and on Indian lands, assistance on the implementation of the THM and synthetic organics regulations; developing a strong management program in primacy States to assure maintenance of primacy States; emergency assistance; financial assistance to States; research, development and implementation of additional regulations to control other contaminants in drinking water; implementation of a program to protect underground sources of drinking water; and the initiation of enforcement actions in recalcitrant cases to ensure compliance.

FY 1979 Priorities

Priority 1:

- Provide technical assistance to State and local agencies in the implementation of the organic regulations;
- Implement and enforce a program for assuring compliance with NIPDWR in non-primacy States and on Indian lands;
- Provide assistance in responding to, controlling and mitigating spills and other episodes that threaten imminent and substantial health endangerment to public and underground water supplies and provide enforcement action against public or private entities determined to be totally or partially responsible for such spills and episodes;
- Encourage UIC primacy to designated States;
- Provide financial assistance to States to implement and to maintain their public water systems and underground injection control programs.

Priority 2:

- Encourage as many States as possible to assume and maintain primacy for the public water systems supervision program;
- Protect designated sole source aquifers;
- Provide technical assistance to States on the assessment of surface impoundments;
- Develop a strong management program in primacy States to assure maintenance of primacy status.

Priority 3:

- Coordinate the program with other environmental programs;
- Develop contingency plans for designated States that indicate they will not seek primacy for the UIC program.

FY 1980 Priorities

Priority 1 in FY 1980 will include in addition to the FY 1979 activities (1) providing technical assistance for implementing regulations on synthetic organics, (2) issuing variances and exemptions to the organics regulations, (3) Federal implementation of a UIC program in those States which do not assume primacy. Priorities 2 and 3 will remain the same as FY 1979.

Question: Could you go into some detail about how the Agency will go about developing the data for the revised regulations in view of the timidity of the National Academy to recommend specific levels of pollutants in drinking water? What tasks will EPA perform; what will be contracted out? What is the probable schedule for issuance of revised maximum contaminant levels? Did the NAS indicate that the interim levels were reasonable? How much revision does EPA expect will need to be attempted? Will revisions tend to be stricter or more lenient than the interim regulations?

Answer: Since the National Academy did not recommend maximum contaminant levels for contaminants, but only provided background information and research recommendations in most cases, this Agency will have to select those contaminants which are a potential problem in drinking water and develop MCLs for them. This will involve examination of occurrence data, health data, analytical methodology, as well as a determination of the regulatory strategy. In those instances where the Academy recommended Acceptable Daily Intakes (ADIs), contributions of the contaminants from sources other than water will have to be ascertained before MCLs can be developed. In most cases, particularly with regard to the inorganic contaminants, the Academy indicated that interim MCLs were adequate, but in some cases the Academy questioned the adequacy of MCLs on the bases of safety factors or health significance. In these latter cases, reassessment of all available data will have to be made to determine if the MCLs should or can be altered. In some cases, more stringent MCLs may result, while in other cases less stringent MCLs could result, and it is even possible that certain MCLs could be eliminated on the basis of lack of need.

Every existing MCL will be critically re-evaluated, but the most difficult problem will be that of considering the possible inclusion of additional contaminants, particularly among the organic chemicals. At this time it is impossible to provide a schedule for completion of revised primary drinking water regulations or for preparation of the "Administrator's List" of recommended MCLs.

Work is underway on all of the above issues. National monitoring data is being obtained on the chemicals listed by the NAS and toxicology and technology research is underway. It is important that the Revised Regulations be comprehensive and detailed and reflect all of the experience developed by the Interim Regulations implementation plus new scientific knowledge.

Although the rate of development of the "Administrator's List" and Revised Regulations has been affected by the present emphasis on the Proposed Amendments to the Interim Regulations, I expect that about one year will be needed before those new proposals would be issued.

Question: What reaction has EPA had to the maximum contaminant levels for pollutants other than trihalomethanes? Are they anywhere subject to challenge? In publishing the revised regulations, will any effort be made to establish maximum contaminant levels for specific organic compounds, or will the agency continue to want to rely on the broad spectrum approach which requires a sort of "best available technology" by installing granular activated carbon systems?

Answer: The concept of establishing MCLs for specific organic chemical contaminants or groups of such contaminants remains a possible alternative to the prescribed treatment approach. It is even conceivable that the currently proposed regulations for the control of organic chemical contaminants could be modified to include MCLs for certain contaminants, without waiting for the development of revised regulations. The success of an alternative involving MCLs depends on whether or not sufficient data can be accumulated on the health effects of individual contaminants or groups of contaminants, occurrence of these contaminants, and acceptable analytical techniques for individual contaminants or particular categories of contaminants. Some of the comments to the current proposal have suggested this approach, but it introduces additional problems that would have to be dealt with, e.g., which chemicals, should be regulated, what specific levels are acceptable, and will the public receive the same level of protection that the current approach might provide.

Question: Of the 430 water systems specified by EPA that serve over 75,000 people, the EPA says that only 50 may need treatment. However, under the proposed regulations, all 430 would be initially required to install GAC until they could show no need.

What is the estimated cost of running tests to prove that a system is in need of GAC?

Doesn't it seem somewhat unfair to compel the 380 systems that probably won't need treatment to spend these amounts on proof of, what would prove to be a "guaranteed" compliance with the MCL?

Answer: The proposed regulations do not require the installation of GAC filters where they are not needed. Rather, potentially impacted systems are asked to investigate the quality of their source water, and where significant contamination by synthetic organic chemicals does not exist, a variance from the treatment requirement can be obtained. It is impossible to estimate the cost of a source examination, since the conditions are extremely variable. In some cases, merely a knowledge of the type of source will provide grounds for a variance - e.g., deep well or protected watershed, and the cost will be negligible. In other cases, extensive analytical studies will be necessary, and the cost of these analyses could run to several thousand dollars. The concept of requiring proof of the absence of contamination does seem unfair to some, but this is a provision of the Safe Drinking Water Act. If MCLs were established for organic chemical contaminants, even more monitoring would be required, but such monitoring would amount to requiring proof of the presence of contamination.

Question: What are some alternatives to Granular Activated Carbon treatment?

Are there really other economically feasible alternatives available, or is this a non-existent possibility?

Answer: Some of the alternatives to GAC are powdered activated carbon, biological activated carbon, aeration, resin absorption and various combinations of treatment. While these alternatives are not as generally applicable as GAC, undoubtedly there are particular situations where one of them would be effective.

Question: What is the relationship of the EPA to the FDA on this issue? Is there any "give and take?"

Answer: FDA's relationship to EPA in the matter of organic chemical contamination of drinking water amounts to essentially an endorsement by FDA of the need for control measures, based on the establishment of a health risk concurred in by both agencies. FDA has already banned the use of chloroform.

QUESTIONS FROM SENATOR CHAFEE

Question: Would you please describe what a State's program must include to qualify for primacy?

Answer: A State can qualify for primary enforcement responsibility if it meets these conditions:

- It adopts regulations that are at least equal to the Federal regulations in protecting public health;
- It adopts and implements adequate surveillance and enforcement procedures;
- It provides variances and exemptions (if it chooses to provide these) that meet Federal requirements;
- It provides an adequate plan for supplying safe drinking water under emergency circumstances;
- It keeps records and provides reports, keeping EPA fully informed of its activities.

Question: Would you describe what a water supplier must do to comply with the statute?

Answer: The Law requires water suppliers to:

- Assure that maximum contaminant levels are not exceeded;
- Sample and analyze water on a regular basis;
- Meet recordkeeping and reporting requirements; and
- Notify the public whenever water quality deteriorates or the water system fails to operate properly.

Question: How are the maximum contaminant levels attained?

Answer: Please refer to the attached document entitled: "Manual of Treatment Techniques for meeting the Interim Primary Drinking Water Regulations." (The document has been retained in the committee files.)

Question: What are the construction needs (technologies and costs) in order for a supplier to comply with the interim primary drinking water standards -- with and without the proposed organics regulations?

Answer: The construction needs which have developed as a result of the Interim Primary Drinking Water Regulations vary from supply to supply. Some suppliers already meet the IPDWR. An estimate of the total annual cost of implementing the IPDWR for public water supplies is \$426-\$545 million per year in 1975 dollars. Many of these costs could have been expected even had the IPDWR not been issued. Per capita cost associated with the regulations are from 0 - \$15.05 per year. The costs and associated technologies are described in a report entitled "Economic Evaluation of the Promulgated Interim Primary Drinking Water Regulations."

Over and above the previously mentioned costs are those expected expenditures associated with the proposed organics regulations. Once again, costs to any particular system are extremely variable. At present only about fifty systems are expected to be impacted by the relatively expensive activated carbon technology. All systems serving populations over 10,000 people will incur some monitoring costs. Annual THM national costs are estimated at \$129 million.

Total annual national costs for organics are estimated at \$668-\$917 million. These costs, and associated technologies, are described in a Federal Register notice (Vol. 43, No. 130, Thursday, July 6, 1978).

Question: Is the drinking water any better anywhere in the U.S. than it was on December 16, 1974 as a result of your program? In your catalogue of success stories you talk about monitoring and testing schedules, the status of State primacy, the number of regulations published, the studies completed or underway, data management and public information. When will we begin to see results in terms of improved drinking water quality?

Answer: The quality of drinking water has improved in many areas as a result of the Safe Drinking Water Act and implementation of the Public Water System Supervision Program.

Three prime examples come to mind. Cincinnati was experiencing problems with formation of trihalomethanes because of its water treatment practices. By changing the treatment train and points of application for chlorine disinfectant, the problem of trihalomethane formation due to interaction between chlorine and organic precursors has been eliminated. Many other treatment systems have also taken advantage of this new but simple and cost effective treatment technique and improved the quality of their drinking water.

A second example involves lead contamination in Brighton and Cambridge, Massachusetts. The problem stemmed from corrosive water attacking the lead service connections. By adjusting the pH of the water and neutralizing the corrosiveness of the water, lead contamination was reduced below the maximum contaminant level.

Another example includes the asbestos problem experienced in Duluth, Minnesota. The new water treatment system constructed in Duluth has eliminated most of the asbestos fibres from the drinking water supply.

Since the National Interim Primary Drinking Water Regulations did not take effect until June 24, 1977, statistical data on actual improvements in drinking water quality is not readily available. However, at the conclusion of FY 1978, the States must report to EPA by January 1, 1979, on the number of primary drinking water regulations violators, the status of variances and exemptions granted by the State, and any enforcement actions taken by the State. Such data will provide us with baseline information to better gauge the impact of the safe drinking water program over the next several years.

The Center for Disease Control in cooperation with EPA reports annually on waterborne disease outbreaks. The latest report (attached) presents a summary for 1976. The next annual summary for 1977 should be available in October 1978. As indicated in Table 1, the number of cases reported dropped from 10,879 in 1975 to 5068 in 1976.

In its report, the Center for Disease Control indicated that the 35 reported disease outbreaks for 1976, an increase of 46 percent from 1975 (24 outbreaks) probably was due to more complete reporting by the States. Thus, the reporting and recordkeeping requirement specified in the regulations are having a definite impact on the quality of drinking water.

Finally, the public notice requirement is accomplishing its objective of keeping the public informed about the quality of drinking water. The public has a greater awareness and perception of the quality of its drinking water and is taking the initiative to secure safe drinking water. This can be noted by the positive actions taken to approve bond issues and raise the necessary capital for upgrading and constructing water treatment systems to meet the requirements of the National Interim Primary Drinking Water Standards or applicable State drinking water standards.

III. WATERBORNE DISEASE OUTBREAKS, 1976

In 1976, 35 waterborne disease outbreaks were reported to the Center for Disease Control for the United States, an increase of 46% over 1975.

A. Definition of Outbreak

A waterborne disease outbreak is defined in this report as an incident in which 1) 2 or more persons experience similar illness after consumption of water, and 2) epidemiologic evidence implicates the water as the source of illness.

There is 1 exception; 1 case of chemical poisoning constitutes an outbreak if the water is demonstrated to be contaminated by the chemical. In most of the reported outbreaks, the implicated water source was demonstrated to be contaminated; only outbreaks associated with water used for drinking are included.

B. Sources of Data

Waterborne disease outbreaks are reported to CDC by state health departments. A standard reporting form that was pretested in 8 states is now being used (see Section E). In addition, the Health Effects Research Laboratory, Environmental Protection Agency (EPA), contacts all state water supply agencies to obtain information about waterborne disease outbreaks and these data are included in this report. Personnel from CDC and EPA work together in the investigation and evaluation of waterborne disease outbreaks. When requested by a state health department, CDC and EPA can offer epidemiologic assistance, provide expertise in the engineering and environmental aspects of water purification, and as indicated, provide large volume water sampling for isolation of viruses, parasites (*Giardia*), and specific bacterial pathogens. Data obtained on outbreaks are reviewed and summarized by representatives from CDC and EPA. A line listing of reported waterborne disease outbreaks in 1976 is included (see Section F).

In this report, municipal systems are defined as public or investor-owned water supplies that serve large or small communities, subdivisions and trailer parks of at least 15 service connections or 25 year-round residents. Semipublic water systems are present systems in institutions, industries, camps, parks, hotels, service stations, etc., which have their own water system available for use by the general public. Individual water systems, generally wells and springs, are those used by single or several residences or by persons traveling outside of populated areas (e.g. backpackers).

C. Interpretation of Data

Data included in this summary of waterborne disease outbreaks have limitations similar to those outlined in the foodborne disease summary and must be interpreted with caution since they represent only a small part of a larger public health problem. These data are helpful in revealing the various etiologies of waterborne diseases, the seasonal occurrence of outbreaks, and the deficiencies in water systems that most frequently result in outbreaks. As in the past the pathogen(s) responsible for many outbreaks in 1976 remains unknown. It is hoped that advances in laboratory techniques and standardization of reporting of waterborne disease outbreaks will augment our knowledge of waterborne pathogens and the factors responsible for waterborne disease outbreaks.

D. Analysis of Data

In 1976, 35 waterborne disease outbreaks, an increase of 46% from 1975 (24 outbreaks) and 5,068 cases, a decrease of 53% from 1975 (10,879 cases), were reported to CDC (Table 1). Increased reporting by certain states probably accounts for the increased number of outbreaks in 1976. Of 35 outbreaks, Pennsylvania reported 14 (40%), affecting 424 individuals (median of 21 per outbreak); 12 involved semipublic water and 2 individual water systems.

Figure 1 shows the geographic distributions of outbreaks by state. Sixteen states and Puerto Rico reported at least 1 outbreak. Figure 2 depicts the trend in reported waterborne disease outbreaks in the period 1938-1976.

Table 2 shows the number of outbreaks and cases by etiology and type of water system. Of 35 outbreaks 26 (74%) were designated as "acute gastrointestinal illness." This category includes outbreaks characterized by upper and/or lower gastrointestinal

symptomatology for which no specific etiologic agent was identified. In previous years these outbreaks were grouped under the category "sewage poisoning." There were 9 (26%) outbreaks of known etiology: chemical (3), *Giardia lamblia* (3), *Shigella* (2), and *Salmonella* (1). In the 3 largest outbreaks an etiologic agent was found; *Shigella sonnei* in Puerto Rico (2,150 cases), *Salmonella typhimurium* in New York (750 cases) and *Giardia lamblia* in Washington (600 cases).

The 3 chemical outbreaks reported were due to lead (2.2 mg per liter in water samples), chlordane (a pesticide - 1,200 mg per liter in water samples) and polychlorinated biphenyls (pcb's - 900 mg per liter in water samples). In the 33 non-chemical outbreaks, microbiologic water sample results were reported in 28. Evidence of fecal contamination (total or fecal coliforms) or pathogens were found in water samples collected during 27 of the outbreaks. *Salmonella typhimurium* was isolated from water in the New York outbreak and *Giardia* cysts were isolated from water in outbreaks in Colorado, Vermont, and Washington. In outbreaks where pathogens were isolated from the water supply, coliforms were reported in only 1, an outbreak of giardiasis involving the use of untreated surface water where 25 coliforms per 100 ml (MPN) were found. The other outbreaks of giardiasis involved surface water sources that were disinfected, and it is possible that chlorination was sufficient to destroy indicator organisms such as coliforms but not *Giardia* cysts. The outbreak of salmonellosis was caused by a cross-connection, and it is not known if timely water sampling for coliforms was conducted in conjunction with the sampling for pathogens. It is important that an attempt be made to isolate pathogens from the water supply during an outbreak to help establish the etiology, but it is equally important to also document the presence of coliforms and document their relative importance as indicator organisms for use in routine surveillance of water supplies.

Most outbreaks involved semipublic (66%) and municipal (26%) water systems, and fewer involved individual (8%) systems (Table 3). This distribution is almost identical to 1975. Outbreaks attributed to water from municipal systems affected an average of 418 persons compared with 55 persons in outbreaks involving semipublic systems and 15 persons in outbreaks associated with individual water systems. Deficiencies in treatment (inadequately or untreated water) accounted for 29 (83%) of the outbreaks. Untreated water (surface or ground) accounted for 18 of the 29 outbreaks.

Of the 23 outbreaks associated with semipublic water supply systems, 17 (74%) involved visitors to areas used mostly for recreational purposes. Of these 17, 13 occurred in the summer months May through September (Table 4).

Comments

The 46% increase in the number of outbreaks reported in 1976 is probably due to more complete reporting. Diligent investigation, such as was done in outbreaks reported from Pennsylvania, can uncover relatively small waterborne outbreaks that often originate from semipublic water systems. It is hoped that similar investigation and reporting will be done by other states so that major deficiencies commonly affecting semipublic water systems, especially in recreational areas, can be better understood and ultimately corrected.

As in recent years outbreaks originating from semipublic water systems in recreational areas contributed significantly to the total number of waterborne outbreaks reported in 1976. Water systems used on a seasonal basis or those that do not usually have an overwhelming demand placed on them by large numbers of visitors are showing the strains of such pressure. Water supply systems in such areas, especially national, state, and local parks, must be routinely reappraised and monitored and corrections made to insure safe water under increased demands. The large outbreak (more than 1,000 cases) that occurred in 1975 in Crater Lake National Park underscores the actual and potential problems that can occur in recreational areas.

Coliform organism identification is used as an indication of fecal contamination of water supplies and is widely employed in routine surveillance programs. Negative results have usually been interpreted as providing assurance that the water is free of enteric pathogens. This interpretation must be reevaluated in light of data available from waterborne outbreaks of giardiasis. In the 2 outbreaks of giardiasis where disinfection was provided, *Giardia* cysts were found in the water supply in the absence of coliforms. Although adequate disinfection data are not

currently available, it is felt that *Giardia* cysts are as resistant to chlorination as cysts of *Entamoeba histolytica*, and high concentrations of chlorine and long contact times would, therefore, be required for cyst inactivation. Almost all of the outbreaks of giardiasis documented in the U.S. since 1965 have occurred as the result of drinking untreated surface water or surface water whose only treatment was disinfection. Disinfection practices normally employed in these systems would not provide for high concentrations of chlorine or long contact times, and it's likely that *Giardia* cysts could survive the treatment whereas coliforms would not. The coliform test in these situations would not provide assurance that an outbreak of giardiasis would be prevented.

The giardiasis outbreak in Washington is the first documented waterborne outbreak of giardiasis involving a filtered-water supply. Treatment for the surface water source consisted of a mixed-media pressure filter and disinfection; no sedimentation was employed prior to filtration. In the outbreak, failure of the chlorination equipment occurred, and a number of deficiencies were noted in the installation and operation of the pressure filters, including ineffective pretreatment or conditioning of filters with appropriate chemicals. Water filtration theory indicates that organisms the size of *Giardia* cysts should be removed by conventional sand filters; however, effective pretreatment of the water prior to filtration must be accomplished. Conventional treatment of surface water generally includes coagulation/flocculation and settling prior to filtration or if the settling process is not used the addition of appropriate chemicals for conditioning of the filter media. Pressure filters are generally utilized for iron and manganese removal and for a number of reasons are generally not considered effective for microbiological treatment. The data to date would indicate that well operated conventional treatment plants employing coagulation/flocculation, settling, and filtration are successful in preventing outbreaks of this disease.

Fig. 1 WATERBORNE DISEASE OUTBREAKS, 1976

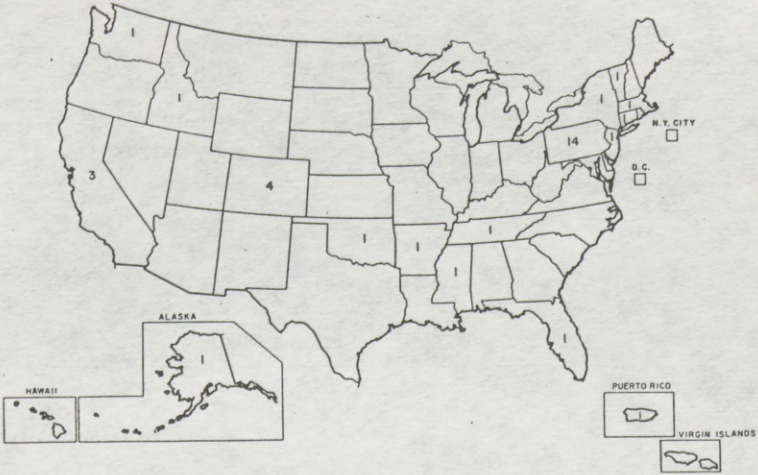


Fig. 2 AVERAGE ANNUAL NUMBER WATERBORNE DISEASE OUTBREAKS, 1938-1976



* NUMBER CASES FOR 1976 ONLY

Table 1

Waterborne Disease Outbreaks,
1972--1976

	<u>1972</u>	<u>1973*</u>	<u>1974*</u>	<u>1975</u>	<u>1976</u>	<u>Total</u>
Outbreaks	29	26	25	24	35	139
Cases	1,638	1,774	8,356	10,879	5,068	27,715

*Revised totals

Table 2

Waterborne Disease Outbreaks, by Etiology and
Type of Water System, 1976

	<u>MUNICIPAL</u>		<u>SEMI-PUBLIC</u>		<u>INDIVIDUAL</u>		<u>TOTAL</u>	
	<u>Outbreaks</u>	<u>Cases</u>	<u>Outbreaks</u>	<u>Cases</u>	<u>Outbreaks</u>	<u>Cases</u>	<u>Outbreaks</u>	<u>Cases</u>
Acute gastro-intestinal illness	4	229	21	1,216	1	24	26	1,469
Chemical poisoning	1	13	0	0	2	22	3	35
Giardiasis	1	600	2	39	0	0	3	639
Shigellosis	2	2,175	0	0	0	0	2	2,175
Salmonellosis	1	750	0	0	0	0	1	750
Enterotoxigenic <i>E. coli</i>	0	0	0	0	0	0	0	0
Hepatitis	0	0	0	0	0	0	0	0
TOTAL	9	3,767	23	1,255	3	46	35	5,068

Table 3

Waterborne Disease Outbreaks, by Type of System, and Cause
of System Deficiency, 1976

	<u>MUNICIPAL</u>		<u>SEMI-PUBLIC</u>		<u>INDIVIDUAL</u>		<u>TOTAL</u>	
	<u>Outbreaks</u>	<u>Cases</u>	<u>Outbreaks</u>	<u>Cases</u>	<u>Outbreaks</u>	<u>Cases</u>	<u>Outbreaks</u>	<u>Cases</u>
Untreated surface water	1	25	2	39	1	24	4	88
Untreated ground water	2	77	11	790	1	20	14	887
Treatment deficiencies	3	2,900	8	362	0	0	11	3,262
Deficiencies in distribution system	2	763	1	60	1	2	4	825
Miscellaneous	1	2	1	4	0	0	2	6
TOTAL	9	3,767	23	1,255	3	46	35	5,068

Table 4

Waterborne Disease Outbreaks Involving Semipublic Water Supplies,
by Month, and Population Affected, 1976

<u>Month</u>	<u>Number of Outbreaks</u>	<u>Usual Population*</u>	<u>Visitors**</u>
January	-	-	-
February	1	1	-
March	-	-	-
April	3	2	1
May	3	1	2
June	7	2	5
July	5	-	5
August	1	-	1
September	-	-	-
October	1	-	1
November	1	-	1
December	<u>1</u>	<u>-</u>	<u>1</u>
TOTAL	23	6	17

*Outbreaks affecting individuals using the water supply
on regular basis

**Outbreaks affecting individuals not using the water
supply on a regular basis

Table 5

Waterborne Disease Outbreaks, by Month of Occurrence, 1976

<u>Month</u>	<u>Number of Outbreaks</u>	<u>Month</u>	<u>Number of Outbreaks</u>
January	0	July	7
February	2	August	2
March	2	September	0
April	4	October	3
May	5	November	2
June	7	December	1

TOTAL 35

Question: What is the difference between a variance and an exemption? To what extent are these being granted? Who makes that determination -- the States or EPA?

Answer: Recognizing that immediate compliance with the new regulations may not be feasible under all circumstances, the Congress provided for a system of variances and exemptions that can be granted to individual water systems. Variances and exemptions are a means of deferring the compliance with a particular standard in situations in which the delay will not cause an unreasonable health risk and in which there are compelling economic or technical reasons for delaying compliance. The Act requires the development of compliance schedules for all variances and exemptions. Additionally, public notification is required when a variance or exemption is in effect.

A water supplier can apply for a variance if it will not result in an unreasonable risk to health and if the quality of the water is so poor that an MCL cannot be met, despite the use of the best available treatment technology, taking cost into consideration. Variances will not often be granted, however, because to qualify for one a system must already have a "generally available" treatment method in place and operation. The advantage of a variance is that it can last indefinitely; however, EPA will review each one at least once every three years to make sure that the situation leading to the variance has not changed.

An exemption can be granted if it will not result in an unreasonable risk to health and if for compelling reasons a system cannot comply. For example, an exemption can be granted to a small system that is unable to afford additional treatment. In general, an exemption cannot be extended beyond January 1, 1981. In addition, only those water systems in operation as of June 24, 1977, may request time extensions (exemptions) to meet the regulations.

The current estimate for the number of variances and exemptions granted since June 24, 1977, is approximately 100. State granted variances and exemptions will be reviewed by EPA this fall. At that time we will have an accurate assessment of the number granted.

If the State has assumed primary enforcement responsibility, it will make the determination of granting or denying variances or exemptions. In the non-primacy State, EPA will make the determination.

Question: In the Federal Register of February 9, 1978, page 5570, column 2, it says:

The use of granular activated carbon in the treatment of drinking water is a relatively new and sophisticated technology. As additional operating and technical experience is gained with respect to the use of GAC for the treatment of drinking water, the scope of this treatment will be expanded to include smaller community water systems. Based upon further knowledge to be gained through the experience within the next two years, it is possible that design criteria for GAC treatment may be modified. Smaller systems will then benefit.

In the July 6, 1978, Federal Register, EPA replies to questions about this and cited other areas of water treatment that used activated carbon in the processing cycle, however, this did nothing to alleviate the doubts surrounding the use of GAC treatment of drinking water.

My question therefore is this: Might it not be better, if unsure about the effectiveness of GAC, that instead of regulating and forcing a great expenditure of local money, the EPA would research and possibly save local monies by setting up GAC plants in certain cities as test cases?

Answer: We are not unsure of the effectiveness of GAC; rather, we are unsure of the technological capabilities and experience in the use of GAC in the water supply industry, particularly among the smaller utilities. Mid-scale demonstration installations have already been made and are in operation, and further such installations are planned. However, it would be impractical for this Agency to carry out all GAC research on behalf of the water supply industry - the larger utilities have the technological capability and the economic base necessary to perform studies on their own water systems. This Agency will provide technical assistance as needed.

Question: Various agencies in the Federal government finance the construction of water supply projects. Is there any requirement or mechanism to determine whether these projects meet the EPA's standards? Should there be?

Answer: Generally, all Federal agencies providing financial assistance for the construction of water supply projects require that such projects comply with all applicable Federal statutes and regulations. The National Interim Primary Drinking Water Regulations at 40 CFR 142.10(b)(5) require a State which assumes primary enforcement responsibility to establish and maintain an activity "...to assure that the design and construction of new or substantially modified public water system facilities will be capable of compliance with the State primary drinking water regulations."

In non-primacy States, EPA has not adopted regulations which would require the submission of construction plans and specifications for review and certification by EPA.

EPA's decision not to promulgate specific regulations requiring submission of plans and specifications is based on policy consideration which underlie the Safe Drinking Water Act as a whole. One reason, expressed in Water Supply Guidance Number 36 and further expounded upon in Water Supply Guidance Number 52 (attached), is that the States already review these plans and so it would be a duplication of effort by EPA. Another policy underlies the rest of the Safe Drinking Water Act as well; that is the desire to keep primary responsibility for drinking water quality in the hands of the States and localities. While there was disagreement in Congress over the proper Federal role, the prevailing view limited Federal involvement to insuring maintenance of minimum standards of water quality. Only if the States fail to develop their own programs, should the Federal government have authority to impose its own program. (Congressional Record, Volume 119, June 22, 1974, H. 10799.)

If a State is providing adequate pre-construction review to assure water quality standards will be met, EPA will not, and need not, become involved. However, if State control is lacking, the requirements of the Act enable the administrator to set regulations requiring submission of plans and specifications, or "any other information he may reasonably require."

In addition to the above considerations, EPA and the FmHA have signed a joint policy statement regarding FmHA funding priority for public water system improvement or construction. The policy statement reads:

1. Improvement or additions to water treatment systems needed to meet the requirements of the Safe Drinking Water Act will be accorded priority in determining the commitment of available funds.

2. The quality of drinking water for projects financed in whole or in part by FmHA must meet the applicable primary drinking water regulations after completion of any proposed improvements. In those States where primary enforcement responsibility has been assumed by the State, a certification by the State will be required at the time final design and specifications are reviewed. In all other States, such certification will be made by the consulting engineer and will accompany the final design plans and specifications when submitted to the appropriate State regulatory agency for review.

EPA also hopes to secure similar policy statements from other Federal agencies which finance the construction of water supply projects (e.g., EDA, HUD, HEW, SBA, etc.) if their regulations do not require such compliance.

Thus, EPA feels that appropriate mechanisms and requirements exist to assure that water supply projects financed in whole or part by other Federal agencies will meet applicable State and/or EPA standards.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: DEC 29 1976

SUBJECT: Estimated Resource Requirements for EPA Assumption of
Primary (With State Assistance). WSG-36FROM: *Alan Levin*
Alan Levin, Director

State Programs Division, Office of Water Supply (WH-550)

TO: Regional Water Supply Representatives

On October 7, 1976, we sent you Water Supply Guidance No. 27 which estimated the EPA resource requirements for States which do not assume primacy and do not provide any assistance to EPA in conducting a minimum public water system supervision program. This paper makes the assumption that the State has an active public water system supervision program, does not have primacy, but is willing to continue its program and cooperate with EPA.

Recent conversation with Tom Larsen of the Office of General Counsel indicates that if EPA has primacy we would not have authority to conduct all of the activities outlined in WSG-27 and this memo. The Act seems to give EPA authority to conduct activities only in the areas of:

1. Inventories and data management
2. Laboratory certification
3. Enforcement, public notification and legal procedures
4. Variances and exemptions
5. Administration

We hope to get this problem resolved in time for the January 24 meeting of water supply representatives.

I am requesting that you review this document and be prepared to discuss it at the January water supply representatives meeting.

Attachment

ESTIMATED RESOURCE REQUIREMENTS FOR EPA
ASSUMPTION OF PRIMACY (WITH STATE ASSISTANCE).

Introduction

This paper has the objective of assessing resources that will be required when EPA has primary enforcement authority in a State and operates in cooperation with the State water supply surveillance program. It is a companion document to Water Supply Guidance No. 27, to provide a range of EPA manpower resource needs for assumption of primacy.

Background

The November 1976 Draft National Safe Drinking Water Strategy listed, on page 30, three levels of State involvement in primary enforcement authority. They are:

1. Fully operational State programs where the State does the full job by itself.
2. EPA retaining primary enforcement authority, but working together with the State to conduct a public water system surveillance program.
3. EPA retaining primary enforcement authority with the State assuming no part of the program.

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The level III of the November 1976 draft is comparable to the level V of the May 1975 draft of the Strategy. The current level III is the program addressed in Water Supply Guidance No. 27. This paper will address the current level II program, whereby the State and EPA work together. Furthermore, this paper will assume that the State has an effective water supply surveillance program and is prohibited from obtaining primacy only because it lacks the necessary statutory or regulatory authority necessary for primacy. By combining WSG-27 and this paper the Regions are provided with the range of possibilities open to them in States without primacy; this paper showing the minimum EPA resource requirement and WSG-27 showing the maximum EPA resource requirement.

Water Supply Guidance No. 27 listed nine priority program elements where EPA would have to expend resources in order to meet the requirements of the Act. These are:

1. Inventories and data management.
2. Laboratory certification.
3. Communications and education.
4. Enforcement, public notification and legal procedures.
5. Surveillance.
6. Variances and exemptions.

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7. Plan and construction review.
8. Emergency plan.
9. Administration.

Each item will be discussed and resource and manpower estimates will be developed for States with 500, 1200, and 4500 community water systems. Like WSG-27, this paper provides an estimate for the first year of operation, prior to the monitoring deadline for non-community systems. This paper assumes that laboratory certification will be conducted by Regional S & A personnel or from Cincinnati. This paper also assumes that EPA people will be assigned to the location of the State water supply program and will work exclusively on that State's water supply program. Any assistance beyond the manpower shown in this paper would have to come from the existing staffs of the Regional S & A Division, Enforcement Division, Regional Counsel, or Water Supply Branch.

1. Inventories and Data Management.

Most States do not have an ADP system to handle water supply data to the degree of detail necessary to determine compliance with the NIPDWR. Therefore, EPA will have to install and operate MSIS for each State's data. This will enable EPA to easily determine compliance with the regulations, schedule sanitary surveys, check

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on the status of variances and exemptions and aid in determining when to initiate Federal enforcement actions. By running MSIS in each State we would provide a service for the State; they would have access to these data in a more timely manner than it was available previously.

The manpower estimates of WSG-27 have been reduced by eliminating the ADP position and reducing the time of the Staff Position and Secretary. This assumes that all of this work would be done on contract. The contracts section has been greatly increased to reflect the full operating costs of MSIS as shown in the AMS feasibility study.

Item	Manpower			Resources (\$000)		
	500	1200	4500	500	1200	4500
Staff Position*	0.25	0.5	0.5	7.5	15	15
Secretary**	0.1	0.1	0.1	2	2	2
Contracts (Full operating costs of MSIS)				9	22	81
Total	0.35	0.6	0.6	18.5	39	98

*\$30,000 per man-year

**\$20,000 per man-year

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2. Laboratory Certification

Rather than assume that all laboratories submitting samples will be certified by EPA this paper will assume that the State is conducting an adequate Bacteriological Laboratory Certification Program and will continue to run that program. EPA will then only be required to conduct a certification program for chemical and radiological laboratories. The personnel to run the EPA certification program will be located at the Regional Office or Cincinnati, but not at the State level. Therefore, the laboratory certification manpower needs have been greatly reduced from the level shown in WSG-27. EPA will continue to need laboratory analyses in support of surveys and special request lab work. This will be run by the Regional S & A Division for no additional cost.

Item	Manpower			Resources (\$000)		
	500	1200	4500	500	1200	4500
Staff Position*	0.1	0.1	0.2	3	3	6
Secretary**	0.05	0.05	0.1	1	1	2
Total	0.15	0.15	0.3	4	4	8

*\$30,000 per man-year

**\$20,000 per man-year

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3. Communications and Education

This program element is necessary to ensure that water supply operators and citizens understand what the joint EPA-State water supply program consists of. This program will largely be run by the State as part of their routine visits to water supplies and in response to citizen groups and others who request information. EPA activities would be limited to supplying leaflets, information packages, etc. and assisting the State in its education efforts. For this reason, the manpower estimates of WSG-27 have been eliminated as a separate item. The coordination of communications and education is now considered to be part of the Administration element (#9). The amount of material to be distributed has not changed so those costs remain the same.

Item	Manpower			Resources (\$000)		
	500	1200	4500	500	1200	4500
Materials	--	--	--	2	4	8
Total	--	--	--	2	4	8

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4. Enforcement, Public Notification, and Legal Procedures.

In this area it is unlikely that the State will be able to provide much in the way of assistance. The State will not have the authority that EPA has under the Act and the implementation regulations.

As explained in WSG-27, the manpower needs in this area will depend on the number of violations for which EPA will have to check that public notification was given and the number of violations for which enforcement actions are necessary.

Since EPA will carry the major enforcement role in the State the manpower and resource estimates of WSG-27 are not changed.

Item	Manpower			Resources(\$000)		
	500	1200	4500	500	1200	4500
Staff Position*	1.0	1.0	2.0	30	30	60
Staff Assistant**	--	1.0	2.0	--	20	40
Secretary**	0.5	0.5	1.0	10	10	20
Total	1.5	2.5	5.0	40	60	120

*\$30,000 per man-year

**\$20,000 per man-year

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5. Surveillance

Sanitary surveys of public water supply systems are an important factor in providing safe water. Most States recognize this and provide for sanitary surveys as a high priority item. Since the State is most likely doing a good job in this area, EPA would not have to duplicate their work. Accordingly, EPA efforts in this program element would be limited to review of State sanitary survey reports for water systems which are requesting variances and exemptions or are subject to enforcement actions.

Item	Manpower			Resources (\$000)		
	500	1200	4500	500	1200	4500
Staff Position*	0.3	0.6	1.2	9	18	36
Total	0.3	0.6	1.2	9	18	36

*\$30,000 per man-year

6. Variances and Exemptions

Since the State will not have primacy, EPA will have to process variance and exemption requests. This is a time consuming process and is directly related to the number of requests received. The

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manpower and resource positions shown are reduced somewhat from WSG-27. This reflects some additional thinking on the number of requests for variances and exemptions which are likely to come in the first year. Most of the work in the initial request has to be done by the water supply before the request even gets to EPA.

Item	Manpower			Resources(\$000)		
	500	1200	4500	500	1200	4500
Staff Position*	0.3	0.5	1.0	7.5	15	30
Staff Assistant**	--	0.3	0.5	--	6	10
Secretary**	0.2	0.2	0.5	4	4	10
Total	0.5	1.0	2.0	11.5	25	50

*\$30,000 per man-year

**\$20,000 per man-year

7. Plan and Construction Review

In general, States have been doing an adequate job of plan and construction review. Since States are conducting activities in this area, EPA would not have to duplicate them. Therefore, for initial planning purposes we will show no manpower resources in this program element.

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8. Emergency Plan

States have been dealing with emergency situations for years with or without a written emergency plan. Since the requirements for the emergency plan are very general in the Act and the implementation regulations, there is no need to go beyond what the State is already doing. Accordingly, EPA will not provide any manpower in this program element.

9. Administration

The work of EPA personnel located at the State agency headquarters must be coordinated with the work being done by State water supply supervision personnel. The essence of this cooperative EPA-State program is that both groups of people work together in their different areas of responsibility. The administrator of the EPA personnel would have the responsibility for ensuring that this is so. Since the number of EPA personnel located at the State has been reduced, we are also reducing the number of people in the Administration area.

Item	Manpower			Resources(\$000)		
	500	1200	4500	500	1200	4500
Administrator*	1.0	1.0	1.0	30	30	30
Secretary**	1.0	2.0	2.0	20	40	40
Total	2.0	3.0	3.0	50	70	70

*\$30,000 per man-year

**\$20,000 per man-year

SUMMARY FOR LEVEL II - EPA PRIMACY (WITH STATE SUPPORT)

Item	Manpower			Resources (\$'000)		
	500	1200	4500	500	1200	4500
1. Inventory & Data Management	0.35	0.6	0.6	18.5	39	98
2. Laboratory certification	0.15	0.15	0.3	4	4	8
3. Communications & Education	(Part of #9 Administration)			2	4	8
4. Enforcement & Legal Action	1.5	2.5	5.0	40	60	120
5. Surveillance	0.3	0.6	1.2	9	18	36
6. Variances & Exemptions	0.5	1.0	2.0	11.5	25	50
7. Plan & Construction Review	--	--	--	--	--	--
8. Emergency Plan	--	--	--	--	--	--
9. Administration	2.0	3.0	3.0	50	70	70
Subtotal; Manpower Stationed in Regions and/or Cincinnati (2)	0.15	0.15	0.3	4	4	8
Subtotal; Enforcement Personnel Located in the State (4)	1.5	2.5	5.0	40	60	120
Subtotal; Water Supply Personnel Located in the State (1, 3, 5, 6, 9)	3.15	5.20	6.8	91.0	156	262
Total	4.8	7.85	12.1	135	220	389

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WSG-52

DATE: 12 JUL 1978

SUBJECT: Plan Review in Non-Primacy States

FROM: Alan Levin, Director
State Programs Division (WH-550) *Alan Levin*

TO: Regional Water Supply Representatives, I-X

We requested an official interpretation on EPA's non-involvement in plan and specification review in non-primacy States. The attached opinion from the Office of General Counsel finds that we can set regulations requiring submission of plans and specifications where the States fail to develop their own programs.

As a policy decision, we have not developed regulations to require plan review. If a Region is now requiring the water suppliers in a non-primacy State to submit plans and specifications, the practice can continue if the basis of the requirement is an inadequate or non-existing State program. However, it should be noted that without regulations the Region cannot enforce the plan review requirement.

This memorandum should be filed in the Water Supply Guidance Manual ring binder as WSG# 52.

Attachment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

20 JUN 1978

OFFICE OF
GENERAL COUNSEL

MEMORANDUM

TO: James Manwaring, Chief
Drinking Water Branch (WH-550)

FROM: Lorraine Chang, Attorney */ *L. Chang*
Water Quality Division (A-131)

SUBJECT: Basis for EPA's Non-involvement in Plan and Specifications Review in Non-primary States

Nothing in the SDWA prohibits EPA from requiring plan and specifications review of modified or new public water system facilities, to ensure their compliance with NPDWR. While specific authority is not given to EPA by the Act to require such review (as EPA has given to the States, in Regs. §142.10), there is general authority, in §1445, to require reporting whenever necessary. The fact that EPA does not now require submission of plans is based on policy considerations which underlie the act as a whole.

Section 1445(a) provides that water suppliers subject to NPDWR "shall establish and maintain such records, make such reports . . . provide such information as the Administrator may reasonably require by regulation . . . to assist him in determining whether such person has acted or is acting in compliance with this Title" The legislative history of this section shows that Congress intended the authority to be broad; to be exercised to enable EPA to carry out the purposes of the Act. (House Report 93-1185, p. 40). Not only can the Administrator require provision of information from water suppliers, but he can make on site inspections as well. §1445(b).

*/ Nancy Warren, a law clerk, in the Office of General Counsel, aided substantially in the preparation of this memorandum.

EPA's decision not to promulgate regulations requiring submission of plans and specifications is justified by policy considerations. One reason, expressed in WSG #36, is that the States already review these plans and so it would be a duplication of effort by EPA. Another policy underlies the rest of the SDWA as well; that is the desire to keep primary responsibility for drinking water quality in the hands of the States and localities. While there was disagreement in Congress over the proper federal role, the prevailing view limited federal involvement to insuring maintenance of minimum standards of water quality. Only if the States fail to develop their own programs, should the Federal Government have authority to impose theirs. Congressional Record, vol. 119, June 22, 1973, H. 10799.

In summary, if a State is providing adequate pre-construction review, to assure water quality standards will be met, EPA will not, and need not, become involved. However, if State control is lacking and the requirements of the Act are not being met, the general provisions of §1445 enable the Administrator to set regulations requiring submission of plans and specifications, or "any other information he may reasonably require."



STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR
RALEIGH 27611

JAMES B. HUNT, JR.
GOVERNOR

July 28, 1978

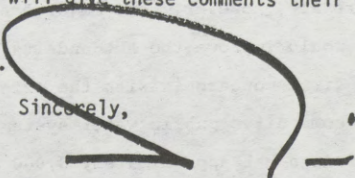
Dear Ed:

The State of North Carolina's Department of Human Resources and the United States Environmental Protection Agency has entered into a Memorandum of Understanding enabling the State to oversee that portion of the Safe Drinking Water Act relating to the public water supply supervision program for community water supplies.

The oversight hearings present an opportunity for the State to reiterate in the written record our growing concern over the mechanics of implementing the Act. Our attached position paper explains in detail our concerns on several sections of the Act. I appreciate this opportunity to present our comments on behalf of the Department of Human Resources, and I am confident the Environmental Pollution Subcommittee will give these comments their due consideration.

With warmest personal regards.

Sincerely,



The Honorable Edmund S. Muskie
United States Senate
Subcommittee on Environmental Pollution
4210 Dirksen Senate Office Building
Washington, D. C. 20510

Attachment

STATEMENT OF THE STATE OF NORTH CAROLINA
FOR THE WRITTEN RECORD OF THE
OVERSIGHT HEARING ON IMPLEMENTATION
OF THE SAFE DRINKING WATER ACT,
SUBMITTED TO THE SUBCOMMITTEE ON ENVIRONMENTAL
POLLUTION OF THE COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS, JULY 24, 1978

The State of North Carolina is pleased to submit a statement for the written record on the implementation of PL93-523, the Safe Drinking Water Act. We hope our comments will be of help to you in your review of the Act.

The State of North Carolina is dedicated to the protection of the health of all its citizens and the protection of our drinking water supply. Although we have not achieved primacy, we have signed a Memorandum of Understanding with the Environmental Protection Agency and we have an excellent working relationship with the regional office of EPA on the implementation of the program in North Carolina.

There are, however, some major concerns we have that, in our opinion, would improve the Act and its effectiveness.

Our first concern is with the existing definitions for "community" and "non-community" public water systems. Under these definitions North Carolina has approximately 3,000 to 3,200 community systems and an estimated 15,000 non-community systems. Many of the 15,000 systems are country gas stations, stores and churches.

While the State of North Carolina will continue to assure safe drinking water for all people in the State, we suggest that the definition for a public community system would be more accurately

defined as one serving 10 or 15 residences. Non-community systems should be distinctly defined in the Act to avoid vague interpretation.

A second concern is that under Section 1412(b)(1)(B) the Administrator is permitted to establish Maximum Contaminant Levels based on his judgment which may have any adverse health effect. The State of North Carolina believes that public confidence in established contaminant levels will be greatly improved by basing these levels on scientific evidence which documents a real public health hazard.

The State of North Carolina joins the Southern Environmental Resources Conference of the Council of State Governments in requesting an extensive research effort, in accordance with the National Academy of Sciences recommendations, in order to provide the documentation needed to support the requirement to control organic chemicals in drinking water.

Finally, a third concern regards the public notification requirement. Paragraph (C) of Section 1414 requires a water system owner to give public notice whenever a violation of the regulations occurs. The State of North Carolina would like to be able to preserve a strong public credibility posture. We suggest there be some flexibility for the State and EPA to determine the need for public notification based on the circumstances and nature of the violation.

In addition to the above issues, the North Carolina Department of Human Resources, which administers the program in North Carolina, has cited other specific sections where modifications in the Act would be desirable. Those citations follow:

Sec. 1412 National Drinking Water Regulations

- (a) (2) The phrase "generally available taking costs into consideration" in reference to attainable levels of contaminants is -

construed by EPA to mean "generally available to large municipal systems" and does not consider the small subdivision or mobile home park system which can not afford treatment techniques used by large systems. This phrase should be rewritten to apply to small systems as well as large ones. This modification of the phrase should be made throughout the Act wherever it occurs.

Sec. 1413 State Primary Enforcement Responsibility

Whenever the drinking water regulations are modified by the EPA Administrator, State regulations must also be modified by those States having primary enforcement responsibility granted by this Section. In some States it requires up to eighteen months for a regulation to be changed. Therefore, a paragraph should be added to this section to provide States with up to eighteen months to comply with necessary revisions to their regulations prior to a determination that they no longer meet primary enforcement responsibility requirements.

Provision should be included in this section for a State to return primacy to EPA whenever a State believes it can no longer adequately support the Act and its regulations.

Sec. 1414 Failure by State to Assure Enforcement of Drinking Water Regulations

- (d) EPA regulations based on this paragraph require a State to adopt secondary drinking water regulations or be penalized for failure to enforce its primary enforcement responsibility although the requirements for primacy do not include the adoption of secondary drinking water regulations. It is recommended that this paragraph be deleted from the Act.

Sec. 1414 Variances

Sec. 1416 Exemptions

These sections are satisfactory as written; however, the EPA guidelines detailing the specific requirements to be submitted for each category are quite restrictive and impose some unnecessary burdens on the public water supply system owner who attempts to obtain a variance or exemption.

Sec. 1442 Research, Technical Assistance, Information, and Training of Personnel

- (d) This paragraph provides for training personnel of State agencies and units of local government at institutions of higher learning but does not provide for the training of water treatment facility operators who are in direct control of operations. An amendment should be added which will provide resources to the operator to attend short courses, seminars, workshops, etc. to increase his knowledge and improve his ability to perform his job. Necessary funds for this training should also be provided.

Sec. 1443 Grants for State Programs

This section should be amended to provide funds for the continuation of grants to States to carry on the public water supply system supervision programs. Funds should be at least equal to the 1979 appropriation of \$45,000,000 plus contingencies for inflation.

Sec. 1444 Special Study and Demonstration Project Grants; Guaranteed Loans .

This section needs to be amended to more clearly define a small public water system. A small public water system could reasonably be defined as one serving a population of up to 5,000 persons. Although grants are provided in this section for development and demonstration of new or improved methods, approaches, or technology for providing a dependably safe supply of drinking water, no specific grants are allocated to small public water systems for assisting in the development and demonstration of a project which would enable these systems to solve problems peculiar to the systems themselves. This section should be amended to reflect this need and adequate funding should be provided.

Sec. 1446 National Drinking Water Advisory Council

This section establishes the National Drinking Water Advisory Council to advise, consult with and make recommendations to the Administrator of the Environmental Protection Agency. This section should be amended to require the Administrator to give due consideration to the recommendations and advice of the Council. The criteria for members of the National Drinking Water Advisory Council should be amended to include at least two individuals in responsible charge of a State regulatory water supply program. These are the individuals contemplated by the Act as being in responsible charge of the primary enforcement program in each State.

I am hopeful that our experience and suggestions for modification in the Safe Drinking Water Act will be of help to you in your overview process.

Thank you for this opportunity.

STATEMENT BY THE
CITY OF LOS ANGELES
TO THE
SENATE SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
FOR THE
CONTROL OF ORGANIC CHEMICAL CONTAMINANTS
IN DRINKING WATER
ON THE
EPA SAFE DRINKING WATER REGULATIONS

JULY 18, 1978

STATEMENT BY THE
CITY OF LOS ANGELES
ON THE PROPOSED ORGANIC CONTROL AMENDMENTS TO THE
NATIONAL INTERIM PRIMARY DRINKING WATER REGULATIONS

THE CITY OF LOS ANGELES WELCOMES THIS OPPORTUNITY TO PRESENT ITS VIEWS ON THE PROPOSED REGULATIONS FOR THE CONTROL OF ORGANIC CHEMICAL CONTAMINANTS IN DRINKING WATER.

THROUGH ITS DEPARTMENT OF WATER AND POWER, THE CITY PROVIDES WATER AND POWER TO 3 MILLION RESIDENTS AND HAS AN EXCELLENT RECORD OF OVER 75 YEARS OF PROVIDING A SAFE WATER SUPPLY. LOS ANGELES IS ACTIVE IN MEETING THE OBJECTIVES OF THE SAFE DRINKING WATER ACT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). WE ARE CURRENTLY IN THE PLANNING STAGE OF A COSTLY FILTRATION PROJECT FOR THE LOS ANGELES AQUEDUCT TO MEET THE NEW EPA TURBIDITY STANDARD.

WHILE LOS ANGELES SUPPORTS MEASURES NECESSARY TO PROTECT PUBLIC HEALTH, WE ARE RESPONSIBLE TO OUR RATEPAYERS TO ENSURE THAT EXPENDITURES OF PUBLIC FUNDS ARE MADE ONLY AFTER THE NEED AND BENEFITS HAVE BEEN ESTABLISHED. VITAL INFORMATION ON THE NEED, BENEFITS, AND COSTS OF THIS PROGRAM IS LACKING, AND THEREFORE WE ARE STRONGLY OPPOSED TO THE PROPOSED STANDARDS AND RECOMMEND INSTEAD THAT EPA SHOULD:

1. DELAY IMPLEMENTATION OF THESE AND ANY FURTHER ORGANICS REGULATIONS UNTIL STRONGER EVIDENCE OF NEED HAS BEEN ESTABLISHED,

2. EXPAND AND ACCELERATE FEDERALLY FINANCED, LARGE-SCALE HEALTH-EFFECTS RESEARCH AS RECOMMENDED BY THE NATIONAL ACADEMY OF SCIENCE,
3. ENCOURAGE WATER SYSTEMS TO LOWER TRIHALOMETHANE LEVELS BY SETTING THE 100 PARTS PER BILLION (PPB) STANDARD AS A NATIONAL GOAL AND REQUIRE MONITORING BY UTILITIES SERVING OVER 75,000 PEOPLE, AND
4. PROVIDE FEDERAL MONITORING OF MAJOR WATER SOURCES NATIONWIDE TO DETERMINE SYNTHETIC ORGANIC CHEMICAL LEVELS.

WE OBJECT TO THE EPA PROPOSAL TO SET A MAXIMUM CONTAMINANT LEVEL FOR TRIHALOMETHANES OF 100 PPB AND THEIR EXPRESSED INTENT TO LOWER THIS LEVEL IN THE FUTURE TO 10 PPB. THE NATIONAL ACADEMY OF SCIENCES WAS CHARGED BY CONGRESS AND THE EPA TO RECOMMEND MAXIMUM CONTAMINANT LEVELS FOR ORGANICS IN WATER TO PROTECT PUBLIC HEALTH. THE ACADEMY FOUND THEY LACKED SUFFICIENT DATA FOR DOING SO AND RECOMMENDED THAT FURTHER RESEARCH BE CONDUCTED. AMONG MEMBERS OF THE SCIENTIFIC COMMUNITY, THERE IS WIDESPREAD DISAGREEMENT OF THE HEALTH SIGNIFICANCE OF LOW LEVELS OF ORGANIC CONTAMINANTS. THE AMERICAN WATER WORKS ASSOCIATION (AWWA) RECENTLY PUBLISHED THE FINDINGS OF AN EPA-SPONSORED STUDY OF THE EFFECTS ON HUMAN HEALTH OF TRACE ORGANIC CHEMICALS IN DRINKING WATER. THE TWO-YEAR STUDY, REPORTS AWWA, FOUND NO EVIDENCE TO BACK EPA'S REGULATIONS FOR THE CONTROL OF ORGANIC CHEMICAL CONTAMINANTS IN DRINKING WATER.

EPA HAS PROPOSED A TREATMENT METHOD USING GRANULAR ACTIVATED CARBON (GAC) TO REMOVE MAN-MADE SYNTHETIC ORGANICS FROM WATER SUPPLIES. THE NATIONAL ACADEMY OF SCIENCES WAS DIRECTED TO MAKE STUDIES AND RECOMMENDATIONS ON SYNTHETIC ORGANIC CHEMICAL LEVELS IN WATER. HOWEVER, THE ACADEMY RECOGNIZED THAT UNCERTAINTIES EXIST REGARDING HEALTH RISKS OF THESE COMPOUNDS AND RECOMMENDED FURTHER RESEARCH TO DETERMINE WHETHER LOW LEVELS OF THESE COMPOUNDS ACTUALLY INCREASE THE PROBABILITY OF HUMAN CANCER. WE AGREE THAT THIS ADDITIONAL RESEARCH IS NECESSARY AND THAT IT WOULD BE PREMATURE FOR EPA TO IMPOSE THE GAC TREATMENT REQUIREMENT ON WATER SYSTEMS.

THE LACK OF KNOWLEDGE ON SYNTHETIC ORGANICS IS DEMONSTRATED BY THE VAGUENESS OF THE PROPOSED REGULATIONS. THE REGULATIONS REQUIRE UTILITIES TO MONITOR FOR 60 SYNTHETIC ORGANICS. HOWEVER, THE ONLY GUIDANCE PROVIDED FOR DETERMINING THE NEED TO INSTALL GAC TREATMENT IS THE STATEMENT THAT A VARIANCE CANNOT BE ISSUED IF "SIGNIFICANT CONTAMINATION" EXISTS. THE TERM SIGNIFICANT CONTAMINATION IS NOT DEFINED BUT LEFT OPEN TO FUTURE INTERPRETATION BY EPA AND STATE HEALTH AGENCIES. IT IS IMPOSSIBLE FOR UTILITIES TO DETERMINE THE IMPACT OF THIS REGULATION ON THEIR COSTS UNTIL IT IS SEEN HOW IT WILL BE APPLIED BY REGULATORY AGENCIES.

THE COSTS OF CONTROLLING THE FORMATION OF TRIHALOMETHANES AND PROVIDING GAC TREATMENT ARE UNKNOWN BECAUSE THERE HAS NOT BEEN ADEQUATE EXPERIENCE WITH DESIGN, CONSTRUCTION, AND OPERATION OF THESE FACILITIES. FOR EXAMPLE, IT IS INTERESTING TO NOTE THAT DETAILED COST ESTIMATES OF THE CAPITAL INVESTMENT FOR TURBIDITY

REDUCTION IN LOS ANGELES ALONE WILL BE APPROXIMATELY ONE-HALF OF EPA'S ESTIMATE OF THE NATIONWIDE COSTS FOR TURBIDITY CONTROL IN ALL CITIES OVER 100,000 IN POPULATION. A SAMPLE SURVEY CONDUCTED BY LOS ANGELES OF ONLY 31 SUCH CITIES FOUND THAT A \$257 MILLION INVESTMENT WOULD BE REQUIRED TO MEET THE TURBIDITY STANDARDS RATHER THAN THE \$135 MILLION EPA ESTIMATED.

UTILITIES MUST NOT BE FORCED TO CONSTRUCT TREATMENT FACILITIES AT A COST OF HUNDREDS OF MILLIONS OF DOLLARS NATIONWIDE WHEN THESE PROJECTS HAVE ONLY QUESTIONABLE JUSTIFICATION. USING EPA COST DATA, LOS ANGELES WOULD HAVE TO SPEND \$93 MILLION IN CAPITAL COSTS AND \$4.6 MILLION IN ANNUAL OPERATING COSTS TO PROVIDE GAC TREATMENT. THIS ESTIMATE WAS MADE BEFORE EPA ANNOUNCED THAT THEIR ORIGINAL ESTIMATE FOR ORGANICS CONTROL HAD DOUBLED. MUCH MORE TIME IS NEEDED TO GAIN INFORMATION FROM RESEARCH AND EXPERIENCE BEFORE TREATMENT METHODS ARE ADOPTED.

THE EPA SHOULD REQUIRE LARGE UTILITIES TO MONITOR FOR TRIHALOMETHANES TO IMPROVE OUR DATA BASE. TEST METHODS ARE ESTABLISHED AND COSTS ARE JUSTIFIABLE FOR THOSE CITIES SERVING OVER 75,000 PEOPLE. ON THE OTHER HAND, THE COST AND COMPLEXITY OF MONITORING FOR SYNTHETIC ORGANIC CHEMICALS IS TOO EXPENSIVE FOR THESE UTILITIES AND SHOULD BE MANAGED, OPERATED, AND FINANCED BY THE EPA. SUCH A PROGRAM SHOULD BE BASED ON COST EFFECTIVENESS, FOCUSING ON THE SYSTEMS IDENTIFIED AS HAVING THE HIGHEST SYNTHETIC ORGANIC CHEMICAL LEVELS.

IN CONCLUSION, THE CITY OF LOS ANGELES RECOMMENDS THAT THE PROMULGATION OF THE PROPOSED EPA STANDARDS SHOULD BE DELAYED INDEFINITELY. EPA SHOULD CONTINUE THE TOXICOLOGICAL AND EPIDEMIOLOGICAL RESEARCH ON ORGANICS IN WATER SUPPLIES. THESE STUDIES SHOULD BE FEDERALLY FINANCED AND THE FINDINGS MADE AVAILABLE TO THE WATER SUPPLY INDUSTRY. IF EVIDENCE OF THE HEALTH RISK OF ORGANIC CONTAMINANTS IN WATER IS DEVELOPED, AND THE MONITORING OF WATER SUPPLIES SHOWS WHERE IMPROVED WATER QUALITY IS NECESSARY, TREATMENT METHODS CAN THEN BE IMPLEMENTED.

WHILE AWAITING THE RESULTS OF THIS RESEARCH, AND ENCOURAGED BY EPA'S LEADERSHIP, WATER UTILITIES THROUGHOUT THE NATION WILL CONTINUE THE SOUND WATER QUALITY MAINTENANCE PROGRAMS THEY HAVE BEEN NOTED FOR WORLDWIDE.

AMERICAN BOTTLED WATER ASSOCIATION
PRESENTATION TO THE UNITED STATES SENATE

OVERSIGHT HEARINGS ON SAFE DRINKING WATER
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION: JULY 18, 1978

Introduction

Mr. Chairman, on behalf of the American Bottled Water Association, I want to thank you for allowing us to offer testimony on the important role that bottled water has played, and must continue to play, in assuring the public of an adequate supply of safe drinking water.

I am William C. Bailey, President of the American Bottled Water Association ("ABWA"). Our Association represents over 125 bottler members, who annually distribute drinking water to an estimated 5 million people. ABWA membership represents an estimated 90 percent of the total bottled water distributed in the United States.

Background

The public concern for high quality drinking water has led to EPA proposals for more stringent, very costly regulation of municipal water suppliers. EPA's proposed regulations have generated a national debate on the wisdom and necessity of such costly regulations.

ABWA's Concerns

The membership of ABWA views this national debate from two important perspectives:

1. ABWA believes that uniform federal regulation of all drinking water is important if the public is to achieve adequate protection and if the drinking water industry is not to be unfairly burdened by conflicting standards, particularly at the federal level of government.

2. There is great need under the Safe Drinking Water Act to focus attention on sources of high quality drinking water that have the capability of serving as alternatives to municipal water suppliers.

I. Uniform Regulation

As to regulation of drinking water, ABWA believes that the entire American public deserves water of high quality and that uniform federal regulation of drinking water is the best method of achieving this goal. Therefore, ABWA generally supports the efforts to date of EPA and FDA to regulate drinking water safety.

Indeed, the bottled water industry has been among the first in the drinking water field to have significant enforceable federal health and safety regulations. Since 1975, FDA has enforced federal Quality Standards for Bottled Water. In 1975 FDA also adopted Good Manufacturing Practices for the processing of bottled water.

ABWA actively encouraged the FDA to regulate bottled water and made substantial technical and scientific contribution to that regulatory effort. We believed then and continue to believe that uniform federal regulation is in the public's interest and, therefore, in our best interest.

Also, ABWA is self-monitoring. We have a program of plant inspections and drinking water quality assurance conducted by an independent research laboratory of our members.

As you can see, the bottled water industry supports federal regulation of all drinking water. A principal

concern of ABWA is, however, that the federal health regulations to which both municipal and bottled water are subjected may at some point begin to conflict and create an unwarranted burden on our industry.

It is especially important that the regulation of drinking water as a food by FDA not be incompatible with its regulation by EPA. There is a potential for unnecessary conflict and confusion. In this regard we would like to submit for inclusion in the record a more detailed discussion of this problem, presented by our Washington counsel, Timothy L. Harker, at the National Conference on Safe Drinking Water held by Resources for the Future in March, 1978. (Exhibit One).

ABWA also believes that federal regulation of the processing and sale of bottled drinking water should serve as a model for such regulations at the state and local level, in order to avoid duplication and unnecessary conflicts.

II. Bottled Water as an Alternative Source

ABWA's second perspective on the national debate over drinking water concerns the lack of breadth in the current focus of the Safe Drinking Water Act. In short, the Act as administered has failed to generate the level of effort, both public and private, that is necessary if all Americans are to be assured of a safe, affordable supply of drinking water.

The Act has ignored millions of people who have their own water supply. In addition, EPA's proposed regulations for trihalomethanes and synthetic organic carcinogens in municipal water supplies do not even cover an estimated 100

million people. Thus the Act appears to have generated an administrative mentality that believes that if central treatment of a drinking water supply is not economically feasible for specific contaminants (such as chloroform) the best alternative is no regulation at all.

Apparently, the administration of the Safe Drinking Water Act has tended to exclude from public and private consideration high quality, dependable alternatives to central water treatment of public water supplies. Bottled water, as an important alternative drinking water source, deserves greater public consideration for the following reasons.

As I have testified previously, bottled water is already a federally regulated industry. In addition to the relatively early federal standards on quality, bottled water has for a number of years operated under detailed federal control of its processing and bottling procedures.

Bottled water is the only drinking water that currently has in place the technology to meet all established and proposed health standards for drinking water.

Bottled water is derived either from naturally safe sources of water (such as fresh spring water) or is processed with advanced, proven water treatment technology. In this regard, it is important to consider that while municipalities are looking for ways to meet EPA's proposed trihalomethane standard, at least 75 percent of the bottled water industry uses ozone rather than chlorine as a bacterial control agent, thereby avoiding any possible formation of chlorinated hydrocarbons as a result of water treatment.

The emerging federal concern over the safety of the drinking water distribution system itself (e.g. lead or asbestos in public water conduits) is not a significant concern with respect to bottled drinking water. Not only does FDA regulate the quality of the bottled drinking water product and the methods by which it is processed, but FDA has for many years also assured the safety of the bottle used for packaging drinking water.

In these hearings municipal water suppliers are understandably concerned with the greatly increased public cost of meeting EPA standards. It is, therefore, pertinent to consider that bottled water may also be a cost effective alternative source of drinking water. Contrary to one assertion made at these hearings, ABWA believes it is incorrect to view bottled water as simply "a rich man's alternative." Our own extensive marketing experience indicates that bottled water is an alternative for persons at all economic levels. Furthermore, it is estimated that only one-half of one percent of the quantity of raw water treated by municipal systems is used for drinking and food. Thus in fact, the bottled water industry by treating only that water needed to be of drinking water quality may under certain conditions be in a position to meet the public's drinking water needs. This may be especially true in areas served by a) private systems; b) small community systems; and c) community systems that EPA intends for economic reason to exempt from trihalomethane (chloroform) regulation and from treatment standards for granular activated carbon.

Examples of Circumstances Under the Safe Drinking Water Act
in Which Bottled Water May be a Preferable Alternative

1. Special drinking water needs of the public may best be met by the bottled water industry; e.g., rather than treating all raw water for nitrate removal, bottled water can supply nitrate free water for women during pregnancy and for infants.

This has been mentioned as a possible alternative in Illinois for compliance with the nitrate Maximum Contaminant Level set by EPA. It is a procedure followed in California where bottled water is recommended for infants in areas and during periods of high nitrate concentration.

The special drinking water problems that may be posed by certain minerals have also been discussed in testimony here today. Thus, for example, in communities with high flouride levels, flouride reduction through central treatment may be achieved only at great cost. The use of bottled water as an alternative may provide the needed flexibility to protect the public while avoiding the great capital investment and operating expense for flouride removal in those communities.

Similarly, the Environmental Defense Fund has today chastised EPA for failing to require monitoring of municipal water supplies for sodium content. Persons who may wish to control their intake of sodium, flouride and other minerals could be adequately protected by a public notification requirement when mineral levels in the public supply are excessive and the use of bottled distilled or purified water, or certain bottled spring waters, as an alternative to a

municipal water supply with unacceptable mineral levels.

Important special needs to be met by bottled water can also occur during temporary periods of high agricultural run-off. Thus, for example, rather than treating all municipal water to remove specific agriculturally-related contaminants, such as pesticides, that may be only seasonally present, the public could be encouraged to use an alternative source of drinking water during such periods.

. 2. As both EPA and the Conference of State Sanitary Engineers have recognized in testimony today, small municipal water systems may be faced with serious economic limitations in attempting to upgrade their public water treatment systems. Yet, ABWA agrees with Mr. Jorling of EPA who testified that the entire public should be the beneficiary of safe drinking water.

It appears to ABWA to be far more prudent and consistent for EPA and local governments to consider notifying the consumer of alternative sources of safe drinking water in those communities faced with severe economic limitations, rather than to forego the high quality drinking water that can be provided those communities. Thus, for example, there appears to be no substantive basis for not providing public monitoring and public notification of excessive trihalomethane levels in all communities. At least under such a system, as opposed to EPA's current proposed approach, the consumer could be advised of available alternative sources of drinking water and of when he should consider the use of an alternative source.

3. In addition, the bottled water industry is a reliable alternative source of safe drinking water during periods of public emergency, such as floods and chemical spills.

Public water systems try in every way to anticipate distribution failures. Unfortunately, there are times when natural or man-made disasters occur that seriously impair the safety or availability of municipal drinking water. A primary example is that of an earthquake in the Los Angeles area several years ago which caused a dam to break, flooding parts of the city.

Water from the public system was completely shut off in parts of the city, and the only alternative source of drinking water in those areas was bottled water. Bottled water companies in many cases provided tanker trucks to deliver drinking water free. Bottled water was also provided in 5 gallon containers and delivered to emergency Red Cross, police and medical centers in the Los Angeles area.

Similar situations exist in many other areas, including Johnstown, Pennsylvania during recent floods, communities in Eastern Pennsylvania during Hurricane Agnes, and Miami, Florida when a broken water main caused contamination of the public water system.

Clearly, if the dependability of bottled water as an alternative source of safe drinking water has been demonstrated during such periods, governments under the Safe Drinking Water Act should focus more attention on this alternative during "episodic" events, such as: a) when public water

supplies are temporarily rendered unsafe; e.g., during the carbon tetrachloride spill on the Kanawha River, and during the recent bacterial episode in the public water system of Bennington, Vermont; and b) on those occasions under the Safe Drinking Water Act when the public utility must notify the consumer that the public drinking water, for whatever reason, is in serious violation of a health-related Maximum Contaminant Level.

4. In the future, our country will experience even greater monitoring and regulation of municipal water supplies. This may also indicate the economic viability of bottled water as an alternative source of safe drinking water for large numbers of consumers of all economic and social levels. One example involves increased monitoring of public water quality at the point of consumer use. If in the future such monitoring indicates problems in certain areas due to contamination of the drinking water by the water distribution system itself, bottled water may well be a cost effective alternative to replacing the entire distribution system of a municipality.

5. Finally, it is evident both from testimony before this Committee and before EPA, that widespread disagreement exists over just how great the capital and operating costs will be for municipal consumers faced with currently proposed as well as future regulations of municipal water supplies. The relative cost picture of bottled water as an alternative source can only be reliably determined by looking at the realistic future cost of municipal drinking water. This does not appear to have been accomplished yet.

It is clear that under the Safe Drinking Water Act greater attention should, therefore, be given to alternative sources of drinking water.

III. ABWA's Principal Recommendations

As a first step toward acknowledging the public importance of alternative sources of safe drinking water, EPA should appoint a knowledgeable person in the bottled drinking water area to the National Drinking Water Advisory Council. Mr. Jorling of EPA testified here today that the National Drinking Water Advisory Council ("NDWAC") has played an important role in reflecting the views of "the states, the industry and the general public."

We certainly agree that NDWAC's role is to help assure that federal regulation of drinking water reflects the spectrum of public knowledge and public interest in drinking water issues. We strongly disagree that NDWAC has to date provided a full representation either of the "industry" or the "general public." It appears that no expert in bottled water or in any source of drinking water except ground water and municipal treatment systems is serving on the NDWAC. Clearly in recognition of the importance under the Safe Drinking Water Act of considering alternatives to municipal water systems (an importance recognized by others in testimony before this Committee and in hearings before EPA) an expert in bottled water, as an important, federally regulated source of drinking water, should serve on the NDWAC.

As a second step, EPA and FDA should be encouraged to

undertake a thorough evaluation of the public circumstances in which the use of bottled water may constitute:

- a. a cost-effective alternative source of safe drinking water;
- b. a desirable alternative drinking water source to be required or encouraged under conditions in which the consumer otherwise would generally forego the benefit of an important health regulation of drinking water (e.g. trihalomethanes in communities under 75,000); and
- c. a desirable, cost-effective alternative source of drinking water for special segments of the population (e.g. those who need mineral free water).

IV. Summary

Bottled water is a reliable alternative source of high quality drinking water. Clearly, additional government attention should be devoted to the opportunities under the Safe Drinking Water Act for better serving the public interest through use of this alternative. Accordingly, we recommend the following:

1. EPA and FDA should be encouraged to pursue a uniform approach in their regulation of drinking water. A review and clarification of the respective roles of FDA and EPA over drinking water is in order.

2. An expert in bottled water, as an alternative source of drinking water subject to federal regulation, should be appointed to the National Drinking Water Advisory Council. Not only is the bottled water industry an important

segment of the drinking water industry, but even more importantly the consideration of bottled water as an alternative source of safe drinking water is in the public interest and should be more ably reflected on that Council.

3. Consideration should be given to allowing local governments to evaluate the use of alternative methods, including bottled water, for meeting EPA's drinking water standards under certain conditions.

4. In community systems and in private water systems that are exempt from EPA regulations such as the trihalomethane standard and the requirement for granular activated carbon treatment, consideration should be given to methods, other than central treatment, for providing drinking water that in fact conforms to the objectives of these standards. For example, under the Safe Drinking Water Act these "exempt" communities could be encouraged or, perhaps, required to provide public notification of when "acceptable" levels for trihalomethane or synthetic organics are exceeded in the public water supply. In these circumstances, because the community supply is exempt from EPA's treatment standards, the community would nevertheless be required also to notify consumers that they may wish to consider an alternative source of drinking water.

5. As a means of meeting the ultimate objectives of the Safe Drinking Water Act, the social desirability as well as the cost-effectiveness of greater reliance on alternative sources of drinking water should be given consideration.

Conclusion

Thank you very much for permitting the American Bottled Water Association to make this presentation. We stand ready to assist the Congress, FDA and EPA in carrying out the important objectives of the Safe Drinking Water Act.

COMMENTS OF TIMOTHY L. HARKER, ESQ.
DELIVERED AT THE NATIONAL CONFERENCE ON
DRINKING WATER POLICY PROBLEMS
SPONSORED BY RESOURCES FOR THE FUTURE
6-8 MARCH 1978

JURISDICTIONAL CONFLICTS UNDER THE SAFE DRINKING
WATER ACT

Introduction

In the law, jurisdiction means the power to decide. In this sense, there are two levels of jurisdiction under the Safe Drinking Water Act, i.e., federal and state. There are also two kinds of jurisdictional conflicts presented by the Safe Drinking Water Act. One, which Mr. Ongerth addresses, is the political conflict due to the fact that the Act reserves most of the decision-making power for the federal government while imposing most of the financial and administrative burdens on state and local governments. I wish to address a few comments to this jurisdictional conflict. My comments pertain to problems which Congress created when it decreed that "he who must pay shall have no say." But first I would like to discuss the second kind of jurisdictional conflict, i.e., statutory overlap potentially resulting in confusion in safe drinking water law and policy.

Part One: Jurisdictional Conflict Due to Statutory Overlap
of the Safe Drinking Water Act and Other Federal
Statutes

Potential jurisdictional conflicts exist among federal agencies with respect to drinking water. Problems may occur because of separate authority over drinking water under the Safe Drinking Water Act ("SDWA"), the Federal Food, Drug, and Cosmetic Act ("FDCA"), the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA"), and the Toxic Substances Control Act ("TSCA").

Drinking water under the law is a "food," subject to standards for food additives and unavoidable contaminants under the FDCA if sold in interstate commerce. But it is more than a food. It is an environmental medium through which the public may be exposed to contaminants, and as such drinking water is subject to the Maximum Contaminant Levels of the Safe Drinking Water Act.

Additional statutory authority over drinking water may be indirectly exercised. Certain chemicals used in drinking water treatment, such as chlorine, are pesticides within the scope of the FIFRA. Pesticides must be registered and pesticide use must comply with label restrictions established by EPA, which also has the authority to prohibit the use of a pesticide that results in unreasonable adverse effects on the environment. EPA may also establish tolerances for pesticide chemicals which may be added to raw water. Clearly, the use of pesticide chemicals in the production and

treatment of drinking water may be regulated under the FIFRA.

Finally, indirect statutory authority over drinking water may be achieved under the TSCA. While TSCA exempts food additives, at least one theory holds that certain drinking water chemicals are not "food additives" but rather, are chemicals used in the production of potable water. Pursuant to such an interpretation existing and new drinking water chemicals may be subject to testing requirements and regulation of use under TSCA.

The statutory overlay with respect to drinking water is important for all forms of drinking water, i.e., municipal water supplied by public water systems, bottled water and drinking water used in the processing or packaging of other foods. While it may be true that FDA has not yet exercised its authority over public water supplies, an important distinction exists between whether the government has authority to regulate (which FDA has) and whether it chooses to exercise its authority. Regulatory priorities change from one administration to the next and may even change more frequently in response to public attention or the pressure of public or special interest groups. Reliable long-range business and public policy planning cannot be made on the basis of an assumption that because FDA has not yet exercised substantial authority over public drinking water, it will not do so in the future.

With respect to the other forms of drinking water, bottled water and drinking water used in the packaging or processing of other foods, the uncertainty caused by the statutory overlay is even more significant than for municipal water supplies.

For example, a food under the FDCA is subject to the provisions of the Delaney Clause and to FDA's aggressive posture toward the addition of carcinogenic substances to the food supply. Bottled water is a food subject to the FDCA. It is not clear whether FDA would view the bottling of municipal water which contains trihalomethanes within EPA's standards (proposed at 100 ppb) as prohibited under the Delaney Proviso. Such an interpretation would appear to be legally impermissible, but confusion will exist among the industry, nevertheless, until Congress or the FDA provides a clear direction.

Even if the Delaney Clause is inapplicable, the potential for more stringent standards for bottled water than for municipal water creates an anomaly, i.e., what is lawful when it comes out of the tap may become unlawful if put in a bottle. This may result in public confusion and clearly injects unnecessary uncertainty into business planning.

Another example of the potential conflict caused by overlapping jurisdiction pertains to drinking water used in food packaging or processing. FDA has proposed to ban under section 409 of the FDCA the addition of chloroform to food.

Yet EPA will apparently permit 100 ppb of chloroform in drinking water. It is uncertain at this time whether the addition of such drinking water to other foods for processing or packing would be construed by FDA to constitute a violation of the Delaney Proviso. Again, the issue of the Delaney Proviso aside, even the potential for requiring significantly tighter standards for a food because drinking water (itself a food) is added to it is anomalous and creates unnecessary uncertainty.

Similar problems of jurisdictional overlap exist with respect to food packaging including water conduits. Drinking water at the point of treatment which is in compliance with EPA standards under the SDWA may by the time it reaches the consumer have picked up additional contaminants from metal cans used for food packaging, plastic containers used for water, or water conduits, including asbestos-containing pipe. If, for example, drinking water standards for such materials as lead, chloroform, or asbestos are established without taking account of the possible additional contribution of such contaminants from the drinking water "package" (container, can or pipe), then drinking water which complies with EPA MCL's at the point of treatment may exceed those standards by the time it reaches the consumer. In such a case, drinking water as a "food" may be in violation of the FDCA even though it complied with EPA standards at the municipal treatment plant.

An even greater conflict could exist in the case of

such leaching or migration. EPA may set MCL's (in excess of zero) for carcinogenic substances in the municipal water supply under the SDWA. FDA on the other hand may view the potential migration of minute quantities (even if unmeasurable) of such compounds from the "package" into drinking water as indirect additives, prohibited by the Delaney Proviso. Again drinking water "safely" consumed under the SDWA, if consumed as a "food" under the FDCA, could become unlawful as well as "unsafe."

Arguably there is a potential value to jurisdictional overlap. It can fill any gaps which may exist in the regulatory authority to protect public health. EPA may not have all the authority under SDWA which it needs in order to deal with a particular problem. An example of such a gap may be EPA's authority under SDWA directly to prohibit or restrict the amount of certain water treatment chemicals rather than setting an MCL for a particular chemical. Should the courts hold that EPA lacks the authority under SDWA directly to prohibit the use of treatment chemicals, FDA under FDCA could regulate the addition of such chemicals to drinking water, even municipal water supplies, on the theory that they constitute food additives.

Indeed, it appears at least in part that a concern for such regulatory gaps is causing the difficulty between EPA and FDA in resolving their jurisdictional differences over drinking water (See Commissioner Kennedy's letter to

EPA Administrator Conliffe, dated October 4, 1977.)

However, the continuation of jurisdictional conflicts over drinking water poses potentially significant problems for public water supplies, the bottled water industry and those who utilize drinking water in food processing or packaging. Before allowing the confusion to continue, Congress should consider at least the following costs:

(a) With conflicting public policy comes public confusion over what is hazardous and what is safe. The Interagency Regulatory Liaison Group effort to achieve greater uniformity in the regulation of toxic materials is implicit recognition of this fact.

(b) Potential unfair discrimination may exist between the public and private sectors insofar as each sells water, i.e., public drinking water before it leaves the tap may in fact be subject to SDWA only; whereas this same drinking water added to food, or used in food processing, or sold in a bottle may face additional regulatory hurdles of the FDA.

(c) Research and development may be somewhat impaired due to confusion over what government standards must be met in order to introduce and use a new water treatment chemical or in order to add water to or use water in the packaging of food.

There appears to be no compelling scientific or public interest reason for treating water as a "food" differently from drinking water which is directly consumed from the tap.

Part Two: Jurisdictional Conflicts Between Federal and Local Governments

The point has been well made by Mr. Ongerth and others that Congress left state and local governments little substantive decision-making authority over safe drinking water. Putting aside the issue of whether from a public policy or constitutional standpoint such a decision is wise, I believe the Congressional decision to attempt to force the cooperation of local governments has important ramifications for the success of a national safe drinking water program.

With the exception of cigarettes and possibly saccharin, the Federal Government has consistently taken the position that the consumer is incapable of making an informed judgment to accept the risks of exposure to carcinogenic substances. Such federal preemption of the individual's decision-making authority appears to rest principally on grounds that the weighing of risks and benefits is too complex a task to be trusted to ordinary citizens. (There is, in addition, the question of involuntary exposure to carcinogenic substances, such as might occur through air pollution, which should not be included in the category of risks as to which there is legitimate argument over consumer choice).

A similar preemption of consumer choice has occurred with respect to the MCL proposed for trihalomethanes and the treatment techniques proposed for synthetic organics under the Safe Drinking Water Act. However, one important additional step has been taken. The Federal Government has not only deprived the consumer of any choice in the matter of what the MCL or method of treatment should be, if any; it has gone the additional step of ordering the consumer to spend his own money to achieve the standards which Congress and EPA have set. There does not appear to be any precedent for federal environmental action in which consumers on the one hand are deprived of any direct decision-making authority in setting restrictions on carcinogenic risk, while on the other hand these same consumers are being ordered to pay the "clean-up" costs and, finally, are given no financial assistance to do so.

This discussion is preliminary to my principal point, i.e., with standards adopted by the Federal Government there is no appreciable opportunity to assess society's willingness to accept various levels of risk. Unfortunately the success of a national safe drinking water program which individual consumers are being asked to underwrite is in large part dependent upon achieving public understanding and acceptance. The Safe Drinking Water Act is geared in the worst way to achieve these goals. While sophisticated concepts of carcinogenic risks and economic

benefit are required for individual decision-making and for acceptance of additional drinking water treatment costs, the very levels of government which most readily elicit public participation, thereby achieving public education and acceptance have been deprived of decision-making authority. In effect state and local governments are left the task of convincing the public that higher drinking water costs are warranted in order to achieve controversial standards in the development of which they played no substantive role. Clearly there is little incentive for them to do so.

The Congress has thereby largely ignored the opportunity to obtain public acceptance by encouraging public participation in decision-making. Education as the first form of regulation has been rejected.

It seems that for the foreseeable future the opportunity is lost to alter the basic jurisdictional structure of the Safe Drinking Water Act. For purposes of Congressional oversight hearings, potential amendments could be considered which might mitigate certain of the Act's jurisdictional shortcomings. In this respect modification of the SDWA's variance or exemption provisions is a practical goal.

Currently, a variance is permissible from a prescribed treatment technique only if the raw water source for the drinking water is such that the treatment technique is unnecessary. A variance from an MCL is permissible only if the raw water source is such that despite application of the

best treatment technology available, the MCL cannot be met. An exemption from compliance with an MCL or a treatment technique is permissible only if for "compelling reasons" the public water supply cannot comply. In either case, a variance or an exemption provides only temporary relief.

It would seem feasible to grant temporary variances (or permanent exemptions) from prescribed treatment techniques or specific MCL's if a water supply could demonstrate viable alternative methods of achieving the required result. Thus, for example, a community faced with a high nitrate level could propose to publicize the hazard of methemoglobinemia to pregnant women and to deliver nitrate free bottled water to such at risk persons, in lieu of removing nitrate from the entire municipal water supply. Similar opportunities to utilize alternative sources of water during temporary periods of high agricultural run-off or during periods of drought when the absence of dilution may concentrate contaminants would seem to be available.

More flexible standards for variance from or exception to the Safe Drinking Water Act should also account for the limited resources of local public health departments. State and local governments are perhaps in the best position to determine priorities for spending limited public health dollars. In certain cases, cost/benefit analysis may indicate convincingly that public health is better served not by expending available resources on additional drinking

water treatment technology which may provide only marginal improvement, but rather by spending available funds on some other health measure.

Given the fact that public health and drinking water are traditional concerns of state and local governments, and given the fact that the Federal Government in the drinking water area has chosen not to subsidize the financial capabilities of local health departments, such flexibility would seem appropriate.

Finally, beside adding flexibility to the variance and exemption provisions of the Act, Congress and EPA may help to achieve greater public acceptance (and therefore greater effectiveness) of the national safe drinking water program by acting to increase the program's credibility.

In certain instances compliance problems and costs of a water supply will undoubtedly be directly related to upstream point and non-point sources of pollution. EPA, by undertaking an aggressive regulatory program against such sources could demonstrate its commitment to a basic economic premise, i.e., that social costs should be internalized, not borne by others (the downstream users). In this regard Congress may consider amending the SDWA to require that EPA pursue administrative and judicial remedies against any upstream point or non-point source found to be causing or substantially contributing to violation of the Safe Drinking Water Act by a downstream public water supply.

A second area in which the credibility of the national safe drinking water program may be enhanced concerns the extent of coverage for the proposed trihalomethane MCL and the activated carbon treatment technique. As proposed, EPA would initially (and for up to 3 to 6 years) exempt between one-third and one-half of the population from these standards. EPA has stated that the proposed grounds for such an exemption are: (1) economic difficulties of communities under 75,000 population in achieving immediate compliance, and (2) the belief that generally the raw water sources of communities under 75,000 population are neither in violation of the proposed trihalomethane standard nor subject to synthetic organics. It may be that EPA, by proposing to exempt for such a long period such a large percentage of the population, has undermined the credibility of its already controversial regulatory effort. Those who are immediately subject to the regulation will hardly be convinced of the pressing public health need for them to undertake additional treatment costs, if millions of others similarly situated are left "at risk" at least for several more years. Similarly those in the population who would remain "at risk" but who are convinced of the scientific validity of EPA's position on cancer-causing agents, may with some reason accuse EPA of acting arbitrarily in ignoring them.

There may in fact be a strong correlation between community population under 75,000 and economic inability to finance necessary additional controls for trihalomethanes

and synthetic organics or the lack of necessity for so doing. But clearly EPA has the burden of demonstrating such correlations.

It would seem that the exceptions may be so numerous as to negate the rule. Furthermore, if the economic correlation exists, it is not clear why EPA considers economic conditions to be such that a grace period of several years in meeting the standard would be significant. Similarly, if there is a correlation between community size of under 75,000 population and raw water source which is relatively free of trihalomethanes and synthetic organics, it is not clear, then, why EPA intends eventually to include such communities under the regulation.

In either event, EPA must undertake open public discussion of any data underlying its proposal to exempt millions of persons from these controversial standards.



Four Canal Plaza
Portland, Maine 04112
Phone 207-773-6438

July 17, 1978

Senator Edmund S. Muskie
United States Senate
Russell Building 145
Washington, D.C. 20510

Dear Senator Muskie:

I am writing on behalf of Consumers Water Company and its several subsidiary companies that operate in seven states including Camden and Rockland Water Company and Maine Water Company which collectively serve over 10,000 families in the state of Maine. I am concerned about the regulations proposed on February 9, 1978, by the Environmental Protection Agency under the Safe Drinking Water Act and am communicating with you as both our Senator from the State of Maine and, more importantly, Chairman of the Senate Subcommittee on Environmental Pollution which I understand is scheduled to hold a hearing on the EPA's drinking water program on July 18.

The objectives of the EPA in developing the proposed regulations are admirable. The problem is that the EPA has apparently grossly underestimated the costs that will accompany implementation of the regulations, or if that be not so, then they have not put into proper perspective the benefits to be derived from those costs. At present the proposed regulations insofar as the requirement for "granular activated carbon" treatment techniques is concerned is limited to utilities larger than any of Consumers' operations. The announced plan, however, contemplates extending those same requirements to smaller utilities as time progresses. Estimates place the per customer cost of such refinements from a low of \$28 per customer to in excess of \$100 per customer in many instances. Surely the per customer cost for smaller systems will be even greater. If such refinements were known to be essential for human health, the cost could be justified. Such is not the case, however. There is a distinct split in the academic community as to whether or not the substances thought to be reduced actually present a health risk, and most of those that do seek a reduction acknowledge that their recommendation is based upon a "possibility."

CONSUMERS WATER COMPANY

Senator Edmund S. Muskie

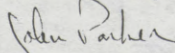
- 2 -

July 18, 1978

Dollars spent in implementing this program will have just as great an effect on the public's pocketbook as increased taxes. Unfortunately, the magnitude of the impact is lost because it will be spread among thousands of independent utilities. If the entire program were lumped into one bill to be financed by the federal government (and obviously all taxpayers), there is no doubt in my mind that Congress could not bring itself to impose such a burden on its constituents.

I, therefore, strongly urge that your sub-committee on Environmental Pollution exert whatever power or influence it has in mandating that the EPA proceed more carefully in its implementation of the Safe Drinking Water Act and not impose irresponsibly burdensome and possibly unnecessary costs on the consuming public.

Yours very truly,



John van C. Parker
Vice President - Financial

JvCP/lml

STATEMENT
BY THE
NATIONAL ASSOCIATION OF WATER COMPANIES

TO THE SENATE
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
IN CONNECTION WITH OVERSIGHT HEARINGS
ON THE SAFE DRINKING WATER
ACT OF 1974

JULY 18, 1978

SUBMITTED BY
MR. FREDERICK ALLEN
EXECUTIVE DIRECTOR

This statement is submitted on behalf of the National Association of Water Companies. The Senate Subcommittee on Environmental Pollution is undertaking a new responsibility in the area of safe drinking water, which is the goal to which NAWC and its members have long been dedicated. We look forward to working with the Subcommittee in the months and years to come on matters of mutual interest.

This statement will explain what NAWC is and go on to discuss an item of current, intense controversy, EPA's proposed regulations on organic substances in drinking water.

NAWC

The National Association of Water Companies, based in Washington, D.C., is a non-profit association founded in 1895. It represents 216 investor-owned companies that supply more than two billion gallons per day to 26 million people in 32 states. This is about 20 percent of the nations' water supply. Many NAWC member companies have provided water service for more than one hundred years.

Like their municipal counterparts, investor-owned water companies are regulated primarily by state utility commissions and are subject to federal water regulatory programs such as the Safe Drinking Water Act. Unlike their municipal counterparts, investor-owned water companies are tax-paying entities

who are responsible not only to their customers but also to the company shareholders.

NAWC and its members share with the members of this Subcommittee and with the Environmental Protection Agency a common goal of keeping drinking water clean and safe. In 1974 NAWC testified before the Congress and advocated the passage of the proposed Safe Drinking Water Act. Until recently, the Association has supported all of EPA's efforts to implement that Act.

Organic Substances Regulations

On February 9, 1978 EPA proposed regulations to limit organic chemicals in drinking water. The regulations are in two parts, the first on which sets a ceiling on the amount of certain organic chemicals in water while the second part requires water systems to employ certain equipment to control the amount of other organic chemicals in water. NAWC has serious questions with this EPA proposal.

Summary of EPA Proposal

EPA proposes to establish a maximum containment level ("MCL") of 100 parts per billion for trihalomethanes ("THM") in drinking water. THMs are substances produced in drinking water by the chemical interaction of commonly present natural organic substances in water with chlorine added for disinfection. EPA claims that THM may have carcinogenic effect

and so it proposes that all water systems serving populations greater than 75,000 persons achieve the MCL for THM within 18 months after promulgation of these regulations. Systems serving less than 10,000 persons would be exempt from the MCL and monitoring requirements.

Other organic substances in drinking water, resulting from point (e.g., industrial) and non-point (e.g., agricultural run-off) sources, would be regulated in the second part of EPA's proposal. To limit the amount of these substances in drinking water, EPA proposes to mandate the use of a specific treatment technique -- granular activated carbon ("GAC"). All water systems serving more than 75,000 persons would have to construct and use GAC treatment systems no later than five years after promulgation of the regulations. A subject water system could seek a variance to use alternative treatment techniques if it could prove the effectiveness of the alternative.

Persons familiar with EPA's work in this area anticipate that in due course EPA would propose to extend its THM and GAC regulations to cover smaller communities, and indeed some have advocated that it do so now.

NAWC's Concern

We believe that the proposed regulations are, at this time, unnecessary, unjustified, excessively costly, and quite possibly harmful to human health. EPA has received contrary scientific evidence as to the carcinogenicity of

organic contaminants from its own consultants, and respected experts who have commented to EPA sharply dispute the point, some even suggesting that the trace amounts of some organic substances, while not inducing cancer, may actually prolong life. EPA has yet to explain why it is accepting some experts' opinions and rejecting others. In light of the division of thought in the scientific community over whether a health hazard even exists, we believe further research in this area needs to be conducted before issuance of final regulations.

Not only does doubt exist about the health hazard, but also it is uncertain whether GAC will be effective in reducing synthetic organics in drinking water. As a matter of fact, there is evidence that GAC may present new health hazards. The Illinois Environmental Protection Agency stated that GAC provides a good breeding ground for bacteria and that its use could put bacteria back into our drinking water. Certainly, before EPA requires the use of GAC, EPA should insure that sufficient scientific evidence exists to assure that GAC would not create new health hazards.

It is not my contention here that the Safe Drinking Water Act requires, or should require, that EPA prove beyond any shadow of a doubt, on the basis of tests on humans rather than mice and rats, that organic substances in drinking water do in fact cause cancer, and that GAC will beyond doubt solve this problem, before it proposes its regulations. On

the other hand, neither do I feel that the simple existence of some evidence, no matter how slight and no matter how contradicted, justifies federal government requirements involving costs of any amount of money on our already overburdened citizens. At this stage I suggest the issue must be whether the evidence that EPA has that there is a risk, factored by the degree of risk, and the sufficiency of evidence that GAC will work, taken together justify the imposition of cost burdens of the magnitude involved.

If the risk is reasonably clear, NAWC will stand in the front lines to demand strict standards. We want to serve clean water. We want to drink clean water!

But where, as here, the risk is so minuscule and so poorly proven, and the technology is so uncertain, out of consideration to our customers, the public, we must strongly object if the costs to be incurred are excessive.

In that light it is necessary to consider costs. EPA originally estimated that its proposals would require capital expenditures of \$352 million to \$585 million and annual operating and maintenance expenses of \$52 million to \$83 million. More recently EPA revised its cost estimates upward by approximately 100 percent. We believe that these revisions still grossly underestimate the eventual costs of the EPA proposals. An increase of 500 percent over the original cost estimates would be more realistic, negating EPA's original argument that the costs would be minimal per

household and therefore justifiable. In fact these proposals would require a 50 percent to 100 percent increase in water rates in many communities which would mean a \$50 to \$100 increase for many households annually in order to cover the capital costs and the annual operating and maintenance costs.

EPA insists, without explanation, that only 61 water systems in the United States will need to implement its granular activated carbon treatment requirement. Yet the proposed regulations require every water system serving over 75,000 persons to implement GAC unless it can obtain a waiver from EPA, and, under the criteria set forth in the proposed regulations for obtaining such a waiver, EPA seems to be unwilling to give informal indications to companies concerned whether they might be eligible for this relief.

In any event, testimony given at EPA's hearings on its proposed regulations indicates capital costs of \$2.4 billion and more, and some private industry analyses project costs much higher than that. In light of these projections, we feel it is premature, to say the least, for EPA to issue its proposed regulations in final form, for the evidence that the requirements will do some good is just insufficient.

On July 12, 1978 Mr. Wm. Neal MacKenzie, President of the NAWC, testified at the EPA hearing in Washington, D.C. on these proposals. At that time, we advocated the need to adopt a common-sense approach to achieve a better balance

between our social objectives and our economic capabilities. Specifically, we announced the willingness of our Association to participate with the municipal systems and the federal government in the additional research needed to prove whether the GAC treatment technique is necessary. We suggested that EPA designate a number of what appeared to be the very "worst" water-system cases, as determined by existing levels of THM's and other synthetic organic contaminants, and test the GAC treatment on a plant-scale basis in those systems over a reasonable period of years to determine if it is truly justifiable. If the research in these systems bears out EPA's contentions, then this proposal to test the treatment technique would already have applied the solution to the water systems where it was needed the most. At the same time this proposal would avoid premature commitment of limited resources and the placement of unsupported cost burdens on the American consumers.

Conclusion

NAWC appreciates the opportunity to present this statement. We look forward to working with this Subcommittee on assuring the American people ample supplies of clean water at reasonable prices.

STATEMENT
of
WATER QUALITY ASSOCIATION
to the
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
on
SAFE DRINKING WATER ACT (PUBLIC LAW 93-523) IMPLEMENTATION

July 18, 1978

The Water Quality Association appreciates the opportunity to present this Committee with the views of its members on the very significant contributions which the point of use water treatment industry makes toward the attainment of the Safe Drinking Water Act's objectives. It is a contribution perhaps not widely-enough understood by the public generally, and apparently not seriously-enough appreciated by the government regulators specifically.

Our Association is a nonprofit organization headquartered at 477 East Butterfield Road in Lombard, Illinois, consisting of some 1200 members who are engaged in the manufacture and in the wholesale and retail distribution of on-site (point of use) water treatment equipment. This equipment is used all across the land to improve the quality of water available from all sources -- used in millions of homes as well as in industry, in health care and other types of institutions, and in commercial establishments.

We, along with local and state government officials, as well as all Americans who, in the final analysis must foot the cost of regulatory requirements, are vitally concerned with implementation of the Safe Drinking Water Act. These concerns relate not only to the safety of water for human consumption, but to the impact of its control as evidence^d in the form of increased taxation, increased product prices, increased inflation, decreased productivity, and erosion of the dollar's value in both domestic and international markets.

The issue is not whether our public supplies of drinking water should be safe. The issue is, rather, whether in fact they are unsafe; and, if so, how, in the most responsible manner, to make them better.

In signing Public Law 92-523, the President of the United States said that "Nothing is more essential to the life of every single American than clean air, pure food, and safe drinking water." At the same time, he also said it was his intent "that it be administered so as to minimize both Federal involvement and costs."

The Law itself echoes this reservation, conditioning maximum contaminant level regulatory treatment requirements on the standard of "feasibility" [Sec. 1412 (b) (1) (B) (3)] which, in the words of the Statute: "means feasible with the use of the best technology, treatment techniques, and other means, which the Administration finds are generally available (taking cost into consideration)."

Our industry, the water improvement equipment manufacturers and dealers, have long been dedicated to this simple, yet complex legislative scheme. We fully and wholeheartedly support its achievement.

At the same time, however, mindful of statutory standards, Executive intentions, congressional reservations, cost-benefit-risk admonitions, and affected national objectives in other and equally important areas, including the destructive effects of inflation which is fueled in large measure by nonproductive expenses, accompanied by the painful awakening of officialdom at all levels that tax supported budgets are not infinite in their capacities, we emphasize the vital need to avoid single-method, single-minded regulation in the goal attainment mechanism.

Respecting the treatment of water to drinking quality standards, in a phrase: treatment at the central level is not the only way.

Water used for human consumption, for drinking and cooking, amounts to only about 1/2 of 1% of the total used in the typical household. Does it make sense, economic or otherwise, to require by Federal ukase that 100% of all water be treated to drinking quality when 99-1/2% of the water thus treated is used for things like flushing toilets, putting out fires, irrigating lawns, beautifying cars,

cleaning clothes, mopping floors, bathing dogs, etc., etc., not to mention the manifold nonconsumptive uses to which water is put by industries, institutions, and commercial establishments?

It's not as though there exists no alternative. Not as though we have no choice other than to treat all the water in order to provide an increased factor of safety for the 1/2 of 1%. There is an alternative!

As a matter of fact, there are several alternatives. And they relate directly to the "feasibility" and "cost" concerns which troubled both the congress and the President back in 1974. Some communities, in truth, are taking steps to adopt these alternatives as a substitute for construction of costly central treatment plants. One of these alternatives is the point of use treatment facility.

What is the point of use industry capable of providing -- and providing now -- today? What is the present state of the art in this industry -- without bond issues -- without huge construction projects -- without inflationary impact -- without delay -- and without obsolescence?

The treatment capabilities are almost across the whole board. And the technology presently exists. If Bostonians want lead removed from their water, it can be done now. If Nevadans want arsenic removed from their water, we can do it today. If the people in Iowa or Illinois want radioactivity removed from their water, they don't have to wait any longer.

Our industry can provide water, at the point of use, treated to the quality desired for human consumption, or for any variety of greater or lesser sophistication, in the amounts actually needed for the particular requirement, and at an acceptable price. The point of use alternative, furthermore, has the present day capability of providing quality water to that 55% of the American population living in those smaller communities of less than 100,000 where central treatment is a serious burden in terms of investment, operation and maintenance costs, and technical expertise presence. More than half of all community water systems serve fewer than 500 people, and we can provide them with quality water also.

The point of use alternative, moreover, is available today in those 6000 areas where community systems serve fewer than 100 people each -- the areas where cost estimates required to bring the 6000 systems up to present standards range between \$21 and \$95 million annually, not including the additional yearly \$4 to \$4.5 million required to remove trihalomethanes.

All of this to treat the 1/2 of 1%! What's more, no mention has yet been made, nor do these figures take into account, the estimated 40 million Americans, about 10 million families all across the land, who have their own water supplies and are wholly outside the protective effect of the Federal law on drinking water.

Providing this alternative is the purpose and function of the point of use water treatment industry. Our products, manufactured and distributed by over 5000 American enterprises which employ 50,000 American men and women in the private sector, treat water to meet individual, institutional, industrial, and commercial needs, as well as drinking standards under Government regulations. This alternative can provide quality-prescribed water for private systems, small community supplies, non-community supplies, and for very special uses. Most important, only that water which must be of drinking quality is treated to that quality.

We respectfully submit that the first task of Government is determination, on a factually proven basis, that need actually exists for support of more specific drinking water regulation. To be publically acceptable, such finding must also include analyses of proven potential risk plus a detailed, valid cost and benefit demonstration attesting to the feasibility and practicability of all various and alternative methods of providing agreeable results, including state and local priorities, and the impact on economic, social, energy, environmental, and other vital considerations. It is simply unacceptable to the public who, at all levels of our complex society, must pay the costs of regulation one way or another. The public will not tolerate regulation for regulation's sake, nor will it allow further growth of Government without convincing demonstration of need. And it is the Government official representing the public, not the unelected bureaucrat, who must bear the ultimate responsibility, and who must answer to the frustrated and angry taxpayer.

In conclusion, we would repeat the sense of our testimony's introduction: no one is recommending that the Safe Drinking Water Act be repealed -- or that it be administered in any way other than intended by its sponsors. The quality of our drinking water supplies is too closely associated with our health, welfare, safety, and comfort to ignore the responsibility which all levels of Government have to insure protection in such a vital area. But this does not mean free rein for the issuance of inflexible, non-cost effective, or lopsided risk-benefit edicts. It does mean, to be publically acceptable, consideration of all factors, following findings of need, and inclusion of available alternatives such as on-site treatment technique utilization.

The tide of environmental idealism of the last decade, at least insofar as excessiveness resulted, is being replaced by the practical realities of this decade. The people will continue to support programs aimed at purity, but only to the extent that they can be demonstrated clearly to be necessary, responsible, and acceptable in a risk-benefit framework. In the context of providing aid in meeting contemporary standards for the regulation of drinking water, the point of use water treatment industry is available for implementing the Act's goals.

We're available -- and we're ready, we're willing, and we're able. We ask only for the opportunity to work with the regulators in the National interest.

Thank you, Mr. Chairman, and members of this Committee for considering this presentation.

* * * * *

Water Quality Association, 477 East Butterfield Road, Lombard, Illinois 60148

STATEMENT OF
JACQUELINE M. WARREN
ENVIRONMENTAL DEFENSE FUND
BEFORE THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
OVERSIGHT HEARINGS ON THE SAFE DRINKING WATER ACT
JULY 18, 1978

The Environmental Defense Fund (EDF) is a nonprofit environmental organization of approximately 45,000 members who are dedicated to seeking scientifically sound solutions to the nation's environmental problems. Since its inception in 1967, EDF has been involved in administrative, legal and legislative efforts to control exposure to toxic and particularly cancer-causing chemicals in the environment. EDF was an active participant in EPA proceedings leading to cancellation of the registrations of the carcinogenic pesticides DDT, aldrin, dieldrin, mirex, heptachlor and chlordane. EDF scientists and lawyers have also worked for the control of toxic substances in air, water and consumer products, and for improvement in the quality of our drinking water, which is the subject of today's hearing.

Regulation of Organics in Drinking Water

The quality of the drinking water provided to the American people is directly related to the quality of our surface and ground water.

supplies. Because of this Subcommittee's longstanding involvement in legislation designed to control water pollution, the expertise you will bring to bear in exercising oversight over the Safe Drinking Water Act is greatly welcomed. The problems to be addressed, especially the issues of controlling organic chemicals in drinking water and of protecting our ground water supplies from industrial and other contamination, are extensions of the same problems you have already addressed in the Federal Water Pollution Control Act and the Resource Conservation and Recovery Act. On behalf of an organization which worked for passage of the Safe Drinking Water Act, and has monitored closely the Environmental Protection Agency's implementation of the Act, we are glad to be here and are very appreciative of your interest in the subject of drinking water quality.

EPA's implementation of the Safe Drinking Water Act has a checkered record so far. While the Agency promulgated the Interim Primary Drinking Water Regulations in an almost timely fashion, the regulations did not cover organics, despite the fact that the presence of organic chemicals and especially organic carcinogens in drinking water, was of paramount Congressional concern when the Safe Drinking Water Act was passed in 1974. Because of EPA's failure to include control of organic chemicals in the interim regulations, which presently govern drinking water treatment practice and will do so for the foreseeable future, EDF sued EPA in December, 1975. A copy of the court's opinion, issued February 10, 1978, is attached. (Att. I).

The controversy over whether concentrations of organic chemicals in drinking water are hazardous to humans has raged since before the statute was passed. As this Subcommittee is very well aware,

the problem of industrial and agricultural pollution of our waterways has been well-documented. It is also well-documented that EPA had not moved to regulate the discharge of toxic materials into water until very recently. The toxic pollutants consent decree, to which EDF was an active party, and the 1977 amendments to §307 of the FWPCA are testimony to the Agency's past failure to act on this problem.

The Safe Drinking Water Act itself was passed largely because of concern arising from widespread detection of the same industrial and agricultural pollutants in drinking water supplies throughout the United States. Prompting this concern was a large body of evidence that water treatment facilities were not equipped to remove organics from drinking water. Indeed, the vast majority of water utilities did not and do not monitor for organics and were therefore ignorant of the existence of a problem. Their principal focus for the past half century has been on eliminating water-borne disease such as cholera and typhoid, principally by chlorination of the water. The more recent problem of contamination of drinking water by synthetic organics, and by trihalomethanes, which are halogenated organics produced by the process of chlorination, was not being addressed by municipal treatment plants anywhere in the country, with a very few limited exceptions. The inability of public water suppliers to protect against organic contamination appeared especially serious in light of the fact that to date more than 700 organic chemicals have been identified in drinking water. Although these represent only a small fraction of the organics believed to be present in drinking water, and most have not yet been tested, at least 21 have

now been identified by the National Academy of Sciences as known or suspected carcinogens. The NAS list, which is appended as Attachment II, includes vinyl chloride, benzene, chloroform, carbon tetrachloride, PCBs, dieldrin, kepone, heptachlor and many other familiar hazardous chemicals which have been found in drinking water.

In recognition of the potential human health risk posed by exposure to these and other contaminants in drinking water, the language of the Safe Drinking Water Act is preventive. It authorizes the Administrator of EPA to establish regulations for any contaminant which "may have any adverse effect on the health of persons."

42 U.S.C. §300f. As the House Report accompanying the bill which became the Safe Drinking Water Act states:

Primary regulations [i.e., both interim and revised] must specify contaminants which in the judgment of the Administrator may have an adverse effect on the health of persons when found in drinking water. The words used by the Committee were carefully chosen. Because of the essentially preventive purpose of the legislation, the vast number of contaminants which may need to be regulated and the limited amount of knowledge presently available on the health effects of various contaminants in drinking water, the Committee did not intend to require conclusive proof that any contaminant will cause adverse health effects as a condition for regulation of a suspect contaminant. Rather, all that is required is that the administrator make a reasoned and plausible judgment that a contaminant may have such an effect. H.R. Rep. No. 93-1185, 92d Cong., 2d Sess. 10 (1974).

Not only was there clear Congressional intent that a preventive approach be taken to organics in drinking water, but a general tone of urgency was also apparent. Thus, the House Report stated:

[T]he lack of comprehensive cost, health effects, technological assessment, and monitoring data cannot justify any further delay in Congressional and administrative action. While it would be desirable to have complete health effects research, effective treatment technology, and accurate, inexpensive monitoring systems in operation prior to commencing a system of regulation, this is simply not possible. It is the . . . intent [of the Committee] that EPA, the States, and the public water systems begin now to maximize protection of the public health insofar as possible, and to continue and expand these efforts as new more accurate data, technology, and monitoring equipment become available. H.R. Rep. No. 93-1185, 92d Cong., 2d Sess. 8 (1974).

Despite these expressions of concern that steps be taken immediately to improve the safety of drinking water, EPA failed to include a standard for organics in the Interim Primary Regulations. Indeed, a proposed organics standard was withdrawn prior to publication of the interim regulations in December, 1975. However, a combination of factors including the EDF lawsuit, additional monitoring and research, and a change in administrations led EPA to propose an interim organics regulation in February of this year. The proposal, which applies to water systems serving 75,000 or more customers, would establish a maximum contaminant level of 100 ppb for trihalomethanes, and would require cities with high concentrations of synthetic organics to install granular activated carbon filters (GAC).*

*Granular activated carbon (GAC) has been used for decades by the beverage and food industries to remove organic chemicals from water. It is also used in industrial waste treatment and in sugar refining.

organic content of water and has been used successfully in Europe for this purpose for the past twenty years.

The proposal to require application of the best available treatment technology for reduction of a broad spectrum of organic contaminants has met with strong opposition from the water works community. Their principal objections challenge the health risk posed by long-term exposure to carcinogenic chemicals in drinking water, the efficacy of GAC to remove organic chemicals, and the cost of installing the technology where high concentrations of organics are detected. As to health risk, a total of twelve separate epidemiological studies have shown a statistically significant association between excess cancer mortality rates and consumption of drinking water contaminated by organics, and animal studies document the carcinogenicity of many of the chemicals found in drinking water. EPA's position is clearly justifiable as a prudent public health measure, and the record of the hearings on the proposal recently concluded by EPA shows that representatives of scientific institutions and other federal regulatory agencies concerned with human health offered strong support for the organics proposal on this basis. EDF also testified at those hearings and a copy of our testimony is attached. (Att. III)

The record on the utility and efficacy of carbon filters in removing organic contaminants is similarly substantial. Although opponents of the proposal have raised a number of extraneous and wholly unsupported arguments regarding the safety of GAC, in fact there is much evidence supporting the technology as available,

reasonable in cost, and effective.

The only genuine issues as to this proposal are how much it will cost to implement and how those costs will be financed. EPA's estimates of economic impact show that the costs to residential consumers will range from \$7 to \$26 a year -- a modest increase by any measure. If small communities with contaminated water supplies have difficulty financing the necessary improvements, perhaps new funding mechanisms should be established. But safe water should be provided for all citizens regardless of the size of the community they live in.* If anything, EPA is to be chided for proposing a regulation which, when implemented, will protect only 52% of the population.

The solution to the organics problem is not to deny that there is one, or to clamor against EPA before the Congress, or to ridicule those supporting the Agency's proposal. A more productive approach would be to resolve whatever technical problems may remain, to seek from the legislative and executive branches the financial assistance to bring safer water to communities who cannot afford to do so, and, most importantly, to get on with the task of protecting

*According to recent estimates, the public is already spending \$400 - \$500 million a year for ineffective home water filter devices and bottled water of questionable quality because of concern about the safety of the water running out of the tap. The EPA proposal is estimated to cost a maximum of \$831 million over the life of the program. This is a relatively small price to pay for protection against harmful contaminants in drinking water, and pales in comparison to the massive annual expenditures for sewage treatment.

our water supplies against the discharges, spills, and contaminated run-off to which they are now entirely vulnerable.

Detection of Heavy Metals in Drinking Water

EPA's record with respect to other contaminants in drinking water and with regard to the entire question of protecting ground water, is much less worthy of commendation. One issue in EDF's lawsuit on the interim regulations concerned regulation of heavy metals such as lead and cadmium in drinking water. While the interim regulations do establish maximum contaminant levels and monitoring requirements for heavy metals, the latter are inadequate to detect a problem when one may exist. The problem of heavy metals contamination, especially by lead and cadmium, is often caused by corrosion of the pipes in the distribution system and home plumbing fixtures. Not only do lead and cadmium cause serious adverse health effects, but corrosive water containing heavy metals has been linked with cardiovascular disease in several studies. The National Academy of Sciences, in its report on Drinking Water and Health, expressed concern about the presence of heavy metals in drinking water, especially "cadmium, lead, copper, and zinc, all of which tend to be found in higher concentrations in soft water as a result of its relative corrosiveness." (NAS report at 43). According to the NAS:

the evidence is sufficiently compelling to treat the "hard water hypothesis" as plausible, particularly when the number of potentially preventable deaths from cardiovascular diseases is considered. In the United States, cardiovascular diseases account for more than one-half of about two million deaths that occur each year. On the assumption that water factors are causally implicated, it is estimated that optimal conditioning of drinking water could reduce this annual cardiovascular disease mortality rate in the United States by as much as 15%.

The regulations must require that an adequate cross-section of households and schedule of samples be taken. One annual sampling, as specified by the regulations, was not sufficient to detect a serious lead and cadmium problem in Boston and Seattle in the recent past. Indeed, it was not until additional in-depth sampling was conducted by EPA that widespread contamination due to corrosive water was discovered in both cities. Yet, despite EDF's lawsuit and warnings by the NAS, EPA has been unresponsive to this issue. If the NAS' estimate of the relationship between soft water and the cardiovascular death rate is correct, the problem may be even more serious than that posed by carcinogenic chemicals in drinking water and should be addressed by the Agency as soon as possible. At the very least, EPA's requirements governing monitoring for heavy metals should assure that problems will be uncovered where they exist so that remedial measures can be implemented. EDF therefore urges this Subcommittee to use its influence to see that this problem is addressed expeditiously.

Protection of Ground Water

Protection of ground water is a matter of urgent concern under the Safe Drinking Water Act and other statutes under this Subcommittee's jurisdiction. Seventy-seven percent of the nation's drinking water supplies are dependent in whole or in part upon ground water.

Ground water is extremely vulnerable to contamination by land and water disposal of soluble toxic materials, by storage of such materials below ground but above the water table, and by the disposal,

storage and extraction of hazardous materials below the water table. A number of federal statutes are applicable to the problem. The Clean Water Act is applicable to ground water insofar as a direct relationship to surface water can be shown. The Safe Drinking Water Act addresses the relatively narrow problem of deep-well injection as it impacts on the quality of ground water used for public water supply. (Section 1421 authorizes the establishment of state permit programs to control underground injections which may endanger ground water.) More significantly than either of these, the Resource Conservation and Recovery Act (RCRA) contains authority to control the land disposal, storage and transportation of hazardous wastes, of which an estimated 30-35 million tons are dumped into the ground annually.

The leachate of hazardous materials from dumps, pits, ponds, lagoons, sludge and numerous other sources adversely affect the quality of ground water, which lacks the self-cleansing capacity of surface water provided by circulation and aquatic organisms. As a result of unrestrained disposal of hazardous materials, ground water has been contaminated on the local level throughout the U.S. The following examples provide graphic illustrations of the nature of the problem:

Waterloo, Iowa, 1973. A laboratory company dumped over 250,000 gallons of arsenic-bearing wastes. The dump site was located above a limestone bedrock aquifer from which residents of nearby towns obtain 79 per cent of their drinking and irrigation water. The aquifer is presently uncontaminated but the potential contamination cannot be underestimated.

Galena, Jo Diviess County, Illinois. Between 1966 and 1968 a mining company discharged waste water into an abandoned shaft of a lead-zinc mine. As a result the Galena-Platteville aquifer was contaminated.

Gray, Maine, 1977. Eight families whose well water was found to be a severe health hazard filed a \$1.8 million suit against an industrial waste processing plant charging that toxic chemicals discharged by the plant permeated the water table and contaminated the wells.

Saint Mary's County, Maryland, 1965. A wood treating company has been treating wood by high pressure injection of creosote with a by product of phenolics. The waste products were stored in clay-lined lagoons. It was discovered the lagoons were leaking and an extensive zone of contamination exists nine feet below ground and is moving in the direction of fresh water ponds and streams.

Somerset County, Maryland, 1975. At Crisfield, Maryland, there is a waste holding pond that contains wastes such as arsenic, lead, nickel, chromium and cyanides and receives 15,000 gallons of waste water per day. The pond is unlined and after testing, the contamination of underground waters extends to a depth of 50 feet and a radius of 1,000 feet.

Pennsville Township, Salem Country, New Jersey. Groundwater beneath a 40-acre chemical manufacturing site has been contaminated by waste chemicals disposed of over a 50-year period.

Egg Harbor Township, Atlantic County, New Jersey, 1973. A landfill has been the depository of large quantities of industrial wastes causing a ground water pollution problem involving chemical contamination.

Logan Township, Gloucester County, New Jersey, 1972. Leachate from industrial waste lagoons caused the pollution of ground waters from chemical pollutants.

Dover Township, Ocean County, New Jersey, 1971. Chemical wastes were illegally stored and dumped causing the contamination of the Cohausey aquifer by petrochemicals resulting in the condemnation of 150 private wells.

Horseheads, Chemung County, New York, 1970. A home manufacturer dumped hydrofluoric acid wastes into a lagoon which discharged into a nearby stream and subsequently contaminated a nearby groundwater supply.

Point Marion, Pennsylvania, 1978. Massive amounts of sulfuric acid waste water from abandoned coal mines flowed from the subterranean water table into the Monongahela River. Fish by the hundreds were killed and water treatment plants struggled to make river water potable.

Ground water pollution, as the examples above illustrate, may cause permanent and irreparable harm unless control mechanisms are effectively utilized. Not only does ground water need to be regulated as a direct source of drinking water, but where ground water discharge is the source of inflow to surface waters, it must be controlled as well. It is short-sighted to regulate surface waters and not regulate the adjacent and upbasin ground water which is its source. Yet legislation, aimed primarily at surface waters and drinking water supplies, has proven ineffective in controlling ground water pollution.

Even though the Safe Drinking Water Act as presently written deals with only one source of ground water contamination, EPA is charged with implementing and coordinating all three statutes and could be making a much more comprehensive and effective effort. So far, the Agency has shown few signs of so doing. For example, the Safe Drinking Water Act authorizes the Administrator of EPA to establish minimum requirements for state underground injection control programs (UIC) and to publish a list of states for which such programs may be necessary to assure that underground injection will not endanger drinking water sources. While proposed regulations for state UIC programs were published in March, 1976, final regulations have never been issued nor has the list of states needing UIC programs ever been published. Thus, more than 2-1/2 years after passage of the Safe Drinking Water Act, there remains no federal program for

protection of ground water against contamination by deep-well injection.

EPA's stop-and-go efforts to implement RCRA are equally unimpressive to date, but they should be subject of another day's hearing. Suffice it to say that apart from a few designations of sole drinking water source aquifers in response to petitions under §1424 of the Safe Drinking Water Act, very little has been done by EPA under any of its statutory authorities to protect a major source of drinking water from chemical and other contamination. It is a situation which should not be permitted to continue.

We appreciate this opportunity to present EDF's views on implementation of the Safe Drinking Water Act and would be pleased to be of any further assistance to the Subcommittee that might be requested.

Notice: This opinion is subject to formal revision before publication in the Federal Reporter or U.S. App. D.C. Reports. Users are requested to notify the Clerk of any formal errors in order that corrections may be made before the bound volumes go to press.

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 75-2224

ENVIRONMENTAL DEFENSE FUND, INC., PETITIONER

v.

DOUGLAS M. COSTLE, Administrator,
Environmental Protection Agency, RESPONDENT

Petition for Review of an Order of the
Environmental Protection Agency

Argued April 5, 1977

Decided February 10, 1978

Judgment entered
this date

Jacqueline M. Warren for petitioner.

Erica L. Dolgin, Attorney, Department of Justice with whom *Peter R. Taft*, Assistant Attorney General and *Thomas A. Larsen*, Attorney, Environmental Protection Agency, were on the brief for respondent. *Edmund B.*

Bills of costs must be filed within 14 days after entry of judgment. The court looks with disfavor upon motions to file bills of costs out of time.

Clark, Attorney, Department of Justice, also entered an appearance for respondent.

Stewart H. Freeman and Gregory T. Taylor, Assistant Attorneys General, State of Michigan filed a brief on behalf of Environmental Protection and Natural Resources Division of Michigan, et al. as *Amicus Curiae* urging affirmance.

John S. McCreery filed a brief on behalf of the Illinois Environmental Protection Agency as *Amicus Curiae* urging affirmance.

Before: TAMM, LEVENTHAL and MACKINNON, *Circuit Judges*

Opinion for the Court filed by *Circuit Judge* LEVENTHAL.

Opinion filed by *Circuit Judge* MACKINNON, concurring in part and dissenting in part.

LEVENTHAL, *Circuit Judge*: This case calls on us to consider the duties of the Environmental Protection Agency (EPA) under the Safe Drinking Water Act¹ passed on December 18, 1974.

I. INTRODUCTION

In this statute, Congress responded to accumulating evidence that our drinking water contains unsafe levels of a large variety of contaminants. The Act requires the Environmental Protection Agency to promulgate regulations restricting the concentration of such substances in drinking water.

The present action is brought by the Environmental Defense Fund (EDF), a non-profit organization concerned with environmental issues. EDF challenges the

¹ Pub. L. 93-523, 88 Stat. 1660 (codified at 42 U.S.C. §§ 300f to 300j-9 (Supp. 1977)).

adequacy of interim regulations promulgated under the Act, urging that they fail to restrict levels of certain substances that may be harmful, and fail to require adequate monitoring of other substances.

The EPA responds by stressing the poverty of clearcut information concerning the harmfulness of the substances in question, and the lack of a satisfactory method for determining their levels in drinking water. These considerations, argues the Agency, make it unfeasible to formulate more extensive regulations at the present time. The Agency's position is reinforced by the fact that the challenged regulations are interim; the statutory scheme provides for the development of more definitive regulations at a later time.

The dispute poses for this court the difficult task of determining whether the agency has exceeded the bounds of its permissible discretion, in an area characterized by scientific and technological uncertainty. Where administrative judgment plays a key role, as is unquestionably the case here, this court must proceed with particular caution, avoiding all temptation to direct the agency in a choice between rational alternatives. At the same time, we must be cognizant of our duty to scrutinize with care the actions under challenge, to determine whether a rational basis for them may be discerned. Our responsibility is particularly weighty where, as here, serious issues of public health are involved on a potentially vast scale.

II. THE STATUTORY SCHEME

The Safe Drinking Water Act provides that the Administrator of the Environmental Protection Agency shall promulgate national drinking water standards in three phases. The first phase leads to the promulgation of "interim primary drinking water regulations" (interim

regulations). These regulations set maximum contaminant levels (MCL) for substances that the Administrator finds may have an adverse effect on health, or, where that is not feasible, specify treatment techniques to reduce the level of the contaminant.² They are intended to "protect health to the extent feasible, using technology, treatment techniques, and other means, which the Administrator determines are generally available (taking costs into consideration) on the date of enactment of this title."³ Proposed interim primary drinking water regulations were to be published within 90 days after the passage of the Act. Final interim regulations were to be promulgated 180 days after passage of the Act.⁴ The interim regulations were to take effect eighteen months after the date of their promulgation.⁵

The second phase results in the promulgation of "revised national primary drinking water regulations" (revised regulations). These regulations also set MCL's or specify treatment techniques.⁶ They must be formulated to reduce contaminant levels as nearly as is feasible to levels at which no adverse effects on health occur. Feasibility is to be determined with reference to the best technology generally available, taking cost into consideration.

To lay the groundwork for phase two, the Act directs the Administrator to enter into an appropriate arrangement with the National Academy of Sciences or another independent scientific organization to conduct a study to determine the existence of drinking water contami-

² Sec. 1401 (1) (B), (C), 42 U.S.C. § 300f (1) (B), (C).

³ Sec. 1412 (a) (2), 42 U.S.C. § 300g-1 (a) (2).

⁴ Final interim regulations were actually promulgated on Dec. 10, 1975. 40 F.R. 59566 (Dec. 24, 1975).

⁵ *I.e.*, in June, 1977.

⁶ Sec. 1401 (1) (B), (C), 42 U.S.C. § 300f (1) (B), (C).

nants that may pose a health problem and, where possible, to establish safe maximum contaminant levels for these substances. A report of the results of this study is to be made to Congress within two years after passage of the Act and a summary of the report is to be published in the Federal Register. Within 90 days after publication of the report, the Administrator is required to formulate proposed revised national primary drinking water regulations, based on the findings contained in the report. Within 180 days after the date of the proposed revised regulations, the Administrator must promulgate revised regulations. These regulations are to take effect 18 months after promulgation.

The third and final phase of regulation generates "national secondary drinking water regulations" (secondary regulations). The Administrator is required to publish proposed "national secondary drinking water regulations" within 270 days after the date of the Act's passage. Within 90 days after publication of such proposed regulations, he must promulgate secondary regulations. The Act does not specify when these regulations are to take effect.

Regulations promulgated in all three phases may be amended.⁷

III. CHALLENGES TO THE INTERIM REGULATIONS

Pursuant to statute, on March 14, 1975, the Administrator published proposed interim regulations for public comment. In the course of the proceedings, EDF challenged the adequacy of the proposed regulations. Subsequently, on December 10, 1975, the Administrator promulgated the interim regulations. In this appeal, EDF challenges four specific aspects of these regulations: 1) the failure to fully control organic contami-

⁷ Sec. 1412(b) (4), (C), 42 U.S.C. § 300g-1(b) (4), (C).

nants in drinking water; 2) the adequacy of the MCL for fluoride; 3) the failure to regulate sodium and sulfates; 4) the adequacy of the monitoring required for cadmium and lead. It will be helpful to detail the nature of the dispute on each point.

A. *Regulation of Organics*

The interim regulations provide MCL's for only six organic contaminants^{*} out of the large number of such substances known to be present in drinking water. They do not specify treatment techniques for reducing organics. EDF argues that the legislative intent was that comprehensive regulation of organics should commence with the interim regulations. It points to accumulating evidence not only of the presence of large numbers of organic substances in drinking water, but of correlations between such contaminants and human health consequences, including cancer. It urges the need to set a limit on *total* organic content of drinking water, by adoption of some chemical measure which would serve as a surrogate for total organic content.

The EPA responds that the interim regulations were meant to be less comprehensive than the revised regulations and, more specifically, that Congress did not anticipate a comprehensive regulation of organics under the interim regulations. The EPA further stresses that the effects of long-term ingestion of organic contaminants in drinking water are not yet clear, making it difficult to set MCL's for these substances. In addition, argues the EPA, information on the efficacy and expense of available treatment techniques is incomplete. Thus, its decision to limit regulation of organics to six substances is presented as a legitimate exercise of agency discretion.

^{*} 40 C.F.R. § 141.12. The contaminants covered are Endrin, Lindane, Methoxychlor, Toxaphene, 2, 4-D, and 2, 4, 5-TP.

B. *Regulation of Inorganic Substances*

1. *Fluoride*

The MCL for fluoride specified by the interim regulations is based on the principle that drinking water may usefully contain sufficient fluoride to provide optimal protection against dental caries, but that the amount by which such levels are exceeded should be limited, so as to avoid undue side-effects—primarily mottling of the teeth (fluorosis), a condition with only esthetic significance. The MCL established by the Administrator permits fluoride levels up to two times the optimal protective level. EDF argues that the permitted level is too high: the severity of fluorosis is proportional to fluoride concentrations; thus, permitting levels to greatly exceed the optimal therapeutic level violates the duty of the Administrator to formulate interim regulations that will protect health “to the extent feasible.”

In response, the EPA cites authority to the effect that the levels in question do not pose a health hazard.⁹ The EPA views the matter as essentially one of line-drawing, in which it properly exercised reasonable discretion.

2. *Sodium and Sulfates*

Neither of these substances is controlled under the interim regulations.¹⁰ The EDF argues that the health

⁹ EPA relies upon consultations with the Department of Health, Education and Welfare, and with the National Drinking Water Advisory Council. Brief for the Respondent at 35-38.

¹⁰ In the Preamble to the interim regulations, as published in the Federal Register, the Agency does *recommend* that the states monitor sodium and sulfates, and notify consumers and physicians of these levels where appropriate. 40 F.R. 59567 (Dec. 24, 1976).

effects of these substances are well established¹¹ and that regulation was mandated by the Act.

The EPA believes that the setting of MCL's for these substances would have been inappropriate, since individual response to their presence in drinking water varies over a broad continuum. While monitoring of these levels and notification of those concerned might be desirable,¹² EPA concluded that it lacked authority under the Act to require such programs.

3. *Cadmium and Lead*

The interim regulations set MCL's for both of these substances. The parties do not dispute the fact that their presence in drinking water represents a potential danger to health. Rather, EDF focuses on the manner in which the levels of these contaminants in drinking water are to be monitored under the interim regulations. While levels are monitored at the tap¹³ (thus insuring that contributions from the distribution and plumbing systems will be reflected), samples are required to be tested only annually,¹⁴ and the size and distribution of sampling is not specified. EDF objects that more frequent sampling, of a specified size and distribution, is needed in order adequately to control the contributions of cadmium and

¹¹ Sodium intake is of concern to individuals on sodium-restrictive diets—primarily those suffering from hypertension or congestive heart failure. Sulfates have a laxative effect on newcomers to a community whose water contains high sulfate levels.

¹² See footnote 11 *supra*.

¹³ 40 C.F.R. § 141.2(c).

¹⁴ 40 C.F.R. § 141.23.

lead from distribution sources, which vary widely in the extent to which they are responsible for these substances in drinking water.

The EPA defends its monitoring requirements on the ground that, in its judgment, more extensive monitoring cannot be justified in light of the added expense. The agency points out that injurious effects from these substances result from long-term exposure, thus permitting correction of deviation from safe levels before harm to the public has resulted. The agency thus views its monitoring requirements as an appropriate exercise of its discretion.

IV. THE INTENT OF THE LEGISLATURE

This case involves conflicting contentions as to the nature of our present state of knowledge in the pertinent areas. We begin, however, by noting that the parties differ in their apprehension of legislative intent, and by making our own effort to discern the will of Congress.

A. *The Statutory Language*

The phased structure of the statutory scheme suggests that formulation of the regulations is intended to be progressive in nature, adapting to increasing knowledge and experience in the area. Yet the statutory language does not dispose of the general issue presented by petitioners: How comprehensive did Congress intend the interim regulations to be?

The opening section of the Act defines the term "primary drinking water regulation" (which includes both interim and revised regulations) as a regulation "which specifies contaminants which . . . may have any adverse effect on the health of persons. . . ." ¹⁵ Petitioner EDF,

¹⁵ Section 1401(1)(B), 42 U.S.C. § 300f(1)(B).

stressing the word "may,"¹⁶ urges that this language reflects a legislative intent that interim, as well as revised, regulations should cover *all* substances in drinking water that may adversely affect health. While there is room for argument, it is our view that the language is more naturally read as a definition—which it purports to be—than as a legislative command.

In another provision, § 1412(a)(2) of the Act states that interim primary regulations "shall protect health to the extent feasible, using technology, treatment techniques, and other means which the Administrator determines are generally available (taking costs into consideration) on the date of enactment of this Act [December 16, 1974]."¹⁷ Read by itself, this language can be taken as extremely comprehensive. We think, however, that the Congressional intent to avoid a requirement of broadest comprehensiveness is discernible when the above language is read alongside the statutory language concerning the (greater) comprehensiveness of *revised* regulations. Section 1412(b) of the Act requires the revised primary regulations to

specify a maximum contaminant level or require the use of treatment techniques for each contaminant for which a recommended maximum contaminant level is established or which is listed in a rule under paragraph (1)(B). The maximum contaminant level specified in a revised national primary drinking water regulation for a contaminant shall be as close to the recommended maximum contaminant level established under paragraph (1)(B) for such contaminant as is feasible. A required treatment technique for a contaminant for which a recommended maximum contaminant level has been established under paragraph (1)(B) shall reduce such contaminant to

¹⁶ Brief for Petitioner at 8.

¹⁷ 42 U.S.C. § 300g-1(a)(2).

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a level which is as close to the recommended contaminant level as is feasible. A required treatment technique for a contaminant which it listed under paragraph (1) (B) shall require treatment necessary in the Administrator's judgment to prevent known or anticipated adverse effects on the health of persons to the extent feasible. For purposes of this paragraph, the term "feasible" means feasible with the use of the best technology, treatment techniques, and other means, which the administrator finds are generally available (taking cost into consideration).¹⁸

This provision in paragraph (3) of § 1412(b) must be read in conjunction with paragraph (1) (B) of that section, which requires the Administrator to establish recommended maximum contaminant levels for, or at least list, *each* contaminant which, in his judgment,¹⁹ may have any adverse effect on health. Hence the passage from paragraph (3) quoted above requires in turn that he specify a MCL, or a mandatory treatment technique, for *each* contaminant which *may* pose a threat to health. The statutory language is thus unambiguous (though perhaps labyrinthine) in its requirement that the revised regulations be fully comprehensive in scope. The language of section 1412(a) which seems universal when taken by itself is perceived on study to be silent as to scope of the interim regulations, and in contrast with the wording for revised regulations. There is more room for administrative discretion than first appears.

There is also a tightening between section 1412(a) and section 1412(b) as to substantive content. Both sections use the term "feasible," and there is flexibility to consider costs. But section 1412(a) provides that the interim regulations shall protect health to the extent

¹⁸ Section 1412(b) (3), 42 U.S.C. § 300g-1(b) (3).

¹⁹ Based on the report on the study conducted by the National Academy of Sciences. See pp. 4-5 *supra*.

feasible using technology generally available on December 16, 1974, while section 1412(b) provides that the revised regulations shall use the *best* technology generally available.

The text of the statute indicates that the regulations are to become progressively more comprehensive and demanding. The words used give some signals of intent. However, it is the history of the legislation that is more enlightening and reenforcing of what we glean initially from the words alone.

B. *The Legislative History*

Prior to the passage of the Safe Drinking Water Act, the only enforceable federal standards for drinking water were directed at communicable waterborne diseases. These were promulgated under the Public Health Service Act.²⁰ Under that law, the Public Health Service published, in 1962, *recommended—i.e., nonenforceable—*guidelines for drinking water contaminants unrelated to communicable disease.²¹

Congress passed the Safe Drinking Water Act in response to increasing indications of a serious threat to health from contaminants in our drinking water not related to communicable disease. The legislative history contains abundant evidence that Congress intended the rapid implementation of broad mandatory controls over impurities. The Report of the House Committee on Interstate and Foreign Commerce²² sets a general tone of urgency in stating that

²⁰ 42 U.S.C. § 264 (1974).

²¹ Public Health Service Drinking Water Standards, Department of Health, Education and Welfare, 1962.

²² H.R. Rep. No. 93-1185, 92d Cong., 2d Sess. (1974).

the lack of comprehensive cost, health effects, technological assessment, and monitoring data cannot justify any further delay in Congressional and administrative action. While it would be desirable to have complete health effects research, effective treatment technology, and accurate, inexpensive monitoring systems in operation prior to commencing a system of regulation, this is simply not possible. It is the . . . intent [of the Committee] that EPA, the States, and the public water systems begin now to maximize protection of the public health insofar as possible, and to continue and expand these efforts as new more accurate data, technology, and monitoring equipment become available.²³

Specifically, the House Report indicates that controls were not to be delayed pending the development of more refined data on health effects and more efficient detection and treatment technology.

Primary regulations [i.e., both interim and revised] must specify contaminants which in the judgment of the Administrator may have an adverse effect on the health of persons when found in drinking water. The words used by the Committee were carefully chosen. Because of the essentially preventive purpose of the legislation, the vast number of contaminants which may need to be regulated and the limited amount of knowledge presently available on the health effects of various contaminants in drinking water, the Committee did not intend to require conclusive proof that any contaminant *will* cause adverse health effects as a condition for regulation of a suspect contaminant. Rather, all that is required is that the administrator make a reasoned and plausible judgment that a contaminant *may* have such an effect.²⁴

²³ *Id.* at 8.

²⁴ *Id.* at 10 (emphasis in original).

A further suggestion of the legislature's intent with regard to organic contaminants is seen in its expectation that the interim regulations "would be based largely on a review and updating of the United States Public Health Service drinking water standards" as conducted by the EPA Advisory Committee on the Revision and Application of the Drinking Water Standards in 1973. House Report at 17. Both the 1962 Public Health Service Drinking Water Standards and the 1973 recommendations of the EPA Advisory Committee on the Revision and Application of the Drinking Water Standards include a surrogate for total organics.

V. EVALUATION OF THE CHALLENGED REGULATIONS IN LIGHT OF THE LEGISLATIVE INTENT

We are persuaded that the legislature intended the EPA to undertake rapid and comprehensive measures in coping with the problem of unsafe drinking water. It seems particularly clear from the legislative history that Congress contemplated prompt regulation, whenever feasible, of every contaminant identified as possibly injurious to health.

While the urgency of the legislature's plan is undeniable, a second aspect of its plan, of perhaps equal importance, is apparent. Regulation in this area, to proceed most efficiently, must remain attuned to our rapidly expanding knowledge and technology. The phased structure of the statutory scheme wisely reflects such an awareness. Heavy investment in measures of uncertain value may prove costly not only in financial terms but also, and more importantly, on a human scale. It would be simplistic to read the legislative will as mandating an undifferentiated and full-scale commitment of resources to programs based entirely on the present state of our knowledge. We do not understand petitioners to adopt such a position.

The notion of attuning national efforts to the progressive development of our capabilities in this area has reverberations, we think, for the proper role of the judiciary in a dispute such as the one before us. In our response to the challenge directed against administrative action, we must be wary lest our interim adjudications hinder pursuit of the legislative goals. In circumstances such as confront us here, judicial efforts may be more profitably expended in assuring that future agency action will effectively promote the goals of the legislature than in fashioning remedies to "correct" earlier agency missteps.

With these thoughts in mind, we proceed to examine the challenged regulations.

A. *Regulation of Organics*

As we have indicated above, we believe the legislature contemplated that the interim regulations would, where feasible, control every contaminant that may prove injurious to health. The failure of the challenged regulations to do so thus becomes suspect. In light of the clear language of the legislative history, the incomplete state of our knowledge regarding the health effects of certain contaminants and the imperfect nature of the available measurement and treatment techniques cannot serve as justification for delay in controlling contaminants that may be harmful.

There is ample evidence establishing the fact that our drinking water is contaminated with a large variety of organic substances, of demonstrated carcinogenicity in animals.²⁵ Most of these substances are not controlled

²⁵ An example of unusual current concern is chloroform. The National Organics Reconnaissance Survey, initiated by the EPA in 1974 to determine the extent to which organics were present in the nation's drinking water, revealed, *inter alia*, that chloroform was present in the drinking water of

under the interim regulations. Methods of monitoring the total organic content of water are available²⁶ and, while not perfect, they make possible the exercise of significant control over the drinking water content of a wide range of organic substances. The argument of the EPA that the use of such imperfect measures may lead to a false sense of security²⁷ cannot be accepted in light of the clear language in the House Report requiring prompt action despite defects in our monitoring capabilities. Finally, there is material in the record before us to indicate that feasible methods for lowering the level of organic contaminants in drinking water may be available²⁸ at a reasonable cost.²⁹ This would of course be a matter for EPA determination in the first instance, but the EPA has not stated that its course has been based on a contrary assumption.

each of the 80 cities studied. Chloroform is carcinogenic in laboratory animals. Report on the Carcinogenesis Bioassay of Chloroform, Division of Cancer Cause and Prevention, National Cancer Institute, Mar. 1, 1976. Chloroform is not controlled under the interim regulations.

²⁶ The carbon chloroform extract (CCE) test procedure, which was the recommended standard for organic chemicals under the 1962 Public Health Service Drinking Water Standards, measures the total level of organic substances in drinking water, without identifying the individual component substances. While it may not detect all organics, it has the practical advantage of obviating the need to measure each substance individually, while providing a gross measure of the total organic content of water. See Drinking Water Standards: Report of the EPA Advisory Committee on the Revision and Application of the Drinking Water Standards (1973).

²⁷ Brief for Respondent at 26.

²⁸ See Evaluation of Activated Carbon as a Drinking Water Treatment Unit Process, EPA, Mar. 3, 1975.

²⁹ See Draft Interim Treatment Guide for the Control of Chloroform and other Trihalomethanes, EPA Water Supply Research Division, April, 1976 at 28.

While there is therefore serious question whether the EPA's failure to control total organics in the interim regulations has been responsive to the statute's provisions, we defer final resolution of this question. Considerations already identified suggest the wisdom of this course of action. During the pendency of this litigation, information bearing upon the problem of organic contaminants in drinking water has continued to accumulate. The National Academy of Sciences has submitted to Congress a report of its study of contaminants in drinking water,³⁰ undertaken pursuant to section 1412(e) of the Act.³¹ The EPA has solicited views and data concerning the control of organic contaminants in drinking water, preparatory to considering amendment of the interim regulations.³² These are but two examples of potential new sources of data that may aid the agency in reformulating its present approach to contaminants so as to keep pace with scientific and technological developments.

Congress has authorized the appellate courts to adopt such procedure, including orders of remand and requirement of further proceedings, "as may be just under the circumstances."³³ In cases like this, the court of ap-

³⁰ Drinking Water and Health, Report to Congress of Recommendations of the National Academy of Sciences (June 20, 1977), summarized in 42 F.R. 35764 (July 11, 1977). The report lists 20 organic substances found in drinking water that are known to have, or are suspected of having, carcinogenic properties in man or animals. 42 F.R. at 35776, Table 1. Of these, only two (Lindane and Endrin) are controlled under the interim regulations. The report stresses the applicability of findings in animal studies to man. *Id.* at 35776.

³¹ 42 U.S.C. § 300g-1(e).

³² Advance Notice of Proposed Rulemaking, 41 F.R. 28991 (July 14, 1976).

³³ Although 28 U.S.C. § 2106 in terms applies to review of court orders, it has been understood to identify a general principle of appellate review that is applicable to review of agency

pellate jurisdiction has been given authority to review actions of agencies in order to assure adherence to legislative mandate and furtherance of the legislative will. In our view, it would not be consistent with sound procedure, and hence would not be just to all concerned in the circumstances, to insist on agency application of resources and effort to reconsideration or revision of the interim regulations, as if that were the only process before the agency. The statute itself delineates an ongoing process, and we are informed of the potential of agency revision of its interim regulations. The court cannot wear blinders in a litigation involving an ongoing administrative process, and its rulings and relief must take account of the world as it exists as of the time of the decree.

In furtherance of our function and responsibility, we remand the record with a request to EPA to report to this court within 60 days regarding significant changes that have occurred, since the promulgation of the interim regulations, in its assessment of the problem of controlling organic contaminants in drinking water, and to advise the court of its determinations—as of the time of the report—as to whether it plans to propose amended interim regulations in light of newly acquired data.

B. Regulation of Inorganic Substances

We find the dispute concerning the EPA's handling of inorganic contaminants susceptible of more definitive resolution at this time. This issue is not characterized by the

orders and regulations, particularly when applied so as to permit enlightenment as to agency reasoning without undue intrusiveness. See *Greater Boston Television Corp. v. FCC*, 149 U.S.App.D.C. 322, 331, 463 F.2d 268, 277 (1971); *International Harvester v. Ruckelshaus*, 155 U.S.App.D.C. 411, 445, 478 F.2d 615, 649 (1973); *National Resources Defense Council v. Train*, 166 U.S.App.D.C. 312, 334 & n.112, 510 F.2d 692, 714 & n.112 (1974).

extremely rapid scientific and technological development that give a special dimension to the problem of organics. Current knowledge of injurious effects is more well-developed and stable. The costs and efficacy of monitoring and treatment procedures are similarly more well established.

The task of the agency here is largely one of line drawing. Agency expertise and judgment must be applied in determining the optimal balance between promotion of the public welfare and avoidance of unnecessary expense. We will not interfere so long as the agency strikes a balance that reasonable promotes the legislative purpose.

Applying this standard we find that the challenged actions concerning the regulation of inorganic substances fall within the limits of discretion delegated to the agency under the Act, and reasonably promote the legislative intent. Our views may be summarized briefly.

1. *Fluoride*: The interim regulations permit fluoride levels to reach twice the optimal level for protection against dental caries. The EDF accepts that these levels may exceed the optimal therapeutic level, but argues that the MCL should be set at 1.5 times the optimal therapeutic level.³⁴ The cosmetically undesirable mottling of the tooth enamel that results from excessive fluoride occurs in a severity proportional to the concentration of fluoride in the drinking water.³⁵ Nevertheless, because of the ex-

³⁴ EDF does not propose in its brief a specific MCL for fluoride, but in commenting on the proposed interim regulations it argued in favor of the 1.5 figure. Comments by the Environmental Defense Fund on the Environmental Protection Agency's Proposed Interim Primary Drinking Water Standards at 12-13 (May 1975).

³⁵ There is serious question as to whether mottling can be regarded as an "adverse effect on health" within the meaning of the Act. See, e.g., HEW letter of June 4, 1973, to EPA at 2. "We believe that in the context of discussing limits to avoid

pense of removing fluoride from drinking water in areas where it occurs naturally in high concentration,³⁶ some determination must be made of the level beyond which it is not feasible to require a further reduction of fluoride. The parties both recognize that there has been considerable controversy as to what this level should be.³⁷ No evidence has been introduced that demonstrates that the level chosen by the EPA for the interim regulations fails to protect the public health to the extent feasible. We must conclude that the balance struck by the agency is well within its discretion under the Act.

concentrations of substances that may be hazardous to health, dental fluorosis should not be termed harmful. The more severe dental fluorosis caused by highly excessive concentrations is described in the literature as unesthetic, cosmetically objectionable, or disfiguring, but is not described as hazardous to health." (The letter is reproduced in Comments by the Environmental Defense Fund on the Environmental Protection Agency's Proposed Interim Primary Drinking Water Standards (hereinafter cited as EDF Comments), App. Tab E, Att. 5).

³⁶ Where fluoride is *added* to drinking water to achieve therapeutic levels, its concentration is, of course, more easily controlled.

³⁷ Brief for the Respondent at 32; EDF Comments at 12, App. Tab E. The 1962 Public Health Service Drinking Water Standards recommended limiting fluoride to two times the optimal therapeutic level. In 1967, the Preventive Practices Branch of the Division of Dental Health of the Public Health Service recommended to the EPA that the limit be reduced to 1.5 times the optimal therapeutic level. Letter of Aug. 22, 1967, from the Acting Director, Division of Dental Health (reproduced in EDF Comments, App. Tab E, Att. 1). In March 1975, HEW determined that the studies upon which the 1967 recommendation was based were inadequate, and recommended to the EPA a level of two times the optimal therapeutic level. Letter of Mar. 7, 1975, from the Director of the Office of Environmental Affairs of HEW (reproduced in EDF Comments, App. Tab J).

2. *Sodium and sulfates*: The EPA did not promulgate interim regulations covering sodium and sulfates. The record before us does not require, as a matter of law, that the agency find that these substances, in the concentrations found in drinking water, have a significant impact on the health of most individuals. As has already been noted, the response of those who are affected varies considerably from one individual to the next. The decision not to impose MCL's for sodium and sulfates comports with these considerations, and is consonant with the views of the EPA Advisory Committee on the Revision and Application of the Drinking Water Standards, and of the National Drinking Water Advisory Council.³⁸

The EDF does not object to the EPA's failure to set MCL's for sodium and sulfates, but only to its failure to require monitoring of these substances and notice to customers when certain levels are exceeded.³⁹ EDF finds authority for requiring such monitoring and notification

³⁸ The EPA Advisory Committee recommended notification to physicians of sodium levels, but not the establishment of an MCL. 1973 EPA Advisory Committee Report at 26, App. Tab H. Concerning sulfates, the EPA Advisory Committee did recommend that a maximum level be established. *Id.* at 27 (referring to bad taste, and the "discomfort" caused by the laxative effect). The National Drinking Water Advisory Council recommended monitoring of sodium and sulfates, and public notification, but no MCL's. Letter of Aug. 14, 1975 from C. C. Johnson to Russell Train, App. Tab I.

³⁹ "If public water utilities were required to monitor and notify users that excessive levels of sodium or sulfates were present in drinking water, the public notification requirements of the Act would be satisfied and that segment of the population which all parties agree are at risk could be protected while data is accumulated to support a maximum contaminant level adequate to protect the general population." Brief for petitioner at 63.

in sections 1412(a)(2),⁴⁰ 1445(a),⁴¹ and 1450(a)(1)⁴² of the Act, the provisions of which are noted in the margin.

Given the deference that the Supreme Court has proclaimed is due on the part of a court to the agency charged with putting a new statute in motion,⁴³ we are in no position to say that the EPA has violated the statute by its failure to establish monitoring and notification requirements in the interim regulations. Section 1445(a)⁴⁴ authorizes EPA to require water suppliers to monitor supplies for the purpose of aiding the Administrator in establishing regulations. It is for the EPA to consider, at least in the first instance, whether such monitoring may be established for the purpose of advice to the public, and whether in any event monitoring can be required in the absence of regulations specifying MCL's or treatment techniques, and whether any monitoring reports made to EPA must or should be available to the public, under the Freedom of Information Act or otherwise. An agency such as EPA is confronted with a host of complex and difficult questions all at one time; an attempt to tackle them holus-bolus may be unfeasible and

⁴⁰ 42 U.S.C. § 300g-1(a)(2), which provides that the interim regulations "shall protect health to the extent feasible, using technology, treatment techniques, and other means . . . generally available . . . on the date of enactment of this title."

⁴¹ 42 U.S.C. § 300j-4(a), which provides that water suppliers "shall . . . conduct such monitoring, and provide such information as the Administrator may reasonably require . . . to assist him in establishing regulations under this title."

⁴² 42 U.S.C. § 300j-9(a)(1), which authorizes the Administrator "to prescribe such regulations as are necessary or appropriate to carry out his functions under this title."

⁴³ *Udall v. Tallman*, 380 U.S. 1, 16 (1965), *Power Reactor Development Co. v. IUERMW*, 367 U.S. 396, 408 (1961).

⁴⁴ 42 U.S.C. § 300j-4.

counter-productive. Only where a statutory direction is clear is a court warranted in issuing a mandate directing it to take particular actions.

Section 1450(a)(1)⁴⁵ constitutes a general authorization for the Administrator to promulgate regulations necessary to his functions under the Act. Such language invests the agency with a latitude that is considerable⁴⁶ but not untrammelled. The matter of sodium and sulfates has not been swept aside. The study carried out by the National Academy of Sciences pursuant to section 1412(e) of the Act⁴⁷ has addressed the matter, and the report of its findings⁴⁸ may aid the agency in re-evaluating its approach to these substances. The relief prayed by petitioners will not be granted.

3. *Lead and Cadmium*: The interim regulations set MCL's for both of these substances. EDF challenges the standards set by the regulations for monitoring the levels of these substances. Monitoring is required once a year for community water systems using surface water, and once every three years for systems using ground water. There is no requirement as to the number of, and locations at which, samples are to be taken. EDF appears to press for more frequent sampling, and for express requirements concerning the number of samples and times and locations at which samples are to be taken, so as to assure detection of harmful levels that may be present in only part of a particular system, or at only certain times.

⁴⁵ 42 U.S.C. § 300j-9.

⁴⁶ *Mourning v. Family Publications Service, Inc.*, 411 U.S. 356, 369 (1973); *Niagara Mohawk Power Corp. v. FPC*, 126 U.S.App.D.C. 376, 381-82, 379 F.2d 153, 158-59 (1967).

⁴⁷ See note 31 *supra*.

⁴⁸ Summarized in 42 F.R. at 35772, 35774.

As to frequency of sampling, the EPA stresses that the harmful effects of lead and cadmium in drinking water generally result from chronic exposure to the contaminants,⁴⁹ a point with which the EDF appears to agree.⁵⁰ EDF does not call our attention to any evidence that would indicate that the challenged sampling intervals are not sufficiently frequent to detect changes in contaminant levels before harm results. On this record, we cannot overturn the frequency established by the EPA as an abuse of discretion.

We turn to the issue of the samples to be taken within a given water supply system, their number, frequency and locations. Corrosion of supply pipes and plumbing fixtures concededly constitutes a significant source of lead and cadmium in drinking water.⁵¹ Consequently, levels of these substances may vary, even within the same water supply system, depending upon variations in the corrosiveness of the water at different times, in the periods of time during which water remains in the pipes, and in the age and composition of the pipes in different parts of the system. It is possible that an annual sampling of water at a single location in a water supply system may fail to detect such variations—even for long periods of time.

Section 1401(1)(D) of the Act⁵² states that primary drinking water regulations (*i.e.*, interim and revised regulations), must contain “criteria and procedures to assure [compliance] with . . . maximum contaminant levels; including quality controls and testing procedures to insure compliance with such levels and to insure proper operation and maintenance of the system. . . .” It is

⁴⁹ Brief for the Respondent at 49-50.

⁵⁰ Brief for Petitioner at 65.

⁵¹ Brief for Petitioner at 65; Brief for the Respondent at 53.

⁵² 42 U.S.C. § 300f(1)(D).

plausible to put it that Congress contemplated monitoring that will detect variations within a system.

However, considerations of feasibility must be weighed in determining the extent to which intra-system variations are unacceptable under the Act. The House Report explains that "[m]onitoring should insure *to the extent feasible* the detection of a violation before such violation causes or contributes to any adverse health effect."⁵³ While it can be argued that *all* water supply systems should be required to sample widely within the system, at specified locations and frequencies, such an approach might unnecessarily burden those systems for which intrasystem variation is not a problem. The House Report suggests that monitoring requirements were intended to be more finely tuned:

More frequent monitoring should be required by regulation for classes of systems facing local conditions which justify such increased monitoring. In prescribing regulations requiring more frequent monitoring or sampling than the minimum, the Administrator is expected to take into account, among other facts, the nature and type of the water source, historical data characterizing the water quality, anticipated variations in water quality, vulnerability of the source to accidental or deliberate contamination; the population at risk, the type of treatment provided, and the level of the contaminant which is generally found as it relates to the established limit.⁵⁴

While this passage from the House Report speaks only of frequency of sampling, its approach seems equally applicable to other aspects of monitoring.

The degree to which monitoring requirements can be tailored to detect local variations in contaminant levels

⁵³ House Report at 15.

⁵⁴ *Id.*

depends upon the access of the EPA to information concerning such variations. The EPA maintains that it did not have detailed information of this sort available at the time of promulgation of the interim regulations.⁵⁵ In an effort to obtain such data, it has encouraged the states to conduct sanitary surveys of water systems which would help to identify local drinking water problems.⁵⁶

An agency has discretion in selecting the techniques appropriate for grappling with a problem and carrying out its functions.⁵⁷ We cannot at this point say that EPA's approach to the formulation of monitoring regulations is without a rational basis. As data accumulate on local variations in lead and cadmium levels, the agency will be in a position to formulate a more refined approach to monitoring—either by amending the interim regulations or by designing the revised and secondary regulations to reflect such local conditions. Should the agency fail to do so, we will have another case before us.

* * * *

Subsequent to the preparation of the foregoing, the EPA has initiated further regulation of organics in drinking water. Regulations proposed by the Agency on January 25, 1978, would limit the presence of trihalomethanes, including chloroform, to under 100 parts per billion in the drinking water of communities with a population of more than 75,000; and would require, in these communities, the application of a special purification technique—filtration by granular activated carbon—to the treatment plants of systems whose water sources

⁵⁵ Brief for the Respondent at 52.

⁵⁶ 40 C.F.R. § 141.2(f) (1976).

⁵⁷ See *Mourning v. Family Publications Services, Inc.*, 411 U.S. 356, 371-72 (1973); *Philadelphia Television Broadcasting Co. v. F.C.C.*, 123 U.S.App.D.C. 298, 300, 359 F.2d 282, 284 (1966).

are polluted. The presence of chloroform in drinking water has been of particular concern because of its demonstrated carcinogenicity in laboratory animals and widespread presence in municipal water systems. See note 25 *supra*.

* * * *

Insofar as the petition for review presents challenges as to inorganic contaminants, it is denied. As to the challenge to the regulation of organic contaminants, we remand the record for a report by the EPA, as set forth in this opinion.

Affirmed.

MACKINNON, *Circuit Judge*, concurring in part and dissenting in part: The majority opinion concludes with respect to *organics*:

In furtherance of our function and responsibility, we remand the record with a request to EPA to report to this court within 60 days regarding significant changes that have occurred, since the promulgation of the interim regulations, in its assessment of the problem of controlling organic contaminants in drinking water, and to advise the court of its determinations—as of the time of the report—as to whether it plans to propose amended interim regulations in light of newly acquired data.

Maj. op. at 18. I concur in this part of the opinion. However, I dissent from the affirmance of the Agency's action with respect to lead and cadmium. The Agency defends its regulation by statistics that are based on *source water*, not on statistics gathered at the point of final distribution. It also relies on testimony that in my view is not sufficiently extensive, particularly in view of the fact that lead and cadmium pollution is admittedly caused by spotty factors, *i.e.*, somewhat by the type of conduits used in various locations and the corrosiveness of the water. The contentions of the Fund, in this respect, seem to me to be logical; and since they are not answered by the Agency, I would remand those portions of the regulations for more extensive testing and reconsideration in the light thereof.

With respect to the Agency's regulations on inorganic substances, I would uphold them, in the main, for the reasons outlined in the majority opinion, but I would not confine the study of fluoride to its dental effects when it is also suspect of causing some changes in bone density.

TABLE 1

Categories of Known or Suspected Organic Chemical
Carcinogens Found in Drinking Water

<u>Compound</u>	<u>Highest observed concentrations in finished water ($\mu\text{g/l}$)</u>	<u>Upper 95% Confidence estimate of lifetime cancer risk per $\mu\text{g/liter}^*$</u>
<u>Human Carcinogen*</u>		
Vinyl Chloride**	10	5.1×10^{-7}
<u>Suspected Human Carcinogens</u>		
Benzene	10	I.D.**
Benzo(a) pyrene**	D.	I.D.
<u>Animal Carcinogens</u>		
Dieldrin	8	2.6×10^{-4}
Kepone	N.D.	4.4×10^{-4}
Heptachlor	D.	4.2×10^{-5}
Chlordane	0.1	1.8×10^{-5}
DDT/DDE	D.	1.2×10^{-5}
Lindane (γ -BHC)	0.01	9.3×10^{-6}
α -BHC	D.	6.5×10^{-6}
β -BHC	D.	4.2×10^{-6}
PCB (Aroclor 1260)	3	3.1×10^{-6}
ETU	N.D.	2.2×10^{-6}
Chloroform	366	3.7×10^{-7}
Carbontetrachloride	5	1.5×10^{-7}
PCNB	N.D.	1.4×10^{-7}
Trichloroethylene	0.5	1.3×10^{-7}
Diphenylhydrazine	1	I.D.
Aldrin	D.	I.D.
<u>Suspected Animal Carcinogens</u>		
Bis(2-chloroethyl) ether	0.42	1.2×10^{-6}
Endrin	0.08	I.D.
Heptachlor epoxide	D.	I.D.

Drinking Water and Health, National Academy of Sciences,
Washington, D.C. 1977.



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TESTIMONY OF JACQUELINE M. WARREN

ON

REGULATION BY THE ENVIRONMENTAL PROTECTION AGENCY OF
CANCER-CAUSING CHEMICALS IN DRINKING WATER

July 12, 1978.

TESTIMONY OF JACQUELINE M. WARREN
June 12, 1978

This statement is supplemental to testimony presented by Dr. Robert H. Harris in New Orleans on Mar. 29, 1978. An expanded version of that testimony is attached. EDF will also submit additional technical comments before the record closes.

After reviewing a representative sample of the testimony presented in these hearings by the water works community, EDF believes that a restatement of the legal requirements of the Safe Drinking Water Act is in order. The statutory language of the Safe Drinking Water Act (SWDA) of 1974 authorizes the Administrator of EPA to regulate any contaminant of drinking water that "may have any adverse effect on the health of persons." § 1401. This is preventive language; there is no requirement that proof of actual harm to consumers of drinking water be shown before control of particular contaminants is warranted. The Act also provides EPA with the flexibility to take the most efficient approach to regulation. Section 1412 provides that EPA may prescribe technology and treatment techniques as well as maximum contaminant levels. Thus, EPA's authority to establish a GAC requirement is clearly within its statutory authority.

The language in the House Report supporting a preventive approach was cited with approval by the U.S. Court of Appeals in EDF v. Costle, No. 75-2224 (Feb. 10, 1978), the lawsuit brought by EDF largely because of EPA's failure to include control of organics in the Interim Primary Regulations issued in December of 1975. On the regulation of organics, the Court said:

In light of the clear language of the legislative history, the incomplete state of our knowledge regarding the health effects of certain contaminants and the imperfect nature of the available measurement and treatment techniques cannot serve as a justification for delay in controlling contaminants that may be harmful. (*EDF v. Costle*, slip op. at 15; emphasis added.)

Under the Court's decision, therefore, arguments to this effect, which have been made repeatedly by the AWWA, the Coalition, representatives of water utilities, and others, do not provide a legal basis for delay; acquiescence by EPA on these grounds would be illegal.

Despite the clear statutory mandate and the Court's opinion, a controversy continues over whether EPA can or should promulgate the proposed organics regulation. Perhaps because of the absence of federal funds for capital construction, or because water suppliers view the mere suggestion that organics in drinking water are harmful as a professional insult, water utilities and their various organizations such as the AWWA and the mis-named Coalition have charged that EPA is responding to "highly vocal" and some have added "uninformed pressure groups." Following AWWA's lead they have urged EPA to scrap the GAC requirement, and to establish 100 ppb THM as a national "goal" although this is merely the average level measured around the country in monitoring surveys. Indeed, there is a logical inconsistency in the AWWA's asserting that they "see no basis whatever for that figure," while seeking at the very same time to enshrine it as a mediocre "goal" that is unrelated to potential health effects.

Yet, this is the solution of those defenders of public health, the water works community, to the health risks identified by EPA, by the NAS, the NCI, the FDA, and many other credible scientific

witnesses in these hearings:

- (1) more research on health effects and GAC, and
- (2) monitoring of THM and synthetic organics without public notification.

As if research and monitoring will somehow serve to protect the public from existing and continuing exposures to carcinogens in their drinking water! Fortunately, the statute and the judiciary have provided that regulation must commence now. As noted above, the argument for delay while more research is conducted advances an approach which EPA cannot legally adopt under the SDWA and EDF v. Costle.

Possibly in recognition of the fact that their position is untenable as a matter of law or prudent public health policy, opponents of the regulations have chosen the low road in expressing their opposition. For example, a traveling road show of witnesses from New Orleans angrily debates any hint of hazard from organics in water, and has provided much of the uninformed but highly vocal pressure in the debate. Their statements and tactics are a disgrace to the people of New Orleans and to the water supply profession.

Stuart Brehm and Mr. Brodtman, the chemist from Jefferson Parish who testified yesterday, seem to have lost all sense of responsibility in their unrestrained effort to discredit Dr. Robert Harris. Their snide references to Dr. Harris as an "itinerant engineer" pale in comparison to their heavy-handed and wholly reprehensible effort to intimidate him by writing letters to the faculty senate and regents at the University of California, where he is doing sabbatical research in Bruce Ames' lab, questioning his credibility, professional morality, and status at the university.

Similarly, Dr. Hyman has engaged in verbal and written name-calling of Dr. Harris, which is hardly appropriate in a scientific debate and discredits Dr. Hyman far more than Dr. Harris. In point of fact, Bob Harris' professional credentials and integrity are not open to serious question. He is known and widely respected in scientific and academic circles -- and has earned the respect and commendation of Senate and Congressional committees for the excellence of his testimony there. His scientific credentials and competence to speak on the issue of organics in drinking water are far superior to those of the itinerant water commissioner and his entourage who have followed EPA's hearings all over the country to sing their same tired song over and over again.

No purpose would be served by further detailing the underhanded tactics employed by Mr. Brehm, Dr. Hyman and the others from New Orleans in their efforts to discredit Dr. Harris. Suffice it to say that it is reminiscent of the ancient Roman tradition of shooting the bearer of bad tidings rather than accepting the fact that they have a problem and taking steps to correct it.

Amid the babble of objections repeated almost as if by rote by much of the water supply profession and their paid scientific consultants, many opponents of the regulations appear to have lost sight of the requirements of the law -- and of their obligation to protect public health. Their disregard for what should be their primary concern -- providing safe drinking water -- can only be viewed with alarm and dismay by the American people. It so dishonors their profession before the nation that the credibility of the water works community may be damaged for years to come.

As Dr. Rice stated in his testimony about the successful European experience with activated carbon for the past two decades, "those who

currently state that 'the U.S. has the safest drinking water in the world' [as the Coalition did here yesterday] are mouthing a generality which in many cases is also an untruth."

It is abundantly clear that the public wants safer drinking water. As other witnesses have pointed out, large numbers of people are turning to alternative sources of drinking water because they do not trust what their local utility is serving up. Sales of bottled water and home water devices are burgeoning and are expected to surpass \$500,000,000 a year in the very near future. Unfortunately, all of the available evidence indicates that these alternatives are not substitutes for municipally treated drinking water. Activated carbon is not necessarily used to filter bottled water, and there is too little carbon and too little contact time between the water and carbon in filter devices to make a meaningful reduction in the level of organics in the water. Excessive bacteria growth in the home devices may also pose a problem. For these reasons, EDF has asked the FTC to investigate the validity of the advertising claims made by the manufacturers of home water filter devices who are seeking to capitalize on public concern over the health risks of organics in drinking water. Yet, these sales reflect a judgment by a growing segment of the population that the water provided by the water works community is unfit to drink. The message that the public wants and is willing to pay for better drinking water could not be clearer.

In summary, EPA is on strong legal ground in proposing these regulations:

-- the scientific basis is certainly sufficient to warrant taking the preventive health measure represented by the proposed regulations;

-- the technology is well known, proven, and reasonably available -- it has been used in the food and beverage industries for decades; and

-- the costs are affordable for the vast majority of the municipalities covered by the proposal.

EDF's objective in advocating and supporting regulation of organics is achievement of safer drinking water nationwide. For this reason, a regulation applicable to only half the population is not good enough, and is inconsistent with the Congressional intent that maximum feasible protection of public health be provided. Nor does EPA claim that the 100 ppb level of THM approaches that level of protection. EDF believes that the MCL for THM should be the level achievable by the application of the most effective THM-reducing techniques to a relatively clean water source such as an average water supply.

If new funding mechanisms are necessary to provide the quality of drinking water which is achievable by GAC and changes in the disinfection process, let us find them. But let us not resolve the dilemma by wholesale exemptions of smaller systems or establishment of standards which are too permissive to protect public health. The choice is to pay now for an ounce of prevention -- or to pay later for a pound of cure, measured in human suffering, death, and great expenditures for medical care. Faced with this choice, the water supply community has elected to disparage the risk, and urges only further delay. The cost of that approach is more cancer and even higher construction costs when the inevitable control requirements are imposed.

The EPA, and representatives of other federal scientific and regulatory agencies, whose principal concern is protection of public

health, have appeared in these hearings to state that they favor the adoption of control measures sooner rather than later to abate the documented risk of cancer from continuing exposure to organics in drinking water.

EDF strongly agrees with this position and, moreover, urges EPA both to expand the coverage and stringency of the proposed regulation and to press forward with their long overdue effort. The public supports it and deserves no less.

TESTIMONY OF DR. ROBERT H. HARRIS
ON THE REGULATION OF CANCER-CAUSING CHEMICALS
IN DRINKING WATER BY THE ENVIRONMENTAL PROTECTION
AGENCY

New Orleans, Louisiana, March 29, 1978

We have assembled here today to discuss what has become this nation's second leading cause of death, human cancer. In particular, we want to know the extent to which chemicals in drinking water contribute to this disease, and the massive human suffering which accompanies it. Over the past decade, the scientific community has come to accept that somewhere between 60 and 90 percent of cancer is caused by the environment, including the food we eat, the air we breathe, and the water we drink. Thus, cancer is potentially preventable, offering the hope that steps like those being proposed by the EPA today will contribute to a reduction in cancer rates. If we are successful in this endeavor, we will have contributed to one of the major medical and public health triumphs of this century.

Drinking Water Contaminants Contribute to Cancer Rate

The first question that we must confront is: Does drinking water cause cancer, and if so how much? To answer this question, we can look for clues in three ways: by studies of fish that must live in polluted water, by laboratory studies of chemicals found in drinking water, and by epidemiologic investigations of human populations that drink contaminated water.

In fish that live in polluted water, like the Mississippi River, studies have shown that there is a high incidence of cancer, as well as other diseases, and that this is associated with the industrial and municipal pollution of the water. In September of 1976, for example, the New York Academy of Sciences held a conference at which numerous scientists delivered papers on the association between fish cancer and other diseases and pollution of the Mississippi River, the Great Lakes, the Pacific Coastal waters, as well as elsewhere. In January, 1977, the Marine Fisheries Review, a publication of the National Oceanic and Atmospheric Administration, published the results of six studies showing that tumors that would be cancerous in man were present in large numbers in oysters, clams and mussels growing in polluted waters in Maine, Massachusetts, Rhode Island, Connecticut, Delaware, Maryland, Virginia, Oregon and Washington. In contrast, only a few cases of unusual growths in mollusks were reported a decade ago. Perhaps as dead canaries warn of potential mining disasters, diseased and cancerous fish should warn of the potential hazards to the public who must depend upon polluted waters as drinking water supplies.

The next clue that perhaps drinking water does represent a human cancer risk comes from laboratory studies on the chemicals that have been found in drinking water. Although to date the EPA has identified over 80 industrial chemicals in New Orleans drinking water, this represents only a fraction of the total number of

SELECTED CARCINOGENS* AND MUTAGENS FOUND IN 11-CITY SURVEY

COMPOUNDS	NEW ORLEANS	MIAMI	SEATTLE	OTTUMWA, IOWA	PHILA.	CINCINN.	TUCSON	N. Y. C.	LAWRENCE	GRAND F.	TR. PAR.
*BENZENE	X			X	X	X					
*CARBON TETRACHLORIDE	X	X		X	X	X		X	X	X	X
*BIS(2-CHLOROETHYL)ETHER	X				X						
*CHLOROFORM	X	X	X	X	X	X	X	X	X	X	X
*1,2 DICHLOROETHANE	X	X			X	X					
*DIELDRIN	X	X	X	X		X					
*DDT, DDE	X										
*HEPTACHLOR	X										
*HEXACHLOROBENZENE	X										
*HEXACHLORO CYCLOHEXANE						X					
*LINDANE (γ-BHC)						X				X	
*PCB						X					
*TETRACHLOROETHYLENE	X	X		X	X	X	X	X	X	X	
*TRICHLOROETHYLENE	X	X		X	X	X			X		
*VINYL CHLORIDE		X			X						
BROMODICHLOROMETHANE	X	X	X	X	X	X		X	X	X	X
CHLOROBENZENE	X	X	X	X	X	X		X	X	X	X
CHLOROMETHYLETHER	X										
DIBROMOCHLOROMETHANE	X	X	X		X	X	X	X	X	X	X
1,3 DICHLOROBENZENE	X	X			X	X			X		
DICHLOROIODOMETHANE	X	X			X	X		X	X	X	X
METHYLENE CHLORIDE	X	X	X	X	X	X		X	X	X	X
VINYLDIENE CHLORIDE	X	X			X	X			X		

chemicals present. Even fewer have been tested for their effects on laboratory animals. For those that have, there is substantial evidence that approximately 20 of these chemicals have the capacity of causing cancer in humans (Table 1). Although the concentrations of these chemicals are usually at the parts-per-billion or parts-per trillion level in New Orleans drinking water, it is well to remember that there is no safe level of a cancer-causing chemical, and that several chemicals, including dieldrin, have been shown to cause cancer in laboratory animals or in humans at the parts-per-trillion levels.

The final clue comes from the epidemiologic studies that have been conducted on human populations. Four of these studies have focused on the lower Mississippi River in Louisiana, and every single one has shown a highly significant association between drinking water from the Mississippi River and cancer mortality rates. Elsewhere in the country, where water is polluted, an additional eight studies have been completed, and seven of these show a consistent pattern of association between drinking water quality and cancer of the gastrointestinal and urinary tract. In a recent review of six of these studies, Dr. Kenneth Cantor at the National Cancer Institute made the following observation:

Given the diversity of the study populations, water quality measures, and statistical methods used in these six investigations, the similarity of results is noteworthy. Bladder and colon/rectal cancer mortality were observed in several to be associated with ... water quality ...

In conclusion, these three clues -- evidence of fish tumors associated with polluted water, the presence of chemicals in drinking water that cause cancer in laboratory animals, and the increased risk of cancer in human populations who drink contaminated drinking water -- provide strong and convincing evidence in support of the EPA's proposal to require activated carbon treatment that would remove these cancer-causing chemicals from drinking water. But how much cancer does drinking water cause, and will the cost of this treatment be off-set by equal or greater health benefits to New Orleans area residents?

The Health Benefits of Activated Carbon Treatment
Will Greatly Exceed Its Costs

The effectiveness of activated carbon treatment to remove cancer-causing chemicals cannot be disputed. The EPA has conducted extensive investigations into this question, and over 15 European communities already use activated carbon filters to remove cancer-causing chemicals from polluted water, such as the Rhine River. The cost of this treatment in Europe has been estimated to have increased the cost of water by 5 to 10 percent (H. Southeimer, personal communication).

From EPA cost estimates, adding activated carbon filters to a water treatment plant the size of New Orleans' will raise the water rates by only 25 cents per person per month. This would necessitate ^{approximately \$1} \$13 million capital expenditure (capital costs may

* These figures are rough estimates based upon EPA's initial cost estimates published in early 1978 using 1976 dollars. They would have to be revised upwards when the EPA's recently revised figures are used.

vary depending on special geological problems), and would increase the cost of water by 9 cents per 1000 gallons, from its current cost of 64 cents per 1000 gallons. On a yearly basis, the New Orleans community at large, including Jefferson Parish, and all residential, commercial, and industrial users, would spend approximately \$5 million annually for this treatment.

An estimation of the health benefits, on the other hand, is more difficult. A precise estimate of cancer risk is not possible, and we do not know how to translate into dollars much of the impact of cancer -- psychological stress, physical pain, and family disruption, to name but a few. Despite these limitations and uncertainties, however, we can make some estimates of risk and benefit which are useful in helping us decide whether improving water treatment will be worth it.

The first estimate of cancer risk that we could make is based on the animal studies of the various chemicals found in New Orleans drinking water. For example, using a method of risk estimation suggested by a recent panel of the National Academy of Sciences, a chloroform concentration of 200 parts per billion consumed over a lifetime would result in approximately 20 cases of cancer per year in the New Orleans area population (approximately one million). Another chemical, dieldrin, if present at a level of only 70 parts per trillion, which was the level EPA detected in

its 1974 study, would cause an additional 20 cases of cancer per year. Unfortunately, we cannot carry this estimation much further, since we have relatively little data on the amounts of the various chemicals that are in the water, and even less information on the sensitivity of laboratory animals to most of these chemicals.

Another method of estimating risk, which is presumably more precise, is to use the results of the studies on human populations. For example, based on the sensitivity of epidemiologic methods, there could not possibly be the consistency of results observed in these studies unless contaminated drinking water increased the risk of GI and urinary tract cancer by 20 percent or more. For the New Orleans area, an increased risk of 20 percent for these sites would result in approximately 70 cases of cancer per year. In New York State, Dr. Michael Alavanja studied the risk of drinking chlorinated water, and found that for urban areas, the increased risk for GI and urinary tract cancer was 170 percent. Using these figures, an excess of approximately 250 cancer deaths in the New Orleans area would be predicted. And, finally, if the four studies of Louisiana residents are used, which suggest an approximate 10 percent excess risk for total cancer, one would predict that approximately 200 cancer deaths result every year from drinking New Orleans water. All of these various estimates are summarized in Table 2.

Table 2

Estimates of Cancer Risk From Drinking Water
in New Orleans Area Based on Animal and Human
Epidemiologic Studies

<u>Method of Risk Estimation</u>	<u>Risk Estimate (Cancer deaths/million/year)</u>
NAS method for 200 ppb chloroform, lifetime exposure, risk equal to most sensitive animals	20
Method same as above for dieldrin at 70 ppt	20
Assume risk at least 20% excess for GI and urinary tract cancer deaths	70
Assume risk equivalent to N.Y. study; odds ratio of 2.7 for GI and urinary cancer deaths	250
Based on New Orleans studies, drinking water accounts for 10% of total cancer mortality rate.	200

Although the various estimates summarized in Table 2 at least suggest a range for the cancer risk, they do not suggest the economic impact, or the dollar value one should attach to these risks. However, the HEW has estimated that the total national cost of cancer is approximately \$30 billion (adjusted to 1978 dollars) annually. This would translate to approximately \$80,000 for every cancer death, which represents only the direct medical costs and the lost income over the length of illness and during the remainder of normal life expectancy. Although use of the estimate of \$80,000 per cancer death grossly underestimates the value of the human life and the cost of cancer, it nonetheless allows us the advantage of establishing a lower limit on the benefits of removing cancer-causing chemicals from drinking water.

Table 3 provides a comparison between the lowest possible level of economic impact resulting from drinking-water related cancer deaths and the expected cost of activated carbon treatment in a city of approximately 1 million population. Based on the epidemiologic evidence, it is readily seen that the benefit/cost ratio is favorable, even at the lower limited of risk defined by the sensitivity of epidemiologic methods. Of course, assumptions regarding the value of the human life that is more consistent with current economic thinking, which usually places the value of a human life at greater than \$300,000, would further increase the benefit/cost ratio.

Table 3

Lowest Possible Level of Economic Impact
 Resulting from Cancer Deaths Due to Carcinogens
 in New Orleans Drinking Water Compared With
 Cost of Activated Carbon Treatment

	<u>Economic Impact</u>
70 Cancer Deaths Per Year (Assumes 20% excess risk of GI and Urinary Cancers)	\$ 5.6 Million/yr.
200 Cancer Deaths Per year (Assumes 10% of Total Cancer Death Rate due to drinking water)	\$16 million/yr
250 Cancer Deaths Per Year (Assumes relative risk ratio of 2.7 for GI and Urinary Tract Cancers)	\$20 million/yr.
EPA's Estimate of the Cost of Activated Carbon Filtration	\$ 5 million/yr.

Therefore, considering that activated carbon treatment will result in benefits other than reduced cancer risk (reduced taste and odors, removal of heavy metals, and removals of chemicals which are mutagenic and teratogenic). It would appear that EPA's proposed regulations are easily justified on a benefit/cost basis.

Sources of Confusion Within the Water Works Community

Unfortunately, much of the opposition within the water works community to EPA's proposed regulations stems from a misunderstanding of the early epidemiologic studies in New Orleans, coupled with a general lack of knowledge of the existence of the numerous other studies of drinking water supplies in other parts of the country. Therefore, it is important to evaluate this misunderstanding, and explore the alleged "inconsistencies" in the early EDF epidemiologic studies in Louisiana.

On November 7, 1974, EDF released preliminary results of a study which had been requested by New Orleans City Councilman James Moreau. The following February, EDF made public its final report, which was later published in the July 2, 1976, issue of Science. This study consisted of a statistical analysis (multivariate regression) of cancer mortality rates in 64 Parishes in Louisiana to determine the influence of urbanization, family income, occupation and source of water supply on these rates. Eleven of the 64 parishes receive drinking water from the Mississippi River or its distributaries, while the remainder mainly used ground water.

The results indicated a statistically significant association between cancer mortality rates and populations which receive drinking water from the Mississippi River. This relationship persisted even when Orleans Parish was excluded from the analysis (to eliminate the possible effect of death rates if cancer patients moved to New Orleans in search of medical facilities), and when the analysis was confined only to the southern 29 Parishes alleged to be different in dietary habits from north Louisiana Parishes.

Subsequent to release of EDF's preliminary report in November, it was criticized by two scientists at the National Cancer Institute and two scientists at Tulane University. Both critiques were solicited by local officials in New Orleans.

The NCI criticisms were based largely on an erroneous suggestion that the EDF study claimed to have "... drawn the net of causal evidence around the data they used." To the contrary, in EDF's November, 1974 report, it was clearly stated that, "The study is brief, the evidence fragmentary, and we have not proved that drinking water causes cancer, but the evidence is indeed highly suggestive."

One of the NCI reviewers did reanalyze EDF's data and found the same pattern of association between Mississippi River water and cancer mortality rates. Even subject to geographic considerations (which EDF believes was done inappropriately), drinking water from the Mississippi River was associated with total cancer and lung cancer mortality rates in white males, non-white males, and non-white females; but not for urinary or liver cancer mortality rates

(gastrointestinal cancer mortality rates were not investigated).

New Orleans officials who are fond of referring to these NCI criticisms, always conveniently fail to refer to the comments made at about the same time by two other NCI scientists, Dr. Gary Flamm (Assistant Director of the Division of Cancer Cause and Prevention) and Dr. Herman Kraybill (Scientific Coordinator for Environmental Cancer). Drs. Flamm and Kraybill were designated by NCI as its representatives at the February 21, 1975 New Orleans hearings before the House Committee on Health and Welfare of the Louisiana State Legislature. In their testimony, both Drs. Flamm and Kraybill emphasized that no level of exposure to a carcinogen could be considered "safe." And in general, they supported the EDF study. Dr. Kraybill referring to it as "laudable". When Dr. Flamm was asked whether or not he considered the New Orleans water as representing a health hazard, he responded, "As a citizen, I have to say Yes, a health hazard would be reduced by removing organic chemicals from New Orleans water These chemicals are not natural and could not possibly be doing you any good."

A more recent incidence in EDF's study was discussed in a letter from Dr. Kenneth Cantor of the NCI to the Chairman of the National Drinking Water Advisory Council: "To my reading, the published study does not appear to be [statistically] biased. It is, of course, subject to the limitations which I presented to the Council, common to all indirect studies. Given these limitations, however, it is a creditable effort."

The origins of the criticisms of EDF's study are the unfounded allegations that EDF claimed that its study "proves" that New Orleans drinking water causes cancer. But in EDF's November, 1974 Report to Councilman Moreau, in Dr. Robert Harris' testimony before the House Committee on Health and Welfare, and again in the Science article, it was repeatedly emphasized that EDF's study did not "prove" that New Orleans drinking water causes cancer, although it did provide strong suggestive evidence.

Everyone should realize that it is scientifically impossible to "prove" that New Orleans drinking water, or for that matter drinking water anywhere in America, causes cancer. As in a murder trial where there are no eye witnesses, the case must be based on circumstantial evidence. To ignore convincing circumstantial evidence in a murder trial would set murderers free to kill again. To ignore the convincing circumstantial evidence that carcinogens in New Orleans drinking water increases the risk of cancer would condemn future generations to needless death by cancer.



GENERAL WATERWORKS • MAINE DISTRICT

P. O. BOX 309, 135 MADISON AVENUE, SKOWHEGAN, MAINE 04976 • (207) 474-8153

September 6, 1978

The Honorable Edmund S. Muskie, Senator
U. S. Senate Office Building
Washington, D. C. 20510

Re: Proposed Regulations for Control of Organic Chemical
Contaminants in Drinking Water

Dear Senator Muskie:

The Maine District of General Waterworks is an administrative office for 14 subsidiary investor-owned water companies. All of these companies are small and therefore are exempt from the currently proposed regulations referenced above.

However, in reading the supplementary information accompanying the proposed regulations we note that the regulations will be expanded to include smaller water systems, in the future. This information does not say the regulations "might" be expanded to include smaller companies. It also does not say that the regulations will be modified or made less costly to comply with for smaller companies.

We would like to point out the extreme impact that these proposed regulations would have on a small company and therefore on its customers. We would like to present the following data for just one of the 14 companies in our district and would suggest that this is fairly typical of the impact of the proposed regulations on a small company. We have used data from our Hartland Water Company which serves approximately 430 customers in and around Hartland, Maine. We have used the EPA estimates of the costs, both capital and O&M interpolated from P. C-51 of the August 1977 Economic Impact Analysis of a Trihalomethane Regulation for Drinking Water. The capital costs have been adjusted upward by 80% as reflected in EPA's revised estimates of cost.

Senator Edmund S. Muskie
September 6, 1978
Page 2

HARTLAND WATER COMPANY

Average Day Production	235,000 gal.
1977 Actual Production Costs	\$ 5,100
Dec. 31, 1977 Actual Net Plant	\$112,000
Aver. Annual Capital Expenditures (Actual last 3 years)	\$ 8,300
1977 Gross Revenue Per Customer	\$109.52

Estimated Capital Cost for GAC Treatment
 $\$191,798 \times .235 \times 1.8 = \$81,130$

Estimated Annual O&M Expense Increase = \$42,532

Estimated Annual Revenue Increase Required = \$58,133
 Rate Increase Required - 126%
 Rate Increase Required Per Customer - \$135.19/yr

As can be seen by the above data, GAC treatment requirements would have a tremendous impact on small water companies and their customers.

The Senate Committee on Appropriations (Report No. 95-1060, Calendar No. 984), has also questioned the value and propriety of promulgating the proposed regulations at this time. Similarly, the House Committee on Appropriations Report No. 95-1255 is concerned -- "that the control strategy of granular activated carbon filtration is being proposed by E.P.A. without sufficient plant experience". "There remain too many questions concerning cost effectiveness and potential health hazards." Copies of excerpts from these Committee reports are attached.

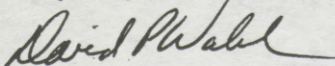
Based on our own knowledge of water treatment processing and water quality, and because of the very extensive comments expressing disagreement with E.P.A. as to the value and cost of their proposed regulation, it is our firm belief that Congress should request E.P.A. to give further study to determine that their proposed amendments are both health and cost effective prior to promulgation.

We would appreciate a request from your office to E.P.A. that

Senator Edmund S. Muskie
September 6, 1978
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recommendations from the Senate and House Appropriations Committees
be implemented.

Very truly yours,



David P. Walsh
Vice-President

CALAIS WATER & POWER COMPANY
CARIBOU WATER WORKS CORP.
EASTPORT WATER COMPANY
ELLSWORTH WATER COMPANY
GREENVILLE WATER COMPANY
GUILFORD & SANGERVILLE WATER COMPANY
HARTLAND WATER COMPANY
MARS HILL & BLAINE WATER COMPANY
MECHANIC FALLS WATER COMPANY
MILLINOCKET WATER COMPANY
NORTH BERWICK WATER COMPANY
NORTHERN WATER COMPANY
SKOWHEGAN WATER COMPANY
WALDOBORO WATER COMPANY

DPW/ss

Encl: Excerpt - Report of House Appropriations Committee
Excerpt - Report of Senate Appropriations Committee

Calendar No. 984

95TH CONGRESS }
2d Session }

SENATE

{ REPORT
No. 95-1080

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT—INDEPENDENT AGENCIES APPROPRIATION BILL, 1979

AUGUST 1 (legislative day, MAY 17), 1978.—Ordered to be printed

Mr. PROXMIER, from the Committee on Appropriations,
submitted the following

REPORT

[To accompany H.R. 12936]

The Committee on Appropriations, to which was referred the bill (H.R. 12936) making appropriations for the Department of Housing and Urban Development, and for sundry independent executive agencies, boards, institutes, commissions, corporations, and offices for the fiscal year ending September 30, 1979, and for other purposes, reports the same to the Senate with various amendments and presents herewith an explanation of the contents of the bill.

AMOUNT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY

	<i>Fiscal year 1979</i>
Amount of bill as passed by House.....	\$68,208,848,000
Amount of change by Committee.....	+255,526,000
Amount of bill as reported to Senate.....	68,464,374,000
Amount of appropriations to date, 1978.....	74,308,601,000
Amount of budget estimates, 1979.....	69,517,534,000
Under estimates for 1979.....	-1,053,160,000
Under appropriations for 1978.....	-5,844,227,000

(1)

The EPA earlier this year proposed amendments to its regulations under the Safe Drinking Water Act to limit certain organic chemicals sometimes found in trace amounts in drinking water. The Committee notes that there are divisions of thought in the scientific community as to whether a health risk exists which would justify these proposals, as well as serious questions concerning the cost, effectiveness, and potential health hazards of the granular activated carbon systems which the EPA would require be installed. The Committee further notes that many water providers believe they will be unable to meet the financial burdens placed on them by these regulations unless rates to their customers are raised—in some cases multiplied.

The cost of these regulations could be almost \$1,000,000,000 by the EPA's own estimate, or up to \$4,000,000,000 or \$5,000,000,000 by other estimates. Already some have argued that, if these regulations become final, federal financial assistance will have to be provided. Therefore, the Committee wishes to take this opportunity to express its own concerns.

The Committee questions whether final promulgation of these regulations within the near future might be premature, in that the evidence to support the EPA's proposals may not justify their issuance. In view of the growing public awareness of government inspired inflationary pressures, and although the Committee has not marshalled the expertise to make its own scientific judgment in this area at this time, the Committee urges the EPA, before going ahead with these costly regulations, to complete the research and make the difficult, balanced judgment to inspire the confidence of knowledgeable persons who must meet the requirements and pay the costs.

ENFORCEMENT

1978 appropriation.....	\$70,837,000
1979 budget estimate.....	95,555,000
House allowance.....	94,555,000
Committee recommendation.....	94,755,000

* Includes \$700,000 requested in House Document 93-231.

The Committee recommends \$94,755,000 for EPA's enforcement program in fiscal year 1979. This amount is \$800,000 below the budget estimate and \$200,000 above the amount provided by the House.

The enforcement efforts of the Environmental Protection Agency are an integral part of the Agency's program of controlling environmental pollution. Much of the EPA's enforcement activities are in support of or in cooperation with State and local enforcement initiatives in such areas as air quality standards, navigable and interstate water quality standards, and issuance of pollution discharge permits. Enforcement responsibilities dovetail with those under the abatement and control account, focusing on air, water quality, drinking water, solid waste, pesticides, toxic substances, and noise. The Agency uses a number of enforcement methods to deal with environmental pollution, including such actions as notices of violation, abatement orders, civil and criminal court actions and, in the case of pesticides, recalls and seizures.

95TH CONGRESS } HOUSE OF REPRESENTATIVES { REPORT
2d Session } No. 95-1235

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT-INDEPENDENT AGENCIES APPROPRIATION BILL, 1979

JUNE 1, 1978.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. BOLAND, from the Committee on Appropriations,
submitted the following

REPORT

together with

ADDITIONAL VIEWS

[To accompany H.R. 12935]

The Committee on Appropriations submits the following report in explanation of the accompanying bill making appropriations for the Department of Housing and Urban Development, and for sundry independent agencies, boards, commissions, corporations, and offices for the fiscal year ending September 30, 1979, and for other purposes.

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availability of substitutes, and the economic consequences of regulating the chemical, EPA, through rulemaking procedures, may take a number of actions. If EPA finds a chemical to be an unreasonable risk of injury to health or to the environment, the Agency may prohibit manufacture or distribution of the chemical, limit the amount of chemical that may be produced, regulate the use of the chemical, require the chemical to be labeled with warnings or instructions and prohibit or regulate the chemical's disposal. EPA may also require a chemical manufacturer to improve quality control procedures if the manufacturing process causes a chemical to present an unreasonable risk to health or the environment. In the event that the immediate regulation of a chemical is necessary to protect human health or the environment, EPA may issue a rule effective upon publication in the Federal Register or initiate a civil action for the seizure, recall, or public notification of the hazards of the chemical.

COMMITTEE RECOMMENDATIONS BY APPROPRIATION

If the amounts approved in the following appropriation accounts, the Agency must limit transfers of funds between media to not more than 10 percent of the budget plan without first obtaining approval of the Committee.

AGENCY AND REGIONAL MANAGEMENT

\$ appropriation.....	\$72,840,000
estimate, 1979.....	\$84,185,000
recommended in bill.....	\$84,185,000

Includes \$100,000 requested in H. Doc. 95-331.

The Committee recommends the budget estimate of \$84,185,000 for agency and regional management in fiscal year 1979. These activities include executive direction and leadership for all programs and support to such areas as public affairs, legislative liaison, international affairs, equal employment opportunity, Federal agency pollution control activities, program planning and economic analysis, budgeting, accounting, auditing, personnel management, organizational analysis, ODP operations, grant and contract policy and other housekeeping activities.

RESEARCH AND DEVELOPMENT

\$ appropriation.....	\$310,747,000
estimate, 1979.....	324,128,000
recommended in bill.....	328,023,000
increase above estimate.....	+3,900,000

The purpose of EPA's research and development programs is to produce the scientific information and technical tools on which national policy is based and the effective control strategies in the regulation, prevention and abatement of environmental pollution. The Committee notes, however, that in the past EPA has at times put greater emphasis on publishing a standard rather than on the compilation of the necessary scientific data on which to base it. Under these circumstances, EPA's research and development programs have been

mends that EPA undertake a complete study of its research development effort to determine how it can be made more responsive and effective in the development of realistic standards.

An example of proposed regulations issued without substantive supporting scientific evidence is the recently published regulation on control of organic chemical contaminants in drinking water supplies for communities above 75,000 population. Of particular concern is that the control strategy of granular activated carbon filtration is being proposed by EPA without sufficient plant experience. The Agency is urged to thoroughly test this control strategy in actual plants before mandating that it be adopted on a nationwide basis. There remain too many unanswered questions concerning cost, effectiveness and potential health hazards.

The Committee recommends the budget estimate with the following changes:

- \$2,000,000 for contractual efforts. A minimum of one-half of the reduction should be applied to the air ecological effects activity. The Committee is concerned that EPA is not properly selecting which tasks should be accomplished in-house and which under contract. A complete review of the procedures used in making such determinations should be made at the earliest possible date.

- \$4,000,000 for monitoring and technical support activities. The budget estimate for these activities in fiscal year 1979 is more than \$11,000,000 compared with \$28,500,000 in 1978. The recommendation will permit a significant increase in 1979 and should be adequate to meet high priority requirements.

- \$8,000,000 for anticipatory research. This will provide for an increase of \$1,131,000 above the 1978 level of \$4,729,000. The Committee also recommends that the number of positions devoted to anticipatory research remain at the fiscal year 1978 level. The Committee is aware of the need for long-term research to permit the Agency to address new environmental problems. However, extensive management attention must be devoted to this activity to ensure that it does not become a vehicle for research projects that cannot be justified elsewhere or have little promise of practical applicability.

- + \$600,000 for implementing a mosquito control research program. This activity should focus on a national effort for the development of integrated pest management methods for mosquito populations associated with fresh water irrigated crop systems using the rice land agroecosystem as a model. Increasing problems resulting from the presence of massive mosquito populations in food production areas where irrigation is used and in adjacent urban areas make it urgent that new methods for controlling this pest problem be developed with minimum reliance on chemical preparations.

- + \$800,000 for aquatic weed control research. The Committee notes that aquatic weeds are causing water quality and navigation problems in many of the Nation's waterways. This research should be directed toward the control of aquatic weeds using chemical and biological measures.

- + \$1,100,000 for groundwater research. The funds are targeted for a study of the Garber-Wellington aquifer in Oklahoma to be conducted through the Kerr Laboratory. Groundwater provides approxi-

GENERAL WATERWORKS • MAINE DISTRICT

P. O. BOX 309, 135 MADISON AVENUE, SKOWHEGAN, MAINE 04976 • (207) 474-8153

July 24, 1978

*Check
w/ KARL*

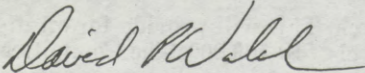
The Honorable Edmund S. Muskie, Senator
U. S. Senate Office Building
Washington, D. C. 20510

Dear Senator Muskie:

In view of the current oversight hearings being conducted with reference to the EPA's drinking water program, I am enclosing a copy of a letter I sent to you on May 11, 1978 together with attachments. I do this as I am not sure you received the original correspondence as no reply was received from your office; which is most unusual as you have always been very prompt in replying to other matters.

I do hope you will find the time to review this information and if I can be of any assistance or if any other information would be desired, please let me know.

Very truly yours,



David P. Walsh
Vice-President

CALAIS WATER & POWER COMPANY
CARIBOU WATER WORKS CORP.
EASTPORT WATER COMPANY
ELLSWORTH WATER COMPANY
GREENVILLE WATER COMPANY
GUILFORD & SANGERVILLE WATER COMPANY
HARTLAND WATER COMPANY
MARS HILL & BLAINE WATER COMPANY
MECHANIC FALLS WATER COMPANY
MILLINOCKET WATER COMPANY
NORTH BERWICK WATER COMPANY
NORTHERN WATER COMPANY
SKOWHEGAN WATER COMPANY
WALDOBORO WATER COMPANY

GENERAL WATERWORKS • MAINE DISTRICT

P. O. BOX 309, 135 MADISON AVENUE, SKOWHEGAN, MAINE 04978 • (207) 474-4163

May 11, 1978

The Honorable Edmund S. Muskie, Senator
U. S. Senate Office Building
Washington, D. C. 20510

Dear Senator Muskie:

I feel I'm becoming a pest; but if you will put up with me one more time, I'd like to express a few thoughts I have on safe drinking water and the costs thereafter to the rate payer.

As a Senator from Maine, you have shown numerous times that you are concerned with the people in your State and this we appreciate. But I, as a person directly responsible for the operations of fourteen water utilities, am also concerned about the people in Maine, especially the ones that reside in the fourteen communities that we render service to.

My concern is that they receive the cleanest, highest quality water available, the best service possible and all for a price that they can afford.

The new EPA proposal of a maximum contaminant level (MCL) in water for trihalomethanes (THM) of 100 parts per billion; I'm afraid will destroy our quality water for a reasonable price.

I'm enclosing some information on the proposed THM's and hope that you will find a few minutes to read it over.

Again, I wish to thank you for your courtesy and prompt replies.

C
O
P
Y

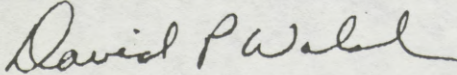
Edmund S. Muskie

May 11, 1978

Page 1

on other matters in the past and hope that you may find the time to visit us here in Maine sometime.

Very truly yours,



David P. Walsh

Vice-President

CALAIS WATER & POWER CO.
 CARIBOU WATER WORKS CORP.
 EASTPORT WATER COMPANY
 ELLISWORTH WATER COMPANY
 GREENVILLE WATER COMPANY
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 MECHANIC FALLS WATER COMPANY
 MILLINOCKET WATER COMPANY
 NORTH BERWICK WATER COMPANY
 NORTHERN WATER COMPANY
 SKOWHEGAN WATER COMPANY
 WALDOBORO WATER COMPANY

cc: D. B. BURNELL



American Water Works Association/Office of the President-Elect
City of Wyoming/1155 28th Street/Wyoming, Michigan 49509/616 534-7671

August 8, 1978

The Honorable Edmund S. Muskie
United States Senate
145 Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Muskie,

I was privileged to attend your senate committee oversight hearing on July 18th, 1978, pertaining to Environmental Protection Agency programs and more specifically to the Agencies proposed regulations to control organic contamination of drinking water. As manager of the Wyoming Michigan Water Supply System and as President-Elect of the American Water Works Association, I am very concerned about the consequences of these proposed regulations. EPA feels compelled under PL 52 523 to promulgate these rules at this time even though the health benefits of such rules are unknown and subject to considerable disagreement among the scientific community.

Organic contamination of drinking water in this country is certainly not a new phenomenon, however it is true that recent advances in laboratory equipment and techniques have provided us with a means of measuring and identifying such contamination. It should be evident that organic contamination of drinking water does not present an eminent hazard. The long term health effects of this contamination is another matter and one that should be of concern to all of us. However, it seems prudent to me, to first determine the extent of the problem, evaluate the health risk and proceed toward the solution in a scientific and cost effective manner.

I believe these regulations are premature and that we should proceed immediately with research, monitoring and demonstration projects in an effort to develop scientific and experimental data which would dictate the most efficient procedural process. Since EPA feels compelled under the law to promulgate rules and treatment processes which will result in huge expenditures and will have questionable health benefits, I believe the law should be clarified to allow a more cost effective approach.

There are several comments I would like to make regarding and in response to testimony before your committee. Knowing of your busy schedule and in the interest of brevity, I submit the following without the inclusion of substantiating source. This can be supplied if necessary.

President: CURTIS H. STANTON, Orlando, Florida
President-Elect: DONALD K. SHINE, Wyoming, Michigan
Vice-President: JEROME B. GILBERT, Sacramento, California
Past-President: ROBERT R. PETERS, Norfolk, Virginia
Secretary-Treasurer: GRANT A. COLTON, Pittsburgh, Pennsylvania
Executive Director: ERIC F. JOHNSON, Denver, Colorado

TTHM (Total Trihalomethanes)

1. TTHM's are primarily formed when natural waters are chlorinated. Therefore the quantities of these compounds in many drinking waters have not changed substantially for many years.
2. Of the several compounds making up the Trihalomethane group only chloroform is a suspected carcinogen to man. It should be noted that there is no known incidence of cancer caused by chloroform even though it has been in our water, food and medicines for many years.
3. In many instances a reduction in TTHM can be achieved by changes in chlorination procedures. However in many cases where natural precursors are high it may be necessary, in order to protect the bacteriological quality of the water, to use combined chlorine residuals (chloramines) to prevent the formation of THM's.
4. Trihalomethanes including chloroform are volatile, low molecular weight compounds which are not effectively removed by activated carbon. Since they form a weak adsorption bond with carbon they may easily be replaced (desorbed) by compounds forming stronger adsorption bonds.
5. The proposed MCL of 100 ppb for TTHM is not dictated by scientific evidence. Only chloroform is a suspected carcinogen and then only in high dosages. There is no evidence that the low dosages in food or water have been detrimental to health. In fact there is some evidence to the contrary.

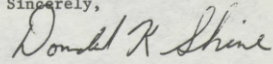
GAC (Granulated Activated Carbon)

1. The use of Activated Carbon is a common treatment process in the water industry for the removal of taste and odors.
2. Mr. Jorlings testified that there are 43 water treatment plants using GAC in the United States today. However it should be noted that all but 2 or 3 of these are used only for taste and odor removal and are not effective for the removal of synthetic organics. The 2 or 3 exceptions are experimental pilot plants of recent origin. Data regarding the operation and effectiveness of these plants should be of interest.
3. Of the 700 organic compounds isolated to date from various drinking waters, few of them would be reduced significantly by the use of GAC.
4. Biological Activated Carbon (BAC) plants used in Europe are designed to remove a specific range of synthetic organics. This range is particularly designed for removal of non-volatile, heavy molecular weight compounds.

5. There are several types of activated carbon depending on the source material used in the manufacturing process. These carbons have different adsorption characteristics and are not effective for the removal of a broad range of organics. It is true that carbon treatment systems can be designed to remove specific organics and therefore may be useful when used for that purpose.
6. GAC will not protect a water supply from accidental spills of organic compounds in the source water. In this situation a spill of non-toxic material may displace a pre-adsorbed toxic compound from the carbon thus creating a health hazard.
7. The cost of GAC treatment has been vastly underestimated by EPA for the following reasons:
 - a. The cost includes construction of facilities to meet only the average day during the maximum month and therefore would not provide protection for all water produced.
 - b. The cost reflects construction to meet present conditions and therefore would not provide construction of facilities large enough to provide treatment of anticipated water use increases for a reasonable time period.
 - c. The costs do not include standby equipment or facilities to allow downtime for maintenance and repair.
 - d. Many water facilities are constructed in highly visible areas and have been designed with aesthetic qualities, the estimated costs do not provide for such design.
 - e. The cost estimates used by EPA are for a limited number of treatment plants serving over 75,000 people. The present rules are very vague regarding variance procedures, therefore it is impossible to develop nationwide cost of this program.
 - f. If GAC is in fact necessary as suggested by EPA, why should we limit our cost projection to only those systems serving 75,000 people or approximately 50% of the population drinking water from public supplies.

Water systems in the United States are the best in the world. In this country we can afford safe water, however we cannot afford to add to the inflationary spiral by extensive construction of plants that are not cost effective. I hope these comments may be of some value to your committee. I can assure you that AWWA is concerned. Our goal is to provide a safe, dependable and potable water in the most efficient manner possible.

Sincerely,



Donald K. Shine



American Water Works Association | 6666 West Quincy Avenue | Denver, Colo. 80235 | 303 794-7711

August 18, 1978

Mr. Robert Van Heuvelen
United States Senate
Committee on Environment and
Public Works
Washington, D.C. 20510

Attached Bob are the questions you submitted to our president with the answers typed on the same sheets and attachments submitted as background. I trust that this gives Senator Muskie the kind of explanation he requested. If not we'll be glad to provide additional information on request.

Eric F. Johnson
Executive Director

EFJ/ge
Enclosures

President: CURTIS H. STANTON, Orlando, Florida
President-Elect: DONALD K. SHINE, Wyoming, Michigan
Vice-President: JEROME B. GILBERT, Sacramento, California
Past-President: ROBERT R. PETERS, Norfolk, Virginia
Secretary-Treasurer: GRANT A. COLTON, Pittsburgh, Pennsylvania
Executive Director: ERIC F. JOHNSON, Denver, Colorado

1. In your testimony you noted that a consultant to AWWA estimates that costs of installation and maintenance of treatment systems to meet the organic system regulations would be nearly double EPA's present estimates? Would you share with the Committee the figures which have been derived by your consultant and the basis for the derivation?

1. Enclosed (Attachments A & B) are reports of Studies by two engineers on the economic impact of the proposed regulations on organic contaminants in water. Enclosed also (Attachment C) is a summary of record evidence on costs prepared by the Coalition for Safe Drinking Water. These data would indicate that the estimates of our testimony were conservative.

STATEMENT OF SAMUEL S. BAXTER, P.E.
TO
ENVIRONMENTAL PROTECTION AGENCY
ON
PROPOSED REGULATIONS FOR CONTROL OF ORGANIC CONTAMINANTS
JULY 1978

My name is Samuel S. Baxter. I am a professional engineer in private practice. My experience and training in engineering, financial, and municipal fields which serve as background for this statement are listed in Appendix A.

This statement expands on the verbal statement given by me at the hearing in Washington, D.C. on July 11, 1978.

I have been asked by the American Water Works Association to prepare a statement on the proposed regulations on organic contaminants in drinking water, with particular reference to the economics involved in the required use of granular activated carbon. I am familiar with previous statements made on behalf of AWWA on this particular subject, and on other requirements of the proposed regulations, but the opinions expressed herein are mine, and have not been directed or controlled by AWWA.

Because of many years of fighting for funds for improvement of water supply and wastewater treatment projects, and in developing improvements and innovations in all phases of the water and wastewater industries, I approach with some trepidation a position which would challenge a procedure which is claimed to advance the practice of water treatment, and to be vitally necessary to protect public health. Nevertheless, I feel compelled to make this challenge on the basis of information which I have obtained, and my judgment of this information.

I am aware of the thinking of those in and out of government who take the position that if there is a possibility of danger to health (cancer), the facts that knowledge is incomplete on health effects, and treatment techniques are of an imperfect nature should not serve as a reason for delay in controlling harmful contaminants. More important, there is a school of thought that supports the idea that cost itself is no factor if any health risk (or even an environmental problem) exists.

But EPA did recognize the matter of cost in the original regulation announcement of February 9, 1978, by publishing cost figures prepared by Temple, Barker and Sloane, Inc. (TBS). These were based on reports by TBS dated August 1977, and December 13, 1977. A revised cost estimate has been made by TBS under

date of July 5, 1978, which revises upward the original capital costs by 50 to 80%, and maintains the original operating and maintenance costs with very little change.

I speak from 25 years as Chief Engineer on public works projects which have cost approximately \$1/2 billion, when I say that I sympathize with those who must estimate costs of any large project, let alone a controversial one such as this one. No matter how much integrity and professionalism goes into the making of such estimates, there is always the tendency to minimize costs, in order to obtain necessary approvals.

Federal appropriation history is replete with requests for additional funds, and to some extent, the same thing applies to state and local projects. In this case, I am surprised that capital costs have been revised upward 50 to 80%, and this a month after the original closing date for comments. I was taught early by lawyers in cases where I was a witness that any statement of mine which expressed doubt or admitted error, left one open to severe attack on all points of my testimony.

The question still arises whether the new figures are correct. In order to make a sample check, I reviewed estimates made by seven cities for which cost figures had been made available to me, or obtained by me. In general, these cities believe that they will be required to use GAC treatment, and have estimated their costs based on requirements which would apply to them. I have not made an attempt to review their judgment, or to check their amounts, but I do suggest it is the managers of these utilities who are on the firing line, who are responsible for service, and who must meet all requirements. All of these cities are in the 100,000 to 1,000,000 population range, except one.

This narrative account of the comparison of data from these seven cities makes a comparison with the latest TBS estimates. The basis for the figures from the seven cities is shown in the table marked Appendix B. The sample may not be large enough to extrapolate to the entire country, but conclusions apply to these cities and others with similar costs. I admit, of course, to the faults and foibles of all estimators.

Capital costs of the seven cities range from \$29 million to \$87 million, with an average of \$63 million. Included is an \$87.2 million for the over 1,000,000 city. The revised TBS figures give a range of \$12.6 million to \$15.8 million for the 100,000 to 1,000,000 population group, and a range of \$47.4 million to \$59.3 million for the over 1,000,000 population group.

Annual operating and maintenance costs for the seven cities range from \$3.94 million to \$13.2 million, with an average of \$7.46 million. Included is a \$12.4 million figure for the over 1,000,000 city. The revised TBS figures

give an amount of \$1.34 million in the 100,000 to 1,000,000 population group, and \$5.87 million in the over 1,000,000 group.

The per capita cost in the seven cities averages \$15.36. The revised TBS figures give \$10 as an average, using 18 minute contact time.

I have omitted any reference to total national costs in the absence of data for a much larger number of cities. Others who have testified have compared their national estimates with TBS figures. I note that the estimate of capital costs for the seven cities reviewed by me is \$442 million. This compares with the figures for the entire nation estimated by TBS in the range of \$616 million to \$831 million.

If the variations in these figures were 5 or 10%, I could understand that the variation could be caused by different time factors, differences in regeneration and contact times, and even an untypical sample on my part. But the variations are much greater and raise the question of whether the total cost in each utility warrants the 0.10 mg/l contaminant level, or the 0.01 level hinted at in the first draft of the regulations.

I am reasonably familiar with the financial problems of cities and the need for all kinds of services provided by municipalities, and particularly those which come under the general heading of public works. If people in the cities must pay the huge capital and operating costs required by these proposed regulations, regardless of whether the amounts are those developed by TBS, me, or by others, it will exacerbate these financial problems. Serious deficiencies exist in many cities in schools, crime prevention, refuse collection and disposal, wastewater treatment, and air pollution. Many cities have considerable work which should be done on present water treatment plants and on distribution systems. This needed work is, in my opinion, just as important, and more so in some cases, than the need to install GAC treatment.

I can understand the human and humane reaction which says that if there is any way to eliminate morbidity or mortality from cancer in people, we should spend any amount of money, and enact any laws or regulations that would bring this about. But there are limits to action, and there are priorities that should be established. When well intentioned groups urge the legislative and executive branches of government to enact laws and regulations on subjects such as cancer, priorities and costs are generally lost sight of.

It may be moot at this time to question the basic legislation on which the proposed regulations are based. Mr. Jorling has pointed out that the "question is not whether or not to regulate organics, it is how to do so reasonably and effectively." Reasonably and effectively are words open to interpretation, but when coupled with the decision of the District of Columbia U.S.

Court of Appeals, the EPA interpretation is certainly different than mine and many others in the water industry. I am referring to the decision which says that, in view of legislative history, incomplete knowledge of health effects of contaminants and imperfect nature of measurement and treatment techniques do not justify delay in controlling contaminants that may be harmful.

I have read the testimony of Dr. Arthur Furst, who testified on behalf of AWWA. I heard the testimony of Dr. Francis Roe who testified for Louisville. I heard the testimony of Dr. Samuel Epstein who testified with Mr. Ralph Nader. With no expertise in epidemiology or toxicology, I have read and tried to understand the reports of NRC and EPA on this subject. There are definitely differences of points of view among all of these reports.

Those who base their opinions on large scale doses in rats translate their findings into potential or possible or probable danger to the health of humans. From these studies a limitation of 0.10 mg/l of trihalomethanes is proposed by the EPA regulations. On the other hand, Dr. Furst says that he finds no publications that support the regulations, including the EDF publication on Mississippi River water that gave the impetus that eventually led to these proposed regulations.

I am concerned that the same U.S. government which would require the payment by water users of hundreds of millions of dollars (probably billions) to establish an arbitrary 0.10 mg/l contaminant level, still permits the sale of cigarettes which the Surgeon General describes as injurious to health, and requires this notice on every pack sold. At the same time, the government collects huge sums in taxes on these cigarettes, and even pays bonuses for growing tobacco. I recognize that people have a choice on cigarette smoking and very little choice on drinking water, but at the same time, the data on lung cancer are much more complete than the data on cancer caused by drinking water.

I note at the same time that highway accidents cause 50,000 deaths each year and at 2 million injuries. We still permit driving at the legal 55 mile per hour rate, although a reduction to a 30 mile rate would reduce the death and injury toll. And very few people can escape the risk from automobiles and trucks.

I cite the tobacco and the automobile cases, not to start a campaign to eliminate or further control these industries, but to show that we do make priority decisions and we do take risks. These priorities are based on need or comforts of people, and on the relative costs of controlling or limiting the risks.

As I look at the testimony of such men as Dr. Furst and Dr. Roe, I see no evidence that suggests that there is immediate danger to public health in our treatment practices, and if there is any such danger, it is quite limited in scope. Their evidence speaks for itself. But as one who has weighed the costs and benefits of many municipal projects, including those affecting water supply, and managed them through the entire process of authorization, bond elections, to final construction and operation, I feel that I can make a judgment on the need for the regulations in their present form.

From my interpretation of the testimony of Dr. Furst; from my estimates of the cost of GAC treatment; from my knowledge of the physical and financial problems of the cities, I see no reason, and believe it foolhardy, to plunge into this program at this time in the form proposed. »

I am well aware that if anyone tries to place a price on deaths from any cause, especially cancer, he lays himself open to violent criticism and to the charge that he is cruel and inhuman. But someone should do this, and relate the number of cancer deaths or cases to trihalomethanes in drinking water. I note Dr. Furst's statement that there is no scientific evidence in the publications which he lists "that trichloromethanes are in any way associated with cancer deaths in New Orleans or in any other city for that matter."

My experience and training lead me to want to do any reasonable thing to improve the quality of drinking water. The same experience tells me that any program that would increase water rates by 30 to 40%, and cause the spending of hundreds of millions of dollars on capital projects, should have solid data to back up such expenditures. I do not see such data at this time.

EPA has made it clear that it believes the legislative history and a court decision require it to proceed in this matter. There is plenty of evidence that the Congress has acted hastily in such legislation as the Safe Drinking Water Act, the Water Pollution Act, the Endangered Species Act, the Rehabilitation Act for the disadvantaged, and others. It might be a courageous act on EPA's part, through the oversight hearings or other procedures, to ask for reconsideration of this problem, and to have the necessary time to develop the research and the pilot work before requiring a large number of utilities to embark on a huge spending program.

Ordinarily, I would assume that the July 12-14 hearings were for the purpose of hearing testimony pro and con on the merits of the proposed regulations, and would include information that would challenge the engineering and scientific viewpoints of others. But because of Mr. Nader's violent attack on the water industry, and those who manage and operate it, I must respond.

From personal knowledge of the industry throughout the United States for the past 40 years, and from reading and tracing its history back into the 19th century, I know of the many progressive steps and improvements which have been made by the managers, engineers, and scientists who have been involved. They have been both progressive and conservative; progressive in using new methods and discoveries in order to provide adequate and safe drinking water to their customers; conservative in making sure that new methods, materials, and procedures were safe, and provided this water at a reasonable cost.

As in any industry, there have been some who have not produced as well as they should, and these were mainly in smaller communities. But those who represent the actual purpose of AWWA, and those who are part of the Coalition for Safe Drinking Water, have been leaders in providing safe and adequate water. They have encouraged the research and pilot plants that improved the current practices of the time. They adapted this research to their full scale plants, and fought the rate and capital cost battles to build and operate these plants. They don't deserve the scurrilous attack by Mr. Nader. They will do what is necessary to handle the trihalomethane problem when enough research is done, and when enough facts are available to justify a change in present methods.

August 1978

COMMENTS OF PAUL HANEY

ENGINEER AND PARTNER IN THE CONSULTING
ENGINEERING FIRM OF BLACK & VEATCH
KANSAS CITY, MISSOURI

RE: PROPOSED AMENDMENT TO NATIONAL
INTERIM PRIMARY DRINKING WATER REGULATIONS

PRESENTED JULY 12, 1978

STATEMENT OF PAUL HANEY

My name is Paul Haney. I am a professional engineer and a partner in the consulting engineering firm, Black & Veatch, of Kansas City, Missouri. I am appearing on behalf of Bridgeport Hydraulic Company, a member of the Coalition for Safe Drinking Water.

My firm has been retained to study the potential national costs for water systems which may be required to install GAC under the proposed amendment to the National Interim Primary Drinking Water Regulations. I was also asked to comment on the energy and certain environmental considerations and concerns related to the use of GAC. My study of all these matters is still in progress, but I will present some preliminary results. A complete report will be filed before the end of the comment period.

First: The Economic Impact of the Proposed Amendment.

My conclusions as to the potential national costs of this regulation are based on data obtained from the affected water utilities. They are based on actual systems, not hypothetical systems.

The beginning point for our study was detailed estimates of capital costs for GAC facilities made by or on behalf of 13 water systems located throughout the country. These systems have 27 treatment plants, with capacities that

range from 13 to 282 MGD. The capital cost estimates for these 13 systems provided the basis for developing a relationship between GAC capital cost and the capacity of a given treatment plant. Similarly, an operating cost versus capacity relationship was derived from detailed estimates for 11 systems having 25 treatment plants that range in capacity from 13 to 282 MGD. In the selection of systems for development of the cost relationship, we used only those systems which had prepared detailed cost estimates.

Given these hard cost data, equations and graphs for estimating the GAC capital cost and operation and maintenance cost for any given size treatment plant were developed. The correlation coefficients of 0.95 and 0.94, respectively, for these equations evidence an extremely good straight-line fit. They provide a sound basis for appraising GAC capital and operation and maintenance costs.

The next step in our study was to solicit from each potentially impacted system data respecting the number and capacity of its water treatment plants. Using the data obtained, and our cost equations, we estimated the GAC capital costs and annual operation and maintenance costs for the system. These data then permitted us to determine the additional annual revenue required to operate the GAC facilities and cover the financing required to construct such facilities. The annual revenue requirement for a

municipally owned system was estimated to be equal to the annual operation and maintenance expense plus 10.35 per cent of the capital costs. For an investor owned utility, it was determined that the first year revenue requirement would be equal to the annual operation and maintenance expense plus 22.3 per cent of the capital costs.

The Results: To date, 172 systems have provided us sufficient data on which we could estimate their costs, if they were required to install GAC. Of these systems, 18 purchase all of their water. We assumed no capital costs for these systems. For the other 154 systems, we estimate total capital costs of nearly \$4.7 billion and total annual operation and maintenance costs in excess of \$400 million. The additional annual revenue requirement for these 154 systems would exceed \$1 billion.

The average capital cost per system for the 154 systems is approximately \$30.4 million. The average annual operation and maintenance expense would be nearly \$2.9 million per system. The average annual revenue increase, \$6.5 million per system. Based on these data, if only 61 systems will be required to install GAC treatment facilities, the estimated national capital costs of GAC would be approximately \$1.85 billion. The annual operation and maintenance expense would be \$177 million and the annual revenue requirement would be

\$400 million. All of these figures are more than twice EPA's revised highest estimates. They, of course, would be even higher if it turns out that more than 61 systems are impacted.

Second: Energy Considerations:

The GAC treatment technique will consume large amounts of energy. Primary energy will be consumed in the operation of the GAC system at the treatment plant. Secondary energy would be consumed in the manufacture and transport of the GAC.

Results: The total primary and secondary energy requirement of GAC treatment would be 17.7×10^6 BTU per million gallons of water treated. For the first 129 systems responding, this would total 46.3×10^{12} BTU/yr or 328×10^6 gallons (7.8 million barrels) of No. 2 fuel oil annually. To put these figures in perspective, the equivalent energy in the form of gasoline would operate 363,000 passenger cars for one year at 15 miles per gallon and 15,000 miles per year. Even assuming only 61 systems would be required to install GAC, the amounts of energy consumed will be huge, probably as much as 10,000 barrels of No. 2 fuel oil per day, or more than three times the estimate in the "white paper."

In addition to the annual energy requirements, there is an energy commitment to manufacture and transport the

initial GAC. For the 129 systems, this energy totals 58.8×10^{12} BTU, enough energy to operate 461,000 passenger cars for one year. Energy consumption which has not been calculated includes manufacture of the contactors and furnaces, transport of these components and other construction materials to the site, construction of the facilities to comply with the interim treatment requirement.

While EPA may consider such oil consumption negligible, I doubt that the Department of Energy would. It does not take many programs at these amounts to convert what may appear to be a relatively small amount of oil into a significant factor in the nation's energy crisis. I would guess that the nation's 55 mph speed limit does not save nearly as much energy as this regulation, if implemented, will consume!

Third: GAC Pollution.

The wastes generated by GAC systems pose both water and air pollution problems. EPA has briefly addressed some of the air pollution concerns. However, EPA has ignored the water pollution problems. Although we still have many concerns about air pollution, my comments today will focus upon the water pollution caused by GAC.

The total volume of water borne waste resulting from the GAC facilities will be approximately 43,000 gallons

per million gallons of water treated, or 2 to 4 times the present volumes of waste being discharged by water systems. The waste water comes from contactor disinfection, contactor backwash, GAC quenching and transport, and the regeneration furnace scrubber. EPA apparently has not considered the problems of disposing of this 2-4 fold increase in the volume of waste water. Some of the waste water can be recycled but some will require pretreatment prior to disposal, undoubtedly at a considerable cost. There will also be the cost associated with the use of the existing sewage treatment facilities.

Revised 6/24/78

COALITION FOR SAFE DRINKING WATER
1220 WATERWAY BOULEVARD
INDIANAPOLIS, INDIANA 26202

SUMMARY OF RECORD EVIDENCE CONCERNING
CAPITAL COSTS TO BE INCURRED TO
WITH PROPOSED AMENDMENT TO THE
NATIONAL INTERIM PRIMARY DRINKING
WATER REGULATIONS

Based on testimony or comments submitted to EPA,^{1/}
the following companies or water systems serving the designated
cities would incur the referenced capital costs in order to
comply with the proposed amendment to the National Interim
Primary Drinking Water Regulations:

	<u>(millions)</u>	<u>Reference</u>
1. Miami, Florida	45.0	Miami Tr. 32
2. Jefferson Parish, La.	44.3 ^{2/}	N.O. Tr. 63
3. New Orleans, La.	90.0 ^{3/}	N.O. Tr. 73, 75 Boston Tr. 111-116
4. San Antonio, Texas	53.0 ^{4/}	N.O. Tr. 146 Comment No. 177
5. St. Charles Parish, Dist. No. 2	5.5	N.O. Tr. 287
6. Trinity River Authority -- North Region (Euless and Bedford, Texas)	0.75	Dallas Tr. 20
7. Arlington, Texas	10.0	Dallas Tr. 21
8. Houston, Texas	40.0	Dallas Tr. 29
9. North Texas Municipal Water District	8.0-10.0	Dallas Tr. 42-43
10. Midland, Texas	1.08	Dallas Tr. 52

11. Oklahoma City, Okl.	50.0	Dallas Tr. 56
12. Port Arthur, Texas	5.7	Dallas Tr. 138-39, 141
13. Dallas, Texas	75.0	Dallas Tr. 156
14. Corpus Christi, Texas	3.0	Dallas Tr. 161
15. New Haven Water Co.	30.0-40.0	Boston Tr. 23
16. Pawtucket, R.I.	2.5 ^{5/}	Boston Tr. 46 Comment No. 280
17. Bridgeport Hydraulic Co.	40.0	Boston Tr. 52
18. Connecticut Water Service	9.2	Boston Tr. 64
19. Passaic Valley Water Commission (N.J.)	18.0 ^{6/}	Boston Tr. 92
20. East Bay Municipal Utility District (Cal.)	60.0	Los Angeles Tr. 65
21. Metropolitan Water District of Southern California	120.0-150.0 ^{7/}	Los Angeles Tr. 93
22. St. Louis County Water Co.	96.5 ^{8/}	St. Louis Tr. ____
23. City of St. Louis	74.0	St. Louis Tr. ____
24. Des Moines, Iowa	19.0	St. Louis Tr. ____
25. Omaha, Nebraska	68.0 ^{9/}	St. Louis Tr. ____
26. Topeka, Kansas	15.0	St. Louis Tr. ____ Written Comment No. 108
27. Kansas City, Mo.	29.0	St. Louis Tr. ____
28. Chicago, Ill. (media replacement only)	70.0	St. Louis Tr. ____
29. Springfield, Mo.	17.9	St. Louis Tr. ____
30. Minneapolis, Minn.	34.3	St. Louis Tr. ____
31. St. Paul, Minn.	33.6	St. Louis Tr. ____

32.	Leavenworth, Kansas	2.6	St. Louis Tr. ____
33.	Springfield, Ill.	2.7	St. Louis Tr. ____
34.	Louisville Water Company	81.3	Louisville Tr. 68
35.	Indianapolis Water Co.	45.3	Louisville Tr. 124
36.	Ann Arbor, Michigan	13.0-17.0	Louisville Tr. 214-c
37.	Atlanta, Georgia	36.0	Louisville Tr. 208 Written Comment No. 151
38.	Dayton, Ohio	40.0-50.0 ^{10/}	Louisville Tr. 217
39.	Evansville, Indiana	19.3 ^{11/}	Louisville Tr. ____
40.	Fort Wayne, Indiana	30.2	Comment No. 101
41.	Southern Nevada Water System (Las Vegas, <u>et al.</u>)	60-100.0	Comment No. 60
42.	Niagara Falls, New York	7.0	Comment No. 61
43.	Water District No. 1 of Johnson County, Kansas	18.0	Comment No. 65
44.	Hammond, Indiana	1.25	Comment No. 87
45.	Chesterfield, Virginia	1.35	Comment No. 95
46.	Newport News, Virginia	2.84	Comment No. 100
47.	Harlingen, Texas	6.0	Comment No. 112
48.	Portsmouth, Virginia	3.5	Comment No. 114
49.	Kansas City, Kansas	15.0	Comment Nos. 115&172
50.	St. Petersburg, Florida	6.0	Comment No. 149

51. Los Angeles, California	106.0 ^{12/}	Comment No. 201
52. Philadelphia Suburban Water Co.	23.4	Comment No. 221
53. Thorton, Colorado	6.6	Comment No. 170
54. Trenton, New Jersey	10.0	Comment No. 171
55. Richmond, Virginia	10.0	Comment No. 178
56. Elmira, New York	2.43	Comment No. 193
57. Huntsville, Alabama	15.0	Comment No. 198
58. DeKalb County, Georgia	26.0	Comment No. 217
59. Fayetteville, Arkansas	8.0-10.0	Comment No. 226
60. Freeport, New York	3.5-4.0	Comment No. 231
61. Beaver Water District Arkansas	9.0-12.0	Comment No. 239
62. Colonie, New York	3.0-5.0	Comment No. 247
63. Hempstead, New York	65.0	Comment No. 259
64. Raleigh, N.C.	10.0-1.0	Comment No. 152
65. Helix Water Dist., Cal (media replacement only)	0.5	Comment No. 160
66. Bangor, Maine	2.0	Comment No. 268
67. South Farmingdale Water Dist (N.Y.)	12.0	Comment No. 281
68. Utica, N.Y.	12.0	Comment No. 288
69. Wichita, Kansas	24.0	Comment No. 306
TOTAL	\$ 2013.60 million	

The evidence also shows additional estimated capital costs of \$120.2 million for non-specified systems in

Florida and Louisiana. Mr. Dykes, Administrator of the Drinking Water Section of the Florida Department of Environmental Regulation, said that based on Miami's estimated costs, the costs for all of the affected systems in Florida would be \$100 million. Subtracting Miami's estimate of \$45 results in an estimated cost of \$55 million for the other Florida systems. Mr. Bajat, on behalf of the Louisiana Conference on Water Supply, Sewerage and Industrial Waste, estimated that the costs for all of the affected Louisiana systems would be \$200 million. The estimates of New Orleans, Jefferson Parish and St. Charles Parish, Dist. 2 were subtracted to determine the estimated cost for the other affected systems in Louisiana (\$65.2 million).

The statement of the New York Section of AWWA says that there are 34 systems in New York serving more than 75,000 persons and that it is estimated that 10 of these will have to modify treatment in order to comply with the proposed GAC requirement. The Section estimates the initial capital investment for those 10 systems (unspecified) to be \$109.2 million. That estimate appears low. The six New York systems presenting evidence in the record (Elmira, Freeport, Colonie, Hempstead, South Farmingdale Water District and Utica) estimate their capital costs to total \$100.43 million.

In addition, the following companies or systems have provided capital cost data to the Coalition, but have not caused such estimates to be included in the record:

	<u>millions</u>
1. Elizabethtown Water Co.	47.2
2. Gary-Hobart Water Corp.	20.5
3. Pittsburgh, PA	33.0
4. Shenango Valley (PA)	0.153
5. Cedar Rapids, Iowa	0.54
6. Tempe, Arizona	14.74
7. Greensboro, N.C.	5.0
8. Hackensack Water Co.	44.0
9. Birmingham, Alabama	33.025
10. Jackson, Mississippi	20.0
11. North Jersey Water Supply Commission	25.0
12. Chester (PA) Water Authority	10.0
13. Monroe County (NY) Water Authority	12.8
14. Manchester, New Hampshire	0.84 (regeneration furnance only)
15. Suffolk County (NY) Water Authority	290.3
16. El Paso, Texas	6.0
17. Lansing, Michigan	2.5

18. Phoenix, Arizona	80.0
19 Lincoln, Nebraska	8.0
20. Denver, Colorado	12.38
21. Orange, Cal.	3.85
22. Portland, Main	7.3
23. Pine Bluff, Ark.	2.1
24. Wilmington Suburban, Del.	9.45
25. Toms River, N.J.	4.40
26. Dauphin Cons. Water (Harrisburg, PA.)	4.93
27. Cobb County, Ga.	3.2
28. Philadelphia	<u>75.3-129.6</u>
TOTAL	\$830.808

NOTES:

1. This summary is based upon a review of the transcripts of the Miami, New Orleans, Dallas, Los Angeles, Boston and Louisville hearings, the written comments submitted at the Los Angeles, Boston, St. Louis and Louisville hearings and written comments 1 through 321 submitted directly to EPA.

2. Jefferson Parish has reported to the Coalition that its revised estimate is \$41.0 million.

3. New Orleans has reported to the Coalition that its revised estimate is \$85.2 million.

4. San Antonio's estimate of \$53.0 million is based upon projected costs in 1981; but would be \$42.2 million in 1976 dollars.

5. At the Boston hearing, Pawtucket reported its capital costs to be \$1.4 million. In its written comment, the estimate was revised to \$2.5 million.

6. Passaic Valley Water Commission has reported to the Coalition that its revised estimate is \$30 million.

7. The Metropolitan Water District of Southern California has reported to the Coalition that its revised estimate is \$181 million.

8. St. Louis County Water Company has reported to the Coalition that its revised estimate is \$91.8 million.

9. Omaha has reported to the Coalition that it has revised its estimate to \$65.5 million.

10. Dayton has reported to the Coalition that its revised estimate is \$50-60 million.

11. Evansville presented a written statement at the Louisville hearing which showed its estimated capital costs to be \$19.3 million. The written statement is not included in the transcript, although the transcript shows that it was submitted and received. Evansville's estimate of \$19.3 million is based upon projected costs in 1983.

12. In data provided to the Coalition, Los Angeles has estimated its capital costs to be \$93.2 million.

1. In your statement, you indicated that the Safe Drinking Water Act of 1974 was enacted to correct deficiencies in drinking water facilities, as well as deficiencies in the education and training of plant personnel. What advances have been made in the education and training of plant operators since enactment? Have surveillance methods been improved?

A brief summary of education and training activities developed cooperatively by AWWA and EPA is enclosed (Attachment D). In addition, the Association conducts many other education and training activities on its own (Attachment E). And EPA has funded training programs with the League of Women Voters and the National Rural Water Association. The EPA-sponsored programs are, of course, just getting underway.


The best source of specific information on surveillance activity would be the Conference of State Sanitary Engineers. We do know that some states have used Safe Drinking Water Act funding to strengthen their surveillance staffs.



American Water Works Association | 6666 West Quincy Avenue | Denver, Colo. 80235 | 303 794-7711

MEMORANDUM

TO: AWWA OFFICERS & STAFF ASSIGNED
TO SECTION MEETINGS

FROM: Eric F. Johnson 

DATE: August 14, 1978

RE: Subjects for Discussion at Fall Section Meetings

A major emphasis in your presentation should continue to be the membership campaign. As of August 1, after dropping more than 1,100 members on July 1, our total was 28,952, a net gain of 2,412 over the 1977 total. Our goal this year has been 30,000 members. If we reach that level, and we should exceed it by far, we have a real chance to attain the goal of 40,000 by June 1981. Sharon Cooper will be giving each of you an up-to-date report on the situation in the section that you are visiting shortly before you go there.

The MAPWA situation and the proposed Water Utilities Council within AWWA is a critical subject, as is AWWA's testimony and position on the proposed regulations on organic contaminants in drinking water. You will be kept up to date on these subjects as they develop.

In the education field, the 10-state EPA-funded seminars on the Safe Drinking Water Act are progressing well, the program being completed in a couple of states. A review of the status of this program and of other education programs is attached.

The library reference service should be ready for offering to the members before the end of the year. A progress report on this is also attached.

The Research Foundation has six projects under way. A status report on those projects is attached.

The Standards Department has 123 projects under way, including 111 on standards and 12 on manuals. A status report on this program is also attached.

In line with the President's Water Resources Policy statements, AWWA has developed its own conservation project, the details of which are included in the attachments.

AWWA Officers & Staff
August 14, 1978

A list of new and revised AWWA publications this year is appended for your reference.

A brief report on the Sixth Annual Water Technology Conference, including its preliminary program, is included. This Conference to be held December 3-6 in Louisville, Ky., should be promoted at some point in your visit.

Enclosed, also, is a copy of the Atlantic City Awards Program. If there are any major award winners from the section you visit, your congratulations at some point in the program will be appreciated.

These are the major items of interest. Although you will not be able to bring them all into your formal presentation, you will have a chance at trustees' meeting, the Section business meeting, and even at hospitality rooms to get the word out.

EEJ/lb

Enclosures

INFORMATION ON RESEARCH FOUNDATION PROJECTS

The Research Foundation has six projects underway or authorized as follows:

1. "Removal of Trace Organics from Water Using Activated Carbon and Polymeric Adsorbents".

Two parts of this three-part project are complete. They are the water quality survey involving the sampling and analysis for organics in the raw and finished water of 14 water utilities and the bench-scale studies on several adsorbents. The third part, the pilot plant at Kansas City, Missouri, will be completed in the fall of 1978. The full report of the project should be completed in February, 1979.

2. "Wastewater Reclamation and Reuse Information/Coordination."

Now in its third year, this project provides information on water reuse, particularly for potable purposes, to 16 agencies that are sponsoring the project and covering all costs. This project led to the following project (item 3 of this report).

3. "Municipal Wasterwater Reuse News."

Sponsored by the Office of Water Research and Technology (OWRT), U.S. Department of the Interior and the EPA, the project involves the gathering of information for and publication of a 24-page monthly newsletter. It began with a world-wide circulation of 3,000, was increased to 3,500 in the spring of 1978, and will be increased to 4,000 in 1979. The newsletter covers research on and application of water reuse for all purposes on an international basis.

4. "Water Reuse Symposium."

To be held in Washington, D.C., March 25-29, 1979, the symposium is being sponsored by several federal agencies. The Foundation has a contract to organize the program, solicit abstracts of papers, invite the speakers, make arrangements for meeting facilities and produce the proceedings. Foundation staff works with a committee comprised of representatives from the sponsoring agencies. This will be the first week-long symposium devoted entirely to the subject of water reuse and will attract people from many countries.

5. "Alum Recovery by Liquid Ion Exchange."

Two years of laboratory work involving sludge characterization and operation of a batch process and then a continuous-flow process is nearing completion. Results have been most promising and preparations are now being made for two full-scale plant tests. One will be conducted at Tampa, Florida, on sludge from a turbidity removal plant, the site yet to be chosen. If successful, the process will provide

Information on Research Foundation Projects

economic benefits for many utilities. Alum recovery alone will not be economical for plants using less than ± 40 ppm of alum. However, for plants using alum and experiencing problems in disposing of the sludge, the savings could be substantial as the process recovers the alum for reuse in the plant and produces a sludge that can be de-watered easily and disposed of safely in several ways. Also, because the alum is recovered the amount of sludge is reduced considerably.

6. "Water Use Study."

The purpose of this study, to be conducted by Dr. Steve Hanke of Johns Hopkins University, is to gather data on water use by customer type and class, peak demands and effect of water conservation devices. We hope to collect data from approximately ten cities selected in such a way as to make the analysis of the data useful to utilities located anywhere in the U.S. The data will be useful for planning conservation programs; more efficient design of distribution systems, pumping stations and storage reservoirs; developing pricing policies; meter sizing and load forecasting. The data should also improve the understanding of sewer flows. We hope to begin field work late in 1978 or early 1979. The key is adequate financing.

Other News of the Foundation

Foundation membership now numbers 104 water utilities, 55 consulting engineering firms, 14 manufacturers, 15 AWWA Sections and one sustaining member for a total of 189. The Section members are:

Atlantic-Canada	Kentucky-Tennessee	Pacific-Northwest
British Columbia	Michigan	Pennsylvania
Connecticut	Nebraska	Rocky Mountain
Florida	New England	Southeastern
Iowa	North Central	West Virginia

Membership is the key to the success of the research program. If the majority of the water utilities, consulting engineering firms serving the field and the manufacturers supplying material and equipment to the field would become supporting members of the Foundation, then there would be sufficient funds to conduct many more research projects and benefits to the water supply field would accrue at a much faster rate. Projects could also be started immediately thereby saving time.

Individual contributions from AWWA members, paid when they pay their annual AWWA dues, has increased and should be encouraged. If every AWWA member gave an average of only \$5.00, the total amount would be in the neighborhood of \$100,000 - enough to support several projects.

Information on Research Foundation Projects

The Foundation Board of Trustees is now considering establishing a trust fund for receipt of memorials, gifts, special donations, etc. Only the earnings from the trust would be used to support research. While such a fund would produce very little at the beginning, over the years it could grow to a substantial amount and produce a steady income large enough to support several projects.

WQTC #VI

The Sixth Annual Water Quality Technology Conference, sponsored by the Water Quality Division, will be held in Louisville, Kentucky, December 3-6, 1978. This conference provides a unique opportunity for water laboratories to hear the latest developments in the techniques, methodology, and his newest headache, regulations. Today, the lab manager, and even the bench analyst, must be aware of government regulations and the effects they have on his operation, from sampling to data reporting.

Those attending the Conference this year will also review one of the most complete exhibits of available instrumentation, have the opportunity to participate in one of four workshops, and visit either Louisville's Crescent Hills Treatment Plant or the U.S. Environmental Protection Agency facilities in Cincinnati, Ohio.

Preliminary Technical Program

1978 WQTC

Galt House, Louisville, Kentucky

December 3-6, 1978

1. Monday A.M. - Opening General Session
Progress Towards Meeting the Interim Primary Regulations
Chairman - Joseph E. Downey
 1. Welcome and Utility Industry Viewpoint
C. H. Stanton
 2. EPA's Viewpoint on Variances and Exemptions
Victor J. Kimm
 3. States Viewpoint Including Public Notification
R. G. McCall
 4. Utility's Viewpoint
Foster Burba
2. Monday P.M. - Concurrent Sessions
 - 2A. Chemical/Physical Analytical Techniques for Controlling Treatment Processes
Chairman - James M. Symons
 1. Methods for Assessing Compliance of Granular Activated Carbon Operation Under Proposed Organic Regulation
Alan A. Stevens
 2. Methods Used in the National Screening Program for Organics in Drinking Water
Dr. S. Sam Fratoni
 3. Improved Electron Microscopic Methods for Measuring Asbestos in Water
Dr. C. H. Anderson
 4. Measuring of Disinfectant Residuals
Karl E. Longley
 5. Methods for Performing Adsorption Equilibrium and Kinetic Studies
Professor Walter J. Weber, Jr.

2B. Microbiological Techniques for Evaluating Distribution Water Quality
Chairman - John E. Courchene

1. Microbiological Implication of Alternative Treatment ^{Orsanco Study}
Dr. Harry D. Nash
2. Yersinia Enterocolitica in Water Supplies
Dr. Ted F. Wetzler
3. Control of Coliforms Emanating from Redwood Tanks
Ramon J. Seidler
4. Testing of Home Use Carbon Filters
Raymond H. Taylor
5. Update on Standard Methods

3. Tuesday A.M. - Concurrent Sessions

3A. Chemical/Physical Analytical Methods for Evaluating Water Quality Deterioration in Distribution Systems
Chairman - J. Edward Singley

1. Use of Linear Polarization Techniques for Measuring Corrosion
Marvin Gardel
2. Comparison of Methods for Evaluating Corrosion
3. Portable Stripping Electrode Methodology for Metals
4. Household Corrosion Problem Determinations
Brian Hoyt
5. Corrosion Indices

3B. Microbiological Methods for Controlling Water Treatment Processes
Chairman - Alan F. Hess

1. Evaluation of Virus Concentration and Recovery Studies
Dr. Mark D. Sobsey
2. Methodology on Endotoxin Analysis
Harold W. Wolf
3. Enumeration and Identification of Bacterial Populations on GAC
Jeanne McElhaney
4. Cell Bioassays for Organic Compounds Mutagenicity
5. Quality Control in the Bacteriological Laboratory

4. Tuesday P.M. - Closing General Session
Organic Contaminant Regulations
Chairman - Harold E. Pearson
 1. Public Benefits of Environmental Regulation
 2. EPA Viewpoint on Organic Regulation Variances
Dr. Joseph A. Cotruvo
 3. Meeting the THM Regulations
Richard Miltner
 4. Pilot Plant Study for Synthetic Organic Removal
Patrick R. Cairo
5. Tuesday Evening Workshops
 1. Monitoring Quality in Storage Reservoirs
G. Fred Lee
 2. Laboratory Certification
Joseph E. Downey
 3. Disinfection
Karl E. Longley
 4. Instrumentation for Organic Analysis
Alan A. Stevens

STATUS OF PROJECTS - STANDARDS AND MANUALSSUMMARY

July 1, 1978

Projects That Have Been Assigned to Committees

Standards dated 1974-1978	56
Standards dated 1973 or earlier	27
New Standards being developed	27
Manuals dated 1974-1978	2
Manuals dated 1973 or earlier	4
New Manuals being developed	<u>6</u>
Total Assigned Projects	122

Projects to be Assigned

New Standard	<u>1</u>
Total to be Assigned	<u><u>1</u></u>
TOTAL OF ALL PROJECTS	123

Thirty (30) Standards have now been approved by the American National Standards Institute (ANSI) as American National Standards.

All but one (1) of the thirteen (13) Standards approved at the January 1978 Board meeting have been published. Five (5) more Standards were approved at the June Board meetings.

CONSERVATION PROGRAM

The Board of Directors authorized the development of an AWWA Handbook of Water Conservation Practices. The approach to conservation will be one for use in time of need and not conservation as an item in itself. The Handbook will be developed by staff, with the current Ad Hoc Committee on Conservation serving as advisers. The project will include:

- a. The assignment of the current Policy Statement on Water Resources adopted by the Board of Directors on June 8, 1975, including the statement regarding conservation, to the Management and Resources Divisions for recommendations regarding revision or reaffirmation.
- b. The preparation of a Handbook of Water Conservation Practices for information to the membership and the public, addressing conservation in a broad sense, which will allow water utilities to develop their own programs based on local conditions.

EDUCATIONAL ACTIVITIESSEMINARS AND WORKSHOPS

There were 21 workshops conducted during the spring this year reaching 861 participants. In lieu of established registration fees, AWWA is tailoring courses on a contract basis which results in a cost savings per student. For example, contracts were negotiated with the State of Maine Health Department and the Environmental Protection Agency, Region VIII, to conduct four one-day Chlorination Workshops in the state of Maine and four one-day Chlorination Workshops in South Dakota respectively. In this instance, courses were entirely subsidized by the state water supply program office and regional office of EPA.

There are 24 workshops currently scheduled for this fall and, again, AWWA has contracted with EPA, Region VIII to conduct four one-day Chlorination Workshops in Utah and the Alaska Department of Environmental Protection is subsidizing the cost of a two-day Emergency Planning Seminar, which is scheduled for Fairbanks, Alaska.

A new AWWA workshop on Customer Service is meeting with overwhelming response from the sections. A second workshop designed for customer service representatives is currently under joint development by the Management and Water Quality Divisions on how to respond to water quality complaints.

WORKSHOP TRAINING PACKAGES

As an alternative to conducting workshops for sections, a series of workshop training packages are being developed, which are intended to be made available for sale and used independently in conducting local training activities. Currently, the Chlorination Workshop Training Package is nearing completion.

ACADEMIC ACHIEVEMENT AWARDS

The promotional campaign for the Academic Achievement Awards Program is under way for the 1979 competition of judging the three best doctoral dissertations or masters theses on water supply and related topics. A new flier describing the eligibility and entry requirements of the program have been mailed to colleges and universities. Sections are being encouraged to solicit participation of four year institutions.

AWWA ACCREDITATION/ENDORSEMENT

An accreditation packet containing guidelines for making application for AWWA Accreditation of water technology programs was mailed last year to all section directors, chairmen, secretaries, and education chairmen. The Education T&P Committee plans to contact sections as well as two-year colleges again this year to explain the goals of the program.

To date, the Michigan State University correspondence course in supervisory development has been approved for AWWA Endorsement and three community colleges in California are making application for accreditation.

SUMMARY OF EPA GRANTS

	<u>Funded</u>	<u>Percent Funded</u>	<u>Budget</u>
SDWA Curricular Project T900608-01	\$ 75,000.	88%	\$ 85,034.
SDWA 10-State Project T900733-01	380,225.	95%	400,237
Water Supply Operations	67,000.	75%	89,282.
Curricular Project (Amendment 1)	29,736.	75%	39,648.
T900632-01 (Amendment 2-Estimate)	70,000.	75%	93,000.
SDWA Self-Study Handbook for Non-Community Water Systems (Submitted 6/78)	25,000.	88%	28,410.
State Plan for Training and Certification (Under Preparation)	15,000.	75%	20,000.
	<hr/>		<hr/>
	\$661,961.		\$755,611.

SDWA Curricular Project-T900608

The grant project has been officially closed out by the Grants Administration Division and the following instructional materials have been published and are available for sale through AWWA:

- (1) SDWA Student Handbook and Instructor Guide for Public Officials
Slide/Tape Presentation, "Managing the Water we Drink"

- (2) SDWA Student Handbook and Instructor Guide for Water System Managers Slide/Tape Presentation, "Planning for Safe Drinking Water"
- (3) SDWA Student Handbook and Instructor Guide for Water System Operators Slide/Tape Presentations, "Turbidity Analysis Workshop" and "Chlorine Residual Workshop"
- (4) SDWA Self-Study Handbook for Community Water Systems

SDWA 10-State Technical Assistance Project-T900733

A total of 1,409 managers and operators thus far have attended a seminar on the Safe Drinking Water Act resulting from the 10-State technical assistance project. The project, to date, is approximately one third complete. States included under the grant include:

California	New Jersey
Idaho	New Mexico
Maryland	North Carolina
Massachusetts	Utah
Nebraska	Wyoming

When the project is completed, at least 119 seminars will have been conducted and an estimated 5,000 water utility personnel will have been advised of the impact of the Safe Drinking Water Act on their operations.

Water Supply Operations Curricular Project-T900632

The emphasis on this project, previously referred to as a basic/intermediate course in water treatment plant operations, was recently altered to encompass all facets of water supply operations.

A proposed scope of work for water distribution materials is being submitted as an amendment to the previously approved water treatment operations project.

As noted in the attached literature describing subject content of the project, the water supply operations training course will consist of four student volumes and a companion reference handbook devoted to related basic concepts and applications involving mathematics, hydraulics, and chemistry. Other instructional components of the course include four instructor guides and solutions manuals. Volumes 2 (Treatment) and 3 (Distribution) will be supplemented by slide/tape presentations.

Volume 1	<u>Introduction to Sources and Transmission</u>
Volume 2	<u>Introduction to Water Treatment</u>
Volume 3	<u>Introduction to Water Distribution</u>
Volume 4	<u>Introduction to Water Quality Analyses</u>
Reference Handbook	<u>Basic Science Concepts and Applications</u>

Volume 1 and the Reference Handbook are scheduled for release late this year and the remaining volumes are scheduled for publication next year.

SDWA Self-Study Handbook
for Non-Community Water Systems

A proposal to develop, publish, and nationally disseminate a self-study handbook on the Safe Drinking Water Act, for owners and operators of non-community water supply systems is currently being reviewed by the US EPA Office of Drinking Water and Grants Administration Division. Technical development will start this year and the handbook is scheduled for publication in 1979 prior to the June effective date for regulating non-community systems.

State Plan for Training and Certification

US EPA, Region VIII is funding a project to prepare recommended guidelines for establishing a central office to coordinate state-wide training and certification activities in Colorado.

TECHNICAL LIBRARY AND INFORMATION SERVICES

By October the Technical Library and Information Center will be fully operational. During the past year staff have done research and tests on two new services: computerized bibliographic searching and automated cataloging. In computerized bibliographic searching staff will use a computer terminal to create bibliographies based on key words and concepts. Thousands of reports and articles can be scanned in seconds and annotated bibliographies on requested water utility topics will be produced. This is being offered to Association members on a cost recovery basis starting in September. Staff are also using a computer to catalog the books and technical reports in the Technical Library. In addition to the cataloging and reference activities staff are expanding the Multi-Media Reference Service collection by acquiring new films and slide/tape presentations. A Technical Library Advisory Committee has been formed and the first meeting is planned for late September. Updates on library activities and services will appear in WILLING WATER.

PUBLICATIONS REPORT
JANUARY 1977 - JUNE 1978

Total 1977 Sales of AWWA Publications.....	\$660,000
Total Projected Sales for 1978.....	\$676,000
Total 1978 Sales of JOURNAL Advertising.....	\$518,000
Total Projected Sales for 1978.....	\$560,000

The above sales figures are an indication of how AWWA is successfully increasing its income to support new programs without increasing its dues. In addition, and most importantly, the publications sales figures also show that AWWA is disseminating its educational materials to more and more water utility personnel.

Specifically, the following publications were released from January 1, 1977 through June 30, 1978.

1. Automation and Instrumentation Manual (30002)
2. Safety Practices Manual - 3rd Edition (30003)
3. Fluoridation Manual (30004)
4. A/C Pipe Installation Manual (30015)
5. Proceedings - 1976 Water Technology Conference (20136)
6. Proceedings - 1977 Annual Conference (20137)
7. Proceedings - Disinfection Seminar (20139)
8. Proceedings - Hazardous Spills Seminar (20140)
9. Proceedings - 1977 Water Technology Conference (20141)
10. Bound Volume #2 of OpFlow (10013)
11. Bound Volume #3 of OpFlow (10014)
12. Bound Volume #69 of JOURNAL AWWA (10012)
13. Safe Drinking Water Act Training Materials for Public Officials, Managers and Operators (Instructor's Guides, Audio-Visual Sets, and Student Handbooks)

14. Standards:

- B200-78 Sodium Chloride
- B202-77 Quicklime and Hydrated Lime
- B502-78 Sodium Hexametaphosphate
- B600-78 Powdered Activated Carbon
- B601-77 Sodium Metabisulfite
- B603-77 Potassium Permanganate
- C101-67 (R1977) Thickness Design of C. I. Pipe
- C105-72 (R1977) Polyethylene Encasement for C. I. and D. I. Piping
- C110-77 C. I. and D. I. Fittings. 2 in. - 48 in.
- C112-71 (R1977) 2-in. and 2½-in. C. I. Pipe Centrifugally Cast
- C207-78 Steel Pipe Flanges for Waterworks Service - 4 in. - 144 in.
- C210-78 Coal-Tar Epoxy Coating System for Interior and Exterior Steel Water Pipe
- C400-77 A-C Pressure Pipe 4 in. - 16 in.
- C401-77 Practice for the Selection of A-C Water Pipe
- C402-77 A-C Transmission Pipe 18 in. - 42 in.
- C506-78 Backflow Prevention Devices - Reduced Pressure Principle and Double Check Valve Types
- C600-77 Installation of C. I. Water Mains
- C603-78 Installation of A-C Pressure Pipe
- C606-78 Grooved and Shouldered Type Joints
- C700-77 Cold-Water Meters - Displacement Type
- C702-78 Cold-Water Meters - Compound Type
- C901-78 PE Pressure Pipe, Tubing, and Fittings. 1 in. - 3 in. for Water
- D102-78 Painting Steel Water-Storage Tanks
- E101-77 Deep Well Vertical Turbine Pumps - Line Shaft and Submersible Types

15. Booklets

- "Story of Water Supply" Picture Book (70001)
- "Dawn's Early Light" Envelope Stuffer (70011)
- "Be a Leak Seeker" Envelope Stuffer (70012)
- "25 Things You Can Do" Envelope Stuffer (70013)
- "5 Basic Ways" Envelope Stuffer (70014)

16. Brochures & Programs

- 1977 WQTC Exhibit Brochure
- 1978 Annual Conference Exhibit Brochure
- 1978 WQTC Exhibit Brochure
- 1977 WQTC Attendance Promotion Brochure
- 1978 Annual Conference Attendance Promotion Brochure
- 1978 Awards Brochure
- 1977 WQTC Conference Program
- 1978 Annual Conference Program

17. Membership Publications

1977-78 Membership Roster (Tri-Annual)
1977-78 Officers & Committee Directory (Annual)
JOURNAL AWWA (Monthly)
OpFlow (Monthly)
Willing Water (Monthly)
AWWA Reports (Quarterly)
1978 Buyers' Guide (Annual)

1. You indicated that there are other problems in the water supply field which have a higher priority than the much publicized organics issue. How would you rank order the priorities which AWWA would like to see addressed?

A summary of the deficiencies in public water systems was issued by the Bureau of Water Hygiene, HEW, predecessor to the Office of Water Supply, EPA, in 1970 (Attachment F). This pointed out many deficiencies directly endangering public health, such as uncovered finished water, reservoirs, inadequate disinfection, inadequate laboratory control, failure to meet mandatory limits on contaminants, lack of cross-connection control programs, and inadequately trained personnel. The order of priorities would, of course, vary with the local situation, but all would rank above the questionable danger of trace organics now being made the focus of major attention.

A STATEMENT CONCERNING THE USPHS WATER SUPPLY SURVEY

PUBLISHED on the following pages is the technical summary of the USPHS Community Water Supply Study report that received such wide attention in the press and that has now motivated at least one Congressman to propose a "Pure Drinking Water Act" that would give the federal government the responsibility for establishing and enforcing water quality standards in all public water systems.

As indicated in its "Principles of a National Water Policy," AWWA believes that such control of water systems should rest with the state. On this basis, it opposes direct federal control of water system operations not only as impractical, but as improper. And the Association has already taken steps to obtain changes in the proposed legislation, with the support of the federal agencies involved.

But if control is to remain at the local and state level, it must be appreciated that responsibility remains there too, and there is indication in the report that this responsibility has not always been discharged to the extent necessary. In recognition of this fact, AWWA has mounted its "Action Now" program with a first goal of having every water utility meet the recommended as well as the mandatory limits of the USPHS Drinking Water Standards, en route, that is, to attaining AWWA's goal of "Quality Water."

Toward its primary goal, the Association has recently taken other steps as well. In view of the demonstrated weakness in cross-connection control programs, AWWA has, with the cooperation of the Public Health Service and the Conference of State Sanitary Engineers, undertaken a series of cross-connection control seminars to help implement the positive policy statement adopted by the Board of Directors last January. At the same time, to reach the rank and file membership, a series of articles on cross-connection control has been started in *Willing Water*, with a series on bacteriological sampling to follow. And in the effort to upgrade the operator personnel in the field, the Association has developed a series of operator workshops and has, through an official policy statement, urged management to set aside funds equal to 5 per cent of management and operator salaries for education.

The basic purpose of AWWA, evidenced in these efforts, is to provide the best water service to the public that the

technology of the field will permit and that economics will allow. Toward this end, the Community Water Supply Study report can be used as a tool—by those communities named as "deficient" to get action to correct the deficiencies, and by those communities not surveyed, as a warning and as a springboard for improvements that have been awaiting support. Some utilities have already taken such action, so that the report is no longer current. But as long as communities continue to grow and change in unpredictable patterns, there will always be temporary deficiencies of one kind or another, as there always have been. The important point is to use deficiencies as opportunities for improvement instead of letting them create opportunities for abuse.

In commenting on the survey report, AWWA has made the point that many of the "deficiencies" reported have been deficiencies of procedure rather than deficiencies in quality of water served, but the Association both participated in developing the standard and accepting it when issued, and feels, therefore, that water utilities should meet its requirements and, if they are not proper, should work for their amendment. Actually, revision of the Drinking Water Standards is now being considered within the federal establishment and this revision will probably be carried forward as soon as the reorganization involved in setting up the Environmental Protection Agency is completed. AWWA has already been promised a role in that revision and will be working toward standards whose requirements can be translated more directly into measurements of water quality and which will be more refined as to specific contaminants. Meanwhile, toward making the development and implementation of such standards practicable, AWWA has been pressing hard to have the budget of the federal Bureau of Water Hygiene increased to the point where it will be able to provide the technical assistance, research, and training needed but not now possible.

Above all, we must recognize that this is a time of rapid change and if we, as an industry, are to meet the challenge of that change, it behooves us all to focus on what we need to do now to keep ahead of the problems presented by burgeoning population, industrialization, and consequent pollution, rather than on what our record has been in the past.

Eric F. Johnson
Executive Director AWWA

SURVEY OF COMMUNITY WATER SUPPLY SYSTEMS

Leland J. McCabe, James M. Symons, Roger D. Lee
and Gordon G. Robeck

THE purpose of the Community Water Supply Survey (CWSS) was to determine if the American consumer's drinking water met the Drinking Water Standards.¹ To obtain nationwide coverage, the Bureau of Water Hygiene of the US Public Health Service initiated the CWSS in February of 1969 in nine areas across the country. The field work for the CWSS was conducted by the Bureau of Water Hygiene, in cooperation with the state and local health departments of the water utilities.

This survey was designed to give an assessment of drinking water quality, water supply systems, and surveillance programs in urban and suburban areas in each of the nine regions of the Department of Health, Education, and Welfare. These areas were selected to give examples of the several types of water supplies in the country. A whole Standard Metropolitan Statistical Area (SMSA) was the basis of each survey, except in Region I where the entire State of Vermont was included, with evaluations made on all public water supply systems, as defined herein, in each study area. This coverage allowed an assessment of the drinking water quality of the large central city, the suburbs, and the smaller communities located in the counties in the SMSA, and the interaction between them.

Specifically, the objectives of this survey were accomplished by determining whether or not:

1. The quality of the urban and suburban American consumer's drinking water in the selected survey areas exceeded the Constituent Limits of the Drinking Water Standards (DWS);¹
2. The water supply systems supplying this water to the consumers had facility deficiencies that might indicate or lead to potentially unsafe drinking water;
3. The bacteriological surveillance programs over these water supply systems meet the established criteria.

SCOPE

Public water supplies in the US numbered 19,236, serving some 150,000,000 people when last inventoried in 1963.² The remaining 50,000,000 people had private water supplies. Most of the public water supplies were small, about 85 per cent serving 5,000 or less people. About one-half of the public was served by the 18,837 supplies that each served 100,000 or less persons, and the other one-half (77,000,000) were served by the 399 larger supplies. About 75 per cent of these public water supplies have ground water as a source, while 18 per cent use surface water. The remaining 7 per cent have a mixture of ground and surface water source.

Systems Surveyed

This survey covered 969 public water supply systems, including 885 community water supply systems (91.3 per cent of the total) and 84 special water supply systems (8.7 per cent of the total). For this survey, the following definitions of the systems were used:

Public Water Supply System. A water supply system includes the works and auxiliaries for collection, treatment, storage, and distribution of water from the sources of supply to the free-flowing outlet of the ultimate consumer. Water supply systems were included in this survey, if they had 15 or more service connections and served 25 or more consumers.

Special Water Supply Systems. Those systems serving trailer and mobile home parks, other tourist accommodations and institutions with resident populations.

Community Water Supply Systems. All other systems studied in an SMSA.

The 969 public water supply systems surveyed (5 per cent of the national total) served about 18,200,000 persons (12 per cent of the total population served by public water supplies).

For the purpose of this paper, water supply systems were divided into four types: 1) those using surface wa-

ter (120 systems) or a mixture of surface and ground water as a source (46); 2) those using ground water as a source (613) [this type was further divided into: a) wells, b) springs, and c) mixture of both]; 3) those purchasing wholesale finished water as a source (106); and 4) special water supply systems (84). Table 1 shows the number of systems in each category and the population served in each region and in the entire survey.

The number of public water supply systems in various population ranges is given in Table 2. The 22 major cities included 73 per cent of the study population, while only 0.5 per cent were served by the 446 systems serving less than 500 consumers. The water treatment practices found in the survey are presented in Tables 3 and 4.

Survey Areas

Background for selection of each of the nine survey areas and the definition of Standard Metropolitan Statistical Area (SMSA) are given below.

Standard Metropolitan Statistical Area. The boundaries and titles of standard metropolitan statistical areas are established by the Bureau of the Budget with the advice of the Federal Committee on Standard Metropolitan Statistical Areas. An SMSA is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. In addition to the county, or counties, containing such a city or cities, contiguous counties are included in an SMSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city.

Region I. State of Vermont—Vermont was included in the survey at the request of the Commissioner of Health with the concurrence of the Governor. (Replaced the initially selected SMSA in this Region.)

Region II. New York, N.Y.—This SMSA included Rockland, Westchester, Nassau, and Suffolk Counties in addition to the City of New York. It was selected to represent those water supplies utilizing surface water providing disinfection only for treatment and those utilizing ground waters from high population density areas. It also represents the highly urbanized (megapolis) areas of the US.

Region III. Charleston, W. Va.—This SMSA included Kanawha County. It was selected to represent those supplies using surface waters that receive the wastes from a highly industrialized area. The small coal mine town supplies represent supplies in economically depressed areas of the northern Appalachian area.

Region IV. Charleston, S.C.—This SMSA included Berkeley and Charleston Counties. It was selected to represent the Atlantic and Gulf coast areas using both surface and ground water.

Region V. Cincinnati, Ohio; Kentucky; Indiana—This SMSA included Hamilton, Warren and Clermont Counties, Ohio; Boone, Campbell, and Kenton Counties, Ky.; and Dearborn County, Ind. It was selected to represent those portions of mid-America using surface water receiving a considerable amount of industrial discharge in addition to municipal wastes and agricultural runoff.

Region VI. Kansas City, Mo.; Kansas—This SMSA included Cass, Clay, Jackson, and Platte Counties, Mo., and Johnson and Wyandotte Counties, Kan. It is similar to the Cincinnati SMSA, but was selected to represent surface waters with a larger agricultural runoff to industrial waste ratio.

Region VII. New Orleans, La.—This SMSA included Jefferson, Orleans, St. Bernard, and St. Tammany Parishes, La. It was selected to represent the supplies receiving surface water drained from large and varied river basins, plus some from deep artesian wells.

Region VIII. Pueblo, Colo.—This SMSA included Pueblo County, Colo. It was selected to represent the water supplies of the high plains region of the country that has a mixture of ground water and surface water sources.

Region IX. San Bernardino; Riverside; Ontario, Calif.—This SMSA included San Bernardino and Riverside

Counties, Calif. It was selected to represent the semi-arid regions of the west and southwest as well as an area served primarily by ground water.

Figure 1 shows the location and the relative size of each survey area.

EVALUATION CRITERIA

Each water supply system was investigated on three bases: 1) drinking water quality was determined by sampling the finished and distributed water and returning these samples to the laboratories of the Bureau of Water Hygiene for bacteriological, chemical, and trace metal analyses; 2) the status of the water supply system facilities was determined by a field survey of the system and the gathering of data on three standard forms (four items were chosen to represent major problems; a) source(s), b) treatment, if any, c) distribution system pressures, and d) operation); 3) the status for the surveillance program over the water supply system was evaluated by obtaining bacteriological water quality data for the previous 12 months of record from state and county health department files.

METHODS

Water Quality Criteria

Water quality was judged either: not to exceed the Constituent Limits of the DWS, hereafter called met Drinking Water Standards; to exceed at least one "recommended" Constituent Limit (some are aesthetic parameters), but does not exceed any "mandatory" Constituent Limit (hereafter called Exceeded recommended, but not mandatory limits); or to exceed at least one "mandatory" Constituent Limit (hereafter called Exceeded "mandatory" limits).

The Drinking Water Standards Constituent Limits measured in this survey or summarized in Table 5.

Facilities Criteria

Source, treatment, operation, and distribution facilities were judged^a either: 1) to be essentially free from major deficiencies; or 2) to be deficient in one or more of the following (where applicable): a) source protection (in absence of disinfection or buying chlorinated water); b) disinfection (if disinfection practiced); c) control of disinfection (if practiced or if purchas-

ing chlorinated water); d) clarification capabilities (if clarification practiced); e) control of clarification (if clarification practiced); or f) pressure (<20 psi) in some or all areas of the distribution system.

Bacteriological Surveillance Program Criteria

The bacteriological surveillance program over the water supply system was judged either: 1) to meet the following criteria; or, 2) not to meet one or both of the following: a) collection of the required number* of bacteriological samples for no less than 11 months during the previous 12 months of record; or b) passing the bacteriological quality standard* for no less than 11 months during the previous 12 months of record.

Field Survey

The regional office staff, in cooperation with the state and local health department officials, prepared a listing of definition adopted for this study. The all known water supplies meeting the list contained the supply name, address, name of the superintendent or person in charge, indication of size, and the telephone number. The list was cross-checked with community and subdivision names to eliminate duplication and establish those areas for which the water supply facilities were apparently unknown. A standard PHS form, Report of Water Supply Used on Interstate Carriers, was prepared for each supply from state and local health department records. The completed list became the basis for work schedules for the field engineers.

Actual field surveys were made by one of the 20 PHS engineers from

* See pages 3-6 of the Drinking Water Standards.¹

A paper presented on Jun. 23, 1970, at the Annual Conference, Washington, D.C., by Leland J. McCabe (Active Member, AWWA), Project Director and Director, Div. of Epidemiology and Biometrics; James M. Symons (Active Member, AWWA), Chief, Control Technology Branch; Roger D. Lee (Active Member, AWWA), Chief, Community Water Supply Branch, and Gordon G. Robeck (Active Member, AWWA), Asst. Director; all of the Bureau of Water Hygiene, USPHS, Cincinnati, Ohio.

TABLE 1
Summary of Water Supply System Types by Region

Region	Pop. in Thousands	Number of Systems by Type						Total
		Surface and Mixed Source	Ground Source			Wholesale Finished Source	Special	
			Springs	Wells	Mixture of Both			
I	307.2	73	67	40	23	1	14	218
II	12,356.3	14	0	135	1	30	41	221
III	229.3	14	1	12	0	3	0	30
IV	251.1	1	0	16	0	3	2	22
V	1,366.0	8	0	31	0	19	8	66
VI	1,383.5	23	0	24	0	34	7	88
VII	1,085.4	7	0	14	0	2	3	26
VIII	111.5	4	1	11	1	0	3	20
IX	1,113.4	22	11	213	12	14	6	278
Total	18,203.8	166	80	496	37	106	84	969
Study population served in Thou- sands:		12,777	149	4,060	29	1,093	94	18,204

headquarters and the regional offices that made up the field staff. At the option of state and local health department staff members, they made surveys with the PHS engineer. The staff of the field office made appointments by telephone for the surveys one to seven days in advance, except for the Kansas and Missouri State Health Departments, who made the appointments several weeks in advance of the study.

During the field survey, the engineer inventoried the facilities and made a sanitary survey to provide information on source, treatment, operation, laboratory control, personnel, distribution, surveillance practices, planning for improvements, and water rates.

Sampling Program

The following samples were collected and dispatched to various Bureau of Water Hygiene Laboratories:

- 1) *Raw Water*. One sample for bacteriological analysis.

TABLE 2
Size Distribution of Systems Surveyed

Population Range	Number of Systems	Per Cent of Total	Total Population Served in thousands	Per Cent of Total
≤ 500	446	46	87.6	<1
501-1,000	101	10	74.0	<1
1,001-5,000	214	22	332.3	3
5,001-10,000	75	8	539.6	3
10,001-25,000	59	6	1,018.6	6
25,001-50,000	36	4	1,380.2	8
50,001-100,000	16	2	1,110.0	6
100,001-1,000,000	21	2	5,362.5	29
> 1,000,000	1	<1	8,100.0	44
Total	969		18,203.8	

- 2) *Finished Water Ready for Distribution*. Four or 5 samples for chemical analyses as follows:

- a) A 2.5 gal sample to the Northeast Water Hygiene Laboratory. This was a grab sample for most ground water and small surface water treatment plants, but where possible a 14-day composite was taken. The following analyses were made on this sample:

Arsenic	Cyanide	Sulfate
Boron	MBAS	TDS
Chloride	Nitrate	Turbidity
Color	Selenium	

- b) An 8-oz aliquot sample for trace metals analyses was

taken out of sample 2)a) above and sent to the Cincinnati Laboratory. The following analyses were made on this sample:

Barium	Fluoride	Silver
Cadmium	Iron	Specific
Chromium	Lead	conduct-
Cobalt	Manganese	ance
Copper	Nickel	Zinc

- c) A 1-gal sample for radioactivity analyses was sent to one of the three Bureau of Radiological Health Laboratories. It was collected in the same manner as sample 2)a) above. The following analyses were made on this sample:

Gross Alpha
Gross Beta
Radium-226, if gross alpha exceeded 3 pCi/l
Strontium-90, if gross beta exceeded 10 pCi/l

- d) A 1-gal sample for pesticide analyses was sent to the Gulf Coast Water Hygiene Laboratory from surface water supplies plus those ground water supplies where sampling was specifically requested by the state or county health officials. It was collected in the same manner as sample 2)a) above. The following analyses were made on this sample:

Aldrin	Endrin	Lindane
Chlordane	Heptachlor	Methoxy-
DDT	Heptachlor	chlor
Dieldrin	epoxide	Toxaphene

- e) One activated carbon monitor sample was sent to the Cin-

TABLE 3
Water Treatment Practices in the Systems Surveyed

Treatment Practice	Type of System (Number of Systems of each)						Overall System Total	
	Surface Water & Mixed Source	Ground Water Source			Wholesale Finished Water Source	Special Systems	Number	Per Cent
		Springs	Wells	Mixture of Both				
Do not disinfect, clarify, or buy, chlorinated water	13	65	330	25	10	53	496	51
Disinfection only or buy chlorinated water	64	15	108	12	93	19	311	32
Clarification* and disinfection	88	0	52	0	3	12	155	16
Clarification* without disinfection	1	0	6	0	0	0	7	1
System totals—number	166	80	496	37	106	84	969	100

* Clarification is the removal of suspended material by coagulation, sedimentation and filtration.

Nov. 1970

SURVEY OF COMMUNITY WATER SUPPLY SYSTEMS

cinnati Laboratory from 110 selected water supplies, 94 of which were from surface sources. Carbon Chloroform Extract (CCE) and Carbon Alcohol Extract (CAE) concentrations were determined from this monitor.

- 3) *Distribution System.* Samples for bacteriological and trace metal analyses were collected at the rate of 10 per cent of the number required by Fig. 1, of the DWS,² with a minimum of 2 each from any water supply.

These samples were taken from consumer's faucets where water was likely to be withdrawn for drinking or culinary purposes. A bacteriological sample was taken only after flushing for several seconds and the chemical sample was then taken shortly thereafter. No special treatment was given to the faucet because each sample was meant to reflect the actual quality of the water delivered to the consumer.

All samples were collected in 8-oz sterile, plastic, wide-mouth, screw-capped bottles which contained 0.2 ml of a 10 per cent solution of sodium thiosulfate as a dechlorinating agent. This concentration of thiosulfate was sufficient to neutralize a sample containing about 15 mg/l residual chlorine, an amount above any residual that was present. Refrigeration of all samples was required during transportation back to the laboratory. Maximum time between collection and analysis did not exceed 30 hr.

Laboratory Procedures— Bacteriological

The bacteriological procedures were those of *Standard Methods*.⁴ The membrane filter (MF) procedure was used for total coliform detection in this study for three reasons. One, larger volumes (100-ml portions) of distributed water could be examined than with the MPN technique; two, the MF procedure yields more precise results; and three, less processing time would be involved per sample, so reexamination of many of the samples could have been made within the 30-hr time limit, if required. All potable and source water samples were examined for total coliforms using M-Endo MF broth,

Treatment Practice	Population Served in Thousands (Number of Systems of Each)							Overall System Totals	
	≤.5	.5-5	5-10	10-25	25-50	50-100	>100	Number	Per Cent
Do not disinfect, clarify, or buy chlorinated water	318	131	17	20	8	2	0	496	51
Disinfection only or buy chlorinated water	98	117	38	24	19	6	9	311	32
Clarification* and disinfection	29	63	19	15	8	8	13	155	16
Clarification* without disinfection	1	4	1	0	1	0	0	7	1
System totals—number	446	315	75	59	36	16	22	969	100

* Clarification is the removal of suspended material by coagulation, sedimentation and filtration.

and incubated at 35 C for 20-24 hr. Because raw water quality varied with its source, three decimal sample portions were filtered, the volume being determined by the estimated water quality.

Any coliform colonies detected in the examination of a sample were further verified by transfer to phenol red lactose for 24- and 48-hr periods at 35 C incubation. All positive phenol red lactose broth tubes then were confirmed in brilliant green lactose at 35 C for verification of total coliforms and in EC medium at 44.5 C for detection of fecal coliforms. This procedure further confirmed the standard total coliform MF test and supplied additional information on the potentially hazardous occurrence of fecal coliform in those potable water supplies.

Basic knowledge was also needed on the general bacterial population of pot-

able water. Therefore, the general population of bacteria count (plate count) was also made on all distribution system samples. Sample portions of 1 ml and 0.1 ml in plate count agar (Tryptone-Glucose-Yeast Agar), incubated 48 hr at 35 C were sufficient to yield the desired data.

Chemical

The five samples, as noted above, taken to determine the chemical quality of the finished and distributed water, were analyzed as follows:

Sample 2a; General Chemistry. These constituents were generally determined by *Standard Methods*,⁴ except as listed below.

Barium—No standard method existed at the time this study was undertaken. An atomic absorption procedure, which will appear in the next edition of *Standard Methods*,⁴

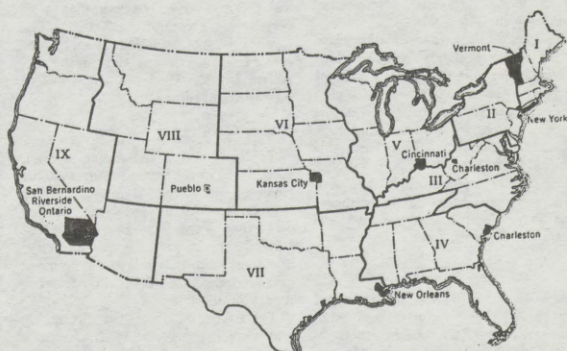


Fig. 1. Size and Location of Sampling Areas
Regional Boundaries in 1969

was used and was found acceptable. The analysis was made only on those samples that had less than 2 mg/l sulfate because, above that concentration, the barium precipitates out of solution.

Chloride—A variation of the potentiometric titration procedure was used, which is a tentative method in *Standard Methods*,⁴ p. 372. Rather than titrate with silver nitrate to a specified end-point in millivolts, using a glass electrode and a silver-silver chloride electrode, a standard curve was prepared that related millivolts to chloride concentration. The concentration of an unknown is then determined from the standard curve. The procedure was just as accurate as the titration method and was simpler to carry out.

Fluoride—A fluoride electrode method, which will appear in the next edition of *Standard Methods*,⁴ was used. Precision and accuracy was generally better than any other method and the method was simpler to carry out.

Sample 2b; Trace Metals. The atomic absorption spectrophotometer method was used for all heavy metals (cadmium, chromium, copper, iron, lead, manganese, silver, zinc, nickel, and cobalt) because its sensitivity, simplicity and speed of analysis far exceeded the usual wet chemical methods. An atomic absorption method for these metals will appear in the next edition of *Standard Methods*.⁴

Sample 2c; Radioactivity. These radiological constituents were determined using standard radiological counting techniques.

Sample 2d; Pesticides. No standard procedure for pesticide determinations existed at the time the CWSS was undertaken. Gas chromatography is generally the accepted method of analysis and will appear in the next edition of *Standard Methods*.⁴ Therefore, this technique was used.

Sample 2e; Organics (CCE and CAE). These organic constituents were determined using standard extraction techniques.

RESULTS

This section contains the principal data on the three major objectives of this survey; that is, a determination of: 1) the drinking water quality in the study areas; 2) the status of the water supply systems providing this drink-

ing water; and 3) the status of the bacteriological surveillance programs over these water supply systems. In general, the data will be discussed on a National basis, except for certain problems that are obviously regional in nature. Details of the findings for each DHEW Region are contained in nine separate Regional Reports.

Survey Sample

In an attempt to survey a variety of water supply problems, and a variety of types of water supply systems of various sizes, the decision was made, in the design of this survey, to investigate all of the public water supplies in nine geographically distributed study areas. While this technique was not expected to provide a perfect random sample of water supply systems throughout the country, the results are considered to be reasonably representative of the status of the water supply industry in the US.

This is verified by using the data in PHS Publication No. 1039, "Statistical Summary of Municipal Water Facilities in the United States, January 1, 1963,"² and comparing certain statistical breakdowns to those of the CWSS. Nationally, about 77 per cent of the public water supplies had ground water as a source in 1963, while about 64 per cent of the supplies in the CWSS had this category of source. The 1963 Facilities Inventory also showed that in the US, 3.6 per cent of the water supplies served larger municipalities, greater than 50,000 population, while 3.9 per cent of the water supplies in the CWSS served communities with populations greater than 50,000. The CWSS sample included about 5 per cent of the water supplies in the US as listed in the 1963 Municipal Water Facilities Inventory.

Water Quality

Tables 6 and 7 show that, overall, 59 per cent of the water supply systems surveyed met the Drinking Water Standards. Included in the 41 per cent that exceeded the Constituent Limits were 16 per cent that exceeded mandatory limits, while the remainder exceeded recommended, but not mandatory limits.

Table 6 demonstrates that the spring and mixed spring and well sources, a majority of which were unprotected and inadequately treated, produced the poorest water quality, mainly because

TABLE 5

Partial List of Bacteriological, Chemical, and Physical Constituents Concentration Limits Taken from the 1962 US Public Health Service Drinking Water Standards¹

Recommended Limits*	
Constituent	Limit
Alkyl benzene sulfonate (measured as methylene-blue-active substances)	0.5 mg/l
Arsenic	0.01 mg/l††
Boron	1.0 mg/l†
Chloride	250 mg/l
Color	15 Units
Copper	1.0 mg/l
Carbon-chloroform extract (CCE)	0.200 mg/l
Cyanide	0.01 mg/l
Fluoride	
Temp. (ann. avg. max. day, 5 years or more)	
50.0-53.7	1.7 mg/l
53.8-58.3	1.5 mg/l
58.4-63.8	1.3 mg/l
63.9-70.6	1.2 mg/l
70.7-79.2	1.0 mg/l
79.3-90.5	0.8 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Nitrate	45 mg/l
Radium-226	3 µCi/l (pCi/l)††
Strontium-90	10 µCi/l (pCi/l)††
Sulfate	250 mg/l
Total dissolved solids (TDS)	500 mg/l
Turbidity	
Untreated	5 Units
Treated by more than disinfection	1 Unit
Zinc	5 mg/l
Mandatory Limits‡	
Constituent	Limit
Arsenic	0.05 mg/l
Barium	1.0 mg/l
Boron	5.0 mg/l†
Cadmium	0.01 mg/l
Chromium (hexavalent)	0.05 mg/l
Coliform organisms (measured by membrane filter technique)	Fails std. if: a) Arithmetic average of samples collected greater than 1 per 100 ml
	b) Two or more samples (5% or more if more than 20 examined) contain densities more than 4/100 ml
Cyanide	0.2 mg/l
Fluoride	
Temp. (ann. avg. max. day—5 years or more)	
50.0-53.7	2.4 mg/l
53.8-58.3	2.2 mg/l
58.4-63.8	2.0 mg/l
63.9-70.6	1.8 mg/l
70.7-79.2	1.6 mg/l
79.3-90.5	1.4 mg/l
Gross beta activity (in the absence of α or Sr-90)	1,000 µCi/l (pCi/l)††
Lead	0.05 mg/l
Selenium	0.01 mg/l
Silver	0.05 mg/l

* If the concentration of any of these constituents are exceeded, a more suitable supply or treatment should be sought.

†† Although the recommended arsenic concentration is 0.01 mg/l, because of interferences in some waters, the concentration of arsenic was only determined to be less than 0.03 mg/l. For the purposes of this study, these waters were considered not to exceed the recommended standard.

‡ Proposed for inclusion in the Drinking Water standards.

† If these limits are exceeded, refer to Section 6.2 of the DWS.¹

‡ If the concentration of any of these constituents are exceeded, the further use of this water for drinking and culinary purposes should be evaluated by the appropriate health authority because water of this quality represents a hazard to the health of consumers.

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of high coliform densities in the distribution water. Protected wells, on the other hand, produced relatively uncontaminated water. The high percentage that did not exceed the mandatory limits was the result of low coliform densities in ground water. Because of the higher content of inorganics in ground water, well sources did, however, have the highest percentage of systems exceeding recommended, but not mandatory limits. Surface waters, although often drawn from polluted sources, are usually improved by treatment. Because of this treatment, the overall quality of surface and mixed surface and ground sources was equal to that of well source systems.

Systems buying water from another system showed the highest percentage of water quality that met the Drinking Water Standards. This is probably because these systems buy water from larger supplies which are generally the better systems. The special systems were, in general, producing water quality slightly above the average for the entire study. This may be related to their general use of acceptable ground water sources.

Table 7 shows that, in general, the larger communities produce much better quality water than the smaller ones. While the percentage exceeding recommended, but not mandatory limits does not vary much with size, the per cent of systems that exceed mandatory limits declines dramatically as the communities become larger. The reason 86 per cent of the survey population was served drinking water that met the Drinking Water Standards when only 59 per cent of the systems were evaluated thusly, is that, as shown in Table 7, bigger systems, where most of the survey population reside, distribute better quality water. In spite of many of the small communities using well sources, one-half of these systems exceeded the Constituent Limits. These systems are served mainly by springs, or surface water.

Facilities Evaluation

Tables 8 and 9 show that, overall, 44 per cent of the water supply systems investigated in the CWSS were essentially free from major deficiencies. Tables 3 and 4 present details regarding the water supply system facilities found during the survey. In summary, 496 systems did not practice disinfection or clarification, or buy chlorinated

water, 311 systems practiced disinfection only or bought chlorinated water, 155 systems practiced clarification and disinfection, and 7 systems practiced clarification without disinfection.

Source Protection

Table 8 shows that 41 per cent of the untreated spring, and mixed spring and well sources also were poorly protected. This poor protection, combined with the lack of treatment, explains the poor water quality that these sources deliver, as shown by Table 6.

Table 9 shows that the bulk of the unprotected sources are serving communities with 500 population or less. Very few communities with a population greater than 10,000 were drawing water from a poorly protected source. Of course, many of these larger communities overcome the poor quality of their raw water through either disin-

fection or clarification and disinfection.

Disinfection

Table 8 indicates that the major disinfection problem is with surface and mixed surface and ground water sources. These systems not only had the highest percentage of systems with inadequate disinfection, if practiced, but also had one of the highest percentages showing inadequate control of disinfection. This probably explains why only 57 per cent of this type of system provided water quality that met the Drinking Water Standards (Table 6), even though most of these sources are treated. The reason that communities having a population from 5,001 to 10,000 have the poorest record with respect to disinfection or disinfection control (see Table 9) may be because these towns are large enough

TABLE 6
Water Quality Evaluation by Source

	Type of System (All data are percent of System Totals by type)						Overall System Totals	
	Surface Water & Mixed Source	Ground Water			Whole-sale Finished Water Source	Special Systems	Number	Per Cent
		Springs	Wells	Mixture of Both				
Met drinking water standards	57	45	57	54	76	65	572	59
Exceeded constituent limits	43	55	43	46	24	35	397	41
Exceeded recommended but not mandatory limits		25	14	29	11	19	238	25
Exceeded mandatory limits		18	41	14	35	5	159	16
System totals—number	166	80	496	37	106	84	969	—

TABLE 7
Water Quality Evaluation by Community Size

	Population Served in Thousands (All data are per cent of Size Totals)							Overall System Totals	
	≤.5	.5-5	5-10	10-25	25-50	50-100	>100	Number	Per Cent
Met drinking water standards	50	67	64	71	67	62	73	572	59
Exceeded constituent limits*	50	33	36	29	33	38	27	397	41
Exceeded recommended but not mandatory limits		26	21	25	20	30	31	238	25
Exceeded mandatory limits		24	12	11	9	3	7	159	16
System totals—number	446	315	75	59	36	16	22	969	—

Note: Per cent of 18.2 million survey population in the four above groups was:

Met Drinking Water Standards 46
Exceeded Constituent Limits 14
Exceeded Recommended Limits 12
Exceeded Mandatory Limits 2

TABLE 8
Facilities Evaluation by Source

	Type of System (All data are per cent of System Totals by Type)						Overall System Totals	
	Surface Water & Mixed Source	Ground Water			Wholesale Finished Water Source	Special Systems	Number	Per Cent
		Springs	Wells	Mixture of Both				
Essentially free of major deficiencies	15	28	51	30	60	58	422	44
Major deficiencies	85	72	49	70	40	42	547	56
Inadequate source protection, in the absence of disinfection or buying chlorinated water	8	41	18	38	22	13	184	19
Inadequate disinfection, if practiced	35	11	14	17	4	13	155	16
Inadequate control of disinfection, if practiced or if buying chlorinated water	11	4	6	5	5	10	65	7
Inadequate clarification, if practiced	16	NA*	3	NA*	0	2	43	4
Inadequate control of clarification, if practiced	33	NA*	<1	NA*	0	5	60	6
Low (<20 psi) pressure in some or all areas of the dist. system	36	51	22	32	15	15	249	26
System totals—	166	80	496	37	106	84	969	

* Not applicable.

TABLE 9
Facilities Evaluation by Community Size

	Population Served in Thousands (All data are per cent of System Totals by Type)							Overall System Totals	
	<5	5-5	5-10	10-25	25-50	50-100	>100	Number	Per Cent
Essentially free of major deficiencies	39	44	49	49	64	50	64	422	44
Major deficiencies	61	56	51	51	36	50	36	547	56
Inadequate source protection, in the absence of disinfection or buying chlorinated water		27	17	7	5	6	0	184	19
Inadequate disinfection, if practiced		12	20	28	24	6	13	155	16
Inadequate control of disinfection, if practiced or if buying chlorinated water		8	7	8	5	3	0	65	7
Inadequate clarification, if practiced		1	7	8	8	3	12	43	4
Inadequate control of clarification, if practiced		3	11	4	5	3	6	68	6
Low (<20 psi) pressure in some or all areas of the dist. system		32	17	24	22	25	31	249	26
System totals— number	446	315	75	59	36	16	22	969	—

Note: 31 per cent of the survey population was served drinking water from systems that were essentially free of major deficiencies.

to obtain water from surface sources where treatment is required, but are not large enough to attract high quality operators or to finance high quality treatment plants.

Clarification

As in the case of disinfection, Table 8 shows that the poorest record of clarification and control of clarification was found in surface, and mixed surface and ground water sources. This is particularly serious, because these sources are precisely the ones that need adequate clarification if disinfection is to be effective. Three of the 22 larger communities (14 per cent) had inadequate clarification and 2 (10 per cent) had inadequate clarification control (see Table 9). Because this size community often draws water from low quality sources such as major rivers, effective clarification is necessary to provide these large populations with high quality water.

Distribution System Pressure

Table 8 shows that, along with their other difficulties, the systems using spring sources had the poorest record of maintaining greater than 20 psi pressure throughout their distribution system. Table 9 indicates that, with respect to community size, the greatest difficulty in maintaining adequate distribution pressures is in the smallest and the largest communities. About one-third of the communities with populations of 500 or less and greater than 50,000 population had low pressure in certain areas or throughout their distribution system. The larger communities are faced with problems of an ever-growing complexity of the distribution system, hilly terrain, and tall buildings. Under these circumstances, maintenance of adequate distribution pressure, vital though it may be to prevent backflow, is very difficult.

Bacteriological Surveillance Program Evaluation

Tables 10 and 11 indicate that, overall, only 10 per cent of the systems surveyed met the bacteriological surveillance criteria. Again, the spring and mixed spring and well sources had the poorest record. Even the best record, 21 per cent for supplies with surface and mixed surface and ground water sources, was poor. Table 11 indicates that, with the exception of the 25,001 to 50,000 population community, whose

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data are unexplainable at this time (1970), the towns with a population of 500 or less had the poorest records. Even the largest communities, however, had a poor record, with only 36 per cent of the 22 communities greater than 100,000 meeting the criteria.

As already noted, the bacteriological surveillance criteria have two parts, a collection portion and a quality portion. To evaluate each supply, the number of samples collected was compared to the collection criteria, and the coliform density from the samples collected, if any, was compared to the quality portion of the criteria. Every supply could be evaluated on the collection portion, but only those supplies that collected some samples could be evaluated on the quality portion of the criteria. If a supply did not collect any samples, it obviously could not have any samples with coliform densities reported. Therefore, the collection portion of the criteria can be analyzed separately for all supplies, but the quality portion cannot.

Collection Rate

The purpose of evaluating the sample collection portion of the criteria separately is to show the numbers of supplies that are not meeting this portion of the criteria. However, mere collection of samples is no guarantee that a supply would pass the criteria. This is because many supplies that now collect too few samples might find that when sufficient samples are collected they would exceed the quality portion of the criteria.

Tables 10 and 11 do show, however, that 85 per cent of the water supply systems investigated did not collect samples at the rate in the bacteriological surveillance criteria. This means that many supplies, if they are producing good quality water, could meet the criteria merely by collecting and analyzing sufficient samples.

For comparison purposes, data were gathered to determine how many of the water supply systems surveyed did not collect sufficient bacteriological samples at a rate equal to 50 per cent of that called for in the DWS. This analysis shows that 827 systems (85 per cent of the total), did not take sufficient samples, while 670 (69 per cent of the total) did not take samples at even half the rate given in the DWS. This reveals that, assuming a sampling rate of only 50 per cent of

TABLE 10
Bacteriological Surveillance Evaluation by Source

	Type of System (All data are per cent of System Totals by type)						Overall System Totals	
	Surface Water & Mixed Source	Ground Water			Wholesale Finished Water Source	Special Systems	Number	Per Cent
		Springs	Wells	Mixture of Both				
Met bacteriological surveillance criteria	21	2	9	2	8	7	100	10
Did not meet bacterio- logical surveillance criteria	79	98	91	98	92	93	869	90
Did not collect samples at a rate in the bacterio- logical surveillance criteria	68	98	85	95	92	94	827	85
System totals—number	166	80	496	37	106	84	909	—

TABLE 11
Bacteriological Surveillance Evaluation by Community Size

	Population Served in Thousands (All data are per cent of System Totals)							Overall System Totals	
	≤.5	.5-5	5-10	10-25	25-50	50-100	>100	Number	Per Cent
Met bacteriological surveillance criteria	4	18	12	10	3	12	36	100	10
Did not meet bacteriological surveillance criteria	96	82	88	90	97	88	64	869	90
Did not collect samples at the rate in the bacteriological surveillance criteria	94	74	83	85	92	88	64	827	85
System totals—number	446	315	75	59	36	16	22	969	—

Note: 60 per cent of the survey population were served drinking water by systems over which a bacteriological surveillance program met the criteria.

that in the DWS is satisfactory, only an additional 157 supplies (16 per cent of the study total) would have collected sufficient samples. This demonstrates that in most systems the sampling rate is not just a little below that called for in the DWS, it is not even close to 50 per cent of that rate.

Water Quality

Selecting for analysis the supplies that collected at least one-half enough samples for six months of the previous year of record, 48 per cent would not have met the quality portion of the bacteriological surveillance criteria. This percentage failing to meet this portion of the criteria ranged from 57 per cent for the smaller systems (≤500) to 4 per cent for the systems serving more than 50,000 persons.

DISCUSSION OF RESULTS

The discussion of results section contains information interpreted for the

country as a whole from data collected during the CWSS on four items of special importance to the water supply industry. These are: 1) quality of source water, 2) quality of distributed water, 3) control of health hazards, and 4) influence of water supply system size on operation and performance.

Quality of Source Water—Surface Water

Changes in the quality of a raw water source can result in changes in the quality of treated water furnished to the consumer. Continual deterioration of source quality may force the water utility to use more extensive treatment methods or seek alternate sources to maintain finished water quality. These actions usually result in an increase in the cost of water.

In many areas, pollution abatement has not kept pace with the increasing effects of man-made pollution, particularly in our surface waters. As a

result, the quality of many water supplies' raw water sources has been threatened. In an effort to evaluate the magnitude of this threat, a portion of the CWSS was designed to obtain information on the past and present source quality for each water supply system studied.

Specifically, information was sought during the sanitary survey on the present adequacy of the source with respect to quantity, bacteriological, chemical, and physical quality, and source protection. In addition, an attempt was made to determine if the overall quality of the source had improved, deteriorated, or stayed the same during the past three years. In general, the answers to the latter question were subjective opinions of the water supply system operators.

This discussion is a summary of the source quality information obtained from those water systems that have surface raw water sources. For purposes of tabulation, a water supply was considered to have a surface source when: its only source of raw water was from a river, stream, brook, lake, reservoir, pond, and so forth; or in the case of a combined surface and ground source, more than 50 per cent of the annual raw water volume came from the surface source. Supplies for which the relative percentage of surface and ground raw water volumes could not be determined were not included.

Table 12 summarizes the information on source quantity and quality obtained during the sanitary survey. These data show that, in general, the quantity and quality of surface water source was judged adequate by the engineers that surveyed these systems. Only slightly over one-half of the sources, however, were judged to be adequately protected. The sources were used because safe water was provided by adequate treatment. Conclusions on a national basis are heavily influenced by the State of Vermont, where many of the unprotected sources did not receive adequate treatment.

Based on the operator's opinion, 59 per cent reported that the quality of their source had remained the same over the past 3 yr.

Additional information on this subject was obtained from the National Water Quality Network, initiated by the Division of Water Supply and Pollution Control of the USPHS, in 1957. This network was operated by the

PHS until 1966, when the responsibility was transferred to the Pollution Surveillance Branch of the Federal Water Pollution Control Administration (now the Federal Water Quality Administration).

Of the 50 original sampling locations established for the network, three are at the raw water intakes for surface water supplies included in the CWSS. These locations are:

1. Ohio River at Cincinnati, Ohio (Cincinnati water treatment plant).
2. Missouri River at Kansas City, Kan. (Kansas City water treatment plant).

TABLE 12
Summary of Responses on Adequacy of
Surface Water Sources

Item	Systems Responding	Per Cent Adequate	Per Cent Inadequate	Per Cent Same
Quantity	124	87	13	
Bacteriological quality	112	80	20	
Chemical quality	113	83	17	
Physical quality	114	83	17	
Source protection	117	55	45	
Item	Systems Responding	Per Cent Improved	Per Cent Deteriorated	Per Cent Same
Changes in source quality during last 3 yr	123	15	26	59

Note: 124 water supply systems were classified as surface water source for this analysis.

3. Mississippi River at New Orleans, La. (Carrollton water treatment plant).

To obtain additional information about these sources, seven water quality parameters, indicative of the quality of the river for use as a water supply source, were selected. They are: 1 hr chlorine demand; total hardness; turbidity; total alkalinity; total algal count; total coliform count and total carbon chloroform extractables (CCE).

A review of the data for Cincinnati, Ohio shows that since 1964 there has been: little change in chlorine demand (data limited); a slight cyclic variation in total hardness; a decreasing trend in turbidities; a gradual increase in total alkalinity; a marked reduction

in algal counts; a decreasing trend (until 1968) in coliform counts; and very little change in CCE.

In general, these data support the opinions obtained during the CWSS that the quality of the Ohio River as a water supply source had either improved or stayed the same in recent years.

The data for recent years from the Missouri River at Kansas City show the following: little or no change in chlorine demand, total hardness, total alkalinity, or CCE; a marked reduction (approximately 7-fold) in turbidity; a sharp increase in algal counts up to 1966 (data limited); and a decreasing trend in total coliforms.

The turbidity data, in general, agree with the reductions reported during the CWSS. The coliform data shows a decreasing trend, however, in opposition to the increase in microbiological loading reported in the study.

The Mississippi River is the only surface source in the New Orleans SMSA. Most of the water supplies using the river for raw water reported continued deterioration of source quality during the past 3 yr. The presence of wastes from a vast complex of upstream sources renders the river difficult to treat for water supply purposes. Tastes and odors are a continual treatment problem in this area.

For this sampling station, the following changes in the selected water quality parameters were noted: marked increases in both algal counts and total coliforms; after an unexplained initial decrease over a period of 2 yr there was a gradual increase in 1-hr chlorine demand; a gradual increase in total hardness; little change in total alkalinity and CCE; and generally declining trend in turbidity.

The data for algal counts, total coliforms, chlorine demand, and total hardness support, in varying degrees, the reported conditions of continued source deterioration. The deterioration reported in the CWSS at this location may be better shown by observations other than those selected, such as the aggravation of tastes and odors after chlorination, and recognition of spills by continuous monitoring.

Ground Water

Well water is often thought to be of high bacteriological quality. In the CWSS, for example, 67 per cent of the well waters were distributed to the

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TABLE 13
Bacteriological Quality of Raw Water From Wells

Total Coliform		Fecal Coliform		Plate Count	
Density	Per Cent Occurrence	Density	Per Cent Occurrence	Number	Per Cent Occurrence
0/100 ml	91	0/100 ml	98	0/ml	17
1/100 ml-4/100 ml	6	1/100 ml-4/100 ml	1	1/ml-100/ml	59
5/100 ml-10/100 ml	1	5/100 ml-10/100 ml	<1	101/ml-500/ml	13
11/100 ml-50/100 ml	1	11/100 ml-50/100 ml	<1	501/ml-1,000/ml	4
>50/100 ml	1	>50/100 ml	<1	>1,000/ml	7

Note: For this analysis 621 individual wells were studied.

consumers without being disinfected. To determine whether or not this confidence in well water is justified, the bacteriological data from the raw well water samples in the CWSS were analyzed. These data are presented in Table 13.

The three characteristics of bacteriological quality of well water that stand out in this survey are: 9 per cent of the wells produced water containing coliform bacteria; 2 per cent of the wells produced water containing fecal coliform; and 83 per cent of the wells produced water containing bacteria as measured by plate count.

Most of the wells having total coliform or fecal coliform densities greater than .04 ml were constructed or so located as to make contamination of the water a not-too-unexpected result. Examples of these included: "horizontal wells" that are driven or drilled into the side of a hill and are difficult to protect; and wells in consolidated formations in poorly drained, inhabited areas.

While bacteria enumerated by plate count does not usually have a direct health significance, heavy growths of bacteria and other microorganisms do indicate the potential for contamination. Also, research findings suggest that high plate counts inhibit the growth of coliform bacteria on laboratory media, thereby obscuring their presence.

Quality of Distributed Water— Overall Water Quality

Chemical and bacteriological samples were collected and analyzed from two or more points in the distribution systems of the water supply systems surveyed. The results for each constituent were then averaged to obtain a measure of the quality of the drinking water delivered by that water supply system. The concentration of the individual constituents was then com-

pared to the Constituent Limits to determine whether or not they exceeded the limits. The number of water supply systems exceeding each limit is presented in Table 14. In addition, to assess how many water supply systems had multiple water quality problems, the number of systems that exceeded a given constituent limit plus at least one more is indicated.

These data indicate that the concentrations of only five constituents, alkyl benzene sulfonate, strontium-90, boron, silver, and cyanide (concentration may have decreased during transportation to the laboratory) were not above the limits of the DWS. In the recommended category, the expected problems with iron, manganese, and total dissolved solids is demonstrated, but few water supply systems exceeded the sulfate and chloride limits. This occurred in spite of the number of ground water sources surveyed. Some water supply systems were attempting to reduce the iron and manganese content of their delivered water by aeration. Of the 45 systems aerating, 87 per cent were judged adequate by the field engineers.

A significant number of systems delivered water with high turbidity, which could cause problems with disinfection. Other systems had high concentrations of nitrate, particularly in the ground water supplies of Southern California.

Many multiple water quality problems are evident in the recommended portion of Table 14. Here, considering each constituent separately, in every case, except for copper or CCE, more than 50 per cent of the systems that exceeded a given constituent limit also exceeded the limit of some other constituent. Overall, about 30 per cent of the 238 water supply systems exceeding at least one recommended Constituent Limit, exceeded more than one recommended Constituent Limit.

TABLE 14
Number of Water Supply Systems Where Average Delivered Water Exceeded Specific Constituent Limits

Constituent	Number of Systems Exceeding Constituent Limit	Per Cent of All Water Supplies in Study	Number of Systems Exceeding One or More Additional Constituent Limit
Recommended			
Alkyl benzene sulfonate (ABS)	0	0	0
Arsenic	2	<1	2
Boron*	9	1	9
Chloride	9	1	9
Color	7	1	5
Copper	11	1	4
Carbon-chloroform extract (CCE)**	12	1	2
Cyanide	0	0	0
Fluoride	52	5	35
Iron	96	10	52
Manganese	90	9	45
Iron and/or manganese	159	16	56
Nitrate	19	3	15
Radium-226	6	1	5
Strontium-90	0	0	0
Sulfate	25	3	25
Total dissolved solids (TDS)	95	10	62
Turbidity	26	3	17
Zinc	1	<1	1
Mandatory			
Arsenic	2	<1	1
Barium	1	<1	0
Boron*	0	0	0
Cadmium	3	<1	3
Chromium (hexavalent)†	4	<1	4
Coliform organisms	120	12	34
Cyanide	0	0	0
Fluoride	24	2	17
Gross beta activity	0	0	0
Lead	14	1	6
Selenium	5	1	5
Silver	0	0	0

* Proposed for inclusion in the Drinking Water Standards.

** Measured in only 110 selected supplies, including 94 surface supplies.

† During this survey total chromium was measured and compared to the standard.

In the mandatory category, the presence of coliform organisms in densities greater than the standard was the major problem. This will be treated in detail later in this sub-section. The presence of the heavy metals such as cadmium, chromium and lead in a significant number of systems was somewhat surprising because these have

mandatory limits. Apparently, some waters are aggressive enough to cause dissolution of these metals from the distribution piping. The occurrence of metal concentrations exceeding limits was more prevalent in waters with relatively low pH and specific conductance. Therefore, a need exists for more specific evaluation of the interrelationship between water stability and piping.

The average water quality of a water supply system is a legitimate measure of its overall performance, but consumers do not drink the average water, they drink water from a specific tap. In sampling various places in the water supply systems during the study, some very poor quality water was discovered. Each of the 2,595 samples collected at a consumer's tap, *de facto* glasses of drinking water, was checked to see whether or not it exceeded any Constituent Limit. In addition, the population equivalent (population served by the system divided by the number of distribution samples taken in the system) of each glass of water tested was determined. This analysis showed that 36 per cent of the samples tested exceeded at least one constituent limit and the population served the equivalent water was 2.9 mil, 16 per cent of the survey population. This shows that a sizable portion of American consumers are not receiving water that meets Drinking Water Standards.

Table 15 indicates that over 8 per cent of these distribution samples exceeded the constituent limit for coliform organisms, total dissolved solids, manganese, or iron, while over 4 per cent of the samples exceeded the recommended fluoride limit. Overall, 30 per cent of the samples drawn at the tap had concentrations of chemicals that exceeded one or more DWS limit.

Based on per cent of survey population exposed, however, the order of major problems was as follows:

Constituent	Per Cent of Survey Population Exposed to Water Exceeding Limit
Manganese	5
Iron	4
Total dissolved solids	3
Coliform organisms	2
Lead	2
Nitrate	1
Turbidity	1
CCE (organics)	1

This listing indicates that the order of prevalence is different when using population exposed than when using per cent of samples or per cent of systems (Tables 14 and 15).

Of the items included in the DWS and measured in the survey, only alkyl benzene sulfate, cyanide, silver, strontium-90, and gross beta activity were not encountered by some consumer in excessive quantities. Finally, as shown by the maximum concentration in Table 15, the following constituents were found in someone's drinking water at a concentration exceeding the limit by 10 times or more: arsenic (recommended limit), iron, manganese, radium-226, turbidity, cadmium, coliform organisms, and lead. This again demonstrates that although 59 per cent of the water supply systems met the Drinking Water Standards on the average, at some locations in the systems surveyed, very poor quality water was found.

Coliform Organism Densities

Water Quality. The mandatory constituent limit most often exceeded in the CWSS was the coliform organism density limit. The limit was exceeded in 120 systems, 12 per cent of the survey total. Tables 16, 17, and 18 show how these data were related to source, size, and geographical distribution, respectively.

Table 16 indicates that the largely inadequately treated and unprotected spring supplies had the highest percentage of systems exceeding the limit, while the mixed well and spring sources were next. Well sources, although 67 per cent unchlorinated, show a relatively low percentage exceeding the limit.

As expected, the smallest communities had the poorest record with respect to coliform densities (see Table 17). This was confirmed by examination of the bacteriological records in the state and local health departments. Surprisingly, the systems serving the 10,001 to 25,000 population group were also poor. These communities must be large enough to attempt to treat a surface source, but too small to be able to properly accomplish the necessary treatment.

Table 18 shows that the combination of small communities and untreated springs in Region I caused 29 per cent of all the supplies there to exceed the coliform density limit. In the entire

CWSS, 52 per cent of all the systems exceeding the coliform density limit were in Region I. Although Region IX also has a number of non-disinfected sources, these are wells and therefore their coliform density data are much better than Region I. The four systems exceeding the coliform density limit in Region VIII were all small, less than 600 population. Three of these systems did not adequately disinfect.

Disinfection Practice. Because coliform organisms and pathogens can be removed by adequate disinfection, the coliform density findings of the CWSS as related to disinfection practice is of interest. About one-half of the supplies studied reported that they did not disinfect their water, while the other half reported that they attempted disinfection. Table 19 compares the total coliform content and the fecal coliform content in the distribution systems of water supply systems that do and do not disinfect their water.

To examine the influence of disinfection practice on various waters, these data were divided into five source types. They show, as anticipated, that in all types a reduction in the per cent of the systems exceeding the coliform density limit occurred when disinfection is practiced. Similar reductions also occurred in the fecal coliform content of samples taken from water supply systems that practice disinfection. Note that this table again shows the generally poor bacterial quality of spring sources. In most cases, the mere practice of disinfection did not completely remove all of the total coliform or fecal coliform from the distributed water. However, as seen from the footnote of Table 19, most of these positive results occurred in systems that disinfect, but do not maintain a chlorine residual throughout the distribution system.

The importance of maintaining a chlorine residual, if coliform organisms are to be eliminated from distribution system samples, is presented in Table 20. In this table, the per cent of samples (one water supply system may have several samples associated with it) showing the presence of total coliform is presented. Although the practice of chlorination causes a dramatic decline in the per cent of the samples showing the presence of total coliforms, these organisms are not eliminated merely by claiming that chlorination is

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TABLE 15
Number of Distribution Samples Exceeding Constituent Limits
(Based on 2595 distribution samples)
All data are in mg/l except as noted.

	Constituent Limit	Maximum Concentration Found	Number of Samples Exceeding Limit	Per Cent Exceeding Limit
Recommended				
ABS	0.5	0.41	0	0
Arsenic	0.01	0.10	10	0.4
Boron*	1.0	3.28	20	0.8
Chloride	250	1950	31	1.2
Color	15 un.	49	17	0.7
Copper	1.0	8.35	42	1.6
CCE	0.200	0.56	33	1.2*
Cyanide	0.01	0.008	0	0
Fluoride	Varies	4.40	118	4.5
Iron	0.3	26.0	223	8.6
Manganese	0.05	1.32	211	8.1
Nitrate	45	127	53	2.1
Radium-226	3 pCi/l	136 pCi/l	16	0.6
Strontium-90	10 pCi/l	4 pCi/l	0	0
Sulfate	250	770	47	1.8
TDS	500	2760	219	8.5
Turbidity	5 un or 1 un**	53 un.	60	2.4
Zinc	5	13.0	8	0.3
Mandatory				
Arsenic	0.05	0.10	5	0.2
Barium	1.0	1.55	2	<0.1††
Boron*	5.0	3.28	0	0
Cadmium	0.01	3.94	4	0.2
Chromium (hexavalent)†	0.05	0.079	5	0.2
Coliform organisms	1/100 ml	2,000/100 ml	228	8.8
Cyanide	0.20	0.008	0	0
Fluoride	Varies	4.40	55	2.2
Gross beta activity	1,000 pCi/l	154 pCi/l	0	0
Lead	0.05	0.64	37	1.4
Selenium	0.01	0.07	10	0.4
Silver	0.05	0.03	0	0

* Proposed for inclusion in the Drinking Water Standards.

** Treated by more than disinfection.

† During this study total chromium was measured and compared to the standard.

†† These constituents were evaluated only on selected samples. The remainder were assumed not to exceed the limit.

practiced. Unless chlorine residual was maintained in the distribution system, a significant per cent of the distribution samples showed the presence of total coliform. These organisms were nearly completely eliminated in systems that showed a trace of chlorine residual or greater.³

Fluorides

The Public Health Service suggests an optimum level of fluoride for all public water supplies as an effective public health measure to prevent tooth decay. As stipulated in the DWS, the optimum concentration is based on the annual average maximum daily air temperature for the given community and varies from 1.2 mg/l in cooler regions of the country to 0.7 mg/l in the warmer areas. Fluoride concentrations in public water supplies greater than

twice the optimum level constitutes grounds for rejection of the supply (see Table 5). Excessive fluoride in drinking waters can produce objectionable dental fluorosis, while the reduction of as little as 0.3 mg/l of fluoride below the optimum level can noticeably reduce the dental health benefits. Fluoride levels in water supply systems must, therefore, be evaluated with respect to excessive fluorides as well as sub-optimum levels.

In this survey, only 104 water supply systems were providing drinking water containing the acceptable range (see Table 1 of the DWS¹) of concentration of fluoride. Many supplies contain a natural source of fluoride, of these, only 47 happen to have an acceptable range of fluoride concentration, while 28 exceed the recommended limit and 24 exceed the man-

datory limit. Three supplies did attempt to defluoridate, but only 1 was successful.

Fluorides were added purposefully to 41 supplies, but 14 of these were not adding enough to have the average of all system samples in the acceptable range. One system was even adding somewhat over the recommended limit.

The other 30 systems that were providing water within the acceptable range of fluoride concentration were buying it from another system that had a natural or man-fed source. Obviously, better control of feeding fluorides is necessary to achieve the full benefit of this additive. The survey indicated that of the 41 systems fluoridating, only 23 were manned by a certified operator or professional engineer.

Because 24 water supply systems were distributing water exceeding the mandatory fluoride limit at the time of the survey, greater effort should be made by the industry to defluoridate so that any possibility of fluorosis in these communities is avoided.

Organics

Water Quality. The Drinking Water Standards recommended that the carbon-chloroform extractables (CCE) in a water supply should not exceed 0.200 mg/l where more suitable supplies exist or can be made available. Table 21 indicates that nearly 90 per cent of the selected supplies tested for organics had CCE concentrations less than 0.200 mg/l. In spite of these results, one of the most prevalent consumer complaints reported by the operators during the CWSS was tastes and odors. This may have been caused by the reaction of chlorine with organics that produces accentuated chlorinous tastes and odors. Proper treatment with oxidants or adsorbents would minimize this problem.

As another indication of the taste and odor problem, about 20 per cent of the surface source systems were practicing taste and odor control. Of these, 82 per cent were adequate in the judgment of the field survey team.

Sampling. Currently (1970), quality control is poor because the carbon adsorption method (hereafter called CAM) for monitoring only recovers a low percentage of the organic substances from water. First, it does not adsorb all of the organics present; and second, a large portion of those adsorbed are not removed by the

TABLE 16

Type of Water Supply Systems That Exceeded the Coliform Density Limit

Type of System	Number of Systems	Number of Systems Exceeding	Per Cent Exceeding
Surface and mixed source	166	26	16
Spring source	80	30	37
Well source	496	41	8
Mixed well and spring			
wholesale source	37	11	30
Finished source	106	5	5
Special systems	84	7	8
Totals	969	120	12

chloroform extraction. This indicates the need for a better method to collect and measure the organics in drinking water.

A second problem in the area of organic sampling is the recovery of the organics from the water in unchanged form. The CAM can be used as a gross indication of the concentration of organics in water, but the residues recovered are not always in their original form, but may be altered by the use of solvents and heat. A need exists to recover the organics in an unchanged form if they are to be identified and used in determining their toxicity via animal experiments.

Pesticides. During the CWSS, 160 samples were taken for pesticide analysis from surface sources and other selected supplies. Seven samples contained measurable quantities of pesticides. These were: Lindane—0.16 and 0.20 $\mu\text{g/l}$ (proposed standard, 56 $\mu\text{g/l}$); Dieldrin—0.10 $\mu\text{g/l}$ (proposed standard, 17 $\mu\text{g/l}$); Heptachlor—0.20 and 0.20 $\mu\text{g/l}$ (proposed standard, 18 $\mu\text{g/l}$); Aldrin—0.10 $\mu\text{g/l}$ (proposed standard, 17 $\mu\text{g/l}$); and Chlordane, 0.22 $\mu\text{g/l}$ (proposed standard, 3 $\mu\text{g/l}$). An

additional 80 showed a trace (detectable, but not measurable concentration) of one or more pesticides.

Control of Health Hazards

Health hazards defined in the PHS Drinking Water Standards¹ are, "any conditions, devices or practices in the water supply system and its operation which create, or may create, a danger to the health and well-being of the water consumer." Detection of such health hazards requires a careful survey of the entire water supply system.

This section will summarize all the health hazards uncovered during the CWSS.

The health hazards found are divided into five categories: 1) source; 2) treatment; 3) distribution systems; 4) surveillance; and 5) personnel. For comparative purposes, some of the system deficiencies, which cause health hazards, reported previously, will also be included here. The deficiencies found during this survey in the five categories noted above are presented in Tables 22, 23, and 24. These data indicate that over one-half of the identified deficiencies occurred in greater than 20 per cent of the plants surveyed. This indicates the prevalence of a wide variety of health hazards in water treatment systems.

Two general areas of health hazards that are present in a high percentage of systems are those in distribution systems and those caused by inadequate surveillance. These two, along with operator training, which could be easily improved, will be discussed in detail.

Cross Connection Control

The control of cross-connections is possible through knowledge of the problem and vigilance in preventing unprotected connections from occurring. Fifty-four per cent of the community

water supply systems surveyed did not have a cross-connection control ordinance and about 90 per cent of the water supply systems had no program or were not effectively implementing any existing ordinance. While many (43 per cent) of the community water supply systems were attempting to control cross-connections on new construction, 89 per cent of the communities surveyed had no program for continuous reinspection for cross-connection hazards. Although control of the hazard should begin at the treatment plant, common division walls between finished and lesser quality waters were observed in 6 per cent of the water systems providing treatment. A progressive program to control cross-connections was evident in only 13 per cent of the community water supplies surveyed.

Surveillance

To prevent health hazards from developing in a water supply system, someone not associated with the supply should review operation procedures and the adequacy of physical facilities on a regular basis. These sanitary surveys should be at least as detailed as the reviews made during the Community Water Supply Survey, and may be more time-consuming depending on the complexity of treatment and the capabilities of the operators.

During the CWSS, data were gathered on the dates of the most recent sanitary surveys. The data are shown in Table 25. The year 1968 was singled out as it was the last full calendar year preceding the survey.

CWSS engineers averaged 1.2 man-days per supply for field work. This single-visit time investment did not include making arrangements for the field work or the preparation of written reports of their findings. Moreover, it did not include the all-important follow-up work with the local officials developing improvement programs and operator training and certification which are so necessary if the surveys are to be effective in securing proper facilities and effective operations.

An estimate of the national need for additional engineers in state and local health departments for water supply surveillance is:

Assumptions—

1. 19,236 water supplies
2. 4 man-days required per supply for plan review, meetings with govern-

TABLE 17

Water Supply Systems in Various Population Sizes Where Delivered Water Exceeded the Coliform Density Limit

Population Range	Number of Systems	Number of Systems Exceeding	Per Cent of Systems Exceeding	Per Cent of Survey Population Exceeding
≤ 500	446	79	18	15
501-5,000	315	29	10	8
5,001-10,000	75	5	7	7
10,001-25,000	59	5	9	7
25,001-50,000	36	1	3	3
50,001-100,000	16	1	6	6
> 100,000	22	0	0	0
Totals	969	120	12	2

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TABLE 18

Regional Distribution of Water Supply Systems Where Delivered Water Exceeded the Coliform Density Limit

DHEW Region	Number of Systems	Number of Systems Exceeding	Per Cent Exceeding
I	218	63	29
II	221	12	5
III	30	2	7
IV	22	0	0
V	66	0	0
VI	88	8	9
VII	26	0	0
VIII	20	4	20
IX	278	31	11
Totals	969	120	12

ing bodies, surveys, report writing, training, etc.

3. 225 man-days equals 1 man-yr

4. Personnel costs

salary \$12,000

fringe benefits 2,500

travel 2,000

office supplies 500

office space 500

† secretary 2,000

total \$20,000

5. 21 per cent of supplies now being surveyed annually

$19,236 \times 0.79 \times 4 \text{ man-days} \times 1/225 = 270 \text{ men}; 270 \text{ man-yr} \times \$20,000 = \$5.4 \text{ mil/yr.}$

The average annual cost of surveillance per supply would be $4/225 \times \$20,000 = \text{approx. } \350 .

Aside from costs for production quality control by the plant personnel,

two other additional costs associated with surveillance are the laboratory costs for the additional bacteriological and chemical analyses required to meet the 1962 USPHS Drinking Water Standards. Examination of 10 per cent of the systems in the CWSS chosen at random showed that these systems averaged 20 bacteriological samples per year below the DWS. Assuming a laboratory cost of \$10 per sample and 19,236 water supply systems in the country, \$3.8 mil per year is needed for these additional analyses. In the area of chemical analysis, only 10 per cent of the systems surveyed measured the concentration of the constituents in Table 5 during the previous year. The 1962 USPHS Drinking Water Standards state, "Under normal circumstances, analyses for substances listed below (essentially Table 5) need only be made semiannually." Taking a laboratory cost of \$150 to determine all of these constituents, an approximate cost of \$5.2 mil/yr is needed for these analyses. Summing these three surveillance costs yields a figure of approximately \$14 mil to upgrade the nation's surveillance program.

Operator Experience and Training

The engineer making the water supply survey obtained information on the experience and training of the principal operator at the treatment facility. This was the person whose wrong acts or failures to act could adversely affect water quality.

TABLE 20

Influence of Chlorine Residual on Bacteriological Quality of Distributed Water

Type of System	Per Cent of Samples Showing Positive Coliforms		
	Unchlorinated Systems	All Chlorinated Systems	Chlorinated Systems that Maintained a Chlorine Residual
Surface water source	93	6	2
Mixed ground and surface water source	54	9	6
Spring source	36	9	0
Well source	11	3	0
Mixed spring and well source	43	26	0
All types	17	6	2

The results are presented in Table 26. The basic education level is relatively high. Only 16 per cent failed to finish high school. However, 61 per cent reported they had no water treatment training at the short school level or higher. Training was markedly lacking in microbiology and chemistry. Assuming that on-the-job training is how-to-do-it rather than the learning of fundamental why-we-do-it concepts, 77 per cent were deficient in microbiological training, and overall 72 per cent in chemistry (not shown in table). Chemistry training responses from facilities having more than disinfection treatment are more meaningful than overall figures. Forty-six per cent of those operators were deficient in chemical training. Also note that 11 per cent considered their staff lacking in water treatment knowledge. These untrained personnel are often unaware of the hazards to the consuming public that might result when water of substandard quality is produced. As an example, 9 per cent of the supplies using gas chlorination reported interruptions to the disinfection process while changing cylinders, a completely unnecessary hazard to the consumer.

Of interest to the water supply industry is the 43 per cent of the operators reporting more than 20 yr experience. Their replacement represents a large manpower need during the next few years as they reach retirement age. Twenty per cent of the operators reported less than 2 yr water purification experience, so it appears new men are entering the field and there should be no personnel shortage.

TABLE 19

Bacteriological Quality of Distributed Water Related to Chlorination Practice

Type of System	Chlorination Practiced	Number of Systems	Per Cent of Systems Exceeding Coliform Limit	Per Cent of Systems Containing Fecal Coliforms
Surface water source	No	11	64	64
	Yes	180	7*	7*
Mixed ground and surface water source	No	4	100	100
	Yes	50	14*	0
Spring source	No	62	39	32
	Yes	12	17*	8*
Well source	No	394	8	2
	Yes	204	5*	<1*
Mixed spring and well source	No	27	41	33
	Yes	11	27*	27*
All types	No	498	16	7
	Yes	456	8*	4*

* Almost all of these systems had no chlorine residual in the distribution system.

TABLE 21
Carbon-Chloroform Extract Data

Type of System	Number of Systems Sampled of this Type	Per Cent Exceeding Limit
Well source	12	8
Mixed ground and surface source	4	0
Surface source	94	11
All types	110	10

TABLE 22
Deficiencies Related to Health Hazards—
Treatment and Source

Source	Per Cent* of Systems
Inadequate quantity (922)	9
Restricted water use (900)	19
Deteriorating surface raw water quality (124)	26
Inadequate source protection (496)	19
Treatment	
Plans and specs. not inspected by the state (655)	29
By-pass possible (375)	52
Common walls (613)	6
Inadequate clarification beyond disinfection (162)	24
Inadequate control of clarification beyond disinfection (162)	36
Inadequate disinfection (311)	50
Inadequate control of disinfection (311)	22
Inadequate records (872)	44
Inadequate maintenance (901)	20

* Per cent with deficiencies calculated on basis of supplies where applicable—number in parenthesis.

TABLE 23
Deficiencies Related to Health Hazards—
Distribution Systems

Distribution	Per Cent* of Systems
Pressure less than 20 psi (969)	26
Inadequate distribution facilities (845)	9
Uncovered finished water reservoirs (806)	14
No chlorine residual in distant part of distribution system (457)	57
No disinfection of new or repaired mains (879)	51
No cross-connections control ordinance (854)	54
No effective cross-connection control program (837)	87
Cross-connection control limited to new construction only (889)	43
No cross-connection control program for continuous re-inspection (879)	89
Inadequate progress in cross-connection control (826)	89
Inter-connected with other water systems of unknown quality without protection (742)	6

* Per cent with deficiencies calculated on basis of supplies where applicable—number in parenthesis.

providing compensation and job opportunities are attractive enough to retain them. Only 23 per cent of these short-time experience operators are employed full-time by the water utility, which is disquieting. Some of them are full-time municipal employees having responsibilities in sewage treatment, building inspection, street maintenance or other departments. Others, employed by investor-owned companies, operate two or more water supplies for their employer. Still others plan to make water supply their career, but are merely new employees. No data collected to permit an estimate of their number, however. Thus, the CWSS shows that 43 per cent of the operators have more than 20 yr experience and are approaching retirement, and only 5 per cent of the operators are new to the field (less than 2 yr water purification experience) and working full-time to operate their supplies.

The 37 per cent earning less than \$2,000/yr include most of the part-time operators. With about half the operators reporting earning between \$2,000 and \$7,500/yr and only 16 per cent making more than \$7,500 (29 per cent of the full-time operators), compensation may be an important factor in operator retention.

Effect of Size on Operation and Water Quality

The data from the CWSS suggests some benefits that may accrue from regionalization of water supplies. The first benefit would be reduced costs of health department surveillance. The CWSS included 547 systems that served less than 1,000 persons and 214 that served 1,000 to 5,000 persons. Although many of the small systems served isolated towns and subdivisions, the small systems are numerous enough to offer some possibility of mergers, reducing health department needs for men and money by 4 man-days, and \$350 each year per system eliminated.

Table 27 compares data relating to laboratory control of treatment, experience and demonstrated capabilities of operators, and the water quality records for the previous year of record by population groups.

Table 27 indicates that the larger systems provide better laboratory control, attract and hold better operators and have an increased probability of meeting the bacteriological surveillance criteria. Therefore, if smaller

TABLE 24
Deficiencies Related to Health Hazards—
Surveillance and Personnel

Surveillance	Per Cent* of Systems
Does not meet bacteriological surveillance standards (969)	90
No sanitary survey within the last 3 yr (969)	64
Personnel (Chief Operator)	
Less than short school level training (969)	61
Inadequate bacteriological training (969)	77
Inadequate chemical training (162)	46

* Per cent with deficiencies calculated on basis of supplies where applicable—number in parenthesis.

TABLE 25
Analysis of Date of Last Sanitary Survey

Population Served	Per Cent of Supplies Reporting Sanitary Surveys During:			
	1968	1967-69	1960-66	Never or Did Not Know
≤ 500	13	26	8	66
501-5,000	22	40	10	59
5,001-10,000	33	44	8	48
10,001-25,000	38	51	3	46
25,001-50,000	24	41	5	54
50,001-100,000	19	50	12	38
> 100,000	37	60	15	25
All supplies	21	36	8	56

towns are close enough together to make their merger feasible, they might perform more like the larger communities shown in Table 27. This improvement in operation would benefit their customers, as well as ease the burden of surveillance that is presently on the state and local health departments.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

To investigate public water supply systems in the US, the Bureau of Water Hygiene, Environmental Health Service, of the PHS, with the cooperation of state and local health departments, and water utilities, conducted a nationwide Community Water Supply Survey (CWSS) during 1969 in eight geographically distributed Standard Metropolitan Statistical Areas and the State of Vermont. The survey included 969 water supply systems serving about 18.2 mil people and was designed to assess the status of: A) drinking water quality; B) water sup-

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ply system facilities; and C) bacteriological surveillance programs in urban and suburban areas in nine regions of the country.

The following are the principal findings of the survey.

Drinking Water Quality

1. To determine the quality of the drinking water in the 969 communities surveyed, samples were taken at various places in the distribution systems. The data were averaged for each system and constituent concentrations compared to bacteriological,

TABLE 28
Summary of Water Quality Evaluation

	Population Group Served			
	500 or Less	501-100,000	Greater than 100,000	All Populations
Number of systems:	446	501	22	969
Evaluation of systems:	Per Cent of Systems			
	50	67	73	59
	26	22	27	25
	24	11	0	16
	88	4,552	13,463	18,203

TABLE 26

Operator Experience and Training
(All numbers are per cent of responses)

Item	Per Cent
Education level—high school or better	84
Water treatment training—short course or better	39
Number of previous positions—None	58
Training in sanitary microbiology—None	63
On-the-job	14
Training in chemistry (systems with more than disinfection)	
At short school or higher level	54
None or on-the-job	46
Full time operators	47
Staff adequate in (operator's opinion)	
Number	83
Knowledge	89
Salary	
\$7,500/yr or less	84
\$2,000/yr or less	37
Operators with more than 20 yr experience	43
Operators with less than 2 yr experience	15
Operators with less than 2 yr experience who are also part-time operators	95

TABLE 27

Effect of Size on Operation and Water Quality*

Item	≤ 1,000	1,001-5,000	> 50,000
Supplies having bacteriological laboratory	2	7	73
Supplies with operators having more than 5 yr experience	53	75	94
Supplies with certified operators	11	39	88
Supplies that met the bacteriological criteria 11 of the previous 12 months of record	7	12	24

* All data calculated as per cent of responses to the individual questions.

chemical, and physical constituent limits of the 1962 USPHS Drinking Water Standards.¹ On this basis, only 59 per cent of the systems delivered drinking water that met the Drinking Water Standards. Additionally, 25 per cent of the systems delivered drinking water that exceeded at least one of the DWS "recommended limits" but did not exceed any of the DWS "mandatory limits." Finally, 16 per cent of the systems delivered drinking water that exceeded one or more of the DWS mandatory limits.

2. The smaller systems had more difficulty in delivering water with satisfactory quality than the larger systems. As shown in the summary table below, this was particularly true of the many systems serving 500 people or less.

3. While 572 systems (59 per cent of the survey total) delivered water with a quality on the average that met the DWS, people do not drink the average water, they drink from a specific tap in their home where the water quality is sometimes adversely affected by household plumbing. To determine the quality of water used, 2,595 individual samples were taken throughout the survey areas at a consumer's tap, which were essentially glasses of drinking water; 930 (36 per cent) of these contained one or more constituents with a concentration that exceeded the DWS limits. Each tap sample in the survey had a population equivalent equal to the community population divided by the number of distribution samples taken from that community. On this basis, 2.9 mil people, 16 per cent of the survey population, were being served water from a tap containing substances that exceeded at least one DWS limit. Five per cent of the survey population

were served water from a tap containing substances that exceeded at least one mandatory DWS limit.

4. Eighty-two (68 per cent) of the 120 water supply systems that exceeded the coliform organism density limit, which indicated disease potential, were from poorly protected or inadequately treated spring, well, and mixed spring and well sources. Additionally, 108 of these 120 systems (90 per cent) that exceeded the coliform density limit served a population of 5,000 or less. Finally, 63 of these 120 systems (53 per cent) exceeding the coliform density limit were located in the State of Vermont where disinfection was not frequently practiced or was inadequate. Even in the metropolitan areas surveyed, 57 of the 751 supplies (7.6 per cent) also exceeded the coliform density limit.

5. The presence of coliform organisms at a level above the DWS limit in 120 systems indicates that better source protection or disinfection should be instituted as soon as possible. State or local regulatory agencies should establish a policy of mandatory disinfection unless they can provide technical assistance to assure adequate protection of ground water sources.

6. Of the 496 water supply systems using well sources, 43 per cent exceeded the DWS limits. This was caused by the relatively high occurrence of iron, manganese, fluoride, total dissolved solids, and nitrates. Most of the high nitrates originated in ground water systems in California. The supplies that exceeded the optimum fluoride range were mainly small, but they are scattered throughout several regions.

Certain constituent limits were exceeded more often than others, but based on an average of all samples

TABLE 29
Principal Constituent Limits Exceeded
in 969 Systems

From Recom- mended List	No. of Systems on average Exceeding Limit	From Mandatory List	No. of Systems on average Ex- ceeding Limit
Iron	96	Coliform organisms	120
Total dissolved solids	95	Fluoride	24
Manganese	90	Lead	14
Fluoride	52		
Sulfate	25		
Nitrate	19		

TABLE 30
Facility Deficiencies

	Population Group Served			
	500 or Less	501- 100,000	Greater Than 100,000	All Pop- ulations
Number of systems	446	501	22	969
Per Cent of Systems				
No major de- ficiencies	39	47	64	44
Some major de- ficiencies	61	53	36	56

TABLE 31
Bacteriological Surveillance

	500 or Less	501- 100,000	Greater Than 100,000	All Pop- ulations
Number of Systems:	446	501	22	969
Per Cent of Systems				
Met criteria	4	15	36	10
Did not meet criteria	95	85	64	90

from each system, the principal ones are shown in Table 29.

The frequency of high fluoride and nitrate concentrations indicates available technology for removal is not being employed, thus additional engineering research should be conducted to simplify and lower the cost of reducing the concentrations of these and other inorganics, especially from small systems.

7. One of the most common consumer complaints reported by the operators was from tastes and odors. Because no practical way exists to conduct odor tests on shipped samples, there was no effective method to quantify such information during this survey. Therefore, techniques should be developed

for identifying and measuring organics and other substances that cause tastes and odors. This would also permit the improvement of treatment processes to remove these materials.

Inasmuch as tastes and odors remain a common complaint in public water supplies, more effort should be made to employ the present technology of oxidation and adsorption to control or remove these troublesome constituents. Further research is needed to reduce the cost of such treatment to make it more practical and acceptable.

8. Techniques for collecting and measuring low concentrations of specific toxic organics, as well as those that cause tastes and odors, are inadequate, but the semiquantitative carbon chloroform extract (CCE) method does allow for the general characterization of some organics in water, so it was used on 94 surface supplies. Eleven per cent of these supplies exceeded the recommended limit of 200 µg/l.

Water Supply System Facilities

1. To determine the status of the facilities used to treat, distribute, and store public drinking water, site surveys and interviews with operators were conducted regarding the water supply system. Based on this information, 44 per cent did not have any "major deficiencies," while 56 per cent were deficient in one or more of the following: source protection; disinfection or control of disinfection; clarification (removal of suspended matter) or control of clarification; and pressure in the distribution system.

2. The data in Table 30 indicates that small systems have more facility deficiencies than the larger ones, but all sizes of systems have some improvements to make.

3. Of the 80 spring and 37 mixed spring-well sources where no disinfection was practiced, 40 per cent were poorly protected. This problem occurred mainly in towns with a population of 500 or less, and particularly in the State of Vermont. This is one of the five survey areas that reported some waterborne disease outbreaks in recent years.

4. Disinfection was found inadequate in 17 per cent of the towns with populations of 25,000 people or less. Overall, 155 systems (16 per cent of the survey total) failed to disinfect properly. Where a chlorine residual was maintained in the distribution system,

virtually no coliform indicator organisms were found.

5. Three out of the 22 systems serving over 100,000 population did not have adequate clarification.

6. Inadequate pressure (<20 psi) in the distribution system was found in 32 per cent of the 446 systems serving 500 people or less. Relatively limited areas of low pressure were also reported in 32 per cent of the 38 cities over 50,000 population.

These low-pressure areas were found in many water systems primarily because of deficient pumping, storage, and distribution facilities. Pressure should therefore be monitored at strategic locations in the system and the system improved by installing adequate pumps, reservoirs, and generally strengthening the distribution network to handle peak fire or hot-weather demands.

7. Of the 969 water supply systems, only 104 had an acceptable range of fluoride concentration from either natural or man-fed sources. Three systems of the 52 that exceeded the acceptable range of fluoride attempted to defluoridate, and only one of those was successful.

Bacteriological Surveillance Programs

1. To determine the status of the bacteriological surveillance program over each water supply system investigated, records in the state and county health departments were examined for the number of bacteriological samples taken and their results during the previous 12 months of record. Based on this information, only 10 per cent had bacteriological surveillance programs that met the "criteria," while 90 per cent either did not collect sufficient samples, or collected samples that showed poor bacterial quality, or both.

2. The data on the adequacy of the Health Department bacteriological surveillance programs related to system size are summarized in Table 31 and indicate that in all population groups there was a gross failure to meet the criteria. This was particularly true for smaller systems.

3. Insufficient samples were taken in more than one of the previous 12 months of record from 827 systems (85 per cent of the survey total). Even considering a sampling rate reduced by 50 per cent of that called for in the criteria, 670 systems (69 per

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cent of the survey total) still would not have collected sufficient samples.

The water utility should be responsible for water quality control, but the bacteriological surveillance collection requirements seem to be beyond the capability of most small water systems. A more practical technique must be developed if the public's health is to be protected. If all systems were chlorinated, a residual chlorine determination might be a more practical way of characterizing safety.

4. Analysis of the bacteriological data records for those systems that did some sampling during the previous year of record, revealed that 48 per cent exceeded the coliform density limit² in at least one of the previous 12 months of record.

Other Major Findings, Conclusions, and Recommendations

1. To determine the status of the programs to control health hazards, data were collected on the date of the previous sanitary survey and the status of the cross-connection control program. This information indicated that:

a) The personnel operating the systems reported a sanitary survey was made within the last three years in only 36 per cent of the communities, while the personnel at 56 per cent of the systems said either they did not know when the last sanitary survey was made or that one was never made by state or local health departments.

b) Additionally, cross-connection prevention ordinances, and reinspection of existing construction were lack-

ing in 54 and 89 per cent, respectively, of the water supply systems studied.

2. To determine the adequacy of personnel and their training, each operator was asked a series of questions about the staff. This type of inquiry produced the following main points.

a) Sixty-one per cent of the operators had not received any water treatment training at a short-school level or higher.

b) Seventy-seven per cent of the operators were deficient in training for microbiological work and 46 per cent of those who needed chemistry training did not have any.

c) Finally, many of the operators are only part-time employees and their salaries are very low. Only 29 per cent of the full-time operators earn more than \$7,500 per year, so lack of compensation has much to do with poor employee retention and questionable operation.

3. Smaller sized communities or systems had more water quality problems and facility deficiencies than the larger ones. This makes consolidation or regionalization of some systems advisable. In the metropolitan areas surveyed, many smaller systems are mixed in with the larger systems and their merger would seem feasible where institutional arrangements will permit. Long-range regional planning should help overcome some of the current barriers to consolidation and may even prevent the continuation of small system proliferation. Merging would reduce the cost and improve the qual-

ity of the water delivered. As an initial effort, surveillance services and technical assistance could be provided by one group for several separate systems. Further, preliminary to complete consolidation, an attempt could be made to have a central facility, wholesale high quality treated water to surrounding small communities, where it could be distributed under local management.

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1. In your statement you indicated that non-primacy states have identified overwhelming administrative and financial obstacles that preclude their cooperation in protecting drinking water. Would you elaborate on some of these problems?

The latest estimates indicate that there are 60,000 community water systems and 200,000 additional public water supplies that are to be regulated under the Safe Drinking Water Act. After estimating the costs of monitoring, surveillance, technical assistance, and enforcement procedures in relation to the funds being offered by the federal government to assist in getting the job done, such states as Indiana, Pennsylvania, Oregon, and Wyoming have concluded that they could not afford to take on primary enforcement responsibility. Perhaps a state-by-state survey of these problems would provide a better measure of the cost-benefit of even existing regulations.

