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GASOHOL COMPETITION ACT OF 1979,
S. 2251

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HEARING

BEFORE THE

SUBCOMMITTEE ON

JUST, MONOPOLY AND BUSINESS RIGHTS

OF THE

COMMITTEE ON THE JUDICIARY

AND THE

COMMITTEE ON SMALL BUSINESS

UNITED STATES SENATE

NINETY-SIXTH CONGRESS

SECOND SESSION

ON

S. 2251

MARCH 5, 1980

Serial No. 96-58 B

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REPORT

THE PROGRESS OF THE

The progress of the work during the year has been very satisfactory. The following table shows the results of the various experiments conducted during the year.

The first experiment was conducted on the 1st of January. The results were as follows:

The second experiment was conducted on the 15th of January. The results were as follows:

The third experiment was conducted on the 30th of January. The results were as follows:

The fourth experiment was conducted on the 15th of February. The results were as follows:

The fifth experiment was conducted on the 1st of March. The results were as follows:

The sixth experiment was conducted on the 15th of March. The results were as follows:

The seventh experiment was conducted on the 30th of March. The results were as follows:

The eighth experiment was conducted on the 15th of April. The results were as follows:

The ninth experiment was conducted on the 30th of April. The results were as follows:

GASOHOL COMPETITION ACT OF 1979, S. 2251

WEDNESDAY, MARCH 5, 1980

U.S. SENATE,
SUBCOMMITTEE ON ANTITRUST, MONOPOLY
AND BUSINESS RIGHTS,
COMMITTEE ON THE JUDICIARY,
AND THE SELECT COMMITTEE ON SMALL BUSINESS,
Washington, D.C.

The select committee and subcommittee met, pursuant to notice, at 1 p.m., in room 2228, Dirksen Senate Office Building, Senator Howard M. Metzenbaum (chairman of the subcommittee) presiding.

Present: Senators Metzenbaum, Culver, Thurmond, Dole, Stewart, Levin, Huddleston, Nelson, Schmitt, and Pressler.

Also present: Antitrust Subcommittee: Margery Baker, counsel; Marilyn Falksen, chief clerk; Kevin Callahan, research assistant; Peter Chumbris, minority chief counsel. Select Committee on Small Business: W. Joseph Lanham, minority economist; Corey Rosen, professional staff member, and Bob Dotchin, minority staff director.

OPENING STATEMENT OF SENATOR METZENBAUM

Senator METZENBAUM. The meeting will come to order.

Today we begin hearings on S. 2251, the Gasohol Competition Act, an act that is cosponsored by 18 other Members of the Senate, besides myself.

I want to begin by expressing my dismay at the fact that this legislation had to be introduced. It is no secret that this Nation is dangerously dependent on costly and unreliable sources of foreign oil; so much so that we have in recent weeks heard talk of war to defend the oil fields of the Persian Gulf. In response to our excessive foreign oil dependence, the Congress has earmarked billions for the development of alternative energy sources, solar, geothermal, coal, and above all, synthetic fuels.

We have seen crude oil and natural gas prices deregulated at staggering costs to the American consumer in the hope that somehow, some way, the higher prices would call forth more domestic production. The people of this country have been subjected to a massive oil company advertising campaign designed to convince them that the industry is ready, willing, and able to solve our energy problems.

We all have heard the slogans: "Energy for a strong America," "Working to keep your trust," and so on. It is thus a great irony that we are about to hear testimony on legislation designed to prevent those same oil companies from using their power in the marketplace to inhibit the rapid introduction of gasohol. Gasohol is a made-in-America

fuel whose raw materials are provided through the incomparable productivity of American agriculture. It is a product that is ready now to come on line, and indeed, is on line. The technology exists. We need only move ahead with it. Some production already has occurred. It is an energy source whose production will not require the kind of massive investment needed in the oil industry.

Today's witnesses will tell us of the potential involvement of farm organizations, co-ops, small business, in this promising new field and of their support for this legislation. Gasohol will lessen our dependence on foreign oil. It will provide a market for hard-pressed American farmers. It will to at least a small degree enhance competition in the energy industry. Frankly, I fail to see how any one in this country could be against moving ahead rapidly with gasohol. Yet the sad fact is that with a few notable exceptions the major oil companies have raised obstacle after obstacle to moving gasohol into the market.

In testimony before Congressman Bedell's Special Business Anti-trust Subcommittee, and in the testimony we expect to hear today, gasohol's proponents have painted an almost unbelievable picture of oil company obstructionism. We have heard of threats to terminate the franchises of dealers who market gasohol. We have heard of refusals to permit dealers to accept credit on purchases of gasohol. We have heard of instances of harassment of dealers who decide to market gasohol, by increasing the rents, by accelerating rent collections, by refusing to permit company tanks and pumps to be used for gasohol, by threatening to delay product deliveries. We have also witnessed propaganda campaigns designed to discredit gasohol in the public eye.

It was only in the glare of national publicity that the oil companies have retreated from some of their practices, at least the more blatant ones. But the message is clear to the independent franchisers, who are absolutely dependent on the major companies for supply allocations in order to stay in business. That message is: "Sell gasohol and risk the wrath of your supplier. Sell gasohol and risk having your livelihood cut off." If left unchecked, such tactics by the major oil companies will continue to stifle the development of gasohol as a means of stretching our Nation's scarce fuel resources. We cannot permit the oil companies' self-interest to stand in the way of the product's rapid development.

For this reason, the other 18 Senators and I have introduced this bill, have joined in indicating that we hope to move forward very promptly to pass S. 2251, a bill to prevent major oil companies from raising impediments to the marketing of gasohol. Similar legislation is pending in the House. I hope that we can pass this bill, and I particularly hope that we can do it with the support of the American petroleum industry.

It is my understanding that certain Members of the Congress, if their time schedules permit it, indicated that they desire to be with us today. I am not sure if they are in the audience. Congressman Daschle, we are very happy to have you with us. Congressman, do you mind if I yield to my fellow Senator, Senator Huddleston.

Mr. DASCHLE. Not at all, sir.

Senator METZENBAUM. Senator Huddleston, do you have an opening statement? I am happy to have you with us. I didn't see you sitting there.

STATEMENT OF SENATOR HUDDLESTON

Senator HUDDLESTON. I just slipped in on you, Senator. I want to commend you, Senator Metzenbaum, chairman of the Subcommittee on Antitrust, and, of course, Senator Nelson, chairman of the Small Business Committee, for calling these hearings. I appreciate the opportunity to participate. I commend you on the bill that you just referred to, S. 2251. I would ask that I be added as a cosponsor.

Senator METZENBAUM. It has been done.

Senator HUDDLESTON. The progress which the gasohol industry has made in the past year has been truly astounding and gasohol promises to make a very significant contribution toward solving our energy problems.

The administration and the Congress, I think, have shown our support for developing gasohol's potential through a series of financial incentive programs for potential alcohol producers: There are tax breaks for gasohol and many States are developing their own gasohol incentive programs and acceptance of the new fuel by American consumers has been strong. Gasohol, like conservation, gives each individual American the opportunity to send his own personal message to OPEC that we are determined to make oil dependence a thing of the past. But Government programs and consumer acceptance aren't going to be much if discriminatory marketing practices keep the product from being readily available.

A most blatant example of discriminatory practices against gasohol was the announcement by some of the major oil companies of their intention to prohibit the use of credit cards by individuals purchasing gasohol at their stations. Prudently these companies decided to rescind that prohibition, but only after I and other Senators wrote to the Economic Regulatory Administration urging that regulations be promulgated to prevent such prohibition, only after numerous Senators announced their intention to take legislative action, and only after the Small Business Committee scheduled hearings into the matter. The credit card reversal notwithstanding, we still hear reports of other questionable practices and it is the purpose of these hearings to explore them.

The gasohol industry is still in its formative stages. It is a timely issue to consider what needs to be done to prevent monopolistic and anticompetitive practices from taking hold. Mr. Chairman, I can see the time when virtually no gasoline will be sold in this country that is not at least 10 percent alcohol. It is my personal opinion that that ought to be the objective of this country. I think it can be achieved. I think that gasohol can be produced essentially by using an abundant resource such as coal.

I think the ingredients to make the alcohol are so varied that they can be selected in such a way as not to impose any strain upon our food supply or our ability to produce food. It just does not make sense not to take advantage of this opportunity that is available to us right now to decrease the amount of oil that goes into our gasoline consumption by as much as 10 percent. It ought to go much beyond 10 percent. We can do 10 percent now. Twenty percent is easily attainable, and, of course, we can even go further than that with a few modifications and somewhat of a greater effort.

But the 10-percent gasohol mixture is viable at the present time. It is available to us. It ought to be used. I think any action that anybody takes that stands in the way of accomplishing that objective should be looked upon in a very serious way.

Thank you very much.

Senator METZENBAUM. Thank you very much, Senator Huddleston. I failed to point out that this is a joint hearing of the Antitrust, Monopoly and Business Rights Subcommittee and the Senate Select Committee on Small Business.

Senator Huddleston is a member of that committee. Senator Nelson, who is chairman of that committee, is walking in at this very moment.

Senators Stewart and Levin are also members of the committee.

Senator Nelson, do you have an opening remark you might like to share with us?

Senator NELSON. I have no remarks.

Senator METZENBAUM. You do not.

Senator Levin?

STATEMENT OF SENATOR LEVIN

Senator LEVIN. Mr. Chairman, I do not have a formal opening statement at this time. I will, however, provide one at a later time for the record.

I would like to take this opportunity to indicate my strong support for your bill, S. 2251, which I am privileged to cosponsor and to join in Senator Huddleston's sentiments that alcohol can and will provide us with a long stride on the road to energy independence. We can achieve that goal if we remove the impediments that now exist to gasohol marketing. Hopefully, this bill will remove some of these impediments.

I am a strong supporter of the use of alcohol. I strongly support your bill, Senator Metzenbaum.

[The formal statement of Senator Levin referred to above follows:]

PREPARED STATEMENT OF SENATOR CARL LEVIN

Mr. Chairman, let me commend you on your sponsorship of S. 2251, the Gasohol Competition Act, a bill that will help to remove significant impediments on the marketing of gasohol. As the witnesses appearing at this joint committee hearing today will testify, every aspect of gasohol production is affected if retail gasoline outlets in this Nation are constrained in their attempts to market the product.

It is crucial, Mr. Chairman, that as we begin this hearing we are aware of the significant contribution that gasohol can make to solving America's energy problems. It reduces both our dependence on oil, a nonrenewable fossil fuel, and our reliance on increasingly unpredictable foreign sources of that oil. Realization of gasohol's potential as a motor fuel will help to insulate us from short-term changes in the supply of foreign oil and its ever rapidly increasing price.

The Congress and the President have acted to increase our commitment to the development of both ethanol and methanol production, and provide the economic incentives necessary to speed up the production and marketing of these alcohols and gasohol itself. The Departments of Agriculture, Commerce, and Energy, and the Small Business Administration currently administer a variety of programs designed to provide loans and other forms of financial assistance to farmers, farm cooperatives, private investors, and independent researchers for the development, demonstration, and operation of alcohol and gasohol technologies and production facilities. In addition, the Windfall Profits Tax legislation intends

gasohol's exemption from the 4 cents-a-gallon gasoline excise tax, and provides a 40 cents-a-gallon tax credit to those who use alcohol without blending.

Despite the efforts of the administration, the Congress, and private investors to bring the promise of gasohol to fruition, the major oil companies have continued to place unreasonable demands on their franchised retail dealers who are attempting to market gasohol. We will receive testimony today that retail dealers have been threatened with contract terminations, removal of credit card charging privileges, and supply cutoffs when they have attempted to market gasohol. In those cases where the major oil companies have allowed their retail dealers to market gasohol, that permission is often granted only if costly modifications are made in a station's pumping operation.

Mr. Chairman, I am aware of the concerns expressed by the major oil companies concerning the suitability of gasohol as a motor fuel, and the net energy balance in alcohol production. However, I believe that these unresolved issues are best decided not by the major oil companies, but by elected officials and the American public. We can make informed decisions on these questions only after we develop a significant history of gasohol use in our automobiles, and other gasoline engine vehicles and machinery. We cannot allow the major oil companies to stand in the way of such a determination.

Let me conclude by noting that it is somewhat ironic that at the same time that the major oil companies are placing these roadblocks in front of their retail dealers who wish to market gasohol, many of them are beginning to test market the product. Texaco, for example, has recently initiated a significant gasohol marketing operation here in the Washington, D.C. area. Yet we will receive testimony here today that Texaco is acting to discourage retail dealers not located in one of their targeted areas from marketing gasohol.

As a cosponsor of S. 2251, I share with you, Mr. Chairman, a commitment to the future of America's home grown fuel, gasohol, and the hope that that future will include the broad spectrum of small businessmen, farmers, independent oil jobbers, independent gasoline refiners, and gasoline retail dealers who are acting now to help solve the energy problems that confront this Nation. Thank you.

Senator METZENBAUM. Thank you very much, Senator Levin.

Senator NELSON. Senator Metzenbaum, I have a statement. To just economize on time, I would ask that it be printed in the appropriate place.

Senator METZENBAUM. Without objection, the statement will be inserted in the record.

[The prepared statement of Senator Nelson follows:]

PREPARED STATEMENT OF SENATOR GAYLORD NELSON

On behalf of the Senate Small Business Committee, I want to commend Senator Metzenbaum for calling these hearings and inviting the committee to participate in them. Along with several other members of the Small Business Committee, I have joined Senator Metzenbaum in sponsoring this bill. I know that there is very broad interest on the committee in the general area of the production and distribution of gasohol.

These hearings have been called to determine what steps are necessary to prevent monopolistic, anticompetitive practices in the marketing of gasohol. Gasohol presents a unique opportunity for small businesses, individual farmers and farm cooperatives. There are no economies of scale in the production of gasohol beyond a very small size, and alcohol fuels save the most energy when they are produced near their marketing area. Transporting alcohol fuels long distances wastes a great deal of energy and money, so a system of small, local producers selling to local dealers and jobbers makes the most sense.

While that may be the logical route, however, it may not be the route that major energy companies prefer. Localized, small-scale gasohol production and distribution would establish a competitive source of fuels, one that the companies did not control. In recent months, there have been some very disturbing signs that, in reaction to this situation, several major oil companies are taking steps to discourage gasohol, or to control the gasohol market.

Last month, for instance, Exxon and Gulf announced that they would not allow their credit cards to be used for the purchase of gasohol. They rescinded their policy only after the Small Business Committee announced hearings on the subject. In recent weeks, however, dealers from around the country have documented further cases of harassment by major oil companies when the dealers tried to market gasohol. These practices range from large rent increases for the station to restrictive lease policies that effectively prevent gasohol from being sold. Mobil, for instance, requires that a dealer put in his own gasohol pump and, when his lease expires, dig it up and restore the station to its original condition. For a dealer on a 1- or 2-year lease with no assurance of renewal, this represents an unacceptable risk. Texaco has begun to market its own gasohol, and in the process has launched a massive advertising campaign indicating that gasohol marketed by individual dealers cannot be trusted to be a good product. Ironically, Texaco's gasohol is three octane points below that sold by most independents.

We must not allow the major oil companies to dominate a market that offers so many opportunities for so many people. If all the producers of gasohol fuel could only sell their product to the majors, and if people who wanted to buy gasohol could only buy it from the majors, then everyone—the consumer, the farmer, and the small businessman—will lose. Everyone, of course except the major oil companies.

To assure that this scenario does not develop, S. 2251, the bill we are considering today, should be acted on promptly.

Senator METZENBAUM. Senator Stewart.

STATEMENT OF SENATOR STEWART

Senator STEWART. Senator Metzenbaum, I want to congratulate you and Senator Nelson for holding this hearing. I think it is an excellent thing that you are doing. I congratulate you on the bill. I am glad to join with you as a cosponsor.

I would just say that I think it is a very timely hearing because of the misinformation about alcohol fuels that is being pretty well directed by some in the economy who are opposed to this, perhaps because it might provide them with some competition.

Farmers need this legislation. I speak from a State that has a large number of people who are interested in the production of alcohol fuel, but they need a market for their surplus alcohol. They need somebody who will dehydrate neat alcohol and blend it with gasoline to make gasohol.

The jobbers and wholesalers in my State, and I am quite sure that this is true across the country, have taken the lead in marketing gasohol. If the major oil companies continue to operate as they have with their credit card policies, well, they can make things very difficult. Exxon has changed their policy. Prior to the time they did that they had to have some encouragement from members of the Senate and from folks at the Department of Energy. But if they continue with their unreasonable practices of forcing people who distribute gasohol to install new pumps which cost a tremendous amount, well, these kinds of practices are just going to have to be stopped. So I think this hearing is very timely.

I would also hope, Mr. Chairman, that we have some information on the energy balance. I know that Representatives Bedell and Daschle can speak to that, and I certainly hope they do. Senator Metzenbaum, I support you 100 percent in what you are trying to do. I am encouraged

by the fact that you are having these hearings, and I am pleased to participate in this kind of activity with you and Senator Nelson.

Senator METZENBAUM. I am very grateful to you for your support, Senator Stewart.

Senator Thurmond has not yet arrived. He will have an opening statement. We will be glad to hear from him when he does arrive.

We are happy to have Hon. Berkley Bedell and Hon. Thomas Daschle and a statement from Hon. William J. Hughes, all Members of the House.

We are very happy to hear from you, Representative Bedell, and then we will hear from you Representative Daschle. I think that is the seniority, if I am not mistaken.

STATEMENT OF CONGRESSMAN BEDELL

Mr. BEDELL. Thank you, Senator. We thought we had pretty well destroyed the seniority system when that group of 75 Democratic freshmen came in about 5 years ago. But, now that I have an opportunity to take advantage of the seniority system, I will do so.

Senator METZENBAUM. You have a different perspective now.

Mr. BEDELL. Mr. Chairman, I want to compliment you on the proposal, S. 2251, the Gasohol Competition Act.

Additionally, I wish to thank you for this opportunity to share with you and your committee, some of my thoughts on the marketing of gasohol.

In the House of Representatives, I serve on the Agriculture Committee, where I have been working for some time, along with Congressman Daschle and others, to promote the production and marketing of gasohol.

I am also chairman of the Small Business Subcommittee on Anti-trust and Restraint of Trade which last year held a series of hearings on gasohol retail marketing, including a day and a half specifically focused on gasohol.

We had additional hearings scheduled for mid-January when the issue of gasohol credit cards, once again arose. Senator Nelson and I had arranged for joint hearings of the Senate and House Small Business Committees, but a reversal of policy by Exxon and others, after we scheduled the hearings, made these hearings unnecessary.

As you have correctly noted, Mr. Chairman, there is nothing to prevent the major oil companies from returning to their past practices of inhibiting the sale of gasohol by denying the dealers the right to accept company credit card charges for this product. In fact, some oil companies continue to engage in various practices that have the effect of inhibiting the sale of gasohol.

Mobil Oil, for example, has about 18,700 service stations in its brand name distribution network. Over 16,000 of these are owned by Mobil and leased to dealers.

Mobil says that any of its dealers are free to sell gasohol if they can find a supplier. However, according to testimony we received, Mobil prohibits its over 16,000 leasee dealers from putting anyone else's product in their storage tanks or selling anyone else's products through their pumps.

The leasee dealer, can, at his own expense, install additional tanks and pumps to handle gasohol, a product that Mobil does not supply, but the company specifies that the property must be returned to its original condition, that is, minus the added tanks and pumps, when the lease expires.

No one on my subcommittee was surprised when Mobil's vice president for marketing told us last October that not one of their leasee dealers was selling gasohol.

Making it virtually impossible for leasee dealers to carry the product is only the one specific way in which some of the major oil companies are restricting the marketing of gasohol.

A year or 2 ago, we saw a campaign to convince people that gasohol is bad for your car's engine. After people saw for themselves that this was not so, a new argument was found. Now we are hearing the oil companies talking about the energy inefficiency in the balance of energy.

I was at the Archer Daniel Midland plant last fall and they told me at that time that they were getting more than 2 Btu's of alcohol for every 1 Btu of input into their plant. They expect additional improvements.

Even if that were true, however, it isn't really a 2-to-1 balance, it is more like a 3-to-1 balance because alcohol only has two-thirds as many Btu's per gallon as does gasoline. But when you put alcohol with gasoline in a 10-percent mixture, you do not decrease the amount of mileage you get. So that we get almost 50 percent more miles per Btu from alcohol that is added to gasoline than we do or would get from gasoline.

In addition to that, Mr. Chairman, if all we are going to worry about is energy balance, this room would not be lighted as it is. It takes 3 Btu's of energy to produce every Btu of electricity. But we do it because we can use electricity better than we can some of the other forms of energy we have. Our shortage is in liquid fuel.

If we could take 1 Btu of coal and transfer it to a Btu usable as fuel for our automobiles and thereby cut back on the amount of oil that we are importing from the OPEC nations, it would be one of the most important things, in my opinion, that we could possibly do.

Certainly, as we face the energy problem we face, if we can move toward using renewable resources which are benign, which are not detrimental to our environment as is the case with alcohol fuel, it would be one of the greatest things that we could do for our total society.

I commend you tremendously for what you are doing on your committee. I certainly support you in what you are doing. I think it is very, very critical at this stage as we attack this important problem we face in America.

Senator METZENBAUM. Thank you, Congressman Bedell. Your own hearings on this subject were extremely helpful to us. It is my understanding, and I am not certain that I am correct, that you and Congressman Hughes introduced a companion to our bill into the House yesterday, is that correct?

Mr. BEDELL. Yes; Congressman Hughes introduced that bill. I support him in that, yes, sir.

Senator METZENBAUM. Very good.

Thank you. We are very grateful to you and expect to work with you along the way to get this legislation enacted.

STATEMENT OF CONGRESSMAN DASCHLE

Senator METZENBAUM. Congressman Daschle, we are happy to have you with us, sir.

Mr. DASCHLE. Thank you, Mr. Chairman.

I want to associate myself with the remarks made by Mr. Bedell in his commendation of both committees, for not only holding these hearing this afternoon, but for the comments that were made prior to the time that we testified. I thought that the remarks that were made were really very much on target, and certainly ones that have to be reiterated as we continue in the hearings today.

There was a pundit who once said that the golden rule of business is that he who has the gold makes the rules. I think in the area of commerce today, this rewrite of the golden rule has been more successfully applied to alcohol fuel marketing than any other part of retail petroleum business today.

The oil industry has the gold. The oil industry has made the rules. Those rules do not allow the overwhelming majority of the Nation's service stations in this country to market gasohol.

Gasohol marketing freedom is not a peripheral issue. It is not something that goes beyond the questions that we face, and whether or not we are going to have a viable alcohol fuels industry. The fact of the matter is that gasohol marketing freedom is the central issue to our Nation's ability to reducing our dependence upon the uncertain supplies of increasingly costly foreign oil.

Right now in this country, Mr. Chairman, there are approximately 163,000 retail gasoline outlets in this Nation and 137,000 of those or 85 percent of those outlets are branded independent outlets, outlets that are managed by an individual, but under a franchise agreement with an oil firm and outlets which under current law are denied the freedom to market gasohol.

In our economic system the acceptability of a product is supposedly determined by the marketplace. But gasohol does not conform to this theory.

The fact of the matter is the decisions in oil company board rooms, not the decisions made by thousands of customers in the marketplace determine the general availability of gasohol today.

The rules made by the oil industry lawyers and written into the typical franchise agreement clearly show why gasohol cannot be sold freely at 85 percent of our retail outlets today.

For example, consider the agreement in a typical franchise that states:

Any dispenser, pump, tank or other container or a receptacle for refined petroleum products, furnished to buyer, by seller, and or marked in such manner to indicate its use for the storing, handling or dispensing of products, trade marked or branded by seller, shall be used solely for the storing, handling and dispensing of such seller, trade marked or branded products.

I am sure some Federal bureaucrat started that language, but I think that it is well ingrained in the oil industry contracts today.

The fact of the matter is the underlying concept in this whole statement is that independent processors cannot use gasohol in the pumps that are currently available on the market today.

Take for example the second one :

The buyer agrees that all products delivered to the station by the seller shall be resold by the dealer as the respective trade marked or branded product of the seller, and shall not be adulterated, mixed or blended by the buyer with any other substance before the sale or delivery to consumers.

The bottom line here is that they consider alcohol as an adulterated product. That sounds like some scandalous thing that we would add to a dirty novel, but the fact is that it is a prohibited product today.

In the hearings held by Mr. Bedell which were quite good, we asked the Mobil Co. representatives just what they felt an adulterated product like gasohol was. They said: "We don't consider it any more than the Hoola Hoop."

Well, I think we have gone far beyond that with that kind of thinking. The effect of all of these provisions, Mr. Chairman, is not merely to discourage gasohol marketing or merely to impede gasohol marketing. These provisions flatly ban the marketing of gasohol by any branded dealer in America who cannot obtain the specific exemption from the terms of his or her franchise agreement.

In May of last year, I introduced the Gasohol Marketing Freedom Act in the House of Representatives. The purpose of this legislation, like the purpose of the Gasohol Competition Act which was recently introduced by the chairman of this subcommittee, is simple. Both measures seek to enable the Nation's branded independent retailer marketers of motor fuels to free market gasohol and prohibit a franchiser from engaging in any act of retaliation or discrimination against a franchised dealer who chose to market gasohol.

Mr. Chairman, these are very important measures. These are certainly ones that I hope can serve as expeditious acts on the part of the Congress to insure that these impediments are not continued in the retailing and the production and the consumption of alcohol in the years ahead.

I thank you for your time this afternoon.

Senator METZENBAUM. Thank you very much, Congressman Daschle, for your support. We are very grateful to the congressional support evidenced in the House. We will be working with you. We hope to move this bill over there just as promptly as possible. Thanks very much, gentlemen.

Mr. BEDELL. Thank you.

Mr. DASCHLE. Thank you.

Senator METZENBAUM. We will now hear from a panel of farmers: Dean W. Simeral, vice president, public affairs, Ohio Farm Bureau Federation; Mr. Mike Stientjes, American Farm Bureau Federation; Mr. Joseph Hertel, testifying on behalf of the Ohio and National Farmers' Union, and Mr. Roger Etrheim, marketing director, Iowa Corn Promotion Board.

PANEL OF FARMER REPRESENTATIVES:

STATEMENT OF DEAN W. SIMERAL, VICE PRESIDENT, PUBLIC AFFAIRS, OHIO FARM BUREAU FEDERATION; MICHAEL STIENTJES, AMERICAN FARM BUREAU FEDERATION; JOSEPH HERTEL, OHIO AND NATIONAL FARMERS' UNION, AND ROGER ETRHEIM, MARKETING DIRECTOR, IOWA CORN PROMOTION BOARD

Senator METZENBAUM. I am happy to have you here.

Mr. Simeral, we are happy to welcome you again. You are from my

own State and with the cooperation of the other witnesses, we will be glad to hear from you first.

We would say to all of the witnesses that we will put your entire statements in the record at the conclusion of your oral testimony. We have a number of witnesses today. We hope you can confine your remarks to 5 minutes, or, at the absolute outside, 2 or 3 minutes beyond that.

Dean, proceed.

Mr. SIMERAL. Thank you, Mr. Chairman.

My name is Dean Simeral. I am vice president, public affairs, for the Ohio Farm Bureau Federation.

We appreciate this opportunity to testify before your committee concerning our Nation's need to place gasohol in a high priority profile in our country's affairs.

The Ohio Farm Bureau Federation is totally committed and dedicated to the development and maximum use of alcohol from crops for fuel. If proposed legislation mentions gasohol or alcohol for fuel, we support it. This, of course, is not really true. We only support those legislative proposals that we believe will impact favorably on alcohol from crops for fuel.

The reference to "if it mentions alcohol, we are for it" is a method of conveying to this committee and Congress that the Ohio Farm Bureau believes that our Government should be encouraging, providing incentives and removing any obstacles to this development. We believe that an alcohol fuel from crops emphasis will be a significant benefit to agriculture with a positive spinoff benefit to lessening our dependence on imported oil.

The ultimate development of alcohol for fuel from grain crops, we believe, could lead to a phasing out of farm programs relating to corn and feed grains and provide a significant savings to our Federal Treasury.

Senator METZENBAUM. I think you ought to repeat that statement. We don't hear many things around here about saving money for the Federal Treasury.

Mr. SIMERAL. Yes; we will be glad to repeat that.

The ultimate development of alcohol for fuel from grain crops, we believe, could lead to a phasing out of farm programs relating to corn and feed grains and provide a significant savings to our Federal Treasury.

Senator METZENBAUM. That is very important.

Mr. SIMERAL. This hearing is geared to the question of impediments to the production and marketing of alcohol for fuel.

We believe the No. 1 impediment to production is the question of a market. This is not a very profound observation, but I believe it is significant.

S. 2251, to amend the Clayton Act is obviously proposed to head off possible impediments to the marketing of gasohol or alcohol as an octane enhancer or alcohol as a fuel.

We cannot identify or document a case where an oil company has actually prohibited the use of their credit card for the purchase of gasohol at one of their franchised dealers. The announced intent to place such a limit on the use of the credit card, we believe, is justification for the amendment to the Clayton Act as contained in S. 2251.

If oil companies have prohibited their dealers from dispensing gasohol from company-owned pumps and tanks, then this also should be prohibited. This too is included in S. 2251, which we support.

If a significant impediment to the production of alcohol for fuel is a market, we should look for market obstacles. One such impediment is the cost of alcohol today compared, for example, to gasoline. We believe the 4 cents Federal gasoline tax exemption for gasohol must be continued as provided in the windfall profits tax bill, recently approved by a conference committee.

This 4 cents tax exemption and the 40 cents tax credit mentioned later are needed to address the impediment identified as cost. This is needed to improve the chances of private investors taking the risk to build multimillion-dollar alcohol plants.

We understand the windfall profits tax bill also provides a 40-cent-a-gallon income tax credit to the producer of alcohol for fuel. We do not clearly understand how and when this credit would be applied. We would recommend, if not already provided, that this credit be applicable when the alcohol is used as an octane enhancer or when used as alcohol or mixed with another fuel at some mixture more or less than the 1-to-9 mixture of gasohol.

The oil companies hold the key to the marketing of alcohol for fuel. We would not support a Federal mandate that the oil companies market gasohol or alcohol as fuel.

We would, however, support incentives that the Government might develop which would encourage the marketing of gasohol and the removal of any obstacles that are used by the oil industry to discourage or impede the marketing of alcohol.

We recognize that major oil companies have spent millions on commercial advertising to develop an image of a quality product. Since gasohol has a cleaning effect on fuel lines, it must be used in new cars or operators should know they will need to change fuel line filters once the "gunk" has loosened and stopped at the filter.

Also, an older car that has some water in the tank from previous fuel or from condensation may experience more separation if gasohol is added, resulting in rough running or stopping when water is pulled through the fuel line.

The Government could assume the responsibility to educate the public about these problems so the oil companies do not have the risk of public rejection of their brand name because of the cleansing effect or water problem. With an informed public there should not be any problems. Maybe the Government should "hold harmless" any company sued for water in gas because of alcohol addition or problems associated with the cleansing effect.

If any auto company fails to cover gasohol using engines with the usual warranty, they should be required to show evidence of the problems or why the warranty does not apply.

If oil companies throw up warranty problems with gasohol, they too should show evidence of the major problems.

If the major oil companies alone or together refuse to handle gasohol, or consider alcohol as an octane booster when supply is offered by other private industry, they should be subject to "show cause" examination.

If anyone uses the hunger of world arguments against alcohol from crops for fuel they should be made aware that:

Only starch is used for alcohol.

Protein is in short supply in the world. Starch is plentiful. When alcohol is made from corn the protein is still available for feed or food. Only the starch is used.

Corn production can be increased 25 percent with no decrease of other grain.

If the positive energy balance argument is used, we should recognize that:

We can use coal to create a liquid fuel for motor vehicles by the gasohol route.

Electricity gives us only one-third of the energy that was originally in the fossil fuel.

We are talking about using surplus corn—corn already produced, but why even consider the energy used to produce the corn.

Most energy estimates start with plowing the field or even mining the ore to make the steel to make the tractor and so forth. This is a questionable argument.

It takes energy to export the corn, the only other real use for it. Export energy requirements are never calculated.

We believe the best information available will show a positive energy balance if stillage can be used in wet form and a near balance if concentrated high protein gluten feed is the byproduct.

Other, whether real or imagined deserve congressional review of examination to determine whether or not these are impediments and could be eliminated.

Can oil companies, at the refinery level, pass through directly the cost of alcohol as they can increased gasoline prices?

Are the regulations of the Bureau of Tobacco, Alcohol and Firearms an impediment? This question is probably most significant, as it relates to small plants.

It would be less of an impediment if all Government loans, grants and guaranteed loans were funneled through one agency.

Government loans and grants, the law states, can only be made if the project shows at least an energy balance. This provision should be eliminated from the law because it is nearly impossible to determine, and why does it matter?

Research reports that we have seen would indicate that alcohol used as an octane enhancer or booster would permit getting 4 percent to 6 percent more gasoline output per barrel of crude.

In addition, we believe that by using alcohol in gasoline we would experience less pollution and could possibly, and I emphasize "could possibly," eliminate the required catalytic converter. This holds the potential of our getting 6 to 10 percent more miles per gallon.

We believe that the production and marketing of gasohol, alcohol as an octane enhancer, alcohol as a fuel itself and alcohol as an extender for other liquid fuels with the alcohol made from crops has the potential of making a significant contribution to the betterment of agriculture and reducing our dependence on imported crude oil.

The Government, we believe, should eliminate all impediments to its production and marketing. In addition, there should be tax incentives, research and Government encouragement to its development.

Senator Metzenbaum, you and your cosponsors of S. 2251 are to be commended for the introduction of this bill that provides a vehicle for surfacing impediments to alcohol production and marketing.

Thank you for this opportunity to testify.

Senator METZENBAUM. Thank you very much, Mr. Simeral.

The ranking minority member of the committee, Senator Thurmond, is now with us. I believe he has a short opening statement that we will put in at this point.

OPENING STATEMENT OF SENATOR THURMOND

Senator THURMOND. Thank you, Mr. Chairman.

Energy problems continue to plague our Nation in an increasingly serious manner. It is most important that we seek appropriate ways to solve these problems, or at least lessen the adverse effects of the continuing problems on individual Americans and on all sectors of our economy. The increased use of gasohol appears to be one of the major ways available to us to help meet this energy crisis.

The testimony and discussion today at these joint hearings should be most beneficial to all of us. I note that we have scheduled a wide array of witnesses. This will give us several much-needed viewpoints about various aspects of the gasohol opportunities and problems that we face.

Our consideration, Mr. Chairman, will be toward developing whatever legislation that might be best for the overall public interest, with due consideration for each segment or sector of the economy and our society that might be affected.

I am particularly concerned, with respect to the issues that we are considering today, that we keep the American consumer in the forefront of our thinking. All too often, I feel, we say we are developing legislation that is in the best interest of the consumer but, in fact, that desired result is not achieved.

Certainly, as we deal here with ethanol, or gasohol, the individual consumer—in the short-run and the long-run prospective—must be the primary focal point for all of us.

Mr. Chairman, I look forward to these hearings and to the followup discussions concerning these extremely important matters.

I might say that as one deeply interested in agriculture and coming from an agricultural State, I want to do everything that I can to encourage the use of farm products. In gasohol we can use many farm products, even corn stalks, as I understand, can be used; grain can be used, and many other things that would help the farmers.

I don't know of any segment of our economy today that is having a tougher time than the farmers. If it had not been for the increase in land prices, many of them would not be in business today. They have just been able to borrow more and stay in business.

But, I want to say further, it is my judgment that Congress has to do something to help sustain the farmers or most of them will go out of business. This gasohol situation will be of some help. Other steps will have to be taken in other fields. Thank you very much.

Senator METZENBAUM. Thank you.

At this point, we will hear from Mr. Etrheim, and then we will come back to the American Farm Bureau, and then the Farmers' Union.

Senator Culver is on a tight schedule, and I know that Mr. Etrheim is from Iowa. Out of special deference to my friend from Iowa, we are happy to hear from you at this point.

OPENING STATEMENT OF SENATOR CULVER

Senator CULVER. As you know, I have been a strong supporter of gasohol as a means to stretch gasoline supplies and reduce our dependence on imported oil. I have cosponsored major amendments to both the synfuels and windfall profits tax legislation to provide funds for research on alcohol fuels, support for production facilities, and to reduce the delays and paperwork associated with permits for fuel alcohol production. I have also cosponsored a package of tax credits and exemptions that would encourage the production of both fuel alcohol and gasohol.

Gasohol has reached a high level of acceptance in the State of Iowa. There are over 800 stations in the State and in some of these gasohol accounts for almost half of the total sales. As the leader in gasohol, Iowa is continuing to develop new ideas. Recently workers at the Ames Laboratory discovered a substance that can eliminate the need for much of the energy currently needed for the distillation process. Also the Iowa Development Commission working with the Land O'Lakes Corp. is studying the effectiveness of a leadfree regular grade gasohol. I think this kind of activity is strong evidence that we are just scratching the surface of the potential uses of alcohol fuels.

With the spread of gasohol across the country I was shocked to learn that three of the major oil companies had a policy that would prevent the use of their credit cards for gasohol. For this reason, I was pleased to cosponsor the Gasohol Competition Act for which these hearings are being held.

The Iowa Corn Promotion Board has played a very important role in not only the growth of gasohol in the State of Iowa, but has been instrumental in promoting gasohol nationwide. For this reason, I am particularly pleased to see Mr. Roger Etrheim from the Iowa Corn Promotion Board here to testify today.

Mr. ETRHEIM. Thank you, Mr. Chairman.

I wish to thank the chairman and the members of this committee for the opportunity to testify as a representative of the Iowa Corn Growers and as a member of the National Gasohol Commission.

I have been asked to testify on gasohol, which is a blend of 10 percent agriculturally derived ethanol alcohol and 90 percent unleaded gasoline, as it relates to this committee's hearing.

I believe that the economics of agriculture and energy are very closely entwined.

I further submit that what we do as a nation in the near term and the long term, relative to agriculture and energy, will determine what

kind of a country we will bequeath to our children and grandchildren.

I have been involved in the promotion of gasohol since the beginning in June 1978.

In the interest of this Nation's economy and our national security, may we urge a cooperative effort between the American farmer and the oil industry in the development and promotion of gasohol.

We do understand the concerns shown by the major petroleum marketers in test marketing gasohol before launching a full-scale marketing and promotional program.

However, in view of the fact that gasohol has proven its value and potential in the marketplace, has been accepted by the consumer and by car manufacturers in honoring their warranties, there should be no reluctance on the part of any marketer to allow the use of their normal credit procedures toward the purchase of gasohol.

When we first started marketing gasohol in Iowa, back in June of 1978, we used a very crude and inefficient method of blending the alcohol and gasoline. With the consumer acceptance of gasohol, we now have alcohol available for blending at terminals to insure quality control.

We realize that it was not economically feasible for major petroleum pipeline terminals to handle the storage, blending, and dispensing of gasohol until the market was established at sufficient levels.

In Iowa, gasohol sales have reached 5 percent of all unleaded gasoline sales. Many retail outlets in Iowa show that their sales of gasohol have 45 percent of their total business.

I believe that a major step toward domestically produced, renewable energy was taken when one of the largest major refineries and a major credit card acceptance center announced they would be offering a total gasohol marketing program in all of their Iowa outlets.

In Iowa, we have over 800 stations selling gasohol. In January 1980, over 9 million gallons of gasohol were purchased without any problems. I am not aware of, nor have we encountered any problems with any major oil companies who are marketing gasohol at the present time, in regard to the restriction of usage of their credit cards.

In conclusion, I would like to express our appreciation for the cooperation shown by the major petroleum marketers in regard to our local program in the State of Iowa.

Mr. Chairman, thank you for this opportunity to address your committee.

I would also add, we do support the bill as proposed for any further restrictions that could happen on gasohol.

Thank you.

Senator METZENBAUM. Thank you very much, Mr. Etrheim.

Senator CULVER. I understand that you are on a tight schedule. Therefore, I will change the procedure and if you have some questions of Mr. Etrheim, you may go ahead at this time.

I wondered whether or not the remarkable expansion that we have experienced in our State, but in the number of service stations that are making gasohol available currently, and the sales of purchases to consumers, do you see this trend growing in our State?

Mr. ETRHEIM. Yes; I can see the trend growing when the availability of gasohol or alcohol is available for the blend.

At the present time, the largest alcohol manufacturing company is basically allocating alcohol also, just like the gasoline is being allocated.

So the immediate expansion of gasohol is going to be limited mainly until the production of alcohol can be obtained.

Senator CULVER. It is also my understanding that the car manufacturers have honored their automobile warranties on vehicles which use gasohol. It seems to me that this signals that they see no technical problems for engines which use gasohol. Is that your understanding?

Mr. ETRHEIM. Yes; that is right, Senator Culver. At first the major oil companies and car manufacturers did not originally go with the gasohol program.

But the car manufacturing companies did come out with a statement saying that the alcohol or gasohol did not cause any harm to the components, and their warranties would be extended by 100 percent.

Even back in the December issue of the Wall Street Journal, Senator, there was an article stating that various car companies are manufacturing cars for Brazil right now for the 100 percent alcohol program.

If they can do it for other countries, we feel they can definitely do it for America, also.

Senator CULVER. In light of this really, I think, very excellent experience that we have had in our State with gasohol, the fact that consumers, the growing numbers seem to like it, and the car manufacturers have no problems with it, and service station dealers are making profits with it, do you see any need or any reason for a marketer not to allow use of their normal credit procedures toward the purchase of gasohol?

Mr. ETRHEIM. No; I do not. I think that the major oil companies' credit card, I don't feel is a complete franchise that they can restrict the limit of any sale of any product. They allow labor on a credit card. They allow cigarettes. They allow oil, various other tires that are sold that the various independent retailers may be handling. So I don't think this would be any problem whatsoever.

When you walk into a Holiday Inn, of course, you do not see any Howard Johnson napkins or matches and so forth. This is what I consider a real tight, closed franchise.

I do not believe the major oil companies have this type of franchise.

In getting back to the question on the acceptance, the Iowa Development Commission has a survey ran that tested the quality or the people that were buying gasohol in the State. We found that 61 percent of the people that were using gasohol liked it very much and would buy it all the time if gasohol was available for them.

So, because of this test marketing acceptance of gasohol, we feel that right now we are just in a growing stage. We feel that we need to continue to expand the production of alcohol so that we can become energy independent here in America.

Senator CULVER. It is my understanding, too, that in Ames, the Iowa State Lab there discovered a substance that can actually eliminate the need for much of the energy that is needed in the distillation process.

Mr. ETRHEIM. That is correct, Senator Culver. This is under research right now by absorption, by separating the alcohol—the water from

the alcohol. This is basically still in a test market. We do know right now that much work has to be done on it.

They have been contacted by several companies to buy this process. We feel, as the Iowa corn growers have funded \$15,000 for this research, for 1 month, to get the program going, we feel this is very much needed to further the alcohol program.

The technology is changing very rapidly. There has been more technology brought forth in the last 1½ to 2 years than it has in 50 years in alcohol fuels.

Henry Ford mentioned one time that any country that would be so silly to run on one fuel to take care of its energy needs is a very foolish country.

We can see right now that we are in this situation.

Senator CULVER. Finally, Mr. Etrheim, based on your experience, do you see any potential problems with the willingness of some of the giant grain companies to sell grain for use in making gasohol?

Mr. ETRHEIM. Of course, since the grain embargo that President Carter announced back in the first part of January, we supported the President 100 percent on this.

We feel that the large grain companies, the large Government and so forth, we need to have some type of direction because we just can't go out and invest \$50 million for an alcohol plant and then not have the grain available for making alcohol.

So, yes, we do need some direction, positive leadership. When President Carter mentioned in 1979 that we are not going to import any more oil than we did in 1978, I wish President Carter would have shown more leadership by stating that by 1990, we will not have to import any crude oil whatsoever. That would have given the alcohol program a 100-percent boost.

Right now we are in the infancy stages. We are creating a whole new industry. This is what we have to do.

So, if we can get the leadership from the various grain companies to make sure we do have a supply of grain, we have a tremendous surplus of grain in our corn right now, over 1.3 billion bushels. We feel we should be using our grain completely, just like the oil companies are utilizing their barrel of crude oil. They are fractionating it down completely. We want to do the same thing with a bushel of corn or grain so that we are just using the starch for alcohol. We can turn around and ship the protein overseas. We should have a tremendous future by utilizing our products completely.

So, we would like to have the support of all grain companies, co-operatives, everybody for our alcohol program. We need more manufacturing of alcohol right today.

Senator CULVER. Thank you very much.

Mr. ETRHEIM. Thank you, Senator Culver.

Senator CULVER. Thank you, Mr. Chairman.

Senator METZENBAUM. Thank you, Senator Culver.

[The prepared statement of Mr. Etrheim follows:]

PREPARED STATEMENT OF ROGER ETRHEIM

I wish to thank the Chairman and the members of this Committee for the opportunity to testify as a representative of the Iowa Corn Growers and as a member of the National Gasohol Commission.

I have been asked to testify on gasohol, which is a blend of 10 percent agriculturally derived ethanol alcohol and 90 percent unleaded gasoline, as it relates to this committee's hearing.

I believe that the economics of agriculture and energy are very closely entwined. I further submit that what we do as a nation in the near term and the long term, relative to agriculture and energy, will determine what kind of a country we will bequeath to our children and grandchildren.

I have been involved in the promotion of gasohol in Iowa since it began in June 1978.

In the interest of this nation's economy and our national security, may we urge a cooperative effort between the American farmer and the oil industry in the development and promotion of gasohol.

We do understand the concerns shown by the major petroleum marketers in test marketing gasohol before launching a full-scale marketing and promotional program. However, in view of the fact that gasohol has proven its value and potential in the marketplace, has been accepted by the consumer and by car manufacturers in honoring their warranties, there should be no reluctance on the part of any marketer to allow the use of their normal credit procedures toward the purchase of gasohol.

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We realize that it was not economically feasible for major petroleum pipeline terminals to handle the storage, blending, and dispensing of gasohol until the market was established at sufficient levels. In Iowa, gasohol sales have reached 5 percent of all unleaded gasoline sales. Many retail outlets in Iowa show that their sales of gasohol have 45 percent of their total business.

I believe that a major step toward domestically produced, renewable energy was taken when one of the largest major refineries and a major credit card acceptance center announced they would be offering a total gasohol marketing program in all of their Iowa outlets.

In Iowa, we have over 800 stations selling gasohol. In January 1980, over 9 million gallons of gasohol were purchased without any problems. I am not aware of, nor have we encountered any problems with any major oil companies who are marketing gasohol at the present time, in regard to the restriction of usage of their credit cards.

In conclusion, I would like to express our appreciation for the cooperation shown by the major petroleum marketers in regard to our local program in the State of Iowa.

Senator METZENBAUM. One of the early cosponsors of this legislation has now arrived.

Senator Dole, if you have an opening statement, we will be very happy to hear from you.

Senator DOLE. Thank you, Mr. Chairman.

OPENING STATEMENT OF SENATOR DOLE

Senator DOLE. I won't read the statement. I have to run back to the Agriculture Committee. We are dealing with food stamps which some of you may need the way things are going. [Laughter.]

So, I will come back by 2:30 because you have to go.

Senator METZENBAUM. I think I am all right. Thank you.

Senator DOLE. I want to include my statement in the record, and point up that I think maybe some of the problems we felt we had early on were hopefully the result of misunderstandings. I have been sitting through months of hearings on the windfall profits tax and also on the so-called windfall acquisition oil merger bill. I have been told repeatedly by representatives of the oil industry that we wanted to go out and find alternate sources of energy and become independent from

OPEC countries and I think that is the fact. I think that is the intent of those in the industry.

But I would say that if there is any industry that needs a different image in the country, it is the oil industry. I would hope that they will remove any discrimination, if there is in fact any discrimination against those who might purchase gasohol.

For some of us who believe that the industry should survive, it makes it very difficult not to defend the industry. They can do that for themselves, but to indicate to some that we shouldn't tax away all of your products. I don't believe we ought to have the windfall acquisition oil merger bill. I do not believe we can control and regulate industries to that extent. But it makes our job more difficult when we find where there is misunderstanding or not, someone putting roadblocks in front of the development of gasohol, and the marketing of gasohol which is a product of the future, which I think will help reduce our dependence on oil sources.

So, I would just say to my friends in the industry that I hope to have a chance to come back and listen to your testimony. I certainly support the Gasohol Competition Act and support the development of alternate sources of fuel.

We do have an amendment, as some probably know, in the so-called windfall profits tax which extend the excise tax to the year 1992.

We also, for the first time provide tax credits which we think is another approach. That measure will probably become law in the next month or two.

So, I appreciate very much, Mr. Chairman, if I could just put my statement in the record.

Senator THURMOND [presiding]. Without objection, so ordered.
[The prepared statement follows:]

PREPARED STATEMENT OF SENATOR DOLE

I would like to commend you and the other Senators present today for promptly calling this hearing on S. 2251, and for offering an ample opportunity for witnesses of all sides of this issue to present their case, including the oil industry, farmers, independent jobbers, dealers and scientists. I am pleased to be a co-sponsor of S. 2251, and look at this as a major exploratory hearing to consider all sides of the issues involved in the marketing of gasohol.

As ranking minority member of the Senate Finance Committee, the Senator from Kansas has been a strong proponent of gasohol. In the windfall profits bill, which we have recently reported out of conference, I offered an amendment which would retain the current Federal excise tax exemption of 4 cents per gallon for gasohol and extend it through 1992. For alcohol fuel not eligible for this exemption, my amendment provides a nonrefundable tax credit to the blender or user of 40 cents per gallon for alcohol fuel above 190 proof, 30 cents per gallon for alcohol between 150 and 190 proof, and 10 cents per gallon for alcohol made from coal.

As a crusader for gasohol for several years in the Senate, this Senator has seen a need to provide tax incentives to private industry to develop this important alternative fuel. Without these incentives, cost would be an impediment, and would reduce the willingness of private investors to risk their capital in building alcohol plants. But the cost is only one such impediment to making gasohol a viable product. The other major factor is the market. Unless consumers are willing and able to buy gasohol, the chances for its commercialization are slim.

It is for this reason that the Senator from Kansas co-sponsored S. 2251, the bill before us today. This Senator sat through months of testimony by oil industry representatives before the Senate Finance Committee on the windfall profits tax, and before the Judiciary Committee on S. 1246, the windfall acquisition oil merger

bill, in which we were assured of the oil industry's good intent to reinvest its profits in producing new alternative forms of energy, in an attempt to decrease our dependence on OPEC oil, a dependence made all the more precarious by the threat of oil cutoffs, enormous inflation-exacerbating price gouging, and political instability in the Middle East.

Yet despite these assurances by the oil industry of good faith, it came to my attention in January that some of the major oil companies were prohibiting the use of their credit cards for the purchase of gasohol. There have also been reports of other attempts to discourage independent and franchised dealers from selling gasohol, such as the denial of company storage tanks and pumps for gasohol sales, the increasing rents and the failure to deliver gasoline promptly to the dealers who wish to sell gasohol.

I do not know how extensive such practices have been, and hope that we can go into this issue at today's hearing. Certainly, there may have been valid reasons for the oil companies' restrictive practices. I was pleased to learn that the credit card sale restrictions have been stopped, while the glare of national publicity focused on the issue.

However, we need to focus on the extent of alleged subtler forms of discrimination, and on the need for such legislation as S. 2251, to prohibit it.

The viability of gasohol as a commercial fuel and gasoline surrogate depends on our distribution system, a system dominated largely by the major oil companies. Unless retail consumers can buy gasohol readily at their gas stations, the product will not sell. It is this fact, coupled with the urgent need to rid ourselves of dependence on foreign sources of oil, which makes S. 2251 imperative.

A key issue which the Senator from Kansas feels he should address is whether alcohol fuel is seen as a threat or a boon to the oil industry. Gasohol contains only 10 percent alcohol, generally as it is sold today. However, cars can be run on 100 percent alcohol, with slight modifications in their carburetors and engines. In fact, many farmers in my home State of Kansas are producing ethanol and running their cars on 100 percent ethanol. Consequently, alcohol fuel is a direct competitor of oil. We need to address this issue of running cars in the future on 100 percent alcohol. We need to consider gas stations having pumps to sell 100 percent alcohol, and automobile manufacturers selling cars with modified alcohol engines. This future prospect makes this legislation even more imperative.

While today gasohol is made of ethyl alcohol produced from grain feedstock, we need to look to the future prospect of augmenting this alcohol supply with methanol, which can be produced by burning municipal garbage, wood waste, and other renewable sources of biomass energy. We need to look to the day when our major cities will have their own methanol producing pyrolysis plants, which can produce enough alcohol to power city cars and buses on alcohol, as well as private cars.

Because of the imperative need to reduce our dependence on foreign sources of oil by selling gasohol, we need ample Federal incentives and protections for the gasohol market. The Senator from Kansas is an ardent proponent of the free enterprise system. Private companies, farm cooperatives, independent jobbers and oil companies should work hand in hand to produce, distribute and sell gasohol—it is my hope that this bill will be seen as a way of facilitating this partnership. Our friends in the oil industry should welcome gasohol as a partner with oil, in assuring an adequate supply of fuel to meet consumer demand.

I look forward to hearing their testimony as well as that of the other major parties in the gasohol market.

Senator THURMOND. Mr. Stientjes, you were the next witness.

Mr. STIENTJES. Thank you, Mr. Chairman.

Mr. STIENTJES. On behalf of the American Farm Bureau I want to express our appreciation for the opportunity to appear here today. I will just briefly summarize the statement that we submitted for the record.

The American Farm Bureau is a federation of State farm bureaus. It includes 49 States and Puerto Rico. And, of course, this would be inclusive of the Ohio Farm Bureau. We believe that Mr. Simeral has given a very adequate statement as to specific impediments.

So, in summary, I would just like to say that the American Farm Bureau has policies which vigorously endorse Government and industry cooperation to develop domestic energy resources, including gasohol.

It is our position that we oppose business practices as much as we would oppose Government regulation which would operate to discriminate against or arbitrarily limit the production or the use of gasohol.

Specifically, this would include oil company limitations on the use of their credit cards for the purchase of gasohol at franchised stations.

We believe that credit must be made available for gasohol at least on the same basis as what it is for other fuels and products available from these stations.

With that, I will end my remarks.

Senator METZENBAUM [presiding]. Thank you very much, Mr. Stientjes.

Mr. Hertel, representing the Ohio Farmers' Union and the National Farmers' Union.

I am happy to hear from you, sir.

Mr. HERTEL. Thank you, Chairman Metzenbaum, and members of the Senate Antitrust Subcommittee and the Senate Select Committee on Small Business.

I represent, as Senator Metzenbaum mentioned, the Ohio Farmers Union and also the National Farmers Union. My name is Joseph D. Hertel. I am a farmer from Van Wert, Ohio. I have had 35 years' experience as a mechanic. I have seen gasohol and also the straight ethanol powered vehicles in operation and can vouch for the fact that vehicles using alcohol fuels do operate efficiently.

By now, we all know that originally, the first cars Henry Ford produced were designed to run on alcohol.

We should also be aware of the historical involvement that oil companies have had in the defeat of alcohol fuels.

During the depression, after much research, the Nebraska Legislature petitioned Congress for a law requiring use of farmers' alcohol in all motor fuels. This was looked upon as a means of pulling the country out of the depression by many leaders. The oil industry, through a \$2 million campaign, defeated that program.

During World War II, the major opposition to the construction of alcohol fuels plants was the oil companies, even though we were using alcohol as a fuel during the war effort. This shows me that even during times of national crisis, big oil continued to promote its own self-interest above national need.

We are now faced with another crisis, that of energy, and, once again, the oil companies are busy taking care of No. 1 instead of using their resources to help lead this Nation out of this national emergency.

We have known for more than 60 years that alcohol fuels work. We should not, once again, let ourselves be talked into laying this issue aside in favor of maintaining the stranglehold big oil now has on the life of every American.

Gasohol is a good product. It is efficient. It is cleaner burning, reducing air pollution. There is increased mileage per gallon when gasohol is used. Other products, such as tires, can be made from it instead of petroleum.

Mixing alcohol and gasoline would reduce the amount of money going to foreign oil-producing nations. It would generate a major new market for American farm products and provide employment. It could help America move even closer to energy self-sufficiency. It may well strengthen the dollar on the world market.

The arguments for gasohol far outweigh those against it. I feel that failure to act positively on gasohol would be a desertion of the American public. It must have a chance to prove itself without interference from those forces who look upon it as a threat to their profits, which are almost ungodly as it is, and obviously have little concern for the possibility of financial ruin of our Nation.

There are those who say that using corn to produce alcohol will contribute to inflation. Corn is primarily a feed grain. After it has been through the distillation process, it can still be used as a feed grain. A more efficient one, I may add.

Secretary Bergland, in a statement to the Senate Subcommittee on Agriculture, Nutrition and Forestry, has stated that "The USDA has taken a positive stance on the production of alcohol fuels from agricultural materials."

As I noted before, I have been a mechanic for 35 years. I have seen what alcohol fuels can do. Quite frankly, I would stand on my own years of experience before accepting the theories of those who would like to see gasohol treated as a pipe dream or eliminate it, once again, as a valuable source of energy that is so greatly needed.

I have seen a 1974 Chevrolet with a 350-cubic-inch engine that was previously getting 13 miles to a gallon of gas converted to straight alcohol and is now averaging 21 to 22 miles per gallon after 20,000 miles.

A dynamometer test on an International Harvester 986 tractor with a turbocharger that produced 125 horsepower and used $8\frac{1}{2}$ gallons of diesel fuel per hour prior to its conversion to an alcohol-water-diesel fuel mix. After the conversion the tractor had to be throttled back to stay at the same 125-horsepower level. The engine used 6 gallons of diesel fuel, 1 gallon of alcohol and 1 gallon of water. The conversion saved $2\frac{1}{2}$ gallons of diesel fuel per hour. I don't think the water cost that much.

Finally, I want to emphasize to you that through observation and practical use I have no problem endorsing gasohol or other forms of alcohol fuels. It works and as I stated before, we've known this for more than 60 years. The only thing standing in the way of gasohol is the oil industry who has historically opposed it and is still opposing it by trying to intimidate small, independent businessmen and refusing to extend credit to those who would use it by not allowing it to be charged on their credit cards.

In this time of crisis, we would be wise to give every possible means of improving our energy situation as much support as possible, and Senate bill 2251 will help insure this.

I call your attention to the attachments to this testimony that substantiates many of my statements. I thank you for this opportunity to speak to you today.

Senator METZENBAUM. Thank you very much, Mr. Hertel.

I just have a few questions at this time of the panel. Perhaps, Mr. Simeral, you might want to answer.

In a press release dated January 12, 1978, Mobil Corp. raised the specter of the inability of the American farmer to produce enough grain to have a significant effect on the Nation's motor fuel problems.

Is Mobil justified in casting doubt on this country's ability to produce enough ethanol to make a difference?

Mr. SIMERAL. Mr. Chairman, I don't believe that there is any limit as to what the American agriculture could produce.

When you get into the calculations of how much bushels of corn it produced and how many gallons of alcohol those particular bushels will make, I think we have to recognize that there are other agricultural crops that likewise have a significant potential.

One of the ones that is frequently mentioned is sweet sorghum. I believe that the ability of the American agriculture to produce those crops that will provide the base for the production of alcohol is almost unlimited. Whether or not it can meet the total demand, I don't think is really important. It can meet a very significant amount of the demand without question.

Senator METZENBAUM. Do you think that Phillips Petroleum, in their news release of April 1979, slightly overstated the case when they said that: "Since ethanol comes from farm products, we practically have to give up eating corn, wheat and potatoes if we went the gasohol route."

Now I like corn. I like wheat. I like potatoes. Do you think that if there is a push for gasohol, this prediction will come true?

Mr. SIMERAL. Mr. Chairman, I, as one, really have no concerns that there won't be plenty of meat, corn, potatoes, you name it, for the American public and still have the vast potential for producing vast amounts of alcohol for our fuel needs.

Mr. ETRHEIM. Mr. Chairman, could I interject something here?

Senator METZENBAUM. Certainly, Mr. Etrheim.

Mr. ETRHEIM. Clearly in America, we are consuming 11 billion gallons of gasoline per year. If we were going to have a 10-percent blend, it would take 11 billion gallons of ethanol. This in turn, would take 4.2 billion bushels of corn.

We presently are consuming or raising 7.5 billion bushels of corn. Currently, we do not have a diversified program for our energy acres.

We feel that the farmer that is going to be going right now that he has to plant fence row-to-fence row in order to be economic—a matter of survivalship, we know we can produce at least 10 billion bushels of corn.

Here again, what we are trying to create in this new energy industry or alcohol industry is that whatever crop is available, whatever raw material is available in that part of the country, this is what they should be using to make the alcohol out of.

So, we can become energy independent. We do not have to be so wasteful, like we have been in last years.

Senator METZENBAUM. Would you give me those figures that you rattled off at first?

Mr. ETRHEIM. Yes; 11 billion gallons of ethanol is used for the 110 billion gallons of gasoline that is consumed, just unleaded gasoline.

Senator METZENBAUM. That is for the total amount of gasoline consumed?

Mr. ETRHEIM. Unleaded gasoline.

Senator METZENBAUM. Unleaded gasoline?

Mr. ETRHEIM. Yes, sir.

Senator METZENBAUM. You are saying——

Mr. ETRHEIM. Excuse me. It would take 4.2 billion bushels of corn. We are presently raising 7.5 billion bushels of corn per year.

Senator METZENBAUM. You feel that——

Mr. ETRHEIM. Yes. When we had the present grain embargo, in order to get rid of that 12 million metric ton of corn, we need 26 plants the size of that located in Decatur, Ill., just to utilize up those bushels of corn so we don't have this tremendous surplus.

But, it seems like all the grants that are going right today are going for biomass. We have the technology right now for a grain alcohol fuel. We urge your support for this program.

Senator METZENBAUM. Thank you very much.

Mr. Hertel?

Mr. HERTEL. I am like you, I have the same feeling. I urge your support for this program.

Senator METZENBAUM. Thank you very much. I very much appreciate your testimony and the support of the four farm groups coming before us today. Thank you.

Mr. CHUMBRIS. Mr. Chairman, Senator Thurmond has some questions he will submit in writing.

Senator METZENBAUM. Senator Thurmond will be having some questions which will be submitted to you in writing. I am sure you will be good enough to respond.

Mr. HERTEL. Yes, sir.

Mr. SIMERAL. Yes.

Mr. STIENTJES. Yes.

Mr. ETRHEIM. Sure.

Senator METZENBAUM. Thank you.

[The prepared statements of Messrs. Simeral, Stientjes, Hertel, and Etrheim, follows:]

PREPARED STATEMENT OF DEAN W. SIMERAL

My name is Dean W. Simeral, vice president of public affairs for the Ohio Farm Bureau Federation.

We appreciate this opportunity to testify before your committee concerning our Nation's need to place gasohol in a high priority profile in our country's affairs.

The Ohio Farm Bureau Federation is totally committed and dedicated to the development and maximum use of alcohol from crops for fuel. If proposed legislation mentions gasohol or alcohol for fuel we support it. This of course, is not really true. We only support those legislative proposals that we believe will impact favorably on alcohol from crops for fuel. The reference to if it mentions alcohol, we are for it is a method of conveying to this committee and Congress

that the Ohio Farm Bureau believes that our Government should be encouraging, providing incentives and removing any obstacles to this development. We believe than an alcohol fuel from crops emphasis will be a significant benefit to agriculture with a positive spin off benefit to lessening our dependence on imported oil.

The ultimate development of alcohol for fuel from grain crops we believe, could lead to a phasing out of farm programs relating to corn and feed grains and provide a significant savings to our Federal treasury.

This hearing is geared to the question of impediments to the production and marketing of alcohol for fuel.

We believe the number one impediment to production is the question of a market. This is not a very profound observation but I believe it is significant.

S. 2251 to amend the Clayton Act is obviously proposed to head off possible impediments to the marketing of gasohol or alcohol as an octane enhancer or alcohol as a fuel. We cannot identify or document a case where an oil company has actually prohibited the use of their credit card for the purchase of Gasohol at one of their franchised dealers. The announced intent to place such a limit on the use of the credit card, we believe, is justification for the amendment to the Clayton Act as contained in S. 2251.

If oil companies have prohibited their dealers from dispensing gasohol from company owned pumps and tanks, then this also should be prohibited. This too is included in S. 2251 which we support.

If a significant impediment to the production of alcohol-for-fuel is a market, we should look for market obstacles. One such impediment is the cost of alcohol today compared, for example, to gasoline. We believe the 4¢ Federal Gasoline Tax exemption for gasohol must be continued as provided in the windfall profits tax bill, recently approved by a conference committee.

This 4¢ tax exemption and the 40¢ tax credit mentioned later are needed to address the impediment identified as cost. This is needed to improve the chances of private investors taking the risk to build multimillion dollar alcohol plants.

We understand the windfall profits tax bill also provides a 40¢ per gallon income tax credit to the producer of alcohol for fuel. We do not clearly understand how and when this credit would be applied. We would recommend, if not already provided, that this credit be applicable when the alcohol is used as an octane enhancer or when used as alcohol or mixed with another fuel at some mixture more or less than the 1 to 9 mixture of gasohol.

The oil companies hold the key to the marketing of alcohol for fuel. We would not support a Federal mandate that the oil companies market gasohol or alcohol as fuel. We would however, support incentives that the Government might develop which would encourage the marketing of gasohol and the removal of any obstacles that are used by the oil industry to discourage or impede the marketing of alcohol.

We recognize that major oil companies have spent millions on commercial advertising to develop an image of a quality product. Since gasohol has a cleaning effect of fuel lines, it must be used in new cars or operators should know they will need to change fuel line filters once the gunk has loosened and stopped at the filter.

Also, an older car that has some water in the tank from previous fuel or from condensation may experience more separation if gasohol is added, resulting in rough running or stopping when water is pulled through the fuel line.

The Government could assume the responsibility to educate the public about these problems so the oil companies do not have the risk of public rejection of their brand name because of the cleansing effect or water problem. With an informed public there should not be any problems. Maybe the Government should hold harmless any company sued for water in gas because of alcohol addition or problems associated with the cleansing effect.

If any auto company fails to cover gasohol using engines with the usual warranty, they should be required to show evidence of the problems or why the warranty does not apply.

If oil companies throw up warranty problems with gasohol, they too should show evidence of the major problems.

If the major oil companies alone or together refuse to handle gasohol, or consider alcohol as an octane booster, when supply is offered by other private industry, they should be subject to show cause examination.

If any one uses the hunger for world argument against alcohol from crops for fuel they should be made aware that:

A. Only starch is used for alcohol.

B. Protein is in short supply in the world. Starch is plentiful. When alcohol is made from corn the protein is still available for feed or food. Only the starch is used.

C. Corn production can be increased 25 percent with no decrease of other grain. If the positive energy balance argument is used, we should recognize that:

1. We can use coal to create a liquid fuel for motor vehicles.
2. Electrically gives us only $\frac{1}{3}$ of the energy that was originally in the fossil fuel.
3. We are talking about using surplus corn—corn already produced—so why even consider the energy used to produce the corn.

4. Most energy estimates start with plowing the field or even mining the ore to make the steel to make the tractor, etc. This is a questionable argument.

5. It takes energy to export the corn the only other real use for it. Export energy requirements are never calculated.

We believe the best information available will show a positive energy balance if stillage can be used in wet form and a near balance if concentrated high protein gluten feed is the byproduct.

Other whether real or imagined deserve congressional review or examination to determine whether or not these are impediments and could be eliminated.

Can oil companies, at the refinery level, pass through directly the cost of alcohol as they can increased gasoline prices?

Are the regulations of the Bureau of Tobacco, Alcohol and Firearms an impediment? This question is probably most significant, as it relates to small plants.

It would be less of an impediment if all Government loans, grants and guaranteed loans were funneled through one agency. We believe that agency should be the Department of Agriculture that has more knowledge about agriculture than all the other agencies combined.

Government loans and grants, the law states, can only be made if the project shows at least an energy balance. This provision should be eliminated from the law because it's nearly impossible to determine and why does it matter?

Research reports that we have seen would indicate that alcohol used as an octane enhancer or booster would permit getting 4 percent to 6 percent more gasoline output per barrel of crude. In addition, we believe that by using alcohol in gasoline we would experience less pollution and could possibly eliminate the required catalytic converter. This holds the potential of our getting 6 percent to 10 percent more miles per gallon.

We believe that the production and marketing of gasohol, alcohol as an octane enhancer, alcohol as a fuel itself and alcohol as an extender for other liquid fuels with the alcohol made from crops has the potential of making a significant contribution to the betterment of agriculture and reducing our dependence on imported crude oil. The Government we believe, should eliminate all impediments to its production and marketing. In addition, there should be tax incentives, research and government encouragement to its development.

Senator Metzenbaum, you and the co-sponsors of S. 2251 are to be commended for the introduction of this bill that provides a vehicle for surfacing impediments to alcohol production and marketing. Thank you for the opportunity to testify.

PREPARED STATEMENT OF MICHAEL J. STIENTJES

The American Farm Bureau Federation is a voluntary, general farm organization, representing over 3 million member families in 49 states and Puerto Rico.

Farm Bureau understands the seriousness of our nation's energy problems, and the potential for shortfalls of crisis proportions due to our overdependence on foreign suppliers. We vigorously endorse government and industry cooperation to develop domestic energy resources, including gasohol.

Farm Bureau policy for 1980 states:

It is imperative to the nation's long-term best interest that government and private industry work cooperatively and immediately to develop all possible sources of energy. Government funds and private funds should be used to hasten energy research with the objective of ending our dependence on other nations for sources of energy. This research should include coal gasification, the utilization of feedlot and other organic waste, shale oil extraction, utilization of alcohol as fuel, solar energy, wind energy, nuclear energy, wood, geothermal, and other sources of energy.

Funds should be expended to determine the appropriate sources and process for producing alcohol for gasohol or other fuel using forest and agricultural products. Federal regulations and laws should be revised to minimize obstacles to fuel alcohol production.

Alcohol from grain and other agricultural products can be an alternative energy source. We support the production of alcohol from grain and other agricultural products and urge industry and agricultural cooperatives to investigate and produce this fuel extender. Government incentives should be made available for the production and marketing of gasohol products and for gasoline with alcohol used as an octane booster in the place of other products currently used.

Farm Bureau, therefore, opposes government regulations and business practices which discriminate against, or arbitrarily limit, the production or use of gasohol. This would include oil company limitations on the use of their credit cards for the purchase of gasohol at franchised stations. We believe that credit must be made available for gasohol on the same basis as for all other fuels and products available at such stations.

PREPARED STATEMENT OF JOSEPH D. HERTEL

Mr. Chairman and members of the Senate Anti-Trust Subcommittee and the Senate Select Committee on Small Business. I represent Ohio Farmers Union and the National Farmers Union.

My name is Joseph D. Hertel. I am a farmer from Van Wert, Ohio and I have had 35 years experience as a mechanic. I have seen gasohol and straight ethanol powered vehicles in operation and can vouch for the fact that vehicles using alcohol fuels do operate efficiently.

By now, we all know that, originally, the first cars Henry Ford produced were designed to run on alcohol. We should also be aware of the historical involvement oil companies have had in the defeat of alcohol fuels. During the depression, after much research, the Nebraska legislature petitioned Congress for a law requiring use of farmers alcohol in all motor fuels. This was looked upon as a means of pulling the country out of the depression by many leaders. The oil industry, through a \$2 million campaign, defeated that program. During World War II the major opposition to the construction of alcohol fuels plants was the oil companies, even though we were using alcohol as a fuel during the war effort. This shows me that even during times of national crisis, big oil continued to promote its own self-interest above national need.

We are now faced with another crisis, that of energy, and, once again, the oil companies are busy taking care of number one instead of using their resources to help lead this Nation out of this national emergency.

We have known for more than 60 years that alcohol fuels work. We should not, once again, let ourselves be talked into laying this issue aside in favor of maintaining the stranglehold big oil now has on the life of every American.

Gasohol is a good product. It is efficient. It is cleaner burning, reducing air pollution. There is increased mileage per gallon when gasohol is used. Other products, such as tires, can be made from it instead of petroleum. Mixing alcohol and gasoline would reduce the amount of money going to foreign oil producing nations. It would generate a major new market for American farm products and provide employment. It could help America move even closer to energy self-sufficiency. It may well strengthen the dollar on the world market. The arguments for gasohol far outweigh those against it. I feel that failure to act positively on gasohol would be a desertion of the American public. It must have a chance to prove itself without interference from those forces who look upon it as a threat to their profits, which are almost ungodly as it is, an obviously have little concern for the possibility of financial ruin of our nation.

There are those who say that using corn to produce alcohol will contribute to inflation. Corn is primarily a feed grain. After it has been through the distillation process, it can still be used as a feed grain. A more efficient one, I may add.

Secretary Bergland, in a statement to the Senate Subcommittee on Agriculture, Nutrition and Forestry, has stated that "The USDA has taken a positive stance on the production of alcohol fuels from agricultural materials."

As I noted before, I have been a mechanic for 35 years. I have seen what alcohol fuels can do. Quite frankly, I would stand on my own years of experience before accepting the theories of those who would like to see gasohol treated as a pipe dream or eliminate it, once again, as a valuable source of energy that is so greatly needed.

I have seen a 1974 Chevrolet with a 350 cubic inch engine that was previously getting 13 miles to a gallon of gas converted to straight alcohol and is now averaging 21 to 22 miles per gallon after 20,000 miles.

A dynamometer test on an International Harvester 986 tractor with a turbo-charger that produced 125 horsepower and used 8½ gallons of diesel fuel per hour prior to its conversion to an alcohol/water/diesel fuel mix. After the conversion the tractor had to be throttled back to stay at 125 horsepower. The engine used 6 gallons of diesel fuel, one gallon of alcohol and one gallon of water. The conversion saved 2½ gallons of diesel fuel per hour.

Finally, I want to emphasize to you that through observation and practical use I have no problem endorsing gasohol or other forms of alcohol fuels. It works and as I stated before, we've known this for more than 60 years. The only thing standing in the way of gasohol is the oil industry which has historically opposed it and is still opposing it by trying to intimidate small, independent businessmen and refusing to extend credit to those who would use it by not allowing it to be charged on their credit cards.

In this time of crisis, we would be wise to give every possible means of improving our energy situation as much support as possible and S. 2251 will help insure this.

I call your attention to the attachments to this testimony that substantiates many of my statements and I thank you for his opportunity to speak to you today.

The Gasohol Idea

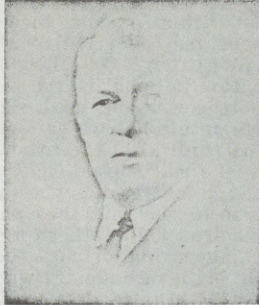
Just how did the gasohol idea get started?

Outside of the fact that the original Otto engine used alcohol, it seems safe to say that the real impetus came out of Europe, South America, China, the Philippine Islands—and finally Nebraska. The editor of *Gasohol U.S.A.* did his first article on farmers' alcohol in 1964. It was really an interview with Donald Despain, a Nebraska industrial relations man then in retirement and barely able to talk. He had written a book styled *The One and Only Solution to the Farm Problem*.

The facts of the hour were simple enough. Agriculture was in a depression. Farmers were getting the same prices on the average that they had received 18 years earlier. This created a cost-price squeeze. In the nation's industrial history, new industries or radical improvements in existing industries had always lifted the country out of depression, and Despain believed power alcohol could lift agriculture into a new prosperity. Despain had an abiding faith in power alcohol and in its destiny. It was, in his way of thinking, an "only" solution.

He recalled how Dr. William J. Hale had expressed the concept before the Gillette Sub-Committee on Agriculture in the U.S. Senate. "Alcohol is the only outlet in mass form for excess agricultural products we have. There is no other way in which we can bring enormous quantities of agricultural products into the chemical-industrial world except through their conversion into alcohol, which they contain in great quantity. Industrial alcohol can be manufactured from any of the farm products that contain sugar or starch. In the northern states the principal sources are corn, wheat, sorghums, rye, barley and potatoes. In the southern states they are sugar cane, corn, sweet potatoes and rice."

During the early 1930s, the alcohol concept came home from all points on the global scene. Chemists and engineers at Iowa State College spent several years in research, study, experimentation and road tests to prove the efficiency and sound value of alcohol blended with gasoline. It proved to be a



Donald Despain

practical, superior motor fuel. In addition, a codification was made of scientific data available from all European countries that had proved by use—not theory—this motor fuel's efficiency, plus the economic values to various nations. These data covered close to 50 years of actual use.

Early in the American investigation, the Illinois Agricultural Association distributed approximately 500,000 gal-

lons of 10% blend of alcohol-gasoline to the general public. Report blanks went to each customer. An analysis from 1,374 customers brought out the following:

1,149 reported easier, quicker starting.

1,308 reported increased acceleration.

1,293 reported less "knock."

1,291 reported increased power.

1,301 reported general performance of the motor better.

1,329 reported the trade would pay a premium if necessary to obtain the alcohol blend.

Gurney Brothers of Yankton, South Dakota, operators of the largest general supply store in the territory at that time, also distributed over 200,000 gallons of the alcohol-gasoline blend, and their reports were about the same.

The State of Nebraska encouraged the use of farmers' blended motor fuel with a rebate of 2 cents a gallon to all motorists who purchased the blend. And the Legislature petitioned Congress for a law requiring use of farmers' alcohol in all motor fuels.

The resolution went to Washington. A committee of farmers, bankers, busi-

Foreign ads on alcohol-gasoline mixes, circa 1930s.



Motor Trucks

Powered with Engines especially
designed to burn **ALCOHOL**

These Facts have been proven:

**They are absolutely Dependable—
They are more Economical—
They are free from Carbon—
There is no loss of Power—**

We shall be pleased to make a demonstration at any time, and
our demonstration will convince you.

On Display at our Showrooms

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Dependable—Economical

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Truck-built to meet the needs of rugged work
and bus operation. Sturdily constructed, dependable to operate.

Powered with the
Famous "221" GMC
valve-in-head Engine

Alcohol burning—
Optional



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nessmen—Donald Despain included—carried the message to the White House. "We were greeted with enthusiasm by the President," Despain recalled, "and by all the members of Congress we talked to. All agreed that this was the solution to the farm problem and would pull the country out of the depression."

The plan didn't survive, of course. The petroleum industry launched a \$2,000,000 campaign to defeat the farmers' alcohol blend program. In the final analysis, oil millions won. Roosevelt and the Congressmen lost their enthusiasm. The oil lobby knocked out the Nebraska bonus plan the following session.

On the surface, the campaign against alcohol came on as high science. Schoolmen joined oil interests in saying that alcohol wasn't economical, that it wouldn't work in cars, that it wrecked engines. And yet at the same time the several oil companies were feeding America this misrepresentation those same firms had big billboards all over England and Europe boasting about the superior qualities of blended petrol, a blend of alcohol and gasoline such as American farmers were asking for to solve the farm problem.

Then there was that interlude known as WWII. Distillation of drinkable whiskey was curtailed. Almost all distilleries were converted to the production of grain neutral spirits.

In addition to that, several plants were set up by the government throughout the country, albeit not without difficulty. After the Army started using alcohol they increased the speed of pursuit ships approximately 50 miles per hour. This fuel—a blend of gasoline and 100 proof alcohol—was indeed used in B-29 bombers, where the *Gaso-hol U.S.A.* editor served as a tail gunner. The breakthrough wasn't easy, and it was temporary.

George E. Johnson, a former Nebraska State Engineer, managed the Omaha Alcohol Plant. Here are paragraphs from a letter he wrote detailing the passage of events:

"I served on an Advisory Committee of the Chemical Branch of the War Production Board. This Committee received one report soon after the Army began using 100 proof alcohol. When they started they used 20,000,000 gallons of alcohol reduced to 100 proof in one month. After that report we could get no further information from the Army on the amount of alcohol used

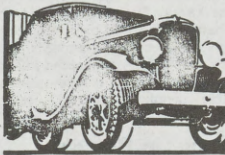
for motor fuel. . . During the war the principal opposition to the construction of the alcohol plants was the oil companies. For more than a year Mr. Frank Robinson and I put in more than half our time to get the allocations through. In so many places we found the oil companies had interlocking directors and financial arrangements where they were controlling the activities of a large part of the research being done by the Department of Agriculture as well as other Departments.

"We found Secretary Ickes had from 30 to 33 advisers who were officers in the various oil companies and who either had indictments pending for violations of the federal laws, or who had been found guilty of violation of the federal laws. These were principal men advising the Secretary on the liquid solid fuel program during the war. The influence extended beyond the work they were scheduled to do.

"We found one man who was Secretary of the Rubber Reserve Board. He had formerly been a bank examiner in the Chicago area at a salary of \$2,400 per year. He had been brought in and made Secretary of the Rubber Research Board. He was the principal man in dealing with the oil companies

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MODEL T-20 DRAWBAR HORSEPOWER 25
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Some advantages of
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Blended Motor Spirit

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VOLUMETRIC EFFICIENCY

COMBUSTION CONTROL

THERMAL EFFICIENCY

An essential feature with a motor spirit is that it has no tendency to evaporate. It is produced when alcohol and gasoline are mixed in a special way, so that the mixture is stable and does not break up. It is this stability that makes it so valuable for use in the motor.

The high latent heat of alcohol makes the charge, and this is the reason why it is so valuable in the motor. It is the reason why it is so valuable in the motor. It is the reason why it is so valuable in the motor.

Alcohol burns and releases the power more by releasing the rate of pressure than the alcohol blend releases the latent heat of the motor. It is the reason why it is so valuable in the motor. It is the reason why it is so valuable in the motor.

Alcohol burns and releases the power more by releasing the rate of pressure than the alcohol blend releases the latent heat of the motor. It is the reason why it is so valuable in the motor. It is the reason why it is so valuable in the motor.

CLEVELAND DISCOL
BRITISH MOTOR
ALCOHOL SPIRIT

GASOHOL IDEA . . .

on the expenditure of some \$800 million of government funds. At the end of the war, he was given a job at \$36,000 per year with the oil interests. . . One must realize that regardless of politics or what party is in power, it is very difficult to change policies and methods developed by our principal corporations."

Alcohol is as good a source of synthetic rubber as petroleum. As an industry, agriculture is the biggest customer of the rubber industry.

Yet when the war ended, one firm—Firestone Tire and Rubber Company—teamed with a firm in Bombay to build a \$30 million synthetic rubber plant, the rubber to be made out of alcohol. Firestone's venture in India suggested that American farmers were hauling their surplus corn to government bins on tires made from India's sugar cane.

This was the general picture when Nebraska State Senator Loren Schmidt introduced the gasohol measure almost a decade ago. Agriculture had reached the crossroads, and the choice had to be made between chaos and chemistry. That choice remains. One road is back to the self-contained basis of peasantry. The other is toward the independent position of supplying a fair share of its products to scientific industry—fuel, rubber, plastics, medicines. There it will find a steadily increasing market for its products without hurting the food supply. The gasohol program, if extended to the degree indicated, will underwrite a condition of balance whereby it will serve both the food market and the industrial market, both maintaining stable parity prices. One will balance the other. Surpluses will no longer exist, and stability plus security will elevate the farmer to his rightful and deserved position. When the farmer reaches that status, our national economic problems will go out the window.

After all, agriculture is basic and fundamental. Upon it all other business and commerce depend.

Why should Maine, Virginia, Idaho and other potato producing areas; why should the great midwest producers of corn, wheat, sorghum, grain rice, rye, barley; why should the fruit producing areas of Washington, California and Oregon and Florida be restrained in their production when their maximum

Illinois Bell Tests

Tests by Illinois Bell have indicated that gasohol improves mileage and saves engine maintenance costs. The company ran a three month comparison of 15 vehicles using regular gasoline and 15 using gasohol. Results revealed that the vehicles using gasohol average 4.48% better mileage.

"Our monthly maintenance review of the vehicles also indicates some saving in engine maintenance with the cleaner burning gasohol," reported Ron Aldridge, Manager-Automotive Services. "We also found that gasohol virtually eliminated gas line freezing problems during the winter months."

The company's road tests used fuel blended from 90% unleaded gasoline and 10% alcohol derived from agricultural products. "If the test results continue to be favorable," added Aldridge, "we will probably expand the use of gasohol to other locations in Illinois where gasohol is available."

Red Tape Before Sales

Part of the new gasohol scene is filling out federal forms—and there are plenty of them to fill! Grappling with government red tape can be frustrating at the best of times. *Gasohol U.S.A.* provides the following information to help ease the process.

Wholesalers will have to comply with IRS Form 637, which exempts wholesale gasoline purchases from the federal 4 cent per gallon tax when the gas is to be mixed with alcohol. This form concerns only wholesalers or gasoline producers. IRS has not yet fully developed their procedures with regard to alcohol fuels and as yet has no forms to use for wholesaler to retailer transactions. Also in the nebulous area is the procedure for application for a refund on taxes erroneously paid on gasohol

production will produce the most valuable chemical compound in the world? And—being denied the maximum production—they stand in line for handouts from the government like foreign peasants.

The rest of the story is still being written—and lived. A good recap of Nebraska's key role in this unfolding drama is told in Charles R. Fricke's report, elsewhere in this issue.

since the beginning of this year. It has been suggested that marketers ask refiners to apply for refunds by filing IRS Form 843, which is normally used for mistakenly paid taxes.

Gasohol proponent Senator Birch Bayh has advised marketers of gasohol not to pay the tax when gasoline is used for gasohol. But he also suggested that good records be kept to distinguish between taxable and tax exempt gasoline.

Another government agency much in evidence on the gasohol scene is the Bureau of Alcohol, Tobacco and Firearms (BATF). BATF forms must be filed whenever alcohol is used that has not been completely denatured, such as pure ethyl alcohol from a local still or farm co-op with no additives in it. Anyone handling or using such pure alcohol, or specially denatured alcohol, must obtain an industrial user's permit, post a bond with BATF, and prove the security of his premises. In all, there are a total of nine BATF forms to be filed in such cases. For more information, write a regional BATF office for booklet P 5000.1 (9-78), *Ethyl Alcohol for Fuel Use*.

MTBE Octane Booster

A new octane booster styled MTBE (methyl tertiary butyl ether) has been approved by EPA for use with unleaded gasoline in concentrations of up to 7%. Use of the additive was requested by Atlantic Richfield Company, but EPA's approval of MTBE applies to other refiners as well.

Additives such as MTBE increase the octane content of gasoline, reducing engine knock. Other additives in the past have been banned by EPA because of violation of emission standards. New additives, therefore, are needed to augment supplies of high octane unleaded gasoline pending universal use of alcohol.

Gasohol in Chicago

Gasohol made from Illinois corn is now being marketed in Chicago filling stations by the Archer Daniels Midland Company, of Decatur, Illinois. Up to 100,000 gallons of the company's denatured alcohol will be stored and blended by GATX Terminals Corporation at Argo, Illinois. When blended with gasoline, up to 1 million gallons of gasohol will be available for distribution in the Chicago area, according to a GATX spokesman.

Fact vs. Myth

Myth. The alcohol-gasoline blends give lower mileage than does gasoline.

Fact. This statement is based upon the fact that the heat content of alcohol is lower than that of gasoline. It is well known that the heat content of a fuel is not a perfectly reliable measure of fuel consumption, since many other factors are of considerable importance. Alcohol-gasoline blends containing 10 to 25% of alcohol give the same or better mileage than does gasoline without adjustments whatsoever. The average of a large number of data from careful dynamometer and road tests have revealed that a 10% alcohol blend will give about 8% better mileage than the base gasoline alone. This result is not due to higher viscosity or density, but is due to more complete combustion, better air-fuel distribution and similar factors. Only with extremely lean mixtures are the blends inferior to gasoline in this respect, and such lean mixtures are not used in practice.

Myth. Alcohol-gasoline blends require a different carburetor and ignition setting than those used with gasoline.

Fact. This statement also is based upon theory and not upon actual investigation. Alcohol-gasoline blends containing not more than 20% alcohol can be used interchangeably with gasoline without any change in the adjustments which are satisfactory with gasoline. If more than 30% of alcohol is used, then some slight readjustments are necessary in most cars. Between 20 and 30%, a few engines require readjustments.

Myth. Alcohol-gasoline blends cause "hard starting."

Fact. Neither theory nor the results of practical tests serve as the basis for this claim. On the contrary, the results of all investigations are in agreement in showing that the alcohol blends containing 25% of alcohol or less give as easy or easier starting than does the base gasoline alone. Furthermore, it is possible, by properly selecting the gasoline used as the base, to prepare alcohol blends with much larger amounts of alcohol without sacrificing easy starting. The volatility of an alcohol blend can be adjusted to any desired level just as in the case with gasoline.

Myth. Alcohol-gasoline blends require a long "warm-up" period.

Fact. It has been the common experience that a shorter warm-up period is required with the alcohol blends than with the base gasoline alone. This result should be anticipated on the basis of the physical-chemical properties of these blends. The decreased use of the choke possible with the blends results in diminished wear of cylinder walls and decreased crankcase dilution. The cold weather operation with the alcohol blends is particularly pleasing.

Myth. Alcohol-gasoline blends have higher latent heat of evaporation than does gasoline.

Fact. This is quite true. The implication is false. The higher latent heat of alcohol and of the alcohol-gasoline blends explains in part the greater power and acceleration which are obtained with these fuels. The differences are not sufficiently great to require any changes in the heat supplied to the intake manifold.

Myth. Alcohol-gasoline blends have higher flash points and higher ignition temperatures than gasoline.

Fact. It is not certain that there are any differences in these characteristics between gasoline and the same gasoline with 10 or 20% of alcohol. The results of very thorough dynamometer and road tests have shown conclusively that any slight differences which may exist are too small to be of practical significance.

Myth. Alcohol-gasoline blends cause corrosion.

Fact. This statement is based upon several misapprehensions. It has been observed that alcohol blends loosen scale previously deposited in the fuel system of gasoline. Such scale consists of gum formed from gasoline, which has the color of iron rust. Some people have believed that this indicated corrosion by the blends but this is not the case. Considerable fear has been expressed that the alcohol blends will dis-

solve shellac from carburetor floats. Floats have not been coated with shellac for many years and the coating now used is unaffected by alcohol in any concentration. The best evidence indicates that alcohol-gasoline blends cause less corrosion than is obtained with gasoline as the fuel. It is pertinent at this point to note that the alcohol-gasoline blends give less corrosion than is obtained with gasoline as the fuel. It is also pertinent at this point to note that alcohol-gasoline blends give less carbon deposition than is obtained with gasoline and will even remove previously formed carbon deposits. There is considerable evidence that the use of alcohol blends leads to longer engine life and decreased maintenance costs than are obtained with the same engine using gasoline.

Myth. Alcohol-gasoline blends dissolve oil from cylinder walls and emulsify lubricating oil in the crankcase.

Fact. Alcohol-gasoline blends have less solvent action upon lubricating oil than does gasoline and should, therefore, allow better cylinder wall lubrication. Less crankcase dilution with the alcohol-gasoline blends has been commonly reported and there has never been any indication of the formation of emulsions in the crankcase. If there is any real difference between alcohol blends and gasoline, as regards lubrication, it is definitely in favor of the blends.

Myth. Alcohol-gasoline blends cannot be stored and handled in present distribution systems.

Fact. Careful scientific and practical investigations reveal that alcohol-gasoline blends containing 10 to 20% of commercial anhydrous alcohol can be handled in all present storage and distribution systems. Water absorption does not occur in commercial storage or in the automobile fuel tank. Separation will not occur unless large amounts of water are introduced by rain, snow or other adventitious moisture. Only the ordinary precautions need be observed to prevent such additions of water. Scheller's 2 million mile test reports that water absorption is not a problem.

RICHARD F. MERRITT
ALCOHOL-ALTERNATE FUEL INSTITUTE
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BETHESDA, MARYLAND 20014
(301) 837-5437

FILL 'ER UP WITH gasohol

In the states where it is available, motorists are snapping up this gasoline-alcohol blend for their cars. Can it help ease the oil shortage? Could your car run on it?

ON A BALMY EVENING early last April, President Carter proclaimed on national television his first widely recorded official endorsement of an oil-conserving fuel that has been powering automobiles successfully for more than 60 years. "From the products of our forests and croplands," he declared in his address announcing the decontrol of domestic oil prices, "we can produce more gasohol—already being used to replace gasoline in several midwestern states."

As it turns out, the President wasn't strictly accurate. Gasohol doesn't really "replace" gasoline. In fact, 90% of it is unleaded gasoline. The remaining 10% is alcohol—200-proof ethyl alcohol, or ethanol, to be precise. And in that portion of the blend lies the basis for some appealing claims for this hybrid fuel.

- ▶ Gasohol, say its advocates, burns cleaner than either leaded or unleaded gasoline and cuts carbon monoxide emissions by as much as 30%.
- ▶ It makes many cars run more smoothly, reducing engine knock and eliminating "dieseling," the tendency of some engines to keep running after the ignition has been turned off.
- ▶ In some tests gasohol has delivered more miles per gallon than straight gasoline.
- ▶ Since the alcohol component of gasohol can be brewed from practically anything that grows—corn, sugar cane, potatoes—it is a renewable energy source that can help us reduce our dependence on imported oil.
- ▶ Fermenting the alcohol from farm crops would create a new market for farmers, thus easing the problem of persistent farm surpluses and saving the money the government now pays farmers

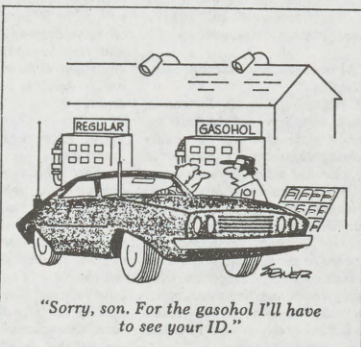
not to grow certain crops, such as corn and wheat.

If there is truth to such claims—and there is—then why haven't we embarked on a full-scale gasohol production program so that everyone's car can use it? The answer comprises something of a mixture itself: part technology, part economics and part politics.

Not everyone agrees that gasohol is as promising a fuel as its advocates say, but no one disagrees with the claim that it works. If your car runs well on gasoline with an octane rating of about 90, it will run well on gasohol with no alteration of your engine. Some retailers do advise motorists to keep an eye on the fuel line filter when they first make the switch because in a dirty engine the alcohol loosens sludge and sediment, which can clog the filter.

At one time gasohol opponents warned that the alcohol would have a tendency to separate from the gasoline in the car's tank, causing hard starting in winter and vapor lock in summer. But millions of miles of driving in the seasonal extremes of the Midwest haven't supported that argument, and such warnings aren't heard much anymore.

The fact that gasohol works so well makes it



difficult for an oil-hungry nation to resist. Gasohol seems to offer us a way to stretch gasoline supplies by 10% without having to discover a single additional drop of oil. Its advocates insist that that is exactly what it would do. Its opponents—who have been found mostly in the large oil companies and, until recently, in the federal government—argue that too many roadblocks stand between the relatively small scale production of today and a program large enough to make a significant contribution to our energy needs.

How much more can we make?

Right now most of the alcohol going into gasohol comes from a single plant in Decatur, Ill., operated by the Archer Daniels Midland Co. A couple of smaller plants elsewhere in the country add a little bit more. Altogether these distilleries are making enough ethanol to mix up about a million gallons of gasohol a day—less than 1/4 of 1% of the country's daily gasoline consumption. Before those numbers can grow significantly, gasoholics will have to convince potential investors in new plants that they can resolve a number of disputes in their favor.

Raw materials. Opponents of a large-scale gasohol program say that producing enough ethyl alcohol to replace a significant amount of gasoline would require such huge crops that too much of the country's farm acreage would have to be diverted from food production. Gasohol defenders insist that the millions of acres the government keeps out of production deliberately each year are sufficient to grow the crops needed for an alcohol fermentation program that could replace 10% of all the gasoline we burn. Furthermore, they say, the land wouldn't be lost for food production entirely. Fermentation of such starchy crops as corn yields a high-protein by-product that could be sold on world markets, thus helping to reduce the troublesome deficit in our balance of payments.

Cost. It costs about three times as much to make a gallon of ethanol in today's plants as it does to refine a gallon of gasoline. Thus, adding ethanol to gasoline raises the price at the pump. But most dealers have been selling gasohol as fast as they can get it, thanks in part to tax breaks that bring down the fuel's price. It is exempt from the 4-cents-a-gallon federal gasoline tax until September 1984, and in Iowa, where it sells best, gasohol was voted an exemption from the state levy on gasoline. The results of these and other tax breaks is that in most places gasohol sells at about the same price as unleaded premium gas. Gasohol

backers say that technological advances in new plants will bring the price down even more. Nevertheless, conservation, not economy, will continue to be gasohol's strongest selling point.

Energy balance. Perhaps the most stinging charge gasohol's detractors make is that the production of ethanol consumes more energy than the fuel eventually delivers in your car. Gasoholics say this criticism misses the point. The alcohol from distillation plants burning coal, municipal refuse or some other plentiful commodity would extend our supply of gasoline, which is scarce. Besides, they say, studies showing a negative energy balance were made at old plants producing beverage-grade alcohol. Producers of fuel-grade alcohol needn't be as fussy about purity, and new plants would incorporate technological improvements that deliver the alcohol with a favorable energy balance. So far, though, such a plant has not been built.

Getting from here to there

For most Americans the debate over gasohol is purely academic, since the fuel is probably not sold at their local filling stations. Of the 600 to 700 gasohol stations in the country, most are in one state, Iowa. Nebraska, Illinois and Indiana sport a number of outlets, and a few stations are located in each of about a dozen other states. The reason for the fuel's popularity in the farming states is simple: The ethanol going into gasohol so far has been distilled almost exclusively from corn, and corn is a very big farm crop.

Farm crops aren't the only source of alcohol. Timber, coal, even solid municipal wastes can be made into a form of alcohol called methanol through a gasification process that bypasses fermentation. Methanol backers point out that it, too, can be used as a gasoline extender, and they have figures to show that it is cheaper to make than ethanol. The Mobil Oil Co. has even demonstrated a successful, though very expensive, way to convert methanol into high-octane gasoline.

The struggle over gasohol is now centered in Washington, since federal incentives for building alcohol plants of one sort or another may make the difference between a regional gasohol program and a national one. Gasoholics think the tide is running in their favor. "The President's endorsement gave us recognition and a sense of legitimacy in other people's eyes that we didn't have before," says Richard Merritt, an unpaid lobbyist for the National Gasohol Commission. "It is now socially acceptable in Washington to favor gasohol."

Senator METZENBAUM. Our next panel is a panel of marketers: Mr. Victor Cino, of the Greater New Jersey Service Station Dealers Association of Tenaflly, N.J.; Mr. Wayne Konitshek, president, Connecticut Dealers' Association, of Stamford, Conn., and Mr. Alfred M. Campbell III, of MAR-CAM Industries, Inc., Glenside, Pa.

In the interest of time, I will ask Mr. Cino to make a statement. Then, I will have some questions for the other two men on the panel. Perhaps we can move along a little more rapidly that way.

Mr. Cino, you have a rather lengthy statement. All of it will be included in the record at the conclusion of the oral testimony. We would ask you to hold your remarks down to the same limited time that we asked of the previous witnesses.

PANEL OF MARKETERS:

STATEMENTS OF VICTOR CINO, GREATER NEW JERSEY SERVICE STATION DEALERS' ASSOCIATIONS, TENAFLY, N.J.; WAYNE KONITSHEK, PRESIDENT, CONNECTICUT DEALERS' ASSOCIATION; ALFRED M. CAMPBELL III, MAR-CAM INDUSTRIES, INC., GLEN-SIDE, PA.

Mr. CINO. Mr. Chairman, thank you for having me here.

Before I get into my prepared presentation let me say at the outset that our association supports fully S. 2251. We strongly urge the passage by the Congress of that bill.

For the purpose of this presentation, if you would be so kind as to refer to the document section, at the back of the presentation, after page 17, it might be easier to follow me along on the presentation.

Mr. Chairman, members of the Senate Subcommittee on Antitrust, Monopoly and Business Rights and the Senate Select Committee on Small Business, let me say at the outset that we are of the opinion, based on the data compiled for this hearing, that most of the major oil companies have made serious attempts to limit or exclude and certainly to discourage the sale of gasohol through major brand retail outlets.

We might just as well get right into the hard facts of the abuses, the stumbling blocks, the methods by which the major oil companies have seriously discouraged and hampered the marketing of gasohol through branded retail service stations.

Let us begin with Shell Oil Co. on page 3 of my presentation.

When gasohol became a more readily available motor fuel, Shell retailers asked Shell Oil Co. its policy on the sale of gasohol by its retailers through its branded outlets. Shell sales representatives replied to inquiries that Shell had no policy, and that retailers would be wise to avoid the sale of gasohol until a Shell position on gasohol was articulated.

Shell representatives further asserted that gasohol was not a good motor fuel, and that retailers should avoid marketing gasohol because of performance problems. Phase separation characteristics of alcohol that may cause misfiring of customers' vehicles, clogging of fuel filters, and water absorption problems associated with alcohol.

On February 13, our attorney, Mr. Charles Abut, asked Shell to communicate Shell policy on sales of gasohol through retail outlets. Shell's response is documented in exhibit Shell B.

While Shell clearly accepts the right of the Shell retailer to sell gasohol, they warn in their letter that serious problems may arise if a retailer elects to market gasohol through Shell-leased equipment.

The intent of the last paragraph in their letter to Mr. Abut is to discourage the retailer from selling gasohol, first, by pointing out gasohol's alleged performance deficiencies, and then by disclaiming any responsibility for maintenance of any Shell equipment utilized in the sale of gasohol.

In addition, Shell indicates to the retailer that they will be on guard for any violations of Shell's trademark, and any violations of Federal, State or local laws arising out of the sale, handling or storage of gasohol.

In short, Shell is warning the retailer to be very careful if he plans to sell gasohol, because Shell knows that any trademark violation, or any violations of law, could mean franchise termination; and in our opinion, these veiled threats of franchise termination are enough to discourage any retailer from selling gasohol.

But has Shell indicated its policy to its entire retailer population? The answer is, "no, they have not."

Despite the fact that Shell has responded to some isolated retailer inquiries, Shell has yet to articulate a policy on gasohol to its entire retailer organization, preferring instead to keep retailers in the dark with respect to their legal rights to market gasohol through their branded outlets.

Since no Shell policy position has been communicated to the majority of retailers, the marketing of gasohol by Shell retailers has been discouraged and limited to a considerable extent. Retailers, for the most part, have had to rely on the word of their sales representatives for Shell policy, and that word too often is casual, unreliable, and without authority or responsibility.

Thus the Shell representative can take a position on gasohol that discourages retailers from selling gasohol, and that for the retailer has essentially the force of law, while Shell officially has no policy on gasohol.

Too often retailers would rely entirely on the words of the Shell representatives, and this reliance is unfortunate, since the representative can say anything, and the retailer will believe him.

At present, the majority of Shell retailers have not received any formal communication on Shell's gasohol policy. I believe and we believe that failure to communicate with its retailers has been the single most important factor in limiting the sale of gasohol through Shell branded outlets.

I will turn now to Gulf Oil Co. One of our association retailers, Mr. Arthur Goins, was told by his Gulf Oil representative, according to Mr. Goins, that if he sold gasohol through his branded Gulf service station, his franchise would be terminated. Gulf exhibit D is Mr. Goins' statement verifying the threat of court action and franchise termination.

Our attorney, Mr. Charles Abut, sought to verify the threat in a telephone call to Gulf Oil. The Gulf Oil official refused either to confirm or deny that the threat was made.

Mr. Abut followed his conversation with a letter to Gulf, exhibit A, asking again to confirm or deny the threat of franchise termination.

In a return letter to Mr. Abut, Gulf refused to admit that the question of franchise termination ever came up in conversation.

Mr. Abut's second letter to Gulf informed that company that a memo of the Abut-Gulf conversation had been prepared, and that the subject of franchise termination did arise.

Gulf Oil has yet to respond to Mr. Goins' charge that he was threatened with franchise termination if he decided to sell gasohol through his branded outlet; and Mr. Goins is too fearful now of franchise termination even to consider marketing gasohol.

Consequently, he has not sold one drop of gasohol. In his case, Gulf has been successful obviously, in discouraging the sale of gasohol.

In summary, Gulf has yet to state its gasohol policy to its retailers, again, by any formal written communication.

Complaints regarding Mobil Oil Co. begin on page 7.

According to Oil Express, in its weekly publication dated January 21, 1980, Mobil Oil Co. has no objection to the sale of gasohol by its branded retailers, provided that retailers install a separate gasohol tank and pump at the retailer's own expense.

However, if they choose to market gasohol with pumps and tanks leased by Mobil, then retailers must purchase a conversion kit for the purpose of converting the round Mobil gasoline pump dispenser to a square pump dispenser.

Sales representatives have told retailers that the Mobil round pump dispenser is a trademark symbol, and that, consequently, any sale of product other than Mobil product through the round pump dispenser would be considered a Mobil trademark violation.

Mobil confirms this policy position in Mobil exhibit B, a letter by Mobil to our attorney, Mr. Charles Abut.

One of our association members, a Mobil retailer, Mr. Herbert Steris, has been told that the Mobil conversion kit for his round pump would cost him approximately \$400 per pump dispenser.

However, when he asked his sales representative for a conversion kit, he was informed that Mobil did not have any conversion kits available for sale at the present time.

His Mobil sales representative then told him that if he sold gasohol through the round pumps without the Mobil kit, that Mobil would consider such a sale a trademark infringement.

Mobil's letter to Mr. Abut was accompanied by a so-called energy update newsletter, prepared by Mobil, which portrays gasohol as having few or no benefits to offer as a motor fuel, as probably being energy deficient, as being more costly than gasoline, as possibly adversely affecting engine performance, and as doing nothing to improve our energy supply.

Clearly, the newsletter is designed to discourage the use of gasohol among Mobil retailers.

I think more importantly that Mobil has failed to advise its retailers in writing of its gasohol policy. It has kept its retailers in the dark, forcing them to rely to a great extent on information passed on to them by their sales representatives. Mobil policy positions are thus relayed to retailers in casual conversations, without official sanction.

Gasoline retailers have an unfortunate tendency to rely heavily for oil company policy positions on oil company sales representatives.

Their oral communication on the subject of gasohol has tended to discourage the use of gasohol by Mobil retailers, and to imply court action and possible franchise termination if gasohol is sold through Mobil pump dispensers without the Mobil conversion kits.

Thus has Mobil effectively blocked the sale of gasohol for the majority of its Mobil retailers, while at the same time not threatening legal action for any retailer selling gasohol by any formal, legal policy position on their part.

Texaco. One of our association members, Mr. John Potter, a Texaco retailer, received a phone call from his Texaco representative soon after beginning the sale of gasohol through his service station. His

representative demanded that he pay his rent on the service station in advance of the first of the month.

Senator METZENBAUM. I notice you have 17 pages.

Mr. CINO. I will move quickly.

Senator METZENBAUM. I wonder if you could move along company by company, which is good, but see if you can shortcut it, and we will put your entire statement in the record.

Mr. CINO. OK. Fine.

I will review very briefly the Texaco problem here. Mr. Potter, a Texaco retailer, has been paying his rent generally in the middle of the month, by check, when he received his first gasoline delivery which usually came on the 14th and 15th of the month. When his sales representative arrived at his service station and found out that Mr. Potter was selling gasohol, he advised Mr. Potter in no uncertain terms that he had to pay his rent, from then on, on the 1st of the month, and that a check was due at the office prior to the first month's business.

Mr. Potter's letter is here enclosed, and it clearly indicates that Mr. Potter has been paying rent on the 15th and 14th of the month, for the last 8 years of business. But this was a way that Texaco found to harass Mr. Potter simply because he had decided to sell gasohol.

As recently as February 28, I might mention, Texaco has announced that its retailers may not use the Texaco credit cards for the sale of gasohol not provided by Texaco.

Exxon—I think Exxon's—the problems that the Exxon retailers have had with Exxon have been summarized rather appropriately in recent months.

Let me say quickly to summarize that two or three of the major problems that Exxon has made for the retailer has been, No. 1, obviously, the restriction on the use of the Exxon credit card, which, incidentally, may be a temporary restriction.

Exxon has not said that they are permanently allowing the retailers to use that Exxon credit card. So we might caution the committee that although Exxon at this moment is saying: "Yes, the Exxon retailer may use the Exxon credit card," that is not going to be their policy necessarily tomorrow. That certainly wasn't their policy as indicated in my statement a few months ago.

So, they obviously have changed course a number of occasions. They may very well change course in the future.

They have also asked the Exxon retailers to indemnify them for any sales of gasohol through pumps and tanks leased to the gasoline retailer. This has provided a tremendous burden and stumbling block for the retailer in marketing of gasohol because he is very concerned that if there should develop a leak, let us say in the gasoline tank, then he would be responsible so far as Exxon is concerned, and the cost for repairing tanks, gasoline tanks, is very, very expensive.

So, that has been a very serious discouragement for many of our Exxon retailers in selling gasohol.

Senator METZENBAUM. Weren't some of the retailers threatened with the loss of their franchise?

Mr. CINO. Yes, sir, they were.

Senator METZENBAUM. That was done according to your testimony, both by letter and orally; is that correct?

Mr. CINO. Yes. Mr. Anthony Brienza, an Exxon retailer, was told that if he sold gasohol through his branded Exxon station, he would have to take the pumps and signs out of his station.

Now we have here a letter by Mr. Brienza. I believe you have that in the packet of documents. I take that back, sir. That was Getty Oil Co. and Gulf Oil Co. who advised Mr. Goins, our Gulf dealer, that if he sold gasohol he would be taken to court. That is included in the Gulf letter.

Senator METZENBAUM. You state that the Exxon letter from Mr. Art Dudley, the Exxon district manager, to Mr. Albert Ruth, Exxon retailer, contained a carefully worded reminder that Mr. Ruth should be aware that under the provisions of the Petroleum Marketing Practices Act, a trademark violation is grounds for termination or nonrenewal of the franchise relationship.

Mr. CINO. That's correct.

Senator METZENBAUM. That certainly is enough of a threat.

Mr. CINO. Yes, sir. I would say it is a threat, but no Exxon personnel had explicitly stated to any of our retailers that they would be terminated if they sold gasohol.

However, in the Gulf situation, we had a situation where the retailer felt that way.

Senator METZENBAUM. I don't want to confuse you, but your testimony indicates that Mr. Anthony Brienza was so told by Exxon.

Mr. CINO. He was told, that if he sold gasohol through his branded Exxon station that they would take the pumps and signs out of his station. They didn't say they would terminate him.

Senator METZENBAUM. Very well. It seems he wouldn't be able to do very much without the pumps.

Mr. CINO. That's correct. They didn't say they would terminate his franchise, however. But the ultimate effect of their act would be to terminate his franchise.

Senator METZENBAUM. No Exxon sign, no pumps, no gasoline, but he does not lose his franchise, anyhow.

Mr. CINO. I would agree with you there, sir; the Getty Oil Co. Mr. Brienza, again, who also happens to be a Getty retailer, asked his Getty district manager for a clarification of Getty's policy on the sale of gasohol. Getty did not reply to the letter. Instead, Mr. Cooke, the Getty district manager went down to visit Mr. Brienza, and advised him that at that time they preferred that Mr. Brienza not sell gasohol at his service station, that Getty was testing gasohol in company vehicles, and would prefer that Getty retailers not sell gasohol until the results of the testing were made known. He advised Mr. Brienza that he would get back to him.

Getty has not formally communicated with Mr. Brienza since then.

In a letter to us, Mr. Brienza declared, "As of right now, February 25, I cannot sell gasohol at my station."

So the ultimate effect of that visit by the Getty district manager was to dissuade Mr. Brienza from selling gasohol. That is exactly what he is doing now. He is not selling gasohol.

That essentially is a brief summary of my presentation.

Senator METZENBAUM. Thank you, Mr. Cino. Your entire statement will be put in the record at the conclusion of this panel's oral presentation.

Mr. CINO. Thank you.

Senator METZENBAUM. I will, in the interest of time, ask you some questions and Mr. Campbell some questions. If I have not permitted you to cover something you wanted to cover, we will make allowances for that also.

Mr. Konitshek, you represent the Connecticut Dealers' Association; is that correct?

Mr. KONITSHEK. Yes, sir; that is correct.

Senator METZENBAUM. Are you aware of any instance in which an oil company threatened to terminate an independent dealer's franchise because that dealer had expressed a desire to market gasohol.

If you are aware of it, would you tell us where and when and how?

Mr. KONITSHEK. OK. In our State of Connecticut, sir, it is virtually impossible. Not only do we have strict franchise laws, but we also succeeded in passing a divorcement piece of legislation. We outlawed company-operated stations in Connecticut. The major oil companies hardly talk to us any more, but they did make one mistake. Mobil's representative, Steve Brademus or Bradley, told a Stamford Mobil dealer, the dealer's name was Michael Fox, on Mike's service center, on Washington Boulevard, in Stamford, Conn., that if he sold gasohol in his station he would be terminated, his franchise agreement would be terminated.

Since I testified at Congressman's Bedell's committee, in October, and brought that up to the record, Mobil has since gone to him and said, "I didn't tell you that. That is not what we meant."

Basically, sir, if I may, I would just like to interject one thing which I think we are missing here to complete full circle this picture, if I may. I don't have a prepared statement to hand in to the record.

First of all, I would like to state that I do support emphatically the bill S. 2251, and I would like to commend you, Senator Metzenbaum, for introducing this legislation. I feel that you, Senator, know more about the oil industry than any Senator in this U.S. Senate, including Senator Long.

If some of what I have to say sounds like your own words, I have been stealing your lines for the last 10 years, so it may.

Basically, we started—the Exxon credit card thing started because of my dealers. We are the only Exxon dealers in the Nation selling gasohol on their credit cards. So that is why I would like to, if I can, bring you completely how this credit card thing started.

Mr. Campbell, Iowa, Nebraska, Kansas, the sales of gasohol, these sales are going on, but these are sales to independent-owned stations or jobber distributor-owned stations.

These sales are not going on in branded, franchised lessee stations, stations owned by the major oil companies and leased to dealers.

Now, on August 6, Connecticut, starting with 15 dealers—Exxons, Mobils, Shells, Citgos, Sunocos, Texacos, stations owned by the major oil companies and pumps and tanks leased by the major oil companies in their own properties owned by the major oil companies.

We started selling gasohol. We snuck it in on a Sunday night, moved in 50,000 gallons of product. Monday morning, we held a press conference, starting with the energy secretary's car of Connecticut, and we started selling gasohol right through the major's own pumps and tanks.

In other words, basically what section 2 of your bill here is covering, we have been doing since August.

Now, we did this for three main reasons.

One, we wanted to prove that at least in my opinion, this oil shortage is phony as the day is long, because I went out to the open market and bought 2 million gallons of product.

No. 2, we wanted to show and illustrate that there is no competition in this industry. That is the problem. That is why gasohol is running up against a stone wall when it comes to the major oil industry. It isn't the product. It isn't the net energy gain. They don't care if it is grape juice. What they don't like is interfering with their market that they have worked so many years to fine tune that virtually is not affected by any competition.

In other words, Shell dealers can't call Mobil for gas. Mobil dealers can't call Texaco for gas. Mobil and Texaco won't come. They do not compete against one another. I am sure you know that better than I.

The third reason, I wanted to prove that the oil industry will never develop an alternative source of energy. I don't care how many synfuel bills the Congress has passed or how much gasohol we produce.

The problem with that is that the major oil companies own these lessee stations like Congressman Daschle testified today—84 percent of the total stations in this country are owned like that.

Where I come from it is more like 96 percent of the stations are owned by the major oil companies.

So, in other words, if you went out and set up every single independent-owned or distributor-owned station with gasohol tomorrow morning, you are still going to miss about 84 percent of the market.

So all they have to do is very simply, they keep the dealers from selling the gasohol, they hold their own dealers off the market, and they sit back and they look, "Well, when we see a demand for the product. When we see a public demand, then we will sell gasohol." There never will be this public demand as long as the major oil companies can control the dealers' stations through leases and rents.

It is like asking the candlemaker to go out and invent the electric light bulb. It is not going to happen.

Now the credit card situation came. We got a little bored in Connecticut, because we didn't have these abuses which we are looking for in this committee. They won't do it in Connecticut.

So, we crossed the State line and went into New Jersey. We set up 15 stations in New Jersey, and I figured, let's find out where they really lie, let's take Standard Oil of New Jersey and let's take Exxon, and 11 out of the 15 stations we set up were Exxon's own properties, stations owned by the Exxon company, leased to dealers.

Well, they couldn't take this. They realized that they are going to have to put a stop to this gasohol business and they are going to have to do it pretty quick because now it is not just 14 stations in Connecticut, it is starting to spread throughout other States.

They came down and the first thing they did was try to stop the credit cards. I believe it was in December that they started with the credit cards.

The first letter I have from them—here is one when they started to grab, and this went up to like \$22,000, they were holding from our

dealers, their dealers, of our money, for not only gasohol credit card sales, but also other products that had nothing to do with gasohol. They would hold up the credit card which used to take a week. We would mail the cards to Houston. We would get reimbursed within 1 week. That week's process came to be over 3 week's process. This 2 weeks of holding this money ruins a dealer's cash flow. That was enough to really panic the dealers.

When they finally did get a check, the letter said:

Please note. While this check is for the full amount of the same assignments, Exxon reserves the right to charge back at a later time any individual credit card assignments which are identified as representing the sale of other than Exxon-branded products.

However, we do not wish to unduly delay reimbursement for the legitimate assignments until this identification process is completed.

[A copy of the letter appears in the appendix on p. 136.]

Well, their "unduly delay" that they didn't want to create took 3 to 4 weeks and cost some dealers thousands and thousands of lack of cash flow at the same time demanding that the dealers pay for the next load of gas.

Well, they made a mistake. You see, the oil companies being as they are so confident of not having this competition to worry about, they wrote up all their leases, Exxon wrote up the leases and the credit card agreement saying that we will accept a credit card for motor fuel, we will accept a credit card for antifreeze, we will accept a credit card for accessories. They never dreamed their dealer would ever sell somebody else's motor fuel, because they don't have to worry about competition.

So, we pointed out to them that it doesn't say we can't use the credit card for gasohol. Gasohol is a motor fuel.

Well, the largest corporation in the world known to man sent out a post card undated, unregistered and tried to amend their credit card agreement which is a multibillion-dollar agreement with a post card, "Dear dealer, section 4 is now amended. We meant Exxon-branded motor fuel only is allowed on the Exxon credit card."

Senator METZENBAUM. Do you have a copy of one of those?

Mr. KONITSHEK. Yes, I do have one. I will get it for the committee.

Then they follow it up with another letter saying that they will not allow Exxon credit cards. The only problem—the mistake they made is we started taking Exxon credit cards in August. They didn't catch on until we went into New Jersey which was December. We probably ran hundreds of thousands of dollars of their own credit cards through their own little Houston credit card center before they even knew what was going on. By the time they figured it out it was too late. They had already paid me and I feel accepted legally the practice of me using it for non-Exxon products.

The next morning we then went to New Jersey, had channel 4 network New York TV come down and we did a little news release. We had the camera show the Firestone tires. The camera showed the Delco batteries. The camera showed STP and all the other non-Exxon products that are allowed on the credit card.

Then the camera swung around and showed the Holiday Inn across the streets which also used the Exxon credit card to stay. Don't try to use that credit card to solve America's energy problems though because that is not an authorized product.

I have with me one of the credit cards that they have bounced on us. I will leave this with the committee. This is an Exxon credit card, \$4. This is \$4, little dollars, which I can't even give you a percentage of what that is to Exxon's revenue, unauthorized product. No other reason to bounce this card, but unauthorized product.

[A copy of the credit card appears in the appendix on page 137.]

In closing, and this is what I really want to get across. I am sorry to see Senator Levin have to leave because I sat in this same chair December 20 and brought this apart.

We are buying our product on the open market. You can pass S. 2251, which will allow us to take credit cards and allow us to do what we are already doing in Connecticut and New Jersey, selling the product through their stations. The problem is the gasoline.

We applied to the Department of Energy in May for an allocation. Mr. Carter talks about how he wants ethanol production up to 500 million gallons by the end of this year.

Mr. Duncan swears that the Department of Energy is doing everything they can to promote gasohol. I can tell by your smile, sir, you know as well as I do it does not happen.

We were granted a 10 million allocation on November 2, to use to make gasohol with, 10 million gallons of unleaded. First, I couldn't believe we got the allocation, because in my opinion, the Department of Energy exists for the sole purpose of protecting the oil companies and for lack of a better word, they own the Department of Energy.

I could not believe that we were granted 10 million gallons, because of what this would mean is we would use their gas to make gasohol to fight them in their stations.

Fourteen major oil companies, Texaco, Exxon, Mobil included, appealed our decision. Last night that decision was overturned. We lost our allocation which means these Jersey dealers, my Connecticut dealers which I have now expanded up to 35, will probably be out of the gasohol business very quickly. Because we cannot continue to buy on the open market at prices—right now, we are selling gasohol, by the way, for \$1.41 retail.

So this is how they beat us. Not by avoiding S. 2251, not by worrying about the Petroleum Franchisers Act, but by drying up the product.

If I continue to supply these dealers on open market gas, I cannot bring it to them at a price that would be worth buying gasohol for the motoring public.

The Department of Energy even had the gall and the audacity to put in the Federal Register a week ago, to point out all the highlights that they have been working so hard in this area to promote gasohol. They even listed a 10-million-gallon allocation that they granted to our supplier, Tricor Petroleum, which is on Long Island. But they forgot to tell you that last night they just terminated that, reversed their own decision that they made themselves on November 2.

So, here we are. We took the shot. We put the Mickey Mouse signs on the pumps which say this is not Exxon product, Exxon will not sell gasohol to the American public. They don't like that disclaimer, but that is the one that we use.

We took the chance to put it in their own stations, pumps and tanks owned by the majors, just what S. 2251 would do. We have already done that, sir.

But now we have lost our Department of Energy grant of gasoline. Obviously, the Department of Energy listens to the oil companies more than it does to the President or the Senate or so on.

Senator METZENBAUM. Thank you very much, Mr. Konitshek. Our staff will investigate that situation as to why the allocation was cut off and will report back to the chairman.

Mr. KONITSHEK. Thank you.

Senator METZENBAUM. I notice that two other members of the Senate have joined us. I am trying to move along, but if either of them has a short statement, I would be very happy to hear from him: Senator Schmitt?

Senator SCHMITT. Well, please let's move on. This is a very interesting hearing. I think clearly one hearing is not going to get to the bottom of all the problems. We just illustrated one and that is the Department of Energy. I have said that before, as the chairman. We should have more hearings on this.

The vote that I am most happy that I cast, and that was opposing the creation of the Department of Energy. Most of our predictions I am afraid have come to pass.

I would want to indicate, however, that in the overall gasohol problem there probably are some issues that are going to be resolved, technical issues, only over a matter of time. That doesn't mean there should be any artificial restrictions in the market place to prevent the marketing or development of or use of gasohol.

But there is still that long-term question of just where is the price of energy going to end up. Now I don't know if the chairman will agree with this or not, but I personally, from a technical point of view, do not believe that the price of energy arbitrarily is always going to be high. That is merely a question of how clever are we technically in terms of exploration and utilization of our resources and in terms of breaking the back of the OPEC cartel which has overpriced oil by about a factor of two, until we can see the price of energy begin to drop relative to other costs.

That is not going to happen in the short term with the present energy policies that we have. This myth is out there that somehow or another energy costs are always going to be high. That is only limited by our imagination and by our technological ability and by the kind of initiative and innovation that we have heard described here today.

So, I hope that we won't believe too strongly that energy costs are always going to be high. I think they can start to go down if we just start to get a little bit smart.

Senator METZENBAUM. Thanks, Senator Schmitt.

Senator SCHMITT. Thank you, Mr. Chairman.

Senator METZENBAUM. Senator Pressler, do you have a statement?

Senator PRESSLER. I have a statement for the record. I will not take up the time. I think the witnesses are doing so well. I do want to commend Senator Metzenbaum for his legislation and join in it.

Also, let me say that I have been writing to the Attorney General since last year about this credit card situation on gasohol. It has intrigued me that gasohol is not developing faster than it is. Everybody is talking about gasohol and everybody is for gasohol and nobody

seems to be against it, but we are really not getting much done when you really analyze how much is being produced and how much is really being marketed.

I know that wartime Germany is not a good example for anything except the fact that they did move alcohol fuels forward very quickly. Brazil is today on the road to full scale use of 100-percent alcohol fuel.

We all know that. We all are for gasohol. I believe it can be developed through the free enterprise system. But I also think there are some things that have impeded its development.

I wish to submit a statement for the record, and to continue listening and commend the committee for its work.

Senator METZENBAUM. Thank you very much, Senator Schmitt and Senator Pressler. We are very happy to have both of you with us.

I think it is significant that, in although afternoon hearings, we don't normally get a large turn out of Senators I think this subject is one of such major concern that we have had 10 Senators here today and 3 Members from the House of Representatives, plus a statement from 1 of them.

So, I think it is indicative that there is great sentiment in the entire Congress for the utilization of gasohol and beyond that, to see to it that any discriminatory practices of the oil companies in connection with the utilization of gasohol are not to be permitted.

Now having said that, we will hear from Mr. Campbell.

Senator SCHMITT. Senator, could I just add one further remark and something that we really have neglected in this total issue and which I think is symptomatic of some of the problems we have just heard described, and that is the nature of what is commonly called the infrastructure by which gasohol can become a widespread and economically marketable item. We have a long way to go on that both in gathering the raw material to the point where it can be distilled and refined into a usable product, and then further in distributing it. Some of those infrastructure problems are institutional, and that is basically what has been described today.

Others are maybe more broadly based than that having to do with how do you supply in a significant quantity, a very broad based user community in this country.

We tend in our legislation to have always been directing our attention at the technology for distilling alcohol from various kinds of products. We have still not really focused on this problem on both sides of that and that is the infrastructure for gathering and for distributing.

Your hearing and this hearing today gets to at least a part of that. What are the institutional restrictions, either governmental or within the private sector that restrict at least one side of that equation.

The other side still has to be dealt with and you—we still have to tackle that basic problem is: What if there is a major reduction in the price or increase in the availability of traditional, conventional products, basic gasoline and oil.

That could happen. It could happen because it was in the best interest of OPEC, as they perceive them to make it happen. It could happen because we suddenly get smart about producing and creating our own energy supplies.

Right now, not one of those things has happened, but they could happen. We have to be prepared for that and recognize that that is a factor in developing investments for this very broad based gasohol economy.

Senator METZENBAUM. Thank you.

Mr. Campbell, I have a few questions for you. First, let me identify you. You are the head of MAR-CAM Industries, Inc., in Glenside, Pa., and that is a manufacturer or producer of gasohol?

Mr. CAMPBELL. Well, not exactly, sir. First of all, MAR-CAM is a partnership between myself and Buzz Marcus.

Second, we do not manufacture. We simply—basically we answer Senator Schmitt's question of the infrastructure and the logistical distribution of gasohol. We work with a series of over 40 independent petroleum oil jobbers. The jobber network services anywhere from 10 to 500 gasoline stations in their own independent network. We supply them with alcohol, as well as the point of purchase material to market, promote and cause retail demand and public awareness to increase with gasohol.

We have been in existence since 1977, and really since last June 1979, when we had six stations. We have grown to over 750 stations, primarily on the east coast, from New Jersey to Florida.

Senator METZENBAUM. Thank you very much. It has been pointed out to me by Mr. Chumbris, Senator Thurmond's very able assistant, that we did have 10 Senators here, indeed.

It is also rather interesting to note that it was on a very much of a bipartisan basis, almost half and half, six and four.

Mr. Campbell, are you familiar with Texaco's gasohol and credit policies?

Mr. CAMPBELL. Yes, sir.

Senator METZENBAUM. Are you aware of instances where Texaco has permitted its credit card to be used for the purchase of non-Texaco products?

Mr. CAMPBELL. Yes, sir, I asked two of my jobbers that basic question yesterday. They said that Texaco allows it for the purchase of gasoline, filters and labor.

I asked, "Well, what about STP? What about dry gas? Things like that." They said it was absolutely common practice to include those on the credit card and it had been done for many, many years.

Also, at the same time, a Texaco jobber stated an example in Buffalo, N.Y., where Texaco had marked through a product exchange, Ashland Oil Co. gasoline, and although the product was to the specifications of Texaco, it was not Texaco's product, but it was certainly marketed through branded, Texaco outlets and used on the credit card.

Texaco pulled out of Buffalo approximately a year ago, when that exchange agreement with Ashland terminated.

Senator METZENBAUM. Are you aware of instances in which some major oil companies have threatened to deny some of their dealers gasoline if those dealers were going to use it to make gasohol and was Texaco one of such companies?

Mr. CAMPBELL. Yes, sir. I have in my prepared statement those references and I have supporting material of local press clippings that basically document just that sort of a thing.

I saw one example in October where one of MAR-CAM's independent oil jobbers was told on a Monday that he would not be allowed to purchase Texaco no-lead gasoline for the purpose of blending with alcohol and selling it as gasohol. He was pulled in to the regional office. The division manager told him on a Friday that this was to be the case and that they should phase down. The press clippings document all of this.

Three business days later, my national sales manager, Andrews Sternberg, before the National Alcohol Fuels Commission, chaired by Senator Bayh, testified to this in Secaucus, N.J. The policy was immediately denied and dropped.

From my standpoint, Senator, we have had to battle every step of the way. The reason that MAR-CAM Industries is in existence is because we are flexible, we are open field runners. We simply chose at any stage of the game simply to get another station open, simply to move ahead.

The dropping of this policy was achieved by simply making it public. This is what we have had to do all along.

Senator METZENBAUM. Let me ask you, in your opinion, what if anything is standing in the way of further expansion of the gasohol market?

Mr. CAMPBELL. Supply.

I would like to very quickly paraphrase my nine pages of testimony into about 2 minutes, because I know we are in quick-hurry.

We feel that there is a pattern that has evolved with the oil companies that I call five stages.

The first stage is that of propaganda or information. My supporting data shows the American Petroleum Institute which shows Mobil, shows many, many oil companies on the record with negative statements regarding gasohol.

Stage 2, I refer to as the "stall tactic," let's review it, let's research it, let's look into it.

Well, I read about it for 9 months and then I started driving on it for 60,000 miles. After 9 months of reading, and that included Senate testimony, I didn't know whether it worked or whether it didn't work. After 60,000 miles, I know it does work.

Exxon is a perfect example. They had a subsidiary called Cleveland Discol, in England. They marketed a gasohol blend up to 33 percent alcohol for over 30 years. Yet, in their company material they say that we have to test it and there are driveability problems.

But in my enclosed material, they endorse gasohol or the concept of a gasoline-alcohol blend through Cleveland Discol probably more eloquently than I do, in my marketing material.

Senator METZENBAUM. Have you found any instances in which gasohol has caused damage to equipment used to store, transport or pump the product?

Mr. CAMPBELL. No, sir, there is one exception. It is so minor it is hardly worth bringing up and that is a product marketed by one company that is a paper filter that goes into the pumps. Alcohol will eat away the glue in this filter. It is real simple to change filters. That is on the pump itself.

Senator METZENBAUM. Generally, then, you found no problem with gasohol?

Mr. CAMPBELL. No, sir. We have marketed, oh, probably—probably 30 million gallons of it with no complaints.

Senator METZENBAUM. Have you found that gasohol causes any harm to the automobiles that the drivers put it in?

Mr. CAMPBELL. No, sir. There was one instance of problem. When we ran tests on the car, it was a Chrysler Corp. product, it was pre-1976. We were quite alarmed at the information that there was a problem. So, what we did is we took the component, a rubber and plastic piece, soaked it in leaded gasoline, unleaded gasoline, alcohol, and gasohol.

Clearly the problem was the fact that they were running a car designed for leaded fuel on unleaded gasoline. It was not——

Senator METZENBAUM. It was one car?

Mr. CAMPBELL. Yes, sir. It is the one problem we have had.

Senator METZENBAUM. That is the only one that you have any familiarity with?

Mr. CAMPBELL. There was one instance, another instance, sir, where a consumer did not read the brochure——

Senator METZENBAUM. Let me just summarize, without telling me the whole story.

Mr. CAMPBELL. You got it. There are hardly any problems.

Senator METZENBAUM. All the time you have been selling the 30 million gallons that has been the only problem?

Mr. CAMPBELL. Yes, sir, that is it.

Senator METZENBAUM. Have any motorists to whom you sold gasohol had problems with so-called driveability, cold-start problems, vapor locks, bucking and stalling that in your view could be attributed to gasohol?

Mr. CAMPBELL. No, sir, not in my 60,000, which is now really 80,000 miles, nor our customers have complained to us.

Senator METZENBAUM. Thank you very much.

Mr. CAMPBELL. Sir, may I just interject one point very quickly in this? I feel it is radically important.

Senator METZENBAUM. Yes.

Mr. CAMPBELL. I mentioned the five stages. The third stage is what we are all here talking about, which is the marketing restraints, be they pump toppers that say it is not a Gulf product. In my material I show where Arco insists that they put up 3-inch letters on the pump which would totally obliterate any merchandising effect to sell the gasohol. Credit cards. These are not the real issue.

Mr. Konitshek pointed to the issue of competition. Currently there is no supply of alcohol left in America. There is very, very little production facilities. With the introduction of 700 Texaco stations, 600 Amoco stations, the product supply has in fact dried up.

What we see is a solution for Senator Schmitt and a problem for the country. The problem is the vertical integration of the major oil companies as they exist today with petroleum and the potential that it would have in the alcohol industry where they would buy the farm lands and where they would own the production facilities, the distilleries of alcohol.

The solution here is very simple. MAR-CAM Industries' 40 independent oil jobbers represent approximately \$1.5 billion of gross sales. They have the ability to afford a \$10 million, \$20, \$30 million distillery.

They also, sir, have the distribution and the ability to fit it right in. The concept of gasohol has always been one of independents, and it has always been one of regional utilization of raw material; sugarcane in Florida, garbage in New York City.

The simple fact is, there are thousands of independent oil jobbers throughout the country that have trucks, storage tanks and gas stations and the money to afford an inexpensive distillery, and I say inexpensive compared to a refinery which is out of their league, and you can take a regional crop, run it through a regional distillery, and distribute it through a regional independent oil jobber.

These people have been denied their allocations, as Mr. Konitshek talked about because of the hypocrisy of the major oil companies where they state, "Well, we are for gasohol, but not for you doing it."

I think that basically, in conclusion, because I know we are in quite a hurry, is really our position.

I certainly want my testimony to go into the record. We have had major harassment. I think the single greatest detail occurred on Friday, when Arco refused to allow one—well, no, Arco, after a great hassle, allowed one of our jobbers into their Paulsboro area refinery terminal with 10 percent alcohol in the tank of his truck. They hassled him and said, "We will never allow you on the property again with alcohol in your truck."

The basic thing, sir, is, if you have 10 percent alcohol in the truck and if they add 90 percent gasoline, the gasohol is blended and it is done. It is simple from that stage.

But every step of the way they fight it, fight it, fight it. And yet, they try to claim that there is no obstruction.

Between my partner and me, I think we are growing old fast. We live from crisis to crisis. We have had at least four of them in the last 10 days, major marketing restraints.

Thank you, Senator Metzenbaum.

Senator METZENBAUM. Thank you very much.

Senator PRESSLER. May I just ask one brief question, Mr. Chairman?

Senator METZENBAUM. Certainly, Senator Pressler.

Senator PRESSLER. Where do you buy the supply of alcohol from or do you buy a blend when you buy it?

Mr. CAMPBELL. No, sir, Senator Pressler. What we do is we distribute the alcohol to the independent stations.

Senator PRESSLER. Pure alcohol?

Mr. CAMPBELL. Yes, sir, 200 proof, agriculturally derived ethanol.

Senator PRESSLER. Where do you buy that?

Mr. CAMPBELL. We have worked with virtually every major distiller in the country through Wisconsin, Iowa, Indiana, Philadelphia, virtually all over.

Senator PRESSLER. Is there a fear that they justify their hassle by saying that the—is there an inspection standard? Is there—are you sure it is 200 proof? I am all for it. Are there any reasons that they give for being so resistant?

Mr. CAMPBELL. Well, their pat answer, sir, is quality control. However, I maintain that the professional, independent oil jobber is just as capable of dividing by 10 as a corporate branded employee. It is very, very simple. You want 8,000 gallons of gasohol, you divide by

10, you put in 800 gallons of alcohol and 7,200 gallons of unleaded. It is that simple.

As far as the storage potential, the problems in storage tanks, we have worked for hours to prepare a manual for the jobbers that we work with. It really boils down to really nothing more than good housekeeping, commonsense, keep it clean. It is not—and believe me, I flunked chemistry in college. It is not a big deal.

Senator PRESSLER. Good. I might also commend you on your work in this area.

I will also ask one final question. What is the current cost of the per gallon—is it slightly higher in your stations if they buy gasohol as opposed to just regular fuel?

Mr. CAMPBELL. Well, sir, what you have is, as opposed to Mr. Konitshek, who must buy spot market gasoline at extremely high prices, and don't forget the gasoline represents 90 percent of the finished costs.

Senator PRESSLER. Yes.

Mr. CAMPBELL. I work with a distribution network that already has the gasoline. So they simply buy the alcohol and add it in and blend it in.

In this sense, they pay normal prices for the gasoline. When they blend the alcohol they get approximately 4 octane greater product. The product will market about 4 to 5 cents a gallon higher than unleaded gasoline at any one individual stations. All stations are different and markets are different.

But if you go into a station, you can expect gasohol to be approximately 5 cents a gallon more expensive, and that is because of the higher octane quality, than unleaded regular.

However, because it is 91 octane, and because Mobil markets 91.5 octane, at least in the Washington market, that is what their stickers say. You basically find that when you compare apples to apples, which is premium unleaded, to gasohol versus gasohol to regular unleaded, you find the prices are the same.

Senator PRESSLER. We do have a rollcall vote underway, I am told. I will have to leave.

I guess a final thing I would say, in addition to saying what a fine job you have done here is that if there is any way we can write letters or work on legislation, we all try to get this thing loosened up so that small and medium-sized gas stations and producers and users can participate in the gasohol thing, we should do so.

I have been one who has advocated that there could be stills developed, huge stills, but that are owned by cooperatives or corporations or small business, that are not just huge monolithic things. I think we are on the verge of a new industry here if we develop it correctly. I think you people are very important.

I have to go to the Senate floor and vote on this rollcall. I believe I am the only Member of the Senate left here.

We will recess until 3:10, at which time we will hear from Mr. Curry, from the American Automobile Association.

Mr. KONITSHEK. One quick comment, Senator. Don't forget the other 90 percent of that product that the major oil companies control. You will never see gasohol grow in this country unless you pass a retail divestiture bill and make a true free market. That oil companies make believe that there is one. Then you will see gasohol, and not until.

Senator PRESSLER. We appreciate your testimony.

Mr. KONITSHEK. Thank you, Senator.

Mr. CAMPBELL. Thank you.

[The prepared statement of Mr. Cino follows:]

PREPARED STATEMENT OF VICTOR J. CINO

INTRODUCTION

Mr. Chairman, members of the Senate Subcommittee on Antitrust and Monopoly, I am just one of the representatives of the Greater New Jersey Service Station Association, an association of over 1,000 retail gas dealers in the State of New Jersey, invited to testify today on the problems gasoline retailers have experienced, and the obstacles some major oil companies have created, in the marketing of gasohol, through retail outlets that sell major brand gasoline.

We are of the opinion, based on the data compiled for this hearing, that most of the major oil companies have made serious attempts to limit or exclude, and certainly to discourage, the sale of gasohol through major brand retail outlets. I would like to begin by briefly outlining specifically the problems these retailers have faced in their attempts to market gasohol through their service stations, and then to introduce to you some of the dealers who have had to confront their major brand suppliers and overcome the obstacles set before them. Some problems have been resolved, but problems do remain. By this presentation, we hope to shed light not only on the problems, but also on the solutions to the marketing of gasohol in this country.

Shell Oil Co.

When gasohol became a more readily available motor fuel, Shell retailers asked Shell Oil Company its policy on the sale of gasohol by its retailers through its branded outlets. Shell sales representatives replied to inquiries that Shell had no policy, and that retailers would be wise to avoid the sale of gasohol until a Shell position on gasohol was articulated.

Shell representatives further asserted that gasohol was not a good motor fuel, and that retailers should avoid marketing gasohol because of performance problems; phase separation characteristics of alcohol that may cause misfiring of customers' vehicles, clogging of fuel filters, and water absorption problems associated with alcohol.

On February 13, our attorney, Mr. Charles Abut, asked Shell to communicate Shell policy on sales of gasohol through retail outlets. Shell's response is documented in exhibit Shell B.

[Exhibits supplied by Mr. Cino are listed in the appendix.]

While Shell clearly accepts the right of the Shell retailer to sell gasohol, they warn in their letter that serious problems may arise if a retailer elects to market gasohol through Shell-leased equipment. The intent of the last paragraph in their letter to Mr. Abut is to discourage the retailer from selling gasohol, first by pointing out gasohol's alleged performance deficiencies, and then by disclaiming any responsibility for maintenance of any Shell equipment utilized in the sale of gasohol.

In addition, Shell indicates to the retailer that they will be on guard for any violations of Shell's trademark, and any violations of federal, state or local laws arising out of the sale, handling or storage of gasohol.

In short, Shell is warning the retailer to be very careful if he plans to sell gasohol, because Shell knows that any trademark violation, or any violations of law could mean franchise termination; and in our opinion, these veiled threats of franchise termination are enough to discourage any retailer from selling gasohol.

But has Shell indicated its policy to its entire retailer population? The answer is no, they have not. Despite the fact that Shell has responded to some isolated retailer inquiries, Shell has yet to articulate a policy on gasohol to its entire retailer organization, preferring to keep retailers in the dark with respect to their legal rights to market gasohol through their branded outlets. Since no Shell policy position has been communicated to the majority of Shell retailers, the marketing of gasohol by Shell retailers has been discouraged and limited to a considerable extent. Retailers, for the most part, have had to rely on the word of their sales representatives for Shell policy, and that word too often is casual, unreliable, and without authority or responsibility.

Thus the Shell representative can take a position on gasohol that discourages retailers from selling gasohol, and would have the force of law, while Shell officially can have no policy on gasohol. Too often retailers would rely entirely on the words of the Shell representatives, and this reliance is unfortunate, since the representative can say anything, and the retailer will believe him.

At present, the majority of Shell retailers have not received any formal communication on Shell's gasohol policy. That failure to communicate with its retailers has been the single most important factor in limiting the sale of gasohol through Shell branded outlets.

Gulf Oil Co.

One of our association retailers, Mr. Arthur Goins, was told by his Gulf Oil representative, according to Mr. Goins, that if he sold gasohol through his branded Gulf service station, his franchise would be terminated. Gulf exhibit D is Mr. Goins' statement verifying the threat of court action and franchise termination.

Our attorney, Mr. Charles Abut, sought to verify the threat in a telephone call to Gulf Oil. The Gulf Oil official refused either to confirm or deny that the threat was made. Mr. Abut followed his conversation with a letter to Gulf, exhibit A, asking again to confirm or deny the threat of franchise termination.

In a return letter to Mr. Abut, Gulf refused to admit that the question of franchise termination ever came up in conversation.

Mr. Abut's second letter to Gulf informed that company that a memo of the Abut-Gulf conversation had been prepared, and that the subject of franchise termination did arise.

Gulf Oil has yet to respond to Mr. Goins' charge that he was threatened with franchise termination if he decided to sell gasohol through his branded outlet; and Mr. Goins is too fearful now of franchise termination to even consider marketing gasohol at his station.

Consequently, he has not sold one drop of gasohol. In his case, Gulf has been successful in discouraging the sale of gasohol.

In summary, Gulf has yet to communicate its gasohol policy to its retailers by any formal written communication.

Mobil Oil Co.

According to Oil Express, in its weekly publication dated January 21, 1980, Mobil Oil Company has no objection to the sale of gasohol by its branded retailers, provided that retailers install a separate gasohol tank and pump at their own expense.

However, if they choose to market gasohol with pumps and tanks leased by Mobil, then retailers must purchase a conversion kit for the purpose of converting the round Mobil gasoline pump dispenser to a square pump dispenser. Sales representatives have told retailers that the Mobil round pump dispenser is a trademark symbol, and that, consequently, any sale of product other than Mobil product through the round pump dispenser would be considered a Mobil trademark violation. Mobil confirms this policy position in Mobil exhibit B, a letter by Mobil to our attorney, Mr. Charles Abut.

One of our association members, a Mobil retailer, has been told that the Mobil conversion kit for his round pumps would cost him approximately \$400 per pump dispenser. However, when he asked his sales representative for a conversion kit, he was informed that Mobil did not have any conversion kits available for sale at the present time.

His Mobil sales representative then told him that if he sold gasohol through the round pumps without the Mobil kit, that Mobil would consider such a sale a trademark infringement.

Mobil's letter to Mr. Abut was accompanied by a so-called Energy Update newsletter, prepared by Mobil, which portrays gasohol as having little or no benefits to offer as a motor fuel, is probably energy deficient, more costly than gasoline, may adversely affect engine performance, and will not improve our energy supply.

Clearly, the newsletter is designed to discourage the use of gasohol among Mobil retailers.

I think more importantly Mobil has failed to advise its retailers in writing of its gasohol policy. It has kept its retailers in the dark, forcing them to rely to a great extent on information passed on to them by their sales representatives. Mobil policy positions are thus relayed to retailers in casual conversations, without official sanction.

Gasoline retailers have an unfortunate tendency to rely heavily for oil company policy positions on oil company sales representatives.

Their oral communication on the subject of gasohol has tended to discourage the use of gasohol by Mobil retailers, and to imply court action and possible franchise termination if gasohol is sold through Mobil pump dispensers without the Mobil conversion kits.

Thus has Mobil effectively blocked the sale of gasohol for the majority of its Mobil retailers, while at the same time not threatening legal action for a retailer selling gasohol by any formal policy position.

Texaco

One of our association members, Mr. John Potter, a Texaco retailer, received a phone call from his Texaco representative soon after beginning the sale of gasohol through his service station. His representative demanded that he pay his rent on the service station in advance of the first of the month.

Mr. Potter was incensed, since he had been paying rent on the station in the same way, and at the same time, for the past 8 years—when he received his first gasoline delivery, usually sometime during the middle of the month.

Attached to our presentation are copies of Mr. Potter's gasoline invoice, dated November 14, 1979, a check for payment of rent to Texaco, also dated November 14, 1979, and a billing statement by Texaco, which clearly indicates when and how Texaco normally billed Mr. Potter for service station rent.

Mr. Potter's letter to Texaco is also included in our documents section. This letter rightly suggests that Texaco clearly altered its rental payments policy for Mr. Potter once Texaco discovered that he was selling gasohol.

Mr. Potter also suggests in his letter that perhaps Texaco should have advised all its dealers that its rent collection policy was changing.

But Texaco did not change its rent collection policy; it was changed only for Mr. Potter, who had decided that he wanted to sell gasohol.

Clearly, Texaco was discouraging Mr. Potter from selling gasohol.

Finally, Texaco has recently announced that its retailers may not use the Texaco credit card for the sale of gasohol not provided by Texaco. Since a very large percentage of Texaco customers buy their gasoline on the Texaco credit card, that policy position will undoubtedly diminish the sales of gasohol through branded Texaco service stations, and greatly discourage those retailers who might have been willing to test-market gasohol.

Exxon

Beginning with Exxon exhibit No. 1, in the packet of documents supplementing this presentation, we clearly have a chronological sequence of statements and events that depict Exxon's shifting position on gasohol sales by its retailers.

Beginning with Exxon exhibit No. 1, a letter by Exxon responding to a customer complaint, Exxon set forth its official policy on credit card usage:

"Exxon has not changed its policy with regard to the sale of credit cards. At all locations which are operated directly by the Company, credit cards are accepted for all purchases and we encourage dealers to follow the same procedure." The letter continues:

"Dealers, however, are independent businessmen and we cannot force them to accept our advice."

But that policy position changed when it came to sales of gasohol, as clearly indicated by Exxon's statement to its retailers in Exxon exhibit No. 4:

"Furthermore, it is important for the customer to be informed by appropriate signing that Exxon will limit its acceptance of assignments of Exxon credit cards for motor fuel sales to sales of Exxon branded motor fuels only."

Retailers who went ahead and sold gasohol despite the warning that they would be totally responsible for resolving customer complaints on gasohol, were subjected to a hand-screening of their credit card invoices, normally submitted to Exxon for eventual payment by Exxon.

The hand-screening process, a cumbersome substitute for computer screening, meant delays in cash payments to retailers of up to 10 days in some instances, causing cash flow problems. In one case, the total credit card amount withheld by Exxon, for one retailer amounted to \$25,000.

Exxon exhibit No. 4 placed a number of responsibilities on the retailer if he elected to sell gasohol: he had to insure the integrity of the Exxon brand gasoline; he had to post signs informing his customers that he was not selling an Exxon product; he had to respond to all customer complaints and be responsible for them, regarding the quality and performance of gasohol.

Exxon exhibit No. 5, a letter by Exxon district manager, Art Dudley, to Mr. Albert Ruth, Exxon retailer, contained a carefully worded reminder that Mr. Ruth should be aware that under the provisions of the Petroleum Marketing Practices Act, a trademark violation is grounds for termination or nonrenewal of the franchise relationship.

But one retailer's sales representative was not so careful. He told Mr. Anthony Brienza, an Exxon retailer, that if he sold gasohol through his branded Exxon station, that he would take pumps and signs out of his station (exhibit No. 5a).

Exxon exhibit No. 7 is a bulletin by Exxon to its retailers informing them that Exxon had reversed its policy on the sale of gasohol on Exxon credit cards, dated 2/80; that policy change came as a result of tremendous Congressional pressure on Exxon, and proves beyond a doubt that major oil companies do respond to public and political pressure, as well they should.

Finally, Exxon attempted to insure that it would not be liable for any sales of gasohol by its retailers, by requesting them to sign indemnification agreements, exhibit No. 9, which essentially placed all responsibility for gasohol sales on the backs of the retailers. In addition, Exxon's indemnity letter agreement sought to:

"* * * indemnify Exxon Company, U.S.A. (a division of Exxon Corporation) from any liability and costs, including attorney's fees, resulting from any actions in either federal or state courts, or administrative actions, which may arise in connection with or resulting from the sale, storage, handling or other operations involving gasohol * * *"

The agreement continues:

"I recognize that considerable research is ongoing with respect to the uncertain effects of gasohol in petroleum storage tanks and pumps. Therefore, this indemnity shall include costs of fines or penalties, costs of maintenance and repair of tanks and pumps owned by Exxon (including all clean-up costs and damages to third parties associated with leakage of said tanks and pumps) and any other costs when it can be established that the cause of such costs was due to the peculiar effects of gasohol as distinguished from other types of motor fuels."

In short, the conditions under which Exxon sought to control the sale of gasohol at its branded service stations, in my estimation, beyond a doubt discouraged the sale of gasohol, by making it clear to its retailers that the risks in selling gasohol were greater than the advantages.

Getty Oil Co.

One of our association retailers, Mr. Anthony Brienza, wrote a letter to his Getty district manager, Getty exhibit No. 1, asking for clarification of Getty's policy on the sale of gasohol by its retailers.

The Getty district manager, Mr. Cooke, did not reply to Mr. Brienza's letter, for that would have been a formal statement of position on Getty's part; instead, Mr. Cooke made a personal visit to Mr. Brienza's service station.

Mr. Cooke declared at that time that Mr. Brienza could not sell gasohol at his station, that Getty Oil was testing gasohol in company vehicles, and would prefer that Getty retailers not sell gasohol until the results of that testing were made known. He advised Mr. Brienza that he would get back to him.

Getty has not communicated any formal position to its retailers on the sale of gasohol, and Mr. Brienza is not selling gasohol because of his conversation with his Getty district manager. In Getty exhibit No. 2, Mr. Brienza declares:

"As of right now, which is February 25, I cannot sell gasohol at my station."

In short, the words of his district manager have prevented our Getty retailer from selling gasohol, because he believes he cannot sell gasohol. He also believes that if he should sell gasohol at his service station without Getty permission, that he would be terminated.

We all know that Mr. Brienza can sell gasahol, and has every legal right to sell a non-Getty product at his service station; but the words of his district manager have a greater influence on his thoughts and actions than the law itself. Unfortunately, the influence of sales representatives and district managers on oil company retailers is very great, and oftentimes, retailers take the words of oil company personnel as gospel.

Finally, one of the greatest problems facing the increased marketing of gasohol through branded service stations is the failure of gasoline retailers to get the right information, to be certain of their legal rights under the law, and to be free of bullying verbal abuse from their sales representatives, who often threaten when they have no right to threaten, bully when they have no right to bully, and make statements that do not have the official sanction of their companies.

Retailers need the protection of Congress from oil company personnel who threaten them one day, and deny their threats later, and too often influence the retailer to do only what the oil company wants them to do, and not what he as a retailer ought to do, for his own benefit, and the benefit of his customers, the consumers of America.

SUMMARY STATEMENT

One of the major problems for retailers nationwide has been that oil companies in general have not set forth policy on the sale of gasohol in any formal communications, with the exception of Exxon.

This general absence of such written communication has left retailers to determine for themselves whether or not to risk franchise termination by selling gasohol. The threat of franchise termination has been the single most important detriment to the sale of gasohol through major brand service stations.

Oil company reluctance to allow retailers full use of company credit cards, and oil company insistence on indemnification from any liability for actions arising out of the sale of gasohol, are two other major reasons for the limited sales of gasohol through branded service stations.

Retailers are quite reluctant to fight their oil company suppliers, and too often give in to the wishes of oil company personnel, just to keep peace with their franchise relationship. Retailers, after all, are small businessmen, and major oil companies are giant, multinational corporations. Thus, the retailer tends to rely heavily for information on oil company personnel, even when the information strictly favors the oil company, and works against the retailer and the consumer, as in the issue of gasohol marketing.

We think that first of all the major oil companies should formally articulate their company position on gasohol sales by their retailers. We also think that more reliable information on gasohol's quality and performance ought to be conveyed to gasoline retailers across the country, and not by oil company personnel, so that retailers can gain greater confidence in gasohol as a motor fuel, and begin marketing it, as a matter of course.

Finally, the Congress should consider legislation that would protect retailers from threats by oil company personnel that tend to limit the retailer's right to conduct business for his own benefit and the general benefit of his customers. Too often, retailers must suffer thinly disguised threats by overzealous representatives, more anxious to impress their companies than to obey the law. The problem is that oil companies too often tell their retailers what to do, despite what the laws of the land give them the right to do.

Such has been the case with gasohol. The law allows retailers to sell gasohol, but the oil companies have discouraged its use; and consequently, gasohol sales have been limited. Thank you, Mr. Chairman.

[Additional submissions of Mr. Cino appear in the appendix.]

Senator PRESSLER. We will have a short recess at this time.

[Whereupon, at 3 p.m., a short recess was taken.]

Senator METZENBAUM. The committee will come back to order.

The Chair is sorry that I had to leave for a rollcall vote. Our next witness is Mr. Richard F. Curry, director, environment and energy, American Automobile Association, Falls Church, Va.

Mr. Curry, we are very happy to have you with us. We look forward to hearing your testimony at this point.

STATEMENT OF RICHARD F. CURRY, DIRECTOR, ENVIRONMENT AND ENERGY, AMERICAN AUTOMOBILE ASSOCIATION

Mr. CURRY. My remarks will take about 5 minutes.

Senator METZENBAUM. Fine.

Mr. CURRY. Mr. Chairman, I am Richard F. Curry, director of environment and energy, for the American Automobile Association.

AAA which has nearly 21 million members in the United States and Canada appreciates the opportunity to express our views on S. 2251, which relates to the use of credit cards for the purchase of gasohol.

The Nation's effort to reduce its dependence on imported petroleum relies heavily on the development of fuel alternatives which are domestic in origin and derived from renewable feedstocks.

Fuel grade ethanol which constitutes the blending component in gasohol is a good case in point. It is the first of what we hope ultimately will be an ample number of transportation energy alternatives.

After being subjected to the closest scrutiny, gasohol has finally been accepted by oil industry leaders as a product worthy of being sold alongside gasoline.

President Carter has made alcohol production a key feature of his proposed energy legislation, even setting a production goal of 500 million gallons by the end of 1981.

Major auto manufacturers also have signified their acceptance of gasohol by stating that its use will not violate new car warranty provisions.

Motorists in ever-growing number are signifying their support of gasohol by purchasing increasing quantities of it.

So the stage has been set. The product has passed muster. Producers, distributors and consumers are working together to establish a new noncompetitive, much-needed energy base for transportation in particular.

But if we are to keep the momentum going in this national effort to introduce the first viable alternative to conventional motor fuel, road-blocks must be removed.

One of the more damaging impediments to steady progress would be refusal of oil companies to accept credit cards in lieu of cash for purchases of gasohol.

We are pleased to note that not all companies are in this category.

AAA recognizes the economic problems which oil companies, along with other retail businesses have encountered in operating credit card systems. But according to the Nielson report, an advisory service for credit card executive, 26 percent of the 117 billion gallons of gasoline sold for passenger car use in the United States during 1978, was charged to credit cards.

That means a substantial number of potential gasohol purchasers would be turned away if their credit cards were not honored.

Canceling that privilege would inhibit the purchase of gasohol from brand name retailers throughout the country. As fuel prices rise and the cost of automobility becomes proportionably more burdensome to the motorist, the need to rely on credit cards assume greater importance.

If the credit card user's preferred fuel is gasohol, and if he is denied the privilege of buying it with his credit card, an impasse results. The distribution of gasohol is affected. The objective of energy independence is dealt a blow. The motorist is denied access to the type of fuel he prefers.

At this point, a question of equity is raised because the consumer is permitted to buy one form of motor fuel on credit, while being denied access to another.

Surely that form of discrimination is unreasonable and AAA believes the language of S. 2251 outlines the proper course of action to redress it.

Oil companies are not being asked to sacrifice anything but inequity. They are being asked to help accelerate the growth in use of a substance which makes it possible for the Nation to move in a practical way toward energy independence and freedom of mobility.

Mr. Chairman, AAA hopes this committee will secure prompt action toward passage of the gasohol credit bill, S. 2251.

Thank you for your attention to these remarks.

Senator METZENBAUM. Thank you very much, Mr. Curry. I would like to ask you—it is my understanding, confirmed by your statement, that the three major domestic auto manufacturers have accepted the use of gasohol under their new car warranty provisions. What does this suggest to you about the objections raised by oil companies that gasohol causes damage to cars that run on it?

Mr. CURRY. Well, it suggests their case hasn't been proved, I would say.

Senator METZENBAUM. According to the information that you have at AAA, does gasohol adversely affect the performance of cars or the so-called driveability?

Mr. CURRY. I am happy to say that I cannot think of a single instance which was reported to me over a period of several years to indicate that there is any such problem in existence.

It may theoretically exist, but it certainly doesn't in the real world as far as I can tell.

Senator METZENBAUM. What about the receptivity of the American motorist? Do you think they want to buy gasohol or do you think there is a market for it?

Mr. CURRY. I think it has been made abundantly clear here today that the problem is supply. The American public I think has understood the simplicity and practicality of this substance from the outset. They have been much more ready to move on it than industry has in supplying their needs.

Senator METZENBAUM. Thank you very much, Mr. Curry.

Mr. CURRY. Thank you, Senator.

Senator METZENBAUM. I have no further questions.

Senator DOLE. I would like to ask if you feel there is any real or significant danger of retail customers being misled as to the identity of the brand of gasohol they buy if credit card sales are allowed?

Mr. CURRY. I really hadn't considered that aspect of it. I think it is very important that we guard against the possibility of substitutions. This is causing some problems, as you may have heard, in different parts of the country: Colorado, I recall especially.

So, if that were a factor, it should be carefully examined.

Senator DOLE. That's all I have, Mr. Chairman.

Senator METZENBAUM. Thank you very much, Mr. Curry.

Mr. CURRY. Thank you, Senator Metzenbaum.

Senator METZENBAUM. I appreciate the support of the AAA.

[The prepared statement of Mr. Curry follows:]

PREPARED STATEMENT OF RICHARD F. CURRY

I am Richard F. Curry, director of the Environment and Energy Department of the American Automobile Association. AAA, which has nearly 21 million members in the United States and Canada, appreciates the opportunity to express our views on S. 2251, which relates to the use of credit cards for the purchase of gasohol.

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One of the more damaging impediments to steady progress would be refusal of oil companies to accept credit cards in lieu of cash for purchases of gasohol. And we're pleased to note that not all companies are in this category.

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That means a substantial number of potential gasohol purchasers would be turned away if their credit cards were not honored. Cancelling that privilege would inhibit the purchase of gasohol from brand-name retailers throughout the country.

As fuel prices rise and the cost of automobility becomes proportionably more burdensome to the motorist, the need to rely on credit cards assumes greater importance. If the credit card user's preferred fuel is gasohol, and if he is denied the privilege of buying it with his credit card, an impasse results. The distribution of gasohol is affected; the objective of energy independence is dealt a blow; and the motorist is denied access to the type of fuel he prefers. At this point, a question of equity is raised, because the consumer is permitted to buy one form of motor fuel on credit, while being denied access to another.

Surely that form of discrimination is unreasonable and AAA believes that the language of S. 2251 outlines the proper course of action to redress it.

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Mr. Chairman, AAA hopes this committee will secure prompt action toward passage of the gasohol credit bill, S. 2251.

Thank you for your attention to these remarks.

Senator METZENBAUM. We now have that which is listed on our agenda as being a panel of oil company witnesses. However, I have been advised that the oil companies would prefer to testify independently of each other, that each has a different point of view.

Therefore, we will hear first from Texaco, and then from Mobil and then from Exxon.

The Chair, I might say, is totally indifferent on this issue, in view of the request, which seems to be a reasonable one. We will proceed in this manner.

Mr. Seamans, vice president, Petroleum Products, Texaco. You know we try to hold our witnesses down to a limitation of about 5 minutes, but if you need 6, go ahead.

Mr. SEAMANS. Thank you, Mr. Chairman, and I will honor that request. I think we can do that. We will eliminate much that apparently everyone is in agreement with.

STATEMENT OF J. M. SEAMANS, VICE PRESIDENT, PETROLEUM PRODUCTS, TEXACO, INC.

Mr. SEAMANS. Mr. Chairman, I am J. M. Seamans, I am vice president of Texaco, Inc. I have the direct responsibility for the refining, supply and distribution and marketing activities in the United States.

Needless to say, we welcome the opportunity to come talk to you about not only gasohol, but about the proposed Senate bill, S. 2251.

Texaco does in fact believe that gasohol is an important method of extending our motor fuel supplies and particularly for the future. We have not only actively supported the production, but we are aggressively marketing gasohol. I think all are well aware of that effort.

We do not believe, however, that S. 2251 is needed to make increased gasohol available to consumers on a competitive basis.

First of all, let me make sure that you understand Texaco's position with respect to the sale of nonbranded gasohol at Texaco retail outlets and the charging of such fuels on the credit card.

Texaco has not and has never singled out nonbranded gasohol for some special discriminatory treatment. Texaco's customers are free to purchase and resell nonbranded gasohol at Texaco stations just as they are free to purchase and resell nonbranded gasoline at Texaco stations.

Texaco is very concerned, however, that under those circumstances the consumer should be aware that the gasoline or gasohol that is being purchased is not a Texaco product.

Therefore, it is not subject to our quality control, and does not necessarily meet our specifications.

Many customers rely upon Texaco's trademark in purchasing motor fuels as their assurance of quality. Members of the public should not risk being misled into believing they are purchasing a Texaco product when, in fact, they are not.

Therefore, when any nonbranded motor fuel is sold at a Texaco station, whether it be gasoline or gasohol, Texaco requires that any Texaco identification be removed from the pumps from which the product is being dispensed and that Texaco credit cards not be accepted in payment for the product.

Texaco believes that these two steps will make it clear to our customers that they are not buying a Texaco branded product.

There is a very basic distinction between unbranded gasoline or gasohol on the one hand, and the non-Texaco products which many retailers sell at their service station on the Texaco credit card.

There is no realistic danger that the public will believe the tires, batteries, or other accessories carrying the name of some other company have been manufactured by Texaco, nor does the public assume that Texaco stands behind the quality of the services performed by its independent retailers.

However, Texaco has never permitted the use of its credit cards for purchases of nonbranded motor fuels. A statute requiring a change in that policy, particularly in view of Texaco's extensive advertising campaign for its branded gasohol, is likely to mislead the public into thinking that any gasohol sold at a Texaco station is manufactured, blended and subject to Texaco quality controls.

This is simply not true, and no statute should be passed which might mislead a consumer into thinking that it is.

At this point, I would like to review the history of Texaco's current involvement in the manufacturing and marketing of a Texaco lead-free gasohol product.

Last summer our company undertook a study and formulated plans to begin the test marketing of a branded Texaco lead-free gasohol. Texaco has always marketed on a branded basis. We believe that Texaco's offering of a branded gasohol greatly increased public acceptance of not only Texaco's brand of gasohol, but probably gasohol in general.

Texaco has been known for the reliability of its fuels for many years, and we firmly believe that one of the reasons for the public's present acceptance of gasohol is that a major company such as Texaco is standing behind the reliability of its gasohol and markets it as a branded product with an extensive public education program through advertising and with the benefits of its credit card system.

Our test marketing of Texaco branded gasohol commenced in three metropolitan market areas. Texaco gasohol was introduced first in the Indianapolis marketing area on October 1, 1979. The results were encouraging and Texaco gasohol was promptly extended into the Boston and New York City markets during the same month.

The results of these were also encouraging and the expansion continued. To date, there are 13 markets where Texaco branded lead-free gasohol is being sold through nearly 700 retail outlets.

On February 4, Texaco became the first major gasoline refiner to begin the marketing of lead-free gasohol in the Washington, D.C., area.

This gave rise to a resolution by the Fairfax County Board of Supervisors duly recognizing Texaco's marketing initiative and its contribution to energy conservation and development.

In the near future, we will have nearly 1,100 retail facilities marketing Texaco brand gasohol in the United States.

Since Texaco has very few company-operated service stations, almost all of Texaco's branded gasohol is made available to the motoring public through independent distributors and independent retailers.

All of Texaco's branded distributors and branded retailers in the gasohol marketing areas have been given the opportunity to purchase branded lead-free gasohol from Texaco.

Texaco retailers report that the customers using gasohol seem to be receptive to both the product and to the benefits of the higher octane ratings.

Many customers claim that Texaco lead-free gasohol provides more power and better performance than Texaco lead-free gasoline. Patriotism obviously plays a part, in that many customers believe that, as

we do, that by using gasohol the Nation's dependence on imported oil is lessened.

As I say, we also subscribe to that position.

Chrysler and General Motors have stated that gasohol usage will not affect their automobile warranties. Gasohol does, without doubt, extend the availability of motor gasoline fuel.

While we at Texaco do not envision that gasohol is a panacea for all of our energy problems, we believe that there are additional steps both we and the Government can take to expand gasohol supplies and to increase its acceptability by the public as a reliable fuel.

For our part, we plan to expand gasohol marketing into the mid-western area of the United States which is close to the present production facilities and sources of alcohol.

Two factors, however, could limit the expansion of alcohol. One is the need for a secure supply, and that is a supply of alcohol.

The other is the requirement that it be economically feasible to market the product within a geographic area. The ability to overcome these possible limitations is dependent upon supply, transportation, price of the alcohol, and certainly the tax incentives granted by State and local governments.

Texaco is also working on ways to improve ethanol supplies. Just last week, Texaco and CPC International, Inc., announced that they have agreed to proceed with design engineering and certain equipment orders with respect to the proposed production of up to 60 million gallons a year of fuel-grade ethanol from corn at CPC's wet milling plant in Pekin, Ill. This would be enough alcohol to blend into 600 million gallons of gasohol annually.

Additional steps by both the Federal and State governments can also help. The Federal Government has provided a motor fuel excise tax exemption for gasohol in the National Energy Act of 1978. This exemption expires October 1, 1984.

Texaco supports the extension of this exemption beyond the expiration date, and recommends that the exemption be expanded to include gasohol blended from domestic alcohol produced from coal sources as well as agricultural products.

Our records also indicate that 15 States have exempted gasohol from either a portion or from all of the motor fuel taxes, and 19 other States have proposed similar tax exemptions.

Texaco recommends that these tax exemptions continue to be granted to provide the economic incentives necessary to support the further manufacture of competitive marketing of gasohol.

The tax incentives that have been granted to date have to a degree offset the higher price of the alcohol and have permitted the wholesale price of the product to be competitive with regular leaded or lead-free gasoline.

As you can see, we at Texaco are as desirous as anyone to increase the availability and acceptability of gasohol to consumers on a competitive basis. We do not however believe S. 2251 furthers this objective.

In fact, by requiring that manufacturers of branded fuels permit their credit cards to be used, without charge, to sell fuels manufactured by others, will unfairly require purchasers of Texaco gasohol, for example, to subsidize purchases of non-Texaco gasohol.

Such a rule is not only inequitable, but it provides a disincentive for a gasohol manufacturer to offer credit card services to his customers, since he can obtain a free ride at others' expense on existing credit cards, and could perhaps result in some companies doing away with credit cards altogether.

In addition to potentially misleading consumers to think they are buying an advertised branded product when they are not, the bill also requires that those consumers who do choose to purchase branded Texaco gasoline or branded Texaco gasohol incur the expenses involved in providing a free credit card system to manufacturers of unbranded gasohol.

Texaco does not charge its retailers for the handling of credit card sales of gasoline, nor does it charge the credit card customer.

The expenses involved in our credit card program are marketing costs, which are ultimately collected from the purchasers of branded gasoline and branded gasohol.

If Texaco is required to provide free credit card service to other manufacturers of gasohol, Texaco has essentially three choices.

One, it can pass this added expense on to the purchasers of its branded products.

Two, it can impose a charge either upon the retailer or directly upon the customer for all gasoline and gasohol, so that nonbranded fuels bear their fair share of the expenses.

Three, or, we simply do away with the credit card altogether.

While all of these alternatives could be permitted under S. 2251, Texaco believes that none of them are necessarily more beneficial to the consumer than its present policy, and some are probably worse.

Thus, while S. 2251 is cast in terms of prohibiting discrimination against gasohol, some of its sponsors interpret it in a way which would discriminate in favor of those gasoline marketers who have chosen not to provide credit card services for their product, and against those gasohol manufacturers who have gone to the additional expense of educating the public on the merits of gasohol and who have undertaken to increase the public acceptability of gasohol by standing behind a branded product, and who are now furnishing gasoline credit cards without charge to their resellers and ultimate consumers.

At least some of its sponsors interpret this statute as going well beyond general laws applicable to exclusive dealing arrangements and discriminatory market practices.

In fact, it is so broadly worded that it might be construed by some to require any oil company to permit its credit card to be used for the purchase of gasohol from any source, even if the purchase is made at another company's service station.

Such unlimited exposure to additional credit expenses jeopardizes the system of gasoline credit cards which has served the public so well for so many years.

Thank you for your attention, gentlemen. I will be glad to respond to any questions.

Before, if I may, however, I would like to simply respond to some of the testimony that was made before in one or two very specific cases.

I am impressed that everything I have heard here this afternoon implies that credit cards, per se, have absolutely no deterrent effect on

the sale of gasohol. In fact, I think some of those who presented testimony indicated they could cite no specific reasons.

The real problem, as I have heard earlier here today is the same one that we face today and that simply is the supply of alcohol. Of course, this is the area we think we should truly address ourselves.

One other point, if I may. Mr. Cino talked of a specific Texaco retailer—I am not sure of the location. I understand it may have been in New Jersey, who had his rental payment time changed because he reportedly refused or was refused to market gasohol in some form or another.

I would like to assure both this committee and Mr. Cino that that in effect is absolutely not Texaco policy and that any change in the date at which any of our retailers or customers pay their bills has absolutely nothing to do with whether they market gasohol or not.

If this committee or Mr. Cino in fact has any problem with that, I would be glad to personally investigate that with that retailer and make sure that he understands it properly and in fact, would even be happy to respond in writing to this committee.

Now, with that, Mr. Chairman, I will be glad to respond to questioning.

Senator METZENBAUM. As I understand the thrust of your testimony, you think the marketing of gasohol is a sound business proposition. You don't think you are selling the public an inferior product. You think that there is a great deal of public satisfaction with gasohol, that there is a ready market for the product. The main problem right now is finding enough alcohol. Is that a fair summary?

Mr. SEAMANS. I think that is basically a fair summary.

Senator METZENBAUM. Is your gasohol currently cost competitive with gasoline?

Mr. SEAMANS. I would say that it varies, and depending on how you describe competitive. It is fully competitive in those areas where you have both the Federal tax and the State tax incentives and where you in fact have a supply of alcohol that is relatively low cost.

In some areas, I would say that it is not competitive with the other gasoline that we are marketing, because of lack of State incentives in some cases, and also, because of the cost of alcohol.

Senator METZENBAUM. Even in those areas though, isn't it selling rather adequately, even though it is a little bit higher than gasoline?

Mr. SEAMANS. The answer again to that is yes and no. There is a very definite distinction between the volumes that we sell in those areas where the price is less competitive.

I think I can summarize this by saying that the sale of gasohol is truly price sensitive. In a given market where we are marketing an entire area through all classes of trade, wholesale, retail and consumer, in a free market, the percentage of gasohol sales will vary directly in proportion to the differential price on gasohol and the other branded gasoline products.

Senator METZENBAUM. Is gasohol a higher octane product than regular gasoline?

Mr. SEAMANS. Lead-free regular; yes, sir, it is.

Senator METZENBAUM. Now let me—

Mr. SEAMANS. Let me make this point, however. I was grossly disturbed in what I heard before. We obviously do a great deal of testing

on gasohol, both in the marketplace and market responses to its acceptance, and also in the laboratories and also with train drivers, et cetera.

We pretty consistently get an octane improvement that ranges to a maximum of two numbers to something less than this. I don't think we have ever seen or heard of any gasohol mixture which gets the kind of octanes that were claimed here earlier in the testimony.

Senator METZENBAUM. Could you tell me why the octane rating of Texaco gasoline is only 89, when most of the others are 91 and 92?

Mr. SEAMANS. I don't think that is a correct statement, Senator Metzenbaum.

Senator METZENBAUM. We had some testimony to that effect.

Mr. SEAMANS. Well, you are looking at probably what some might refer to as an unleaded premium and unleaded regular. Texaco does not market an unleaded premium grade of gasoline. There are others who do not, also.

I believe, based on our surveys of the market, et cetera, that the lead-free premiums are in the range of 91. The lead-free regulars which we market in the range of 88.5 and to a high of 89. They are competitive on the basis of our lead-free regular gasoline.

Senator METZENBAUM. Mr. Seamans, every one of your gasoline stations has a group of TBA: tires, batteries, and accessories. Are any of the TBA items marketed under the Texaco name?

Mr. SEAMANS. Yes, we market a line of filters. Tires we do not. Batteries, we do.

Senator METZENBAUM. Now when I go into a Texaco station and I buy a tire, I don't really know whose tire it is. Do you sell only one brand of tire or a lot of companies' tires?

Mr. SEAMANS. We sell a number of brands. I would suggest that maybe that you are not the average purchaser of tires, Senator. Most people buy tires by brand based on the advertising and experience of the suppliers, brand. Most people, for example, specifically want a Firestone or a Goodrich or a Goodyear or something of that nature. They ask for it and they shop for it by brand name.

Senator METZENBAUM. Now if I buy a belt for my water pump or if I buy some spark plugs at some station—you can't get them too often any more in most stations—it won't be your product, will it?

Mr. SEAMANS. The belts, it is quite likely that it can be; the plugs, it will not be.

I guess we can summarize this by saying that there are certain of the associated items, tires, batteries, and accessory type materials which Texaco does market under its own name.

The majority of them, however, we do not, tires being the principle exception of what we do not market under our own name.

Senator METZENBAUM. The dealer can buy any tire he wants to sell?

Mr. SEAMANS. The dealer can buy any tire that he wants to sell, yes.

Senator METZENBAUM. If I go into that station and buy something from a Texaco station, don't I sort of assume, even if there is somebody else's name on it, that the Texaco company is standing behind it? Is that the general attitude?

Mr. SEAMANS. This is the very thrust of our whole argument why you should not do what you are proposing to do, is that even though it

may not be listed specifically as a branded Texaco product, such as an unbranded gasohol or an unbranded motor fuel, and even though that is properly deidentified, that you and the average consumer when you go into a Texaco station, with the exception of the tires and that type of line which is quite different, firmly believe that that in effect is Texaco which carries the endorsement and seal and quality control that they associate with a Texaco product.

Senator METZENBAUM. But the point is you can put it on a credit card and it is not your product except when it is gasohol.

Mr. SEAMANS. But one major exception is the fact that as I say, the customer knows that he is not buying a Texaco tire when he buys the tire, sir.

Senator METZENBAUM. Good. Now how big does the sign have to be on the pump that says, "This is not a Texaco product," in order to satisfy your concern?

Mr. SEAMANS. I don't think an issue has ever been with us how big the sign. It obviously should be readable by the customer sitting in his car. That might warrant 1- or 2- or 3-inch letters.

Senator METZENBAUM. If it does that, then you would have no objection to putting it on your credit card; is that it?

Mr. SEAMANS. Yes; we do.

Senator METZENBAUM. Why? You don't mind putting the spark plugs on, although they are not made by you.

Mr. SEAMANS. Well, I think you proved my case, Senator.

Senator METZENBAUM. No; I think quite the opposite; you proved mine.

Mr. SEAMANS. No. [Laughter.]

When you said that even though I know that is not a Texaco product, I really expect Texaco to stand behind it. That is the point with gasohol.

Now it is quite different when you don't see on the pump, "Firestone tire," or "Goodyear tire," or "Goodrich tire."

They know and depend on that brand name, just as they do on Texaco's brand name.

Now when you deidentify a pump, with however big a letter you want to put on the pump, the customer, as you indicated you do, still associates that with the kind of quality—

Senator METZENBAUM. Mr. Seamans, your dealer can handle any kind of spark plugs he wants and handle any kind of tires he wants. He can handle any other kind of other product he wants in that gasoline station, and he can put them on the credit card.

Mr. SEAMANS. No; there are obviously restrictions.

Senator METZENBAUM. Name one.

Mr. SEAMANS. Those which support the marketing of gasoline and the service we provide.

Senator METZENBAUM. Very well.

Mr. SEAMANS. But in the case of these tires and that type of a thing there is a very clear differential here where you ask our customer. He does not come to us if he has a problem with a Firestone tire.

Senator METZENBAUM. He comes to you if he has problems with a tire he bought from your dealer.

Mr. SEAMANS. He comes to our retailer who in fact directs him to—

Senator METZENBAUM. You think he goes over to Akron and talks with Goodyear Tire & Rubber Co.?

Mr. SEAMANS. He may get the adjustment directly with a local Firestone or he goes to the retailer and the retailer makes the arrangement through Firestone.

Senator METZENBAUM. I think you are kidding. [Laughter.]

Mr. SEAMANS. Well, you should sit in my office in Houston and see the complaints we get on products, and they are not on that type of product.

Senator METZENBAUM. I would say to you that the average customer would go to the place from which the product was bought and say, "Look, this belt, I bought it 2 weeks ago and it has torn up. This battery isn't working. The tires aren't any good. Aren't you going to make an adjustment?" He would expect the dealer to take care of it for him because he knows that Texaco is a responsible company.

Mr. SEAMANS. That retailer I am sure provides many of those kinds of services, but by the same token, Senator, when you buy a tire, you are given a guarantee by the tire manufacturer which is something that you can take anywhere in the United States and get an adjustment on that tire if you are dissatisfied with it. It does not have to be with the Texaco retailer.

Senator METZENBAUM. That may be so, Mr. Seamans.

Mr. SEAMANS. Many do that.

Senator METZENBAUM. I live in a State of 11 million people. Some of them live in big cities, like Cleveland, Columbus, Cincinnati. Some of them live in smaller communities like Gallion and Uricksville and Zenia and Connellsville. They don't have any Goodyear dealer to take it to or Firestone dealer to take it to. They take it back to their local Texaco station because they know the Texaco station will stand behind it.

That is all we are talking about in connection with gasohol; isn't it?

Mr. SEAMANS. That is the good business practice of our independent retailers. We sincerely hope they do provide that kind of service. But that is not a service that is in effect underwritten by Texaco, other than the encouragement we would give them to do it, obviously.

Senator METZENBAUM. Mr. Seamans, you talk about the bill requiring the purchasers of Texaco motor fuels to subsidize purchases of non-Texaco gasohol. Frankly, I don't understand that, because first of all, what happens if the purchaser does not pay the bill within a stated number of days? You charge a finance charge; don't you?

Mr. SEAMANS. Yes, sir.

Senator METZENBAUM. That would be a finance charge whether you bought gasohol or gasoline; wouldn't it?

Mr. SEAMANS. Yes; but I sincerely hope you are not saying all these people are not going to pay their bills on time.

Senator METZENBAUM. No; but the point is, that is a substantial source of income for Texaco; isn't it? The credit charges on the credit cards?

Mr. SEAMANS. Not a great deal, no, sir.

Senator METZENBAUM. Not compared to what you make on oil today, I know. [Laughter.]

It can't compare with that. But I am talking about the old days when that meant something,

Mr. SEAMANS. No; the service charges that we make in connection with our credit card are relatively insignificant. We are not in the business of lending money. We are trying very desperately, Senator, to accumulate enough cash so that we can provide the investment to get on with the other energy needs that we have. We are trying very desperately to avoid.

Senator METZENBAUM. What rate do you charge on late charges?

Mr. SEAMANS. We charge 3 percent on late charges.

Senator METZENBAUM. Three percent a month?

Mr. SEAMANS. After—no, no, it varies. It is obviously the legal rates in various States.

Senator METZENBAUM. Wasn't it about 18 percent?

Mr. SEAMANS. It would be in some States, yes, sir.

Senator METZENBAUM. That was when an 18 percent was still a good rate. It isn't very good this week. [Laughter.]

Mr. SEAMANS. Yes; but the point is we obviously do not want to sell with extended terms on these kinds of services, quite the opposite, we try to avoid it if at all possible.

Senator METZENBAUM. Is there anything in this legislation which would stop you from charging either the manufacturer or the retailer of gasohol or maybe even the buyer for any costs associated with the extension of credit for nonbranded gasohol?

Mr. SEAMANS. I don't know that there is anything in the bill, but let's say there are many other Government deterrents under some of the basic rules and regulations, DOE, et cetera, regarding base period practices and so forth.

Senator METZENBAUM. It is not this bill.

Mr. SEAMANS. No; but this bill may conflict with other existing governmental regulations with regard to what you can charge and what you cannot charge; that it, what you can put into the gasoline pot, and what you cannot and what you can and cannot charge under so-called base period practices.

I don't know how all these would shake out.

Senator METZENBAUM. You are talking about the question of what you may charge under the DOE rules and the DOE legislation.

Mr. SEAMANS. Under the so-called base period practices, yes, sir.

Senator METZENBAUM. Yes.

Mr. TELL. Mr. Chairman, if I might just volunteer a comment, and I do thank the chairman for the invitation to participate on the panel.

I did have occasion to review the situation recently. Our credit charges and practices are frozen under DOE's regulation back to those terms that were in effect in the years 1972 and 1973.

We are the only seller of a commodity where we are required by law today to offer free credit. At a time when we are encouraging the public to think about conservation, when our basic energy policies are designed to promote conservation, we have credit policies frozen by Federal law that work in just the opposite direction.

For most of the accounts that are paying within the regular term, there is no charge whatsoever to the customer for the credit, although there will be a timelag in which our money is outstanding which has a time value of 17 percent at the present time.

There is no return to Texaco on that enormous working capital that

is tied up under this free credit policy that the Federal Government has frozen into effect.

I would encourage the chairman, if this legislation is to go forward, to take a very close look at the types of conflicts that we have today between Department of Energy regulations and policies and the kinds of practices that this type of legislation would seem to encourage and promote.

Senator METZENBAUM. Let's not throw that sort of diatribe out against the DOE on that issue about not permitting you to charge for credit. Isn't the case that what DOE was saying was "You did not charge for credit before. We are now letting you make so much money that it is unbelievable, and we should not let you charge something over and above that for credit."

Mr. TELL. Well, Mr. Chairman, I am reporting facts. I hope I am not offering a diatribe. The facts were, in 1972, that under market conditions, supply conditions that existed at that time, free credit was extended.

I know of no other retail commodity where the law today requires that free credit be offered. I suggest that is in conflict, particularly for a commodity such as gasoline, with the conservation ethic that our energy policy seeks to support.

The world is much different today than it was in 1972. There ought to be some flexibility in our Federal energy policies to accommodate to those changes.

Senator METZENBAUM. I can only say that it seems that the DOE listens to you better than it does to me, why don't you take your complaint to them. [Laughter.]

Mr. SEAMANS. They haven't listened on this, Senator.

Senator METZENBAUM. Let me say to you, Mr. Seamans, that the expense that you describe when you talk about this cost of selling on credit, you really covered that point because you did point out that the expenses involved in our credit card program are marketing costs which are ultimately collected from the purchases of branded gasoline and branded gasohol.

What you are really saying is, we have worked it into the price structure, and therefore, the credit factor is already a part of the price. Now Mr. Tell is saying something a little different.

Mr. SEAMANS. No; I am saying precisely the same thing, under the restrictions described by Mr. Tell, that if we extend the credit card privileges to nonbranded sales, then we do not charge that customer, nor do we charge that retailer for that sale and the only way we can have to recover the cost, because the costs of running the credit card system are very real, is to in turn increase the cost to our branded customers.

There in effect is an out-and-out subsidy of an unbranded purchaser by a branded purchaser of our products.

Senator METZENBAUM. If you were permitted to charge either the distributor or the station or the customer a factor for that actual cost of credit card purchases, then would you not be opposed to this bill?

Mr. SEAMANS. We are opposed to the bill because we think it is most important that we and you and the public have a quality product if we want to, really want to promote gasohol.

If, despite these kinds of objections, such a bill is passed, certainly there ought to be a provision wherein we can recover and charge a credit cost for the use of the credit card.

Senator METZENBAUM. As I indicated to you before the hearing, I would be glad to discuss with you whatever your suggestions are, on the assumption that if we can work out your problems, then you will be supporters.

Mr. SEAMANS. Yes.

Senator METZENBAUM. Senator Dole?

Senator DOLE. Thank you, Mr. Chairman.

What percentage of the gasohol being sold by Texaco dealers is Texaco brand and what percentage is nonbranded?

Mr. SEAMANS. I can tell you branded. We are selling currently just under 3 million gallons a month, branded. That will escalate to something like 5 million gallons a month in terms of our expansions already underway by April.

We have a very large number of outlets selling unbranded gasohol in many areas all over the country. I might add that credit card has been no deterrent to these people whatever.

I simply do not have statistics, nor do I know how I can get statistics to indicate the volumes that are moving, but they are moving. We have not discouraged that.

Senator DOLE. Is there evidence that the Texaco brand gasohol is superior in quality to the nonbranded?

Mr. SEAMANS. I think this. We know quality of Texaco branded gasohol. We have no knowledge whatever of the quality of unbranded.

It is quite possible that some could meet our rigid specifications, but it is also quite possible that a lot of it may not or would not.

When you have absolutely no control over the product, you have no ability to look at it, to test it, to certify it. We simply lose all control of quality and most anything could be sold, as far as we were concerned, under those conditions.

Senator DOLE. You mentioned the increased cost to your company by allowing credit card sales of nonbranded gasohol. How much money are we talking about?

Mr. SEAMANS. We are talking, probably conservatively, of 2 cents per gallon for every gallon of it that goes across the credit card. It is substantial.

Senator DOLE. So you would have to increase the price of gasohol 2 cents a gallon, nonbranded, to cover that administrative cost?

Mr. SEAMANS. Yes, sir, to cover the cost of the credit card.

Senator METZENBAUM. You don't mean that, do you? If it is 2 cent a gallon for every gallon of gasohol you sell, you wouldn't have to increase 2 cents a gallon on all the balance, because you are going to sell much more.

Mr. SEAMANS. No. No. What we are saying is, for every gallon of unbranded product that goes across our credit card, we incur a cost of about 2 cents a gallon.

Now we would have to recover that, but admittedly, you are spreading it across a larger volume.

Senator DOLE. You don't know how much that is? How many gallons?

Mr. SEAMANS. That is the old thing, you know; this can get totally out of hand, obviously, if you look at today and say, "Well, it is insignificant." That might be a reasonable statement, but with the promotional effects that we are all making on gasohol, it could become a very significant factor.

Senator DOLE. I want to clarify another thing. I watch television a lot. I see those great Texaco ads and the image advertising that a lot of us do. [Laughter.]

Some are effective and some are not. [Laughter.]

I hope I didn't understand you correctly when you indicated in response to Senator Metzenbaum that if I go into a Texaco station and buy a Goodyear tire, if that tire collapses on the way home, I can't take it back to my Texaco dealer or if I do, he says, "That's too bad. You take it down to Goodyear." Is that your policy?

Mr. SEAMANS. No.

Senator DOLE. If that is your policy, you better change your ads.

Mr. SEAMANS. We encourage every one of our retailers to take care of your problem, but the point of that is, the retailer does not stand behind the product, nor does Texaco.

Now as good business practices, we obviously encourage our retailers to get your business. When you have a problem, he simply goes to Firestone or Goodyear if that is your tire, for the adjustment on that tire. That is not Texaco, nor is it the retailer who is making that adjustment and that correction.

Any good businessman provides, hopefully, a very good service to your customers. That is what we obviously want to do.

Senator DOLE. Yes; otherwise, I think you would not have any customers.

Mr. SEAMANS. You are absolutely right. Similarly, you will have no customers if you deliver an inferior product when they think they are buying a good product.

Senator DOLE. If the gasohol is good enough for them to get back to the station. [Laughter.]

Mr. SEAMANS. That is right. That is a possibility, but the other possibility is also there.

Senator DOLE. I know there is probably—I hope there is not over-emphasis on gasohol, because I think there are some who look upon it as a cure-all or panacea and there is just no end to what we are going to do with this, and all the farmers are going to be rich. I think many of us may indicate that by inference in our press releases. You never know how far we have gone. Every member of Congress has certainly at least one gasohol program that he is working on. When we run out of gas we will have gasohol.

You raised some good arguments in reference to the legislation, but we are looking at some—I would assume in another 5 years you won't need any unbranded, will you? Won't you have an adequate supply in 5 to 10 years?

Mr. SEAMANS. If you are talking about gasoline supply and demand and equating in the next 5 years, I think that is a very real possibility.

Senator DOLE. You just signed an agreement with CPC.

Mr. SEAMANS. Yes.

Senator DOLE. You have an agreement with ADM.

Mr. SEAMANS. We do have agreements with ADM. We have agreements with virtually every alcohol supplier. As I gathered from the testimony of those preceding us, the only limits to our expansion is what we can get our hands on.

Senator DOLE. What percent of the total market do you have of supply?

Mr. SEAMANS. As far as gasohol, I can't describe it. I think we are truly the largest marketer of gasohol in the United States. There are no statistics that I know that describes what others are doing. We are approaching 1 percent of our total gasoline sales and plan to do even much beyond that.

Senator DOLE. You are not trying to discourage the sale of gasohol?

Mr. SEAMANS. Absolutely not. I think everything we have done is quite the opposite. We have gone on national TV, radio, newspapers. We promoted it in every possible way.

Senator DOLE. I think I saw something on television about your station in Virginia. Do you have a lot of Members of Congress filling up there?

Mr. SEAMANS. We did in fact. The day we opened that station it looked more like this committee than anything I have seen in a long time.

Senator DOLE. Did they come back after the cameras were gone?

Mr. SEAMANS. I would sincerely hope so. [Laughter.]

Senator METZENBAUM. Mr. Seamans, one last question. Mr. Campbell talked about the problem that one of the Texaco dealers had in trying to buy Texaco gasoline after he had 10 percent alcohol in his truck.

Now he was told—according to Mr. Campbell; I wasn't there—that he could not have Texaco gasoline if he was going to use it to make non-Texaco gasohol.

Would you say that person was following company policy in telling him that he couldn't buy Texaco gasoline?

Mr. SEAMANS. No; he was not. I am sure this is one—as you know, we have many thousands out there, that these things can certainly happen, but we do not, as you know, agree to anyone selling branded gasohol when they in fact are commingling or blending products consisting of part ours and part somebody else's.

I am sure that sales representative or whomever he talked to probably referred to that. If he in fact mixed alcohol with our gasoline, we would require him to sell it unbranded. But we do not restrict him from selling it.

Senator METZENBAUM. Thank you very much, Mr. Seamans.

Mr. SEAMANS. Thank you, Mr. Chairman.

[The prepared statement of Mr. Seamans follows:]

PREPARED STATEMENT OF J. M. SEAMANS

I am J. M. Seamans, vice president of the Texaco, Inc. Petroleum Products Department-U.S.A. I am directly responsible for the refining, supply and distribution and marketing activities of Texaco, Inc., within the United States. I am most pleased to be here today and have the opportunity to comment on Texaco's current marketing of gasohol and to present our views and position on Senate bill S. 2251. Texaco believes gasohol is an important method of extending our motor fuel supplies for the future. We have actively supported the production and mar-

keting of this product, a blend of 90 percent lead-free gasoline and 10 percent ethanol. We do not believe, however, that Senate bill S. 2251 is needed to make increased gasohol available to consumers on a competitive basis.

First of all, let me make sure that you understand Texaco's position with respect to the sale of nonbranded gasohol at Texaco retail outlets, and the charging of such fuel on the Texaco travel card. Texaco has not singled out nonbranded gasohol for some special discriminatory treatment. Texaco's customers are free to purchase and resell nonbranded gasohol at Texaco stations just as they are free to purchase and resell nonbranded gasoline at Texaco stations. Texaco is very concerned, however, that under those circumstances the consumer be aware that the gasoline or gasohol that is being purchased is not a Texaco product, and therefore is not subject to our quality control, and does not necessarily meet our specifications. Many consumers rely upon Texaco's trademark in purchasing motor fuels as their assurance of quality. Members of the public should not risk being misled into believing they are purchasing a Texaco product when, in fact, they are not. Therefore, when any nonbranded motor fuel is sold at a Texaco station, whether it be gasoline or gasohol, Texaco requires that any Texaco identification be removed from the pumps from which the product is dispensed and that Texaco credit cards not be accepted in payment for the product. Texaco believes that these two steps will make it clear to customers that they are not buying a Texaco branded product.

There is a basic distinction between unbranded gasohol or gasoline on the one hand, and the non-Texaco products which many retailers sell at their service stations on the Texaco credit card. There is no realistic danger that the public will believe the tires, batteries, or other accessories carrying the name of some other company have been manufactured by Texaco nor does the public assume that Texaco stands behind the quality of the services performed by its independent retailers. However, Texaco has never permitted the use of its credit cards for purchases of nonbranded motor fuels. A statute requiring a change in that policy, particularly in view of Texaco's extensive advertising campaign for its branded gasohol, is likely to mislead the public into thinking that any gasohol sold at a Texaco station is manufactured, blended, and subject to Texaco quality controls. This is simply not true, and no statute should be passed which might mislead a consumer into thinking that it is.

At this point, I would like to review the history of Texaco's current involvement in the manufacturing and marketing of a Texaco lead-free gasohol product. Last summer our company undertook a study and formulated plans to begin the test-marketing of a branded Texaco lead-free gasohol. Texaco has always marketed its motor fuels on a branded basis. We believe that Texaco's offering of a branded gasohol greatly increased public acceptance of not only Texaco's brand of gasohol, but probably gasohol generally. Texaco has been known for the reliability of its fuels for many years, and we firmly believe that one of the reasons for the public's acceptance of gasohol is that a major company such as Texaco is standing behind the reliability of its gasohol, and markets it as a branded product, with an extensive public education program through advertising and with the benefits of its credit card system.

Our test marketing of Texaco branded gasohol commenced in three metropolitan market areas. Texaco gasohol was introduced first in the Indianapolis marketing area on October 1, 1979. The results were encouraging and Texaco gasohol was promptly extended into the Boston and New York City markets during the same month. The results in these additional areas was also very encouraging and the expansion continued. To date, there are 13 markets where Texaco branded lead-free gasohol is being sold through nearly 700 retail outlets.

On February 4, Texaco became the first major gasoline refiner to begin the marketing of lead-free gasohol in the Washington, D.C. metropolitan area. This gave rise to a resolution by the Fairfax County, Va. Board of Supervisors duly recognizing Texaco's marketing initiative and its contribution to energy conservation and development. In the near future, we will have nearly 1,100 retail facilities marketing Texaco brand gasohol in the United States. Since Texaco has very few company-operated service stations, almost all of Texaco's branded gasohol is made available to the motoring public through independent distributors and independent retailers. All of Texaco's branded distributors and branded retailers in the gasohol marketing area have been given an opportunity to purchase branded lead-free gasohol from Texaco.

Texaco retailers report that the customers using gasohol seem to be receptive to both the product and to the benefits the higher octane rating provides. Many

customers claim that Texaco lead-free gasohol provides more power and better performance than Texaco lead-free gasoline. Patriotism plays a part, in that many customers believe that by using gasohol, the Nation's dependence on imported oil is lessened. We are also pleased that Ford, Chrysler and General Motors have stated that gasohol usage will not affect their automotive warranties. Gasohol does, without doubt, extend the availability of motor gasoline fuels.

While we at Texaco do not envision that gasohol is the panacea for all of our energy problems, we believe that there are additional steps both we and the Government can take to expand gasohol supplies and to increase its acceptability by the public as a reliable fuel. For our part, we plan to expand gasohol marketing in the Midwestern region of the United States, which is close to the present production facilities and sources of alcohol. However, two factors could limit the expansion of gasohol marketing. One is the need for a secure supply of alcohol. The other is the requirement that it be economically feasible to market the product within a geographic area. The ability to overcome these possible limitations is dependent upon supply, transportation, price of the alcohol, and tax incentives granted by State and local governments.

Texaco is working on ways to improve ethanol supplies. Just last week, Texaco and CPC International Inc., announced that they have agreed to proceed with design engineering and certain equipment orders with respect to the proposed production of up to 60 million gallons a year of fuel-grade ethanol from corn at CPC's wet milling plant in Pekin, Ill. This would be enough alcohol to blend into 600 million gallons of gasohol annually.

Additional steps by both the Federal and State governments can also help. The Federal Government has provided a motor fuel excise tax exemption for gasohol in the National Energy Act of 1978. This exemption expires October 1, 1984. Texaco supports the extension of this exemption beyond the expiration date, and recommends that the exemption be expanded to include gasohol blended from domestic alcohol produced from coal sources as well as agricultural products.

Our records indicate that 15 States have exempted gasohol from either a portion or from all State motor fuel taxes, 19 other States have proposed similar tax exemptions. Texaco recommends that these tax exemptions continue to be granted to provide the economic incentives necessary to support the further manufacture and competitive marketing of gasohol. The tax incentives that have been granted to date have to a degree offset the higher price of the alcohol and have permitted the wholesale price of the product to be competitive with regular leaded or lead-free gasoline.

As you can see, we at Texaco are as desirous as anyone to increase the availability and acceptability of gasohol to consumers on a competitive basis. We do not believe S. 2251 furthers this objective.

By requiring that manufacturers of branded fuels permit their credit cards to be used, without charge, to sell fuels manufactured by others, will unfairly require purchasers of Texaco gasohol, for example, to subsidize purchases of non-Texaco gasohol. Such a rule is not only inequitable. But it provides a disincentive for a gasohol manufacturer to offer credit card services to his customers (since he can obtain a free ride at others expense on existing credit cards) and could perhaps result in some companies doing away with credit cards altogether.

In addition to potentially misleading consumers to think they are buying an advertised branded product when they are not. The bill also requires that those consumers who do choose to purchase branded Texaco gasoline or branded Texaco gasohol incur the expenses involved in providing a free credit card service to manufacturers of unbranded gasohol. Texaco does not charge its retailers for the handling of credit card sales of gasoline, nor does it charge the credit card customer. The expenses involved in our credit card program are marketing costs, which are ultimately collected from the purchasers of branded gasoline and branded gasohol. If Texaco is required to provide free credit card service to other manufacturers of gasohol. Texaco has essentially three choices:

(1) It can pass this added expense on to the purchasers of its branded products; (2) it can impose a charge either upon the retailer or directly upon the consumer for all gasoline and gasohol, so that nonbranded fuels bear their fair share of the expenses; or (3) Texaco can do away with its travel card altogether. While all of these alternatives would be permitted under S. 2251, Texaco believes that none of them are necessarily more beneficial to the consumer than its present policy, and some are probably worse.

Thus, while S. 2251 is cast in terms of prohibiting discrimination against gasohol, some of its sponsors interpret it in a way which would discriminate in favor of those gasoline marketers who have chosen not to provide credit card services for their product, and against those gasohol manufacturers who have gone to the additional expenses of educating the public on the merits of gasohol and who have undertaken to increase the acceptability of gasohol by standing behind a branded product, and who are now furnishing gasoline credit cards without charge to their resellers and ultimate consumers. At least some of its sponsors interpret this statute as going well beyond general laws applicable to exclusive dealing arrangements and discriminatory market practices. In fact, it is so broadly worded that it might be construed by some to require any oil company to permit its credit card to be used for the purchase of gasohol from any source, even if the purchase is made at another company's service station, such unlimited exposure to additional credit expenses jeopardizes the system of gasoline credit cards which has served the public so well for so many years.

Thank you for your attention and now I will be pleased to respond to any questions that you may have have in regard to gasohol manufacturing and marketing.

Senator METZENBAUM. Our next witness is Mobil Corp., represented by Mr. Joseph B. Hinton.

STATEMENT OF JOSEPH B. HINTON, GENERAL MANAGER, PLANNING AND FINANCIAL ANALYSIS, MOBIL CORP., ACCOMPANIED BY JAMES McGRATH AND DR. JAMES WHITE

Mr. HINTON. I would like to introduce, to my right, Mr. Chairman, Mr. James McGrath. Jim's title is assistant general counsel, for Mobil.

On my left is Dr. James White. Jim is the manager of scoping and technical analysis in our central research division for Mobil Research and Development Corp. I brought Jim along in case we get into questionable areas of technical interest that I am just not capable of answering. I would expect that we could use him.

Senator METZENBAUM. Maybe we will use him on our panel of experts to follow the oil company spokesmen. We will be glad to have him sit there.

Do you have a written statement?

Mr. HINTON. Yes; I have about a 5-minute statement and then I will be happy to take questions from the group.

Mr. Chairman, and gentlemen, good afternoon. My name is Joe Hinton, general manager of planning and financial analysis, for U.S. Marketing and Refining Division, of Mobil Oil Corp.

I am pleased to be here today in response to your invitation to present Mobil's views concerning oil company practices relative to the retail marketing of gasohol.

Let me begin by attempting to set the record straight and state some key points relative to Mobil's position on the marketing of gasohol.

Mobil's position is not "antigasohol" even though Mobil does not manufacture gasohol. However, in considering the grain alcohol alternative, we are concerned that with existing technology, expanding grain production to produce gasohol is not energy efficient.

Mobil does not manufacture gasohol, however. We do allow its sale by our independent dealers and distributors and they can and they do accept the Mobil credit card in payment for gasohol purchases.

Mobil's policy advising dealers and distributors how they may sell gasohol is genuinely meant to protect the motorist, our trademark and

product reputation as well as to avoid the possibility of liability for any product defects.

Mobil maintains open communications on its policies with its independent dealers and distributors, on whom Mobil depends for marketing the vast majority of its fuels and lubricants in the United States.

As of the end of 1979, 80 Mobil retail outlets were marketing gasohol.

More specifically to your requesting us to testify today, I'd like to make the following comments.

In regard to the conditions which we place on a dealer marketing gasohol, the essential requirement is to avoid the risk of consumers unknowingly purchasing a non-Mobil product, over which we have no quality control, under the impression that it is indeed a Mobil product.

We have provided dealers and distributors with the means by which they can market gasohol without confusing the public. For example, you can see behind me the mechanicals illustrating conversion of gasoline pumps to gasohol pumps.

For dealers and distributors who own their tanks and pumps, we have been providing written instructions for implementing this type of conversion to our field organizations for over 6 months, and dealers and distributors were advised to contact their Mobil marketing representatives to arrange these conversions in case they were considering the sale of gasohol.

Thus, any statements to the effect that oil companies prohibit dealers from marketing gasohol even when it is clearly labeled as being a noncompany product, certainly do not apply to Mobil.

We are cautious understandably, however, about Mobil dealers marketing a gasohol which is blended and distributed by suppliers other than Mobil, because of the multiplicity of technical problems presented by the presence of 10 percent alcohol in gasoline.

I am sure you are well aware of these problems, however, I would like to point out a few that are of particular concern to us.

For example, there is the phase separation problem in storage and distribution. At normal ambient temperature, the presence of as little as one-half of 1 percent water in a storage tank can cause gasohol to separate into two layers, with gasoline as one layer and water as the second layer. If the water-alcohol mixture is fed to an engine, the car is not drivable.

The detergent properties of alcohol are such that over a period of time, rust and scale can be loosened from tank and pump systems and suspended in the gasohol. This sediment can plug fuel filters and thereby cause a vehicle to stall, or become inoperative.

Both these foregoing problems can be overcome with the proper quality control procedures. If a Mobil dealer or distributor elects to purchase gasohol from a supplier, or to purchase alcohol and blend his own gasohol, this he must look to the other supplier and or himself for the responsibility and liability associated with the product.

In this situation, we are prepared to assist the dealer or distributor in marketing gasohol, but must require, for the protection of the consumer, that certain trademark requirements be met.

Our marketing representatives are advising dealers and distributors concerning the sources of materials for the pump conversions, which

you see displayed beside me. These will satisfy Mobil's requirements in regard to protection of our trademark and from liability due to any product defects.

The addition of alcohol to gasoline changes some of its important characteristics, such as its volatility. These and other product characteristics must be comprehended in the blending of the two products to assure good performance under varying conditions.

In addition, the concerns of product quality associated with the potential problems of pipeline supply must be considered.

There are concerns also for fire safety. Under certain conditions standard foams used for gasoline fires are ineffective in fighting a gasohol fire. The availability of alcohol resistant foams in local fire departments and plant fire brigades is of special concern.

In summary, Mobil does allow all its dealers and distributors to market gasohol.

As I stated earlier, Mobil's requirements on dealer marketing of non-Mobil gasohol are limited to trademark protection and protection from liability due to product defects.

Our marketing representatives are prepared to assist dealers in meeting these requirements for Mobil's protection and the protection of consumers.

We are aware of the President's target to sell 5 billion gallons of gasohol per year in the United States in the early 1980's. Certainly, Mobil's current marketing practices do not inhibit the attainment of that goal.

We are proceeding with what we consider to be a rational approach to the whole spectrum of gasohol and energy supply.

Now this concludes my testimony. After one other brief comment, I would like to open up for any questions that you may have.

I respect very much Congressman Bedell, but I do take exception to some of his comments made during his presentation. I believe the first was that he said that I was the marketing vice president for Mobil. Obviously, you know that is not correct. I wish it was. I might select one of my subordinates to come and do these kinds of things, if I were. I hope you see the humor in that comment and not take it too seriously.

The other has to do with the numbers that he quoted. I do have to take exception to those. He was correct when he said that we have 18,700 retail accounts in the United States. He was vastly inaccurate, though, when he said that 16,000 of those 18,700 were accounts where Mobil had some control over the real estate or the improvements on the locations.

The real figures are something like this. We refer to those kinds of stations where we have real estate involvement as being O.G. & L. service stations. That is, we own the station outright, we lease the ground or we lease the ground and the improvements, and then in turn, lease that facility to a dealer.

We have about 6,000 of those.

The balance between that 6,000 and the 18,700, that the Congressman referred to, are accounts that are operated by distributors and independent nonleasee dealers. Those are the dealers of the pump conversion program that we are talking about here, the most inexpensive of the conversion programs, is directed toward.

So, two-thirds of our dealers in round figures have the ability to make pump conversions and get into the gasohol business on their own.

I am very sorry that during my presentation in October Congressman Bedell could not be there to hear it, because I would have liked to discuss the issues with him man to man.

With that I am ready for questions. I would like to pass out one brochure though, if I may, to help me with my credibility in discussing what we are trying to do in this whole area of gasohol.

This is a brochure that we are distributing to our field units all across the United States. It explains what our attitude and position is with regard to gasohol. It also has a couple of order forms that will tell the dealer how he goes about acquiring the conversion kits we require to protect our trademark and so forth.

[On file with committee.]

Senator METZENBAUM. Thank you very much, Mr. Hinton. I am very happy to have you with us today. I do have a few questions.

You have said that Mobil's position is not antigasohol. I accept that statement on its face. I have here a letter written from Joe Pennick. I gather he is the president of Mobil Research and Development Corp. That is part of your company, right?

Mr. HINTON. Yes.

Senator METZENBAUM. Mr. Pennick, in that letter, wrote to the Philadelphia Bulletin, on June 1, 1978, "In your April 14 issue, you ran a column by Jack Anderson advocating the conversion of food grains to gasohol for automobile fuel. This may sound like an attractive idea to some people," and the letter continues on, "unfortunately, the gasohol concept evaporates under careful investigation."

So you may be pro, not antigasohol, but Mr. Pennick apparently isn't. As a matter of fact, he is quite a prolific letter writer.

The next day he wrote a letter to the Washington Post. In that letter, he suggested that, "The average car will not run or control emissions as well with gasohol as with ordinary gasoline."

Now, as if that were not enough, we wait a year later because maybe Mobil has changed its position, but here is an energy update. Does that come from your department? It comes from the Mobil Oil Corp., U.S. Division, Marketing Department.

Mr. HINTON. Right.

Senator METZENBAUM. Is that you?

Mr. HINTON. That is my group.

Senator METZENBAUM. On that date the energy update sent to all Mobil customers addressed the subject of gasohol. Your letter at the time said in part, "Question"—Mr. Abbott I guess signed it.

Mr. HINTON. Right.

Senator METZENBAUM.

Question. How big a contribution can gasohol really make to our energy supplies?

Answer. Gasohol, as marketed today is probably energy deficient.

Question. Will I get better mileage with gasohol?

Answer. Probably not.

Question. Will my car run better with gasohol?

Answer. Probably not.

In conclusion, your letter says:

Considering the above information, and based on current technology, Mobil does not believe that gasohol offers either a short-term or a long-term solution

to the United States energy problem. Gasohol, of course, is a non-Mobil fuel. While the sale of non-Mobil fuel is not absolutely prohibited by the dealer and distributor agreements, the marketing of an adulterated Mobil gasoline as a Mobil product is expressly prohibited.

Therefore, if you are thinking of installing gasohol at a Mobil branded retail outlet, we suggest you first contact your marketing representative.

That doesn't sound too pro-gasohol to me. Does it to you?

Mr. HINTON. Senator, I think the key to every one of those letters and to the position we have taken right up to the moment that I am sitting here has to do with current technology and our concerns about technology and what we can really do with the product.

I still say that we are not antigasohol.

I might also add, in all candor, that because of the problems we know about, the technical problems, we are not necessarily progasohol, either.

However, we are not going to stand in the way of our dealers' marketing the product if that indeed is what they want to do, so long as the public and the consumer are not led to believe it is a Mobil product.

Let me cite a few examples, if I may, of some technical problems that we feel we have yet to resolve. Then, I want to talk about alcohol supply for a moment, if I may.

Senator METZENBAUM. I don't think the alcohol supply is the issue, because we are not talking right now about whether there is enough or is not enough. You are saying, "Unfortunately, the gasohol concept evaporates under careful investigation." You are saying that you probably won't get better mileage or my car runs better with gasohol, "probably not." You are saying "Gasohol as marketed today is probably energy deficient."

I want to tell you, if you are a friend of gasohol, I would hate to hear what you would be saying if you were an enemy. [Laughter.]

Mr. HINTON. Well, let's go item by item and take each one of those points then.

You say that alcohol supply is not a factor in this. It is a factor. In my group in planning, I am charged with developing various contingency plans for all of our marketing activities. You can be assured that in our studies we looked very hard at gasohol and made one assumption. Say we were mandated to sell gasohol.

On that basis we have conducted studies to sell literally hundreds of millions of gallons of gasohol. That leads you straight to the suppliers of alcohol and what they could do should you say tomorrow, Senator, "Mobil, you are going to go into the gasohol business."

The information we have very definitely demonstrates we could not go into the gasohol business on any appreciable scale with available supplies.

Now, another factor concerns me about that. The followup answer to that question was, well, perhaps we could import gasohol from Brazil to meet your demand if you had to go into it tomorrow.

Well, I am a layman, but to me, all I can see in imported gasohol from Brazil is that we would have an OPEC for alcohol. That concerns me.

So, it is a factor should you mandate that we go into it.

Senator DOLE. What about manufacturing it yourself?

Mr. HINTON. I do not have any information available about our own ability to manufacture gasohol. I would have to defer that question to Dr. White to answer.

Senator DOLE. I wonder if you considered that?

Mr. HINTON. In my position in marketing, I am not qualified to talk to that question. We just considered the marketing aspects and ramifications from that point of view, Senator.

Doctor, would you like to speak to that point?

Dr. WHITE. We have not considered a manufacturing aspect. To get appreciable volumes of ethanol for gasohol would require the installation of quite a large number of manufacturing plants. Those plants are expensive and they take time to install. I think probably the least time one can talk about is from time of inception until time of operation of a plant of that size, about 2 or 2½ years.

Senator DOLE. I just think it is an option some day you may consider, if it is feasible. If it is not, of course, you wouldn't consider it. Texaco now seems to be going in that direction. I assume competition, if we don't frustrate competition in Congress, will be a factor. We are very eager to see more of the private sector involvement, otherwise, the Government is going to end up with a big mess on its hands. We are going to take over gasohol. If we can't kill it, no one can.

Mr. HINTON. Senator, I think one point I would like to make as it relates to our position, too, is that we haven't closed the door on any alternate energy alternative. We are constantly looking at every alternative we can think of.

One that is not necessarily an alternative, but it is certainly a planning consideration, has to do with available tankage at service stations and the development and the proliferation of the diesel engine in the Nation. The automobile manufacturers are going more and more into building diesels.

The figures that I have available suggest that by 1985, about 15 percent of the cars coming off the assembly line will be diesel.

So, in our total planning effort we have to look toward that as a consideration too, and we know that there are some problems, some fairly small ones we hope, associated with diesel; but you do get about 25 percent better performance and better mileage out of diesel than gasoline. We have to take that into serious consideration.

I don't know, frankly, maybe the next thing we will be down here talking with you about is diesohol. I am not so sure that is too out.

Senator METZENBAUM. What about your coal methanol production?

Mr. HINTON. Again, I have to defer to Dr. White.

Dr. WHITE. Mobil has spent literally millions of dollars in effort, research and development effort to evaluate the possibility of going from coal to methanol and from methanol on to gasoline.

We have conducted large pilot plant studies. We are continuing with those pilot plant studies. We have a related effort underway with the New Zealand Government to convert New Zealand's natural gas to methanol and from that on to gasoline. That is attractive for New Zealand because New Zealand does not have any indigenous liquid petroleum supplies, but an abundant natural gas supply.

We have invested many millions of dollars in the coal to gasoline and natural gas to gasoline technology. We are continuing to do so.

Senator DOLE. You have a competitive disadvantage under our excise tax exemption. We haven't covered that in the 4 cents——

Mr. HINTON. Yes.

Senator DOLE. I understand that.

Mr. HINTON. If I may, Senator, go back to one of your concerns about that energy update letter that Mr. Abbott signed. It deals with one of the technical problems we still have to resolve, and I think it is probably more serious in some of the Sun Belt areas of our country than perhaps in this area, and that has to do with the vapor problems associated with gasohol.

I have a little firsthand experience with that through the family. My mom purchased some last summer down in Texas, south Texas, where she lived, and had some vapor-locking problems right away because of the tremendous temperatures developed while running the air-conditioner in the car.

Until it cooled down, it just didn't go. That is my first experience with gasohol long before I knew I was to become an expert and be here to help you Senators with the subject.

Senator METZENBAUM. Mr. Campbell indicated——

Mr. HINTON. This vaporization thing has to be dealt with, we believe, and that is one of the reasons we say in the letter, "You may have some driveability problems with the product."

Senator METZENBAUM. Let me say, first of all, that Mr. Campbell and Mr. Curry and others indicated that they had not had those problems with vapor locks. I don't know about your mom's car and I don't want to get into that.

Let me ask you, if you were a dealer and you received that memo that you sent out, this thing called energy update, wouldn't you have to read into that that you were being cautioned against using Mobil fuel to make gasohol and that you would be placing your franchise in jeopardy? Isn't that the only possible interpretation?

Mr. HINTON. I don't believe there is any indication anywhere that says that a franchise is ever placed in jeopardy by one of our dealers.

Senator METZENBAUM. Mr. Hinton, a dealer doesn't always have to be told, "Your franchise is in jeopardy if you do this." When the distributor says to him, "Don't do it," don't you think the dealer is justified believing he will lose his franchise if he does it?

Mr. HINTON. I think what we are saying is that you should be very cautious about doing it and consider all the aspects of the thing, not just the emotion of the moment because it is very popular.

Senator METZENBAUM. No, but that isn't what I am asking you. Forgetting about gasohol for the moment, when the distributor says to you, "Don't do it. Don't take down our sign. Don't close one of the entrances. Don't close up at 10 o'clock. Don't do something else," you go ahead and do it. Wouldn't you say you are placing your franchise in jeopardy?

Mr. HINTON. No, I would not, because most of the dealers run their own independent businesses just the way they see fit. We must have thousands out there that are doing all the things you just described and their contracts and leases are not in jeopardy at all.

In fact, our dealer turnover is at the lowest rate it has ever been.

Senator METZENBAUM. Mr. Hinton, you are aware, aren't you, of

what the fall-off in the number of independent dealers has been nationwide?

Mr. HINTON. Yes.

Senator METZENBAUM. When you have in this country something like 25 percent as many independent dealers today as we had just a few years ago, something has happened, hasn't it? Someone has canceled some franchises. They didn't all go out of business, because today they are making more money than they ever made before in their lifetime. That is fine. That is the oil business at the moment. The oil companies, according to many responsible sources, have terminated an awful lot of franchised dealers. I have people writing me constantly asking me to conduct hearings about the pressure that the oil companies have put on the dealers to drive them out of business.

Mr. HINTON. Well, I can only talk about my oil company and I can quote some numbers as to what has been happening to our O.G. & L. chain, those stations where we have real estate interest. Our chain has been shrinking for the last several years. It has been shrinking in one category. It has been shrinking in the category essentially in those stations that do less than 300,000 gallons per year.

In other words, the small volume stations are where we have had high dealer turnover and high dealer failure. As the dealers have failed in those low volume stations, many of those have been in areas where the population or roads have changed or the distribution of the customers is such that the business is just no longer there; the station did not present a viable alternative to the dealer to make a living.

As those dealers would leave those types of service stations, yes, we have elected to close them up, several hundred a year.

I can demonstrate to you in writing, if you are interested, exactly how many and where.

Senator METZENBAUM. How many fewer dealers do you have now as compared to some date in the past?

Mr. HINTON. We have gone down at O.G. & L. service stations at the rate of about 400 a year for the last 3 years and that is out of a chain that started at say 8,000—7,800, I believe, back in 1974 or 1975 or 1976, in that timeframe.

Senator METZENBAUM. That is about 5 percent attrition a year. That is a pretty good amount.

Mr. HINTON. It sure is.

Senator METZENBAUM. There won't be much left.

Mr. HINTON. Sure. It concerns us a great deal, too. We have only been able to add back something like 25 or so new stations a year, against that attrition. Even that is no small task when you have to go to DOE to get allocations for those units.

Senator METZENBAUM. You know Mr. Konitshek testified before Mr. Bedell's hearing that a Mobil dealer was threatened that if he sold gasohol his franchise would be pulled. Are you aware of that testimony? Are you familiar with it?

Mr. HINTON. I heard his comments, but I find it difficult to believe, but at the same time, I also think I am pragmatic enough to not say that it didn't happen.

We have thousands of field people out there calling on our dealers. What some of those people may say or do is difficult to imagine sometime.

I can say this, Mobil policy filters down from headquarters and not up from the field units. I guess, with the experience we have had the last day or two in the United Nations, you can understand how sometimes we have communications problems at all levels.

Senator DOLE. You think it was a mistake, then?

Mr. HINTON. Right.

Senator METZENBAUM. Let me ask you about something else that might have been a communications mistake. Your policy is to permit credit cards to be used for non-Mobil products, including gasohol; right?

Mr. HINTON. Yes, sir.

Senator METZENBAUM. In fact, you have a brochure advertising many products that can be charged on a Mobil card. You can buy a window air conditioner on it, you can put a vacuum cleaner and a pair of man's pants on it, everything.

Mr. HINTON. That's right.

Senator METZENBAUM. How do you account for the fact then a man by the name of J. A. Blesson, acting district manager of Mobil, on July 17, 1979, wrote to Mr. Bill Berg of the Byrd Oil Co., at Hilton Head, S.C., and said as follows:

Further, we have also been informed that you have been using the Mobil credit card for the sale of gasohol. Please be informed that our credit policy is intended only to cover the sale of mobil products and it is not our intention, nor is it our obligation to provide credit for the sale of a third party's product.

Accordingly, you are hereby requested to cease and desist from the use of Mobil credit cards in the sale of gasohol.

Respectfully yours, Mobil Oil Corp.

Mr. HINTON. I would give anything if that letter had never been written. I think I have probably answered to it 1,000 times in the last—since it was written.

It was written by an administrative assistant in our Florida district office, in the absence of the district manager. It represented what he personally thought our policy was going to be.

When that letter hit the fan, we collected it and clarified to our field units very quickly that we were not and we did not plan to inhibit the sale of gasohol on our credit card in any way.

Senator DOLE. What happened to him?

Mr. HINTON. That was rescinded immediately.

Senator DOLE. Is he still with you?

Senator METZENBAUM. No; he is president of some division.

Mr. HINTON. Hardly.

Senator METZENBAUM. Where is he?

Mr. HINTON. No; he is still with us. By the way, the individual is a good employee. I have known him for a number of years.

Senator METZENBAUM. What is his title now?

Senator DOLE. I see.

Mr. HINTON. He did have his feathers ruffled up a bit over that letter.

Senator METZENBAUM. What does he do now?

Senator DOLE. In charge of correspondence. [Laughter.]

Mr. HINTON. No, he is in the same job. We just took his pen away from him. [Laughter.]

He can't sign letters any more.

Senator METZENBAUM. On the labeling issue, you make kits available to your dealers to delabel pumps. They are told they have to use these kits if they want to sell gasohol. This is the brochure you gave us today telling them how to do it.

Mr. HINTON. Right.

Senator METZENBAUM. How recently was this put out?

Mr. HINTON. Since the President's position as it relates to grain. Actually, this whole gasohol thing has evolved over the last few months. In the early going, we knew little about it and really didn't know about alcohol supplies and so forth, so we were working a learning curve.

Then we testified before Congressman Bedell. By that time we were getting deeper into the problems on the technical side as well as the marketing side and the availability of product.

In recent weeks, with the new interest in the production of gasohol, we have put this together and are in the process of distributing it to the field right now.

Senator METZENBAUM. Are you aware that, according to our earlier testimony, at least one dealer who wanted to sell gasohol and asked for a kit was told that none were available?

Mr. HINTON. That could very possibly be true. They may not have received their supply in his area yet.

Senator METZENBAUM. As a matter of fact, they would be pretty lucky if they received their supply, because this brochure shows availability will be the latter part of March 1980.

Mr. HINTON. Well, we are trying to caution them. We just can't suddenly gin up a lot of this information for thousands and thousands of people overnight.

Senator METZENBAUM. How many kits have been used so far?

Mr. HINTON. I couldn't tell you.

Senator METZENBAUM. One? Ten?

Mr. HINTON. I don't know. Are you talking about this kit or the conversion kit? The package we sent them, we probably make these in the thousands.

Senator METZENBAUM. Isn't this—this is a brochure telling you how you can get the conversion kit; isn't that right?

Mr. HINTON. Right. Telling the people how, there would have to be thousands. Maybe 6,000, 5,000 is a good number.

Senator METZENBAUM. What I am trying to get at is, nobody can convert now because the kit won't be available until the end of March, which means they can't sell gasohol now.

Mr. HINTON. They could have been converted and ordered the equipment had they placed their order prior to this kit, through their marketing representative. We recognize that that was a very, very cumbersome exercise, that people were not communicating effectively. That's the reason this package contains the prestamped and preaddressed order forms to the suppliers of the conversion kit.

We are trying to simplify the thing for the guy that wants to get into gasohol.

Senator METZENBAUM. Am I correct in assuming that Mobil is not a supporter of this legislation? I don't think you stated your position. I hope my assumption is incorrect.

Mr. HINTON. Well, let me say this. We do not believe that it is necessary.

Senator METZENBAUM. If the Congress thought it was necessary, could you live with it?

Mr. HINTON. I am living with legislation I never thought I could live with before 1973. [Laughter.]

Senator METZENBAUM. Yes.

Mr. HINTON. So, I guess to answer your question, I can live with almost anything, but whether or not it is the right thing to do is the real question. I really don't believe that it is needed.

We don't restrict the use of the credit card for gasohol. We have not. We don't have any plans to restrict the use of the credit card for gasohol. We have no plans to inhibit the growth of gasohol. We would just like to do this thing in an orderly fashion and recognize there are also other alternatives other than gasohol.

I think in the long term, gasohol will be one piece of a multifaceted energy package that we are going to have to have in this country.

Senator METZENBAUM. Thank you very much, Mr. Hinton. We appreciate your testimony as well as general counsel.

I was impressed with the fact that general counsel passed out the brochures. I don't know if he can earn his fee that way.

Mr. HINTON. That is a pretty high-priced assistance, I'll admit.

Mr. McGRATH. We do all our work ahead of time, Mr. Chairman.

Senator DOLE. I wanted to ask.

Senator METZENBAUM. Yes.

Senator DOLE. I want to make sure I understand. Are your franchised dealers allowed to sell gasohol?

Mr. HINTON. Yes.

Senator DOLE. As well as your independent dealers?

Mr. HINTON. Yes.

Senator DOLE. So there is no prohibition.

Mr. HINTON. The only condition has to do with the way it is sold and labeled through the dispensing equipment.

Senator DOLE. Thank you.

Mr. HINTON. And who owns it.

Senator METZENBAUM. Thank you.

[The prepared statement of Mr. Hinton follows:]

PREPARED STATEMENT OF J. B. HINTON

My name is Joe Hilton, general manager, planning and financial analysis, U.S. marketing and refining division, Mobil Oil Corp.

I am pleased to be here today in response to your invitation to present Mobil Oil's views concerning oil company practices relative to the retail marketing of gasohol.

Let me begin by attempting to set the record straight and state some key points relative to Mobil's position on the marketing of gasohol.

Mobil's position is not antigasohol even though Mobil does not manufacture gasohol. However, in considering the grain alcohol alternative, we are concerned, that with existing technology, expanding grain production to produce gasohol is not energy efficient.

Mobil does not manufacture gasohol, however, we do allow its sale by our independent dealers and distributors and they can and do accept the Mobil credit card in payment for gasohol purchases.

Mobil's policy advising dealers and distributors how they may sell gasohol is genuinely meant to protect the motorist, our trademark and product reputation and to avoid the possibility of liability for any product defects.

Mobil maintains open communications on its policies with its independent dealers and distributors, on whom Mobil depends for marketing the vast majority of its fuels and lubricants in the United States.

As of the end of 1979, 80 Mobile retail outlets were marketing gasohol.

More specifically to your requesting us to testify today, I'd like to make the following comments.

In regard to the conditions which we place on a dealer marketing gasohol, the essential requirement is to avoid the risk of consumers unknowingly purchasing a non-Mobile product, over which we have no quality control, under the impression that it is a Mobile product.

We have provided dealers and distributors with the means by which they can market gasohol without confusing the public. For example, you can see behind me the mechanicals illustrating conversion of gasoline pumps to gasohol pumps.

For dealers and distributors who own their tanks and pumps, we have been providing written instructions for implementing this type of conversion to our field organizations for over 6 months, and dealers and distributors were advised to contact their Mobil marketing representatives to arrange these conversions in case they were considering the sale of gasohol. Thus, any statements to the effect that oil companies prohibit dealers from marketing gasohol even when it is clearly labeled as not a company product, certainly do not apply to Mobil.

We are cautious about Mobil dealers marketing a gasohol which is blended and distributed by suppliers other than Mobil, because of the multiplicity of technical problems presented by the presence of 10 percent alcohol in gasoline. I am sure you are well aware of these problems, but I would like to point out a few that are of particular concern to us:

For example, there is the phase separation problem in storage and distribution. At normal ambient temperature, the presence of as little as $\frac{1}{2}$ of 1 percent water in a storage tank can cause gasohol to separate into two layers, with gasoline as one layer and alcohol and water as the second layer. If the water/alcohol mixture is fed to an engine, the car will not be driveable.

The properties of alcohol are such that over a period of time, rust and scale can be loosened from tank and pump systems and suspended in the gasohol. This sediment can plug fuel filters and thereby cause a vehicle to stall, or become inoperative.

Both these foregoing problems can be overcome with the proper quality control procedures. If a Mobil dealer or distributor elects to purchase gasohol from a supplier, or to purchase alcohol and blend his own gasohol, then he must look to the other supplier and/or himself for the responsibility and liability associated with the product. In this situation, we are prepared to assist the dealer or distributor in marketing gasohol, but must require for the protection of the consumer, that certain trademark requirements be met. Our marketing representatives are advising dealers and distributors concerning the sources of materials for the pump conversions, which you see displayed behind me. These will satisfy Mobil's requirements in regard to protection of our trademark and from liability due to any product defects.

The addition of alcohol to gasoline changes some of its important characteristics, such as its volatility. These and other product characteristics must be comprehended in the blending of the two products to assure good performance under varying conditions. In addition, the concerns of product quality associated with the potential problems of pipeline supply must be considered.

There are concerns for fire safety. Under certain conditions standard foams used for gasoline fires are ineffective in fighting a gasohol fire. The availability of alcohol resistant foams in local fire departments and plant fire brigades is of special concern.

In closing, Mobil does allow all its dealers and distributors to market gasohol.

As I stated earlier, Mobil's requirements on dealer marketing of non-Mobil gasohol are limited to trademark protection and protection from liability due to product defects. Our marketing representatives are prepared to assist dealers in meeting these requirements for Mobil's protection and the protection of consumers.

We are aware of the President's target to sell 5 billion gallons of gasohol per year in the United States in the early 1980's. Certainly, Mobil's current marketing practices do not inhibit the attainment of this goal.

We are proceeding with what we consider to be a rational approach to the whole spectrum of gasohol and energy supply.

This concludes my testimony and I'm be happy to entertain any questions you might have.

Senator METZENBAUM. Our next witness will be Exxon. As a matter of fact, I want to announce at this time, that although the agenda indicates we will have a panel of experts, Mr. Scott Sklar, National Center for Appropriate Technology; Dr. William E. Riddle, Battelle Research Institute, and Dr. Don Hertzmark, Solar Energy Research Institute, the hour of the day precludes our hearing them. We will accept their statements and include them in the record.

We will hear from Exxon Corp., at the present time.

I will say to you, sir, that we have been advised there is a rollcall vote at 5 o'clock. If you can be relatively brief so that we may ask some questions of you and still make the rollcall without having to adjourn the hearing, we would appreciate it.

**STATEMENT OF E. J. HESS, VICE PRESIDENT, MARKETING,
EXXON, U.S.A.**

Mr. HESS. Thank you, Mr. Chairman, and members of the subcommittee. My name is E. J. Hess. I am the vice president of marketing for Exxon Co., U.S.A.

I have a prepared statement which I believe has been distributed, but Mr. Chairman, in the interest of time, with your permission, I will enter that statement into the record and merely paraphrase it now so that you may get on with your questions.

Senator METZENBAUM. Thank you, Mr. Hess.

Mr. HESS. I would like to say at the outset that Exxon Co., U.S.A., fully agrees with the need to develop all potential energy sources, including alcohol.

I would like to make it absolutely clear that we certainly have nothing against the use of alcohol as a fuel and support all synthetic sources, including alcohol.

We do have some questions about gasohol, as do a number of other people regarding the energy balances for existing processes to produce ethanol for gasohol. It is clear that only by employing alternate process fuel sources and future technology, will this be an energy supportive procedure for improving the U.S. energy balance.

Although we are supportive of alcohol for a fuel, we do not support S. 2251, as it is presently drafted, for several reasons.

Senator DOLE. Do you set out the reasons in your statement and make some suggestions on amendments?

Mr. HESS. Well, sir, let me just briefly mention two areas that are giving us the principal problems with the legislation.

The first has to do with the mandating that a company accept a credit card for sale of any nonsupplied motor fuel, be it alcohol or anything else.

Our original policy at Exxon which refused the acceptance of credit card assignments for non-Exxon motor fuel had nothing to do with the alcohol issue. It was largely a consideration that dealt with the fact that oil company credit cards, unlike that from other retailers,

provide credit that is paid for by the oil company supplier. When we do not provide the motor fuel to the service station and the credit card user, we have no vehicle through which to recover the increasing cost of that credit.

Therefore, any bill that would mandate that we accept credit for a noncompany supplied source of fuel we think is not desirable legislation.

The second area has to do with the second section of the bill which prohibits discrimination and which is rather broad in its prohibition of the imposition of any condition or restriction that might tend to look like it discriminates against a synthetic fuel. Here our problem is that it is stated so broadly that it would be almost impractical or impossible in a field circumstance to tell sometimes whether one is dealing with a synthetic or not with a synthetic.

There will be many questions that will be raised that will require considerable litigation on whether or not a company needs to make facilities available where it is not making facilities available or devote a proportion of its advertising time or provide other services or not provide other services that would go with this other motor fuel, but in general, this summarizes our views on the legislation.

I would like to make one final comment and that is that previous witnesses made a number of and in some cases vague allegations about the company's practices. I would like a copy of the testimony and the complete submission of the four marketers that were here in the panel earlier.

I will volunteer, Mr. Chairman, that we will provide you a response on every single allegation in that statement that named Exxon.

Senator METZENBAUM. I would appreciate your doing so. When the official reporter submits his transcript you can do that. If you want an advance copy, I am sure some arrangement can be made with the reporter.

Mr. HESS. I appreciate that, sir.

Senator METZENBAUM. Mr. Hess, you indicate that your company now allows use of its credit card for the purchase of gasohol. Was that always the case?

Mr. HESS. No, Senator. We changed our policy in January of this year.

Senator METZENBAUM. How did you happen to change it?

Mr. HESS. There was considerable publicity, as I am sure you are aware, about the gasohol question shortly after the President announced his program, the Russian grain embargo and the publicity evolved over the use of grain to make ethanol for use as fuel.

We felt, at that time, that when that publicity did evolve, that it was detracting from some of the more fundamental issues that had to do with the desirability of gasohol as a fuel. We decided to change our policy rather than promulgate that.

Senator METZENBAUM. It did not have anything to do with the fact that you had a lot of publicity about the fact that gasohol could not be charged to your credit card; that on January 9, I indicated that I would introduce legislation to preclude you from doing that, to preclude you from discriminating, and that on January 11, 2 days later, you indicated in a press release that you would permit the sale of gasohol on your credit card.

This just happened to be a coincidence in time?

Mr. HESS. No; it was no coincidence, Senator. There were numerous things that were happening. We were getting letters from Congressmen, from Senators, and considerable media attention was being paid to the issue.

We believed and we still believe that we were justified in our original policy, because, as I mentioned in my summary of my statement, and then in more detail in my complete statement, the motor fuel that we sell to our retailers is the vehicle through which we recover the increasing costs of credit.

Senator METZENBAUM. As a matter of fact——

Mr. HESS. When we begin to incur that cost for motor fuel that is not supplied by us, we no longer have that vehicle.

Senator METZENBAUM. As a matter of fact, you may change your policy back at some point, is that correct?

Mr. HESS. Well, sir, we have no immediate plans to change it back, but nothing is forever. We may at some time, or we may not.

Senator METZENBAUM. As a matter of fact, you covered that point in your press release, didn't you, by saying that until further notice you will permit the sale of non-Exxon branded motor fuel, including gasohol, on the company's credit card?

Mr. HESS. That was our statement, Senator. We have not as of this time given any notice to change the modification that was in that press release. We now accept credit cards for non-Exxon motor fuel.

Senator METZENBAUM. Yet, before you announced your change of policy, if I had my car's tank filled, changed the oil, replaced the filter, added a couple of spark plugs, only the gasoline could be placed on the credit card?

Mr. HESS. Senator, for years we have allowed the assignment of credit on what we call TBA and services provided by dealers which we may or may not supply as a courtesy to our dealers and to help them incur income at their stations and help support their livelihood.

The primary use of the card has been to honor sales of motor fuel which accounts for about 85 percent of our total credit charges and the motor fuel is the vehicle through which we recover the cost of that credit.

Senator METZENBAUM. We heard some testimony that one of your dealers was threatened with termination of his franchise if he sold gasohol. Isn't that a deterrent to that dealer's marketing gasohol?

Mr. HESS. Senator, we do not threaten dealers with loss of their franchise if they market gasohol. The reasons for any termination or nonrenewal of a dealer franchise or lease are now well specified in the law that the Congress passed in 1978, the Petroleum Marketing Practices Act.

Unless there is a violation specified in that law, it is not possible to terminate the franchise of a dealer.

Now one of the provisions that your law provides is that if a dealer violates a trademark restriction, that is a legitimate reason for nonrenewal of a lease. A dealer that might market gasohol from a source that is non-Exxon and sell it as an Exxon trademark product would be in violation of the trademark restrictions and this would be justifiable reason for the nonrenewal of that franchise.

Senator METZENBAUM. This bill would not affect that.

Mr. HESS. This bill would not affect that.

Senator METZENBAUM. If that isn't the case, we interpreted your testimony should not have to permit its tanks to be used for the sale of gasohol. Wouldn't that totally deter the marketing of gasohol. You could not have separate tanks for gasohol, nonbranded gasohol as compared to a regular gasoline?

Mr. HESS. Senator, I don't know what your information is. I have no reason to believe that we do not allow dealers to use our tanks to market gasohol.

Senator METZENBAUM. If that isn't the case, we interpreted your testimony on page 4 to that effect, but if we are wrong, forget it. It is not important.

Mr. HESS. No; I was just saying that the paragraph 2 of your bill is overly broad. A dealer that may not even be ours that markets gasohol in an area where we market, we were saying under your bill, could come to us and say, "We think it is discretionary. You don't put a tank in for me to market gasohol when you put it in for your dealer."

Senator METZENBAUM. Would you describe your company as pro-gasohol, indifferent to gasohol or antigasohol?

Mr. HESS. I would describe my company as very much pro any synthetic source of petroleum and hydrocarbons that would help this country reduce or limit imports from foreign sources in the future.

If alcohol can be produced from a source that will meet that criteria, we are very much in favor of alcohol.

Senator METZENBAUM. Do you have any plans to market gasohol in the future?

Mr. HESS. We have no specific plans at this time, Senator, but we are doing quite a bit of work in this area. We have a project underway through our research affiliate, Exxon Research and Engineering Co., with the assistance of an outside contractor, Stone and Webster, an engineering firm that is quite expert in this field, looking at the investments and the considerations that would have to go into the possible building of a plant, for example, that would use coal or some other source that would make ethanol produced from that plant energy efficient.

I am not saying we have plans to go into that plant now because we don't yet have the results from that study, but we are looking in these areas and, of course, we will watch developments as they occur.

Senator METZENBAUM. But you are not actually moving at breakneck speed in order to get into the development or the sale of gasohol at your stations?

Mr. HESS. We are going in about as breakneck a speed as we can in the general area of synthetics, sir. We have a proposed project which, if it comes to fruition, might cost as much as \$3 billion in investment or more to process shale oil.

We have reserves in the Piceance Basin, in Colorado, for that purpose.

We also are in a joint project, jointly with DOE and a number of other companies, on a pilot project for liquefaction of oil from coal.

We also have a project under consideration for the manufacture of synthetic gas from lignite, in east Texas, which would also run \$3 to \$4

billion range, if it comes into fruition. It would manufacture gas equivalent to 50,000 to 60,000 barrels a day of oil.

So we are doing a lot of things in this whole area of synthetics.

In addition to that, we are a leading factor in the very area of alcohol-gasohol.

We are a leading factor in a joint coordinating research council project which is a group jointly run by the automobile and petroleum industry that is now running a fleet test on cars that are burning gasoline-alcohol blend.

So, we have quite a bit of work going on.

Senator METZENBAUM. Do you have substantial lignite holdings?

Mr. HESS. Yes, in east Texas.

Senator METZENBAUM. You have very, very substantial coal holdings.

Mr. HESS. By very, very substantial, I believe we have something like 9 billion tons, maybe 3 to 4 percent of the total Nation's coal reserves.

Senator METZENBAUM. I think that is reasonably substantial, I would say.

Mr. CHUMBRIS. May I ask?

Senator METZENBAUM. Yes.

Mr. CHUMBRIS. In lignite, is the lignite in North Dakota and South Dakota being used for that purpose also?

Mr. HESS. Sir, I can't answer that. I am a little bit out of my field in that regard. Our project is east Texas where we do have substantial reserves. I can't speak for North and South Dakota.

Senator METZENBAUM. The thrust of my question is whether you have lignite holdings. You have, and I gather they are substantial. You have very substantial coal holdings.

Both of those you are using to try to market gasoline produced from those holdings, but with respect to gasohol, I gather your holdings of farmland are insignificant and that your efforts in that direction are a little less enthusiastic. Would that be true?

Mr. HESS. Well, Senator, we are not in the farming business, to my knowledge.

Senator METZENBAUM. I am not suggesting you get into it.

Mr. HESS. We are not in it now.

Well, there is one other consideration. I mentioned our coal and our shale. Here you are talking about the potential for in each case, 500 to 600 billion barrels of equivalent recoverable liquid reserve.

Even your own Office of Technology Assessment, in their recent report, talks about 1 to 2 billion gallons of ethanol per year being a practical maximum before straining the agricultural capability of this country.

I have heard testimony today that doesn't say that, but on the other hand, if that is true, 1 or 2 billion gallons is in the range of 1 to 2 percent of the total gasoline consumed in this country and one-half to 1 percent of the total liquid energy. You have a question of potential in these areas that needs to be considered.

Senator METZENBAUM. Just one last question. Do you suggest that this bill would require you to bear the cost of credit sales of another company's product? There is nothing in this legislation that will prohibit you from charging either the gasohol manufacturer or retailer

for any costs your incur in the extension of credit for nonbranded gasohol.

Mr. HESS. Yes, but there are considerable restrictions, Senator. Your bill would have to include modifications to the Truth in Lending Act. It would also have to provide us with provisions in Department of Energy price regulations. It would also have to impact on Mr. Kahn, in the Council of Wage and Price Stability for us to do the kinds of things you are suggesting.

Your bill directly does not prohibit us from doing these, but you have a lot of other laws that do.

Senator METZENBAUM. Thank you very much, Mr. Hess.

[The prepared statement of Mr. Hess follows:]

PREPARED STATEMENT OF E. J. HESS

INTRODUCTION

Mr. Chairman and members of the subcommittee, I am E. J. Hess, vice president of marketing for Exxon Company, U.S.A. I appreciate this opportunity to present my company views of S. 2251, a bill which would amend the Clayton Act and make it illegal for companies (1) to limit the use of credit instruments in transactions involving synthetic motor fuel unless similar limits were applied to transactions involving conventional motor fuel and (2) to follow other company practices that would discriminate against or unreasonably limit the sale of gasohol or other synthetic motor fuels..

Because of this country's increasing dependence upon foreign crude, the administration and Congress is understandably interested in the development and sale of alternative fuels. Exxon Company, U.S.A. fully agrees with the need to evaluate and develop all potential energy sources, including alcohols, and is supportive of efforts that would accomplish this. However, our primary concern with the gasohol issue has been the amount of energy required to produce ethanol. Recent estimates based on outside studies and publications show that in addition to the energy required to grow crops, it takes at least as much energy to process corn or sugar to ethanol as the resulting fuel yields. And, to the best of our knowledge, virtually all the ethanol currently being used for gasohol is produced in plants whose process energy is supplied by either petroleum or natural gas. To put this in perspective, a recent Batelle study indicated that, depending on the technology employed, it takes between 1.2 and 2.2 times more energy to produce a gallon of ethanol than that gallon yields as a fuel. The largest portion of this energy is required to convert the corn to ethanol. Therefore, only by employing alternate fuels for process energy will the production of ethanol result in a net gain in liquid energy, and a positive contribution in reducing oil imports.

We understand that S. 2251 has been introduced to encourage the sales of gasohol and also of other synthetic fuels. However, Exxon does not support S. 2251 as presently drafted. The bill is an unnecessary and undesirable government intervention into business practices and is vague and overly broad in its application.

UNNECESSARY AND UNDESIRABLE INTERVENTION OF GOVERNMENT INTO BUSINESS PRACTICES

The fact that some oil companies do not permit the use of their credit cards for the purchase of gasohol at their stations was addressed in a background paper supporting S. 2251. The paper indicated that while that policy does not prevent retail purchases of gasohol, it discourages such sales. However, there has been a significant increase in retail gasohol sales over the past year, with production of ethanol, suitable for use as fuel, currently approximating 100 million gallons annually.¹ Most major refiner-marketers, including Exxon, now allow use of the credit card for gasohol. The factors constraining gasohol sales have not been actions of petroleum suppliers or retailers, but rather the availability of distillation capacity to make fuel grade ethanol and the cost of manufacturing fuel grade ethanol compared to conventional unleaded gasoline.

¹ The Energy Daily, Feb. 19, 1980.

Furthermore, we do not believe that the government should mandate in any form the use of credit cards by petroleum suppliers. Oil company credit cards are different than other types of credit cards. In the case of other types of credit cards, the retailer typically incurs costs of providing credit. In the case of petroleum credit cards, the petroleum supplier instead of the retailer typically incurs the cost of credit, and recovers it in the price of his branded products. Therefore, the offering of credit and the use of oil company credit cards should be independent decisions made by individual companies in response to market conditions. In Exxon's case, the cost of offering credit is currently in the range of 4 cents per credit gallon and is expected to continue to increase in the future. Furthermore, under DOE regulations and current guidelines of the Council on Wage and Price Stability, it is questionable whether much of the increased cost of credit may be passed through to customers or must be borne by refiner-marketers themselves. Although many refiners have made the independent decision to permit the use of their credit card for gasohol, legislation requiring one company to bear the cost of credit sales of another company's product is unjustified.

VAGUE AND OVERLY BROAD APPLICATION

In addition to gasohol, S. 2251 extends credit requirements to other synthetic motor fuels. We have not yet had any commercial scale experience with synthetic fuels, but a synthetic such as oil from shale may be combined with conventional petroleum early in the refining/distribution system. Products made from synthetics may be very similar to products made from conventional petroleum. Thus, a supplier may have considerable difficulty differentiating whether the fuel of another supplier offered at retail came from synthetic or from conventional sources, or how much of it from each. At best, we think that this credit extension requirement is premature since it sets rules for an unknown business climate and an uncertain availability of synfuels in the future.

We feel that the language of paragraph (ii) of the bill is overly broad in that it prohibits the imposition of any condition, restriction, agreement or understanding that discriminates against or unreasonably limits the sale of gasohol or other synthetic motor fuels. For example, this language could be interpreted to mean that a company's advertising program would have to be budgeted commensurately between conventional and synthetic fuels, or its delivery system would have to be exactly the same for conventional and synthetic fuels. Obviously this vague and overbroad language could lead to unnecessary litigation in these areas. Even though the background paper does indicate that the bill is not intended to eliminate all differentiation between gasoline and gasohol and other synthetic-fuels, two problems remain. First, the text of the bill does not reflect this sentiment. Second, even though some differentiation may be allowed, the prohibition is vague since one cannot discern from the bill or background paper what is lawful and what is unlawful differentiation.

Questions of liability resulting from the storage and sale of gasohol and confusion over trademarked products are specific areas of concern when a product other than the supplier's brand is offered for sale by a branded dealer. Our contracts with dealers do not prohibit their offering for sale products other than branded products purchased from us. However, to adequately protect consumer interests, we must assure that motorists are sufficiently informed that such products are not our branded products. A further problem is that the bill could be interpreted to require a supplier to provide investments in pumps and tanks, even though not marketing gasohol or not having it available in the specific markets.

CONCLUSION

In conclusion Exxon is opposed to S. 2251 because the bill represents an unnecessary and undesirable further extension of government regulations into gasoline marketing, not only with respect to credit card usage, but also with respect to the future handling of synthetic fuels.

Senator METZENBAUM. I have a statement from Senator Bayh which will be included in the record.

[The prepared statement of Senator Bayh follows:]

PREPARED STATEMENT OF SENATOR BAYH

I wish to take this opportunity to thank you, for acting so promptly in bringing this matter before the Subcommittee on Antitrust, Monopoly and Business Rights and to congratulate you for assembling a panel of such knowledgeable and experienced individuals as witnesses to assist the Subcommittee in its deliberations on this important matter. I am pleased to note that the Subcommittee will hear from our distinguished colleagues Congressman Berkeley Bedell of Iowa and Congressman Tom Daschle of South Dakota, who have been leaders of the alcohol fuels movement in the House of Representatives. Also the Subcommittee will be able to hear from Dean Simeral of your own Ohio Farm Bureau Federation and Richard Curry of the American Automobile Association who have been working on this issue from the start. It is clear, Mr. Chairman, that without the able assistance of organizations and individuals like these alcohol fuels would not have progressed as they have to date. Similarly, Scott Sklar and Bill Riddle deserve particular attention for their contributions to the rapid development of alcohol fuels as a homegrown, domestic alternative to national dependence on imported petroleum.

As you know, Mr. Chairman, S. 2251, the Gasohol Competition Act, was introduced to permit the free and unhindered marketing of gasohol—a clean, burning, octane boosting blend of alcohol and gasoline—as well as other alternative liquid fuels by America's retail service station dealers. This legislation is an important step toward the widespread commercialization of these new fuels, which is a must if we are to get out from under the yoke of dependence on foreign oil. This dependence has played havoc with our economy and is now threatening to disrupt world peace. The legislation is necessary because of the stranglehold that our major, vertically integrated multinational oil companies have over the distribution of petroleum in the United States, from the time it leaves the ground, to the time it goes into the gas tanks of the American motorist.

Over the past few years we have made enormous progress toward the goal of extending our petroleum supplies by displacing gasoline by domestically produced alcohol. After years of being one of the few "gasoholics" in Washington, I am enormously gratified by these developments. Gasohol is now being sold at thousands of outlets. Jobbers and retailers have a strong interest in marketing this new exciting "home grown" fuel. The major auto companies have warranted their cars for use with gasohol. Measures are currently pending in House-Senate conference committees to provide financial incentives for potential alcohol producers. And the public response to this new product has been nothing short of astonishing. Every marketing survey done on consumer acceptance indicates that Americans support use of gasohol because of its superior performance and because it is one direct step they can take to help reduce our consumption of foreign oil. They are anxious to use our Nation's vast natural resources to meet our energy needs and turn what are now problems—farm surpluses and falling farm incomes, disposal of agricultural, municipal and industrial wastes, and the like—into opportunities.

As a result of these developments, gasohol is beginning to make a noticeable dent in motor fuel supplies in many States. I am proud to say that last December, Indiana had the distinction of being the State in the union selling the most gallonage of gasohol. And plans are now afoot in Indiana to start producing anhydrous alcohol to meet Hoosier demand for gasohol. Similar activity is reflected all across the country, to dramatically boost alcohol production to meet Secretary of Energy Duncan's goal of 500 million gallons of production per year during 1981.

Mr. Chairman, as gasohol has caught on with the public, a disturbing impediment to its sale has come to light—restrictions by our major, integrated oil companies to its free and unhindered sale by franchised and independent service station dealers, who constitute the major marketers of motor fuel in this country. When gasohol first became available to the public, it was primarily distributed by agricultural co-ops. Independent service station dealers, franchised by the majors, were restricted by the terms of their contracts from marketing gasohol by their suppliers because it was not a company product.

In response to this situation, last June 1 sponsored S. 1268, the Gasohol Marketing Freedom Act, which prohibited gasohol sales from becoming legitimate grounds for a supplier to terminate or refuse renewal of a franchise, or to undertake economic reprisals against retailers who distributed gasohol. This legislation was designed to remove franchise agreements, written by the oil companies,

who control most gasoline marketing, as an obstacle to service station dealers desiring to offer this attractive new product to the public.

Since that time, several major oil companies have decided to market gasohol at selected stations. In my own State, Amoco and Texaco, among others, are selling gasohol in selected marketing areas, and many independent jobbers are selling alcohol fuels at their retail outlets. However, independent franchised dealers who would like to make gasohol available to the public at their stations have been unable to do so, unless their supplier blends and delivers the product as a "company" product. If their suppliers do not provide them with "branded" gasohol, these dealers are denied the use of company storage tanks and pumps for gasohol sales, and cannot let customers use their company credit cards to pay for such purchases.

Many dealers in my home State see this as just another way to kill off independent stations, by denying them access to a new market, which a major company can absorb instead at its own gas and go stations. Customers using these stations either have to forego use of gasohol, or switch from their neighborhood station to a company operated station selling gasohol.

Mr. Chairman, this type of behavior is a perfect example of the abuses that stem from the stranglehold the major oil companies have over American fuel supplies and is a practice that is clearly not in the Nation's interest. It gives the major oil companies total control over the sale of gasohol and other synthetic motor fuels now on the horizon—products which compete with their normal product line and cut the public's need for their products. It puts small businessmen—who have worked for years to build up a market, through long hours and exemplary service to their customers—at the total mercy of the oil giants and cuts them out of an emerging new source of business. It denies customers the convenience of purchasing gasohol at the neighborhood station they have patronized for years.

Mr. Chairman, I have long supported measures to break the oil companies into their component parts—production, transportation, refining and marketing—so that they cannot control the price and supply of products to the public. Over and over again, we have seen how they use this control to their benefit during times of shortages to jack up prices and control supplies. This degree of control literally puts the Nation at their mercy and wipes out any vestige of competition in the production and distribution of petroleum products. A proposal I authored to break up the oil companies and restore competition to the oil industry was reported out of the Senate Judiciary Committee in 1976, but was not scheduled for floor action that year because of a threatened filibuster. I have introduced similar legislation in this Congress, which is pending in committee. Opposition from the major oil companies to this attempt to restore free competition to the energy business is overwhelming. Thus far, they have managed to prevent any serious congressional consideration of these matters.

The Gasohol Competition Act we are considering today is one small aspect of this question, but may be critical for the future well-being of the country. It is designed to make sure that we do not permit the major integrated oil companies—who control the distribution of motor fuel in our Nation—to block distribution of alternative fuels desired by the public. It builds on the Gasohol Marketing Freedom Act I introduced in June by prohibiting discrimination against the marketing of any synthetic motor fuel—not just gasohol—and specifically preventing limitation on the use of credit cards in these transactions.

I hope the subcommittee will move swiftly in completing its deliberations on this measure and report it favorably for floor action in the near future. In my role as subcommittee member and chairman of the National Alcohol Fuels Commission, I want to assist the subcommittee in any way I can to address this issue.

Senator METZENBAUM. We will include in the record the statements of the three witnesses we were not able to hear today.

[The statements referred to above can be found in the appendix.]

There is a rollcall vote. If I run, I think I will make it in time.

This hearing stands adjourned.

[Whereupon, at 5:05 p.m., the hearing adjourned, subject to the call of the Chair.]

96TH CONGRESS
2D SESSION

S. 2251

IN THE HOUSE OF REPRESENTATIVES

JUNE 23, 1980

Referred to the Committee on the Judiciary

AN ACT

To amend the Clayton Act to prohibit restrictions on the use of credit instruments in the purchase of gasohol.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That this Act may be cited as the "Gasohol Competition Act
4 of 1980".

5 SEC. 2. The Clayton Act is amended by renumbering
6 the present "SEC. 26" as "SEC. 27", and inserting the fol-
7 lowing new section as section 26:

1 “SEC. 26. It shall be unlawful for any person engaged
2 in commerce, in the course of such commerce, directly or
3 indirectly to impose any condition, restriction, agreement, or
4 understanding that—

5 “(i) limits the use of credit instruments in any
6 transaction concerning the sale, resale, or transfer of
7 gasohol or other synthetic motor fuel of equivalent usa-
8 bility where there is no similar limitation on transac-
9 tions concerning such person’s conventional motor fuel:
10 *Provided*, That nothing in this section or in any other
11 provision of law in effect on the date of enactment of
12 this Act and which is specifically applicable to the sale
13 of petroleum products, shall preclude such person from
14 imposing a reasonable fee for credit on the sale, resale,
15 or transfer of the gasohol or the other synthetic motor
16 fuel if such fee equals no more than the actual costs to
17 such person of extending that credit; or

18 “(ii) otherwise discriminates against or unreason-
19 ably limits the sale, resale, or transfer of gasohol or
20 other synthetic motor fuel of equivalent usability where
21 such synthetic or conventional motor fuel is sold for
22 use, consumption, or resale within the United States or
23 any territory thereof or the District of Columbia, or
24 any insular possession or other place under the juris-

3

1 diction of the United States: *Provided*, That nothing in
2 this section shall—

3 “(a) preclude such person from requiring rea-
4 sonable labeling of pumps dispensing the gasohol
5 or the other synthetic motor fuel to indicate,
6 where appropriate, that such gasohol or other
7 synthetic motor fuel is not manufactured, distrib-
8 uted or sold by such person; or

9 “(b) preclude such person from issuing ap-
10 propriate disclaimers of product liability for
11 damage resulting from use of the gasohol or the
12 other synthetic motor fuel; or

13 “(c) require such person to provide advertis-
14 ing support for the gasohol or the other synthetic
15 motor fuel; or

16 “(d) require such person to furnish or pro-
17 vide, at such person’s own expense, any addition-
18 al pumps, tanks, or other related facilities
19 required for the sale of the gasohol or other syn-
20 thetic motor fuel.”.

Passed the Senate June 20 (legislative day, June 12),
1980.

Attest:

J. S. KIMMITT,

Secretary.

Additional Submissions of
Victor Cino
LOWEN & ABUT
ATTORNEYS AT LAW
ONE EXECUTIVE DRIVE
FORT LEE, NEW JERSEY 07024
201-592-1700

Sheel
#A

200 PARK AVENUE
NEW YORK, N. Y. 10017
212-662-0606
—
PLEASE REPLY TO FORT LEE

CHARLES C. ABUT*
LAWRENCE T. LOWEN**
RENA F. RAYNOR**
—
* N. J. & D. C. BARS
** N. J. & N. Y. BARS

February 13, 1980

Mansey, District Manager

Drive
97952

connected to Victor Cino, a franchise

to cooperate with you in order to
buy of Shell Oil Company regarding the
gasohol, in general, and, in par-
ticular.

prompt reply will be greatly appreciated.

Very truly yours,

Charles C. Abut
CHARLES C. ABUT

CCM/5v

Shell Oil Company



100 Executive Drive
West Orange, New Jersey 07052

Steel
B

February 25, 1980

FEB 26 1980

RECEIVED

Charles C. Abut, Esq.
c/o Lowen & Abut
One Executive Drive
Fort Lee, New Jersey 07024

Dear Mr. Abut:

SUBJECT: V. Cino - Inquiry Re: Gasohol

yes / This is a reply to your letter to me of February 13, 1980, requesting information regarding possible retail sale of gasohol by Mr. Victor Cino.

Mr. Cino has the right to buy product, including gasohol, from any supplier he chooses, and may, of course, sell non-Shell product in a station leased from Shell. However, he may not misrepresent non-Shell product to the public as being Shell product, and he will be expected to comply with all applicable local, state and federal laws, as well as the terms of his Dealer Agreement.

Shell regards it as Mr. Cino's responsibility to take the necessary steps requested to satisfy his legal obligations, and we will examine closely any arrangements which may not adequately protect the trademark interests of Shell.

We would like to take this opportunity to advise you and Mr. Cino that we believe there are risks associated with the sale of gasohol. The water/alcohol phase separation characteristics of alcohol may cause misfiring or stalling of customers' vehicles and may also result in station tank bottoms becoming contaminated with a water/alcohol mixture. Fuel filters in customers' cars may become clogged. The vapor pressure of the mixture may exceed established state or federal standards. Protein-based fire fighting foams may not be effective with ethanol fires. For these and other reasons, Shell will have no responsibility whatsoever for quality or performance of gasohol, including but not limited to: customer complaints arising out of sales of gasohol, violations of federal, state or local laws arising out of the sale, handling or storage of gasohol, and disposal of tank bottoms contaminated with alcohol.

Very truly yours,

[Signature]
W. J. [Name]
Sales Manager

LOWEN & ABUT
ATTORNEYS AT LAW
ONE EXECUTIVE DRIVE
FORT LEE, NEW JERSEY 07024
201-592-1700

Gulf
#A

200 PARK AVENUE
NEW YORK, N. Y. 10017
212-662-0606

PLEASE REPLY TO FORT LEE

CHARLES C. ABUT**
LAWRENCE T. LOWEN**
RENA F. RAYNOR**
—
*N.J. & D.C. BARS
*N.J. & N.Y. BARS

December 26, 1979

Mr. C. W. Trabold
Gulf Incorporated
16 West Passaic Street
Rochelle Park, New Jersey 07662

Dear Mr. Trabold:

This will confirm our telephone conversation of December 26, 1979, in which I advised you that I, as attorney for the Greater New Jersey Service Station Association, Inc., represent Arthur Goins, the operator of the Gulf service station at Queen Anne Road and State Street, Teaneck, New Jersey.

Specifically, I had asked you to confirm or deny the report that one of your employees has threatened Mr. Goins with the termination of his operation, should he at any time elect to retail gasohol at his location. You indicated to me that you would not confirm or deny this statement, but that you would respond to my letter, which I now ask you to do.

In addition, I have asked Mr. Goins whether he would be prepared to purchase his station, and he has confirmed that he would be interested in discussing the matter with you.

I would appreciate a prompt response to this letter.

Very truly yours,

Charles C. Abut
CHARLES C. ABUT

CCA:ag

bcc: Mr. Salvatore Risalvato

Gulf #B LOWEN & ABUT
Gulf Oil Company - U.S. JAN - 4 1980
 METRO NEW YORK - NEW JERSEY DISTRICT **RECEIVED**

J. W. Cahill
 DISTRICT MANAGER

433 Hackensack Avenue
 Hackensack, NJ 07601

January 2, 1980

Lowen & Abut
 Attorneys At Law
 One Executive Drive
 Fort Lee, New Jersey 07024
 Attention: Mr. C. Abut

Re: Artwal Gulf
 143 State St. & Queen Anne Rd.
Teaneck, New Jersey

Dear Mr. Abut:

I am in receipt of your letter dated December 26, 1979.

In paragraph two you state "one of your employees threatened Mr. Goins with the termination of his operation, should he at any time elect to retail gasohol at his location." You and I did not discuss such a charge during our phone conversation on December 26, 1979.

I again extend to you and your client an invitation to meet with the writer for discussion of gasohol use and the possible purchase of the location your client occupies.

Very truly yours,

GULF OIL COMPANY - U.S.

CW Trabold
 C.W. Trabold
 Retail Director

CWT/ps

LOWEN & ABUT
ATTORNEYS AT LAW
2337 LEMOINE AVENUE
FORT LEE, NEW JERSEY 07024
201-592-1700

Gulf #5 C

200 PARK AVENUE
NEW YORK, N. Y. 10017
212-662-0606
TELEX 13881
PSO FORT.

CHARLES C. ABUT*
LAWRENCE T. LOWEN**
RENA F. RAYNOR**

*N. J. & D. C. BARS
**N. J. & N. Y. BARS

PLEASE REPLY TO FORT LEE

January 8, 1980

Gulf Oil Company - U.S.
Metro New York - New Jersey District
433 Hackensack Avenue
Hackensack, New Jersey 07601

Attn: Mr. C. W. Trabold
Retail Director

Re: Artwal Gulf
143 State Street & Queen Anne Road
Teaneck, New Jersey

Dear Mr. Trabold:

I acknowledge receipt of your letter of January 2, 1980. In response, my recollection of our telephone conversation does not coincide with yours, particularly since I took the trouble of preparing a memorandum of the conversation. For your information, the person who communicated the threat to Mr. Goins was your employee, Diane Kotas (spelling may be inaccurate). While you may not be prepared to admit that we discussed this during our initial telephone conversation, I ask you now, as I did in my letter of December 26, 1979, to either confirm or deny that such threats constitute the policy of Gulf Oil Company.

At the same time, as soon as I am in receipt of your written response, my client and I would be happy to meet with you for the discussions mentioned in your letter, and I appreciate your courtesy in extending the invitation.

Very truly yours,

LOWEN & ABUT

By: Charles C. Abut

CCA/lss
bcc: Mr. Arthur Goins
Mr. Sal Risalvato
Mr. Al Ruth

Artwal Gulf Service, Inc.

143 STATE STREET
TEANECK, NEW JERSEY 07666

Gulf
#4 D

February 27, 1980

Congress of the United States
Investigation Committee
Washington, D.C.

Dear Sirs;

I am the leasor of a Gulf Service Station (Artwal Gulf) in Teaneck, N.J.. In listening to the news, attending meeting and being a concerned business man in my field I decided to sell Gasahol in my station. Gulf Oil had discontinued selling Gulf No-Nox (High Test) therefore I had empty tanks to stock and sell the product. I applied to sell Gasahol.

When the names of dealers in the area who would be selling Gasahol appeared in the paper one of the Gulf Oil Sales Representatives saw my Company name. I received a call the following day from the Gulf Oil sales Representative that if I put anything but Gulf products in their tank they would definitely take me to court,

Very Truly Yours,

s/ Arthur L. Gaiman, Jr.
President, Artwal Gulf

AG:mc

LOWEN & ABUT
ATTORNEYS AT LAW
ONE EXECUTIVE DRIVE
FORT LEE, NEW JERSEY 07024
201-592-1700

Gulf
#E

200 PARK AVENUE
NEW YORK, N.Y. 10017
SUITE 4401
212-662-0606

PLEASE REPLY TO FORT LEE

CHARLES C. ABUT*
LAWRENCE T. LOWEN**
RENA F. RAYNOR*
* N.J. & D.C. BARS
** N.J. & N.Y. BARS

February 28, 1980

Gulf Oil Corporation
Three Parkway
Philadelphia, Pennsylvania 19102

Attn: John R. Galloway
Regional Director of Public Affairs

Dear Mr. Galloway:

Confirming my telephone conversation of February 27, 1980, with your assistant, Jeffrey Harris, I would like to have a letter from your office setting forth the official policy of Gulf Oil Corporation regarding the sale of gasohol by Gulf dealers.

Specifically, I would like answers to the following questions:

- (A) Are there any circumstances under which Gulf prohibits the use of its credit card for the purchase of gasohol?
- (B) Are there any limitations on the sale of gasohol by Gulf dealers that are lessees and do not own their equipment?
- (C) Are there any limitations on Gulf dealers that own their own equipment and wish to sell gasohol?

I would appreciate the courtesy of a prompt reply.

Very truly yours,

CHARLES C. ABUT

CCA/lss

bcc: Victor Cino
Salvatore Risalvato
Al Ruth

Mobil
A

LOWEN & ABUT
ATTORNEYS AT LAW
ONE EXECUTIVE DRIVE
FORT LEE, NEW JERSEY 07024
201-592-1700

200 PARK AVENUE
NEW YORK, N. Y. 10017
212-662-0606
—
PLEASE REPLY TO FORT LEE

CHARLES C. ABUT*
LAWRENCE T. LOWEN**
RENA F. RAYNOR**
—
*N.J. & D.C. BARS
**N.J. & N.Y. BARS

January 24, 1980

Mobil Oil Corporation
150 East 42nd Street
New York, New York 10017

Gentlemen:

The undersigned are counsel to The Greater New Jersey Service Station Association, Inc., a group of service station retailers in New Jersey, several members of which are Mobil dealers.

I would appreciate your advising me of your current policy regarding the sale of gasohol by Mobil dealers, and I would also appreciate your providing me with copies of any directives, bulletins or other written material distributed to Mobil dealers concerning their sale of gasohol.

Thank you for your cooperation.

Very truly yours,

CHARLES C. ABUT

CCA:ag
bcc: Mr. Salvatore Risalvato ✓

Mobil Oil Corporation

Mobil
B1
800 KINGS HIGHWAY-NORTH
CHERRY HILL, NEW JERSEY 08034

February 20, 1980

Mr. Charles C. Abut
Lowen & Abut
One Executive Drive
Fort Lee, New Jersey 07024

MR. C. ABUT
FEB 26 1980
RECEIVED

Dear Mr. Abut:

This is in response to your request for Mobil's policy regarding the sale of gasohol by Mobil dealers.

Let me begin by stating several key points of our position:

- Mobil recognizes the need for and has always supported development of viable alternate sources of energy.
- While Mobil does not manufacture gasohol, we do not prohibit its sale by our independent dealers and, in fact, dealers can accept the Mobil credit card in payment for gasohol purchases.
- Our policy advising dealers not to sell gasohol through Mobil's distinctive round pumps, through other pumps bearing a Mobil trademark, or to use other equipment leased or loaned to a dealer by Mobil is genuinely meant to protect both our trademark and product reputation and to avoid the prospect of liability for any product defects.

Consumers We have instructed dealers that, to avoid confusing consumers and to protect the Mobil trademark, they could not pump gasohol through Mobil's round pump, which has come to be identified with Mobil products. We have also instructed them not to pump it through other types of pumps which bear a Mobil trademark or to use other equipment leased or loaned to dealers by Mobil for the sale of gasohol. Our reasons are simple: we cannot risk consumers purchasing a non-Mobil product, over which we have no quality control, under the impression that it is a Mobil product.

Nevertheless, in an effort to cooperate with those dealers who want to sell gasohol, we have developed and made available, at no cost, suitable signage for gasohol pumps. We have offered to buy back any distributor's round pumps, but also have informed them that kits are available for converting a round pump to another design configuration.

-2-

Mobil*Mobil
#B*

Perhaps some background on our policy will give you a better perspective of our position. Mobil recognizes the need for and has always supported development of viable alternate sources of energy. Our studies indicate that gasohol will not reduce our dependence on foreign produced petroleum. Rather, excluding any potential increase in domestic petroleum production, we are quite sure that expanding grain production to produce gasohol will increase, not decrease, dependence on foreign produced petroleum.

For example, earlier last year, in a statement before Congress, U.S. Secretary of Agriculture, Bob Bergland, noted that grain produced ethanol results in a net energy loss, if you consider the amount of energy consumed in growing and transporting the grain to the distillery and then fermenting and distilling the grain to ethanol. In short, without otherwise increasing domestic energy supplies, the energy loss would make the nation more dependent on foreign produced oil. Mr. Bergland's viewpoint has been supported by our own and other studies.

Mobil will continue to follow gasohol technologies closely and, should events warrant it, we will reassess our decision as to whether we should manufacture or market gasohol.

Attached is an informational piece which was distributed to all Mobil dealers on June 18, 1979. Of course, our dealer contracts and station leases also address the questions of the sale of non-Mobil motor fuels.

Very truly yours,

D. L. Eastman
D. L. Eastman
District Manager

DLE/cf
Attachment

Mobil**Energy
Update**M.B.N.
#C₁PUBLISHED BY
MOBIL OIL CORPORATION
UNITED STATES DIVISION
MARKETING DEPARTMENT

NUMBER 6

DATE June 18, 1979

Dear Mobil Customer:

Considerable attention has recently been given to gasohol being dispensed at service stations, particularly in the Middle West. The purpose of this letter is to briefly answer some questions that you may have regarding gasohol.

The answers are based on information gathered from the Federal Government, State Government, academicians and Mobil Research and Development.

What Is Gasohol?

Gasohol is a fuel mixture consisting of no more than ten parts ethyl alcohol (ethanol) made from grains or other renewable biomass sources and ninety parts unleaded gasoline.

How Big A Contribution Can Gasohol Really Make To Our Energy Supplies?

Gasohol, as marketed today, is probably energy deficient. That is, with current technology, it takes as much as two gallons of conventional fuel to grow, gather and process grain into only one gallon of alcohol which has less energy value than a gallon of gasoline. Thus, producing grain alcohol for fuel could actually reduce the U. S. energy supplies. However, if fermentation and distillation processes were fueled by sources other than petroleum (coal, for example), some reductions in petroleum imports may occur.

Secretary of Agriculture Bob Berglund has said that only about 23 million gallons of the 212 million gallons of ethanol produced from grain in the U. S. in 1978 were available for blending with gasoline. The rest was used by the beverage and other industries. Based on 1978 U. S. demand of 114 billion gallons of gasoline, as gasohol this would represent two-tenths of one percent of automotive gasoline demand.

Mobil
KCRDoes Gasohol Have A Higher Octane Than Gasoline?

Yes, this is a significant plus for gasohol. Laboratory test data on ethanol indicate that the octane quality of a typical unleaded gasoline will increase from two to four Research Octane numbers, while Road Octane will increase up to two numbers, depending on the octane level of the gasoline with which it is blended.

Will I Get Better Mileage With Gasohol?

Probably not. Ethanol has about two-thirds the energy content of gasoline. Therefore, on a miles-per-gallon basis, fuel economy decreases in proportion to the alcohol content of the blend. A General Motors Corp. spokesman recently stated that their tests using a wide range of cars have consistently shown a 3% loss of mileage with gasohol.

Does Gasohol Reduce Exhaust Emissions?

Laboratory and road tests indicate that gasohol has little practical impact, either favorable or unfavorable, on exhaust emissions. In the later model, emission-controlled cars, there are no significant changes in hydrocarbon or nitrogen oxide (NOx) emissions when 10% blends of ethanol are burned. Emissions of carbon monoxide may decrease while aldehydes may increase. Cars would still require catalytic converters and other emission-control devices to meet exhaust emission standards.

What Is The Price Of Gasohol?

Gasohol is promoted and priced at retail generally as a premium unleaded gasoline. In order to be priced competitively with gasoline, it is subsidized. The subsidy is in the form of exemption from the 4¢ per gallon federal excise tax and, in some states, exemption from all or a portion of state gasoline taxes ranging from less than 1¢ to 9.5¢ per gallon. These tax exemptions apply to the entire gasohol blend of 10% ethanol and 90% gasoline.

Will My Car Run Better With Gasohol?

Probably not. Gasohol has a leaning effect and many new car engines may have to be retuned to prevent stalling, hesitation, or rough idling. However, because of this mixture's leaning effect, some older cars, especially pre-1972 models, can run with gasohol because they were built to burn a rich fuel/air mixture. The addition of ethanol also raises the vapor pressure and the mixture may cause vapor lock on warm days or during periods of high operating temperatures.

- 3 -

Mobil

#C3

Will Using Gasohol Affect My New Car Warranty?

Probably not for most new model automobiles. U. S. automobile manufacturers have either announced that new car warranties have been extended to cover the use of gasohol or that they are considering warranty coverage. However, the warranties will apparently specify that the gasohol contain no more than 10% ethanol.

Will Gasohol Damage My Car's Engine?

The auto makers say that the use of gasohol may have minor negative effects on the life of a new fuel system or on engine parts. If used regularly over the longer term, gasohol can aggravate corrosion of some metals and promote swelling of plastics and rubber, and could damage sensitive parts of some engines. Also, gasohol has been reported to cause plugging of the fuel filter when first used in some older cars.

Can Water Affect Gasohol In Storage And Distribution Systems?

Yes. Even at normal ambient temperatures, the presence of as little as 0.5% water in a storage tank can cause gasohol to separate into two layers, with gasoline as one layer and ethanol and water as the second layer. If the water/alcohol mixture is fed to an engine, the car will not be driveable. Distribution of gasohol on a national, regional or statewide basis would, therefore, require costly operational and facilities changes to avoid water contamination.

Considering the above information and based on current technology, Mobil does not believe that gasohol offers either a short term or long term solution to the United States' energy problem. Further, we believe that it draws attention away from the larger energy issues which must be faced.

Gasohol, of course, is a non-Mobil fuel and while the sale of a non-Mobil fuel is not absolutely prohibited by the dealer and distributor agreements, the marketing of an adulterated Mobil gasoline as a Mobil product is expressly prohibited. Therefore, if you are thinking of installing gasohol at a Mobil branded retail outlet, we suggest you first contact your Marketing Representative.

R. L. Abbott
R. L. Abbott
General Manager
Resale Marketing

JOHN'S COLONIAL TEXACO

ALBERTATIRE CO., INC.

TOWING - ROAD SERVICE
LOCAL - LONG DISTANCE222 CLIFTON AVENUE
CLIFTON, NEW JERSEY 07011
201-772-9626

December 21, 1979

Texaco Inc.
Ft. of Mehroff Rd.
Little Ferry, N.J. 07643

Attention Richard S. Mazzola, Marketing Representative

Dear Mr, Mazzola:

Pursuant to our recent telephone conversation pertaining to payment of rent for the month of November you will find a copy of my statement for the preceeding month, a copy of my fuel (gasoline) delivery bill with the rent applied and a copy of my cancelled check proving the rent was paid.

As my allocation only allows me 12 900 delivered gallons of motor fuel per month, I have constantly over drawn and have to limit my customers to approximately 500 gallons per day. I space my deliveries out to approximately the 15th & 29th of each month and if you will check your records, payment on the first delivery of each month.

I have been here at this location for about eight(8) years and have followed the same pattern for about that amount of time. I have in most cases prepaid any bills outstanding with Texaco and have a perfect record.

I wonder, Sir if pressure is being brought to bear due to the fact that I am supplementing my fuel with GASOHOL and if this is true, I would suggest you or anyone involved cease and desist immediately. I will not hesitate to seek redress in court if the aforementioned proves to be true.

If you or Texaco desire your rent paid in advance, I suggest that ALL Texaco dealers be advised and some mode of collection uniform thru the Texaco Inc. system be applied evenly.

I have been singled out by Texaco in the past, pressured, threatened, etc. and will not stand for the same in the future. When three year leases were being signed by All dealers, I was being pressured to sign a one (1) year lease by Bob Upton. This Sir is discrimination.

JOHN'S COLONIAL TEXACO

ALBERTA TIRE CO., INC.

Texaco A.
#

TOWING - ROAD SERVICE
LOCAL - LONG DISTANCE

222 CLIFTON AVENUE
CLIFTON, NEW JERSEY 07011
201-772-9626

2

In the future, all conversation between Texaco Inc. and Alberta Tire Co. should be in written form. In this way, there is no room for misunderstanding. This is why I wrote the above to you with a copy to Mr. Wright.

Hoping this matter is now clear between Texaco and Alberta Tire Co. I wish you and yours a happy holiday season, good health and wishes for the New Year. I remain,

Sincerely,

John R. Potter, Pres.

cc Mr. H.I. Wright
Texaco Inc.
Greater N.J. Service Station Association
File

TEXACO INC.
P.O. BOX 8538/342
PHILADELPHIA, PA. 19171



TEXACO INC.

CUSTOMER NUMBER

ORIGINAL STATEMENT

13 005 002981

PAGE 1

STATEMENT
DATE AND NO.
10 31 79
3433 M

ALBERTA TIRE CO INC
DBA JOHNS COLONIAL TEXACO SERV
CLIFTON AND LEXINGTON AVE
CLIFTON NJ 07011

TEXACO REFERENCE		DESCRIPTION	CURRENT DUE	FUTURE DUE
DATE	NUMBER			
82379	055381	INSTALLMENT INV	634.93	
82379	055381	CASH 09 19 79	634.93-	
82379	055381	CASH 09 19 79	,00	
82379	055381	INSTALLMENT INV	634.93	
82379	055381	CASH 09 19 79	634.93-	
82379	055381	INSTALLMENT INV	634.94	
82379	055381	CASH 09 19 79	634.94-	
82379	055381	INVOICE ADJUSTMENT	109.06-	
103079	055441	INSTALLMENT INV	1,199.31	
103079	055441	INSTALLMENT INV		2,398.63
103079	055442	INVOICE	149.36	
		TBA TOTALS	1,239.61	2,398.63
		STATEMENT TOTALS	1,239.61	2,398.63

INTD
Od GYCK

Pd. \$1348.67
ck# 422
pd in
Dec

422 P
1239.61
Rich - OCT 5th
NO prn m + chkd

TERMS OF SALE INDICATED ON INVOICE

Taxco
#B



PETROLEUM PRODUCTS

THANK YOU FOR BUYING TEXACO
WE ARE WORKING TO KEEP YOUR TRUST

Texaco #C

REG. 13	STATION NAME NEWARK N J	CUSTOMER NO. 13-005-002981 L-0005	INVOICE DATE 11 14 79	INVOICE NO. 154795
SHIP		CHARGE TO ALBERTA TIRE CO INC DBA JOHNS COLONIAL TEXACO SERV CLIFTON AND LEXINGTON AVE CLIFTON NJ	PLEASE ADDRESS REMITTANCE DATE AND CORRESPONDENCE TO: TEXACO Inc. P O BOX 8538/342 PHILADELPHIA PA 19171	

PLEASE IDENTIFY REMITTANCE BY INVOICE
DATE AND NUMBER AS SHOWN ABOVE

CC-970

DEL UNIT NO. 113-17394	LICENSE NO.	TIME OF LOADING
---------------------------	-------------	-----------------

Special Truck Markings and Labels applied if required by Department of Transportation.

DESCRIPTION	CODE	NO.	KIND	GALLONS POUNDS OR BASIS	TAXES FEDERAL STATE	*PRICE EXCL TAX	AMOUNT
-------------	------	-----	------	-------------------------------	------------------------	--------------------	--------

GASOLINE/FLAMMABLE LIQUID

FIRE CHIEF GASOLINE	342			3700	04 08	.861	3185.70
LEAD FREE GASOLINE	365			4800	04 08	.901	4324.80
RENT COLLECTION	3803					.00	932.00

INVOICE TOTAL \$8,442.50

TERMS: COD

*Driver's not
from city*

*ck # 421
attach*

THE MINIMUM (R+M)/2 OCTANE RATING IS CERTIFIED AS FOLLOWS:
SKY CHIEF FIRE CHIEF 89.0 LEAD FREE 87.0

GASOHOL

PRODUCT-LINE		TAX ASSUMED BY: PURCHASER ☐ OTC NO.	RECEIVED PAYMENT—INV. TOTAL \$8442.50
GRAVITY		SELLER ☐	
10% AT #F		TRANSPORTER—	OTHER 4010.56
30% AT #F		IF NOT SELLER	CHECK 4431.94
90% AT #F		OTC NO.	
END POINT AT #F		TEXACO Inc. — SHIPPER	
REFRACTIVE INDEX OR BURNING OIL		Products loaded by	DATE
FLASH POINT TAG OPEN CUP		Received By Truck Driver	DATE
TESTED <i>for a/b</i>	Purchase	TEXACO Inc. BY: CASH	

* APPLICABLE STATE FUEL TAXES NOT BILLED SEPARATELY
ARE INCLUDED IN PRICE SHOWN

814563

Do not destroy—This is your original invoice

No. 425

11-14 1955-728
212

\$932.00

DOLLARS

JOHN'S COLONIAL TEXACO
A DIV. OF ALBERTA TIRE CO. INC.
RESERVE ACCOUNT

PAY TO THE ORDER OF
Texaco Inc

MIDLAND BANK & TRUST CO.
E. 58 MIDLAND AVENUE
PARAMUS, NEW JERSEY 07652



John A. Carter

⑈000425⑈⑈021207280⑈ 500.025 ⑈0000093200⑈

Exxon #1

EXXON COMPANY, U.S.A.
 POST OFFICE BOX 2180 • HOUSTON, TEXAS 77001

MARKETING DEPARTMENT
 SPECIAL ASSISTANT FOR CONSUMER AFFAIRS

September 14, 1979

Ms. Hilda Schwartz
 8 Bayview Avenue
 Englewood Cliffs, NJ 07632

Dear Ms. Schwartz:

We regret that an Exxon dealer is restricting acceptance of credit cards and we apologize for the inconvenience and annoyance this has caused. We assure you that the dealer you refer to it only speaking for himself.

* Exxon has not changed its policy with regard to the acceptance of credit cards. At all locations which are operated directly by the Company, credit cards are accepted for all purchases and we encourage dealers to follow the same procedure. //

Dealers, however, are independent businessmen and we cannot force them to accept our advice. We do counsel dealers on the importance of providing good customer service and we discuss each customer complaint we receive with them. Accordingly, your complaint has been forwarded to our field office which is responsible for our marketing activities in your area. You can be sure that prompt attention will be given to the matter.

We appreciate your taking the time to bring this to our attention. We are always anxious to be informed of any situation which adversely affects good relations with our customers.

Very truly yours,

D. L. Bradley
 D. L. Bradley

DLB:elm

✓ EXXON STATEMENT THAT CREDIT CARDS ARE ACCEPTED
 FOR ALL PURCHASES, WHICH CONTRADICTS LATER POLICY
ON GASOLINE PURCHASES.

Exxon

#2

Exxon acts to curb gasohol

By PAUL B. BROWN

Exxon notified its New Jersey dealers yesterday it will not allow company credit cards to be used to pay for gasohol, a move labeled as "unpatriotic and illegal" by the Greater New Jersey Service Station Association (GNJSSA).

President Carter reportedly will announce this week a program to convert some of the grain originally intended for the Soviet Union, before its military intervention in Afghanistan, into hundreds of millions of gallons of gasohol.

In light of Carter's plans, Albert Ruth, president of the GNJSSA which represents about 1,500 of the state's 5,000 gasoline retailers, said Exxon's actions are "against the best interests of this country."

"You would think Exxon would be trying

to support the policy of the United States," Ruth added.

Charles C. Abut, attorney for the GNJSSA, said the move by Exxon may also be illegal.

"I think what they have done is against state statutes dealing with franchisees and may also violate federal antitrust legislation," Abut said.

• • •

GNJSSA representatives met with federal and state attorneys general yesterday asking them to intervene.

If the association doesn't receive state or federal help, Abut said, the GNJSSA may take legal action itself.

In its letters to the dealers, Exxon said it was taking the move to protect its trademark, because the gasohol is not made by Exxon.

Also, the company told dealers it did not

want to accept the credit card for non-Exxon products.

But Ruth said it is a departure from the company's past practices.

"I have been an Exxon dealer for 10 years, and they have always taken the credit card for non-company products, like tune-ups, tires and car washes," Ruth said. "Why are they changing now?"

Salvatore Risalvato, GNJSSA treasurer, said 15 of the association's members now sell gasohol and 15 more are expected to start by Feb. 1.

Risalvato said the station owners buy the gasohol, which is 90 per cent gasoline and 10 per cent alcohol, from a Long Island distributor.

Risalvato said when the gasohol is sold at Exxon stations, it is clearly labeled as a non-Exxon product.

EXXON #3

JN '88

BERGEN/PASSAIC/MUDSON COUNTIES, NEW JERSEY

Gasohol dealers feud with Exxon

NEWARK (AP) — Motorists buying gasohol at Exxon stations will not be able to charge the purchase on the company's credit cards, and dealers are fuming mad.

"You would think Exxon would be trying to support the policy of the United States," said Albert Ruth, president of the Greater New Jersey Service Station Association.

President Carter is expected to announce this week plans to convert grain originally grown for the Soviet Union into millions of gallons of gasohol.

The association, which represents about 1,500 of the state's 5,000 gasoline retailers, believes that Exxon's refusal to honor gasohol purchases on credit is "against the best interests of this country," Ruth said.

"I think what they have done is against state statutes dealing with franchises and may also violate federal antitrust legislation," said Charles C. Abut, attorney for the dealer group.

The organization met yesterday with federal and state officials and may take legal action, said Abut.

In letters to dealers received yesterday, Exxon said the move was taken to protect its trademark. Exxon does not produce gasohol.



Sale of Non-Exxon Motor Fuel

1/80
Exxon
44

Whether or not to sell non-Exxon motor fuel is a question some Exxon dealers and resellers may have been asking themselves. We strongly suggest that anyone considering this question understand the advantages and disadvantages of taking this action before coming to a decision.

Exxon's agreements with its branded dealers and resellers do not prohibit the sale of motor fuels including gasoline, diesel or gasohol purchased from other suppliers. However, there are other important considerations involved in this type of sale. Key among these are the protection of the Exxon trademark and Exxon's long-standing reputation for quality products.

The image of the Exxon brand and the quality of branded Exxon motor fuels have been, and are today, important assets for the Company and its branded dealers and resellers. A significant business contribution can result from the Exxon brand image and customers' loyalty to the brand. To most of your customers, the Exxon brand has come to mean products of consistently high quality supported by convenient locations and credit card acceptance.

While Exxon does not prohibit the sale of non-Exxon motor fuels by dealers and resellers, it is essential that steps be taken to protect the Exxon trademark and its reputation. This right is supported by state and federal laws as well as by the Petroleum Marketing Practices Act. In addition, Exxon's agreements with its dealers clearly provide for the protection of consumers from misleading trade practices. Dealers or resellers who desire to sell non-Exxon motor fuels must take steps to insure that the integrity of the Exxon brand is preserved and that consumers are not led to believe they are purchasing an Exxon product when they are not. These steps include posting signs designed to inform retail service station customers at each step in the purchasing decision that certain motor fuels offered for sale are not Exxon branded. Furthermore, it is important for the customer to be informed by appropriate signing that Exxon will limit its acceptance of assignments of Exxon credit cards for motor fuel sales to sales of Exxon branded motor fuels only.

There are also a number of other factors that should be considered before undertaking the sale of non-Exxon motor fuels. Dealers or resellers who engage in such sales would be totally responsible for resolving customer complaints on the quality and performance of such products. They would also have to negotiate their own supply arrangements for non-Exxon fuels and secure any product quality tests or certifications which may be legally required.

We hope that those that may be considering selling gasohol or other non-Exxon motor fuels will study all of the implications carefully before they act. Your sales representative can provide more detailed information on this subject. Get all of the facts before you make a decision. And if you decide to offer a non-Exxon motor fuel, advise your sales representative. The sales representative can explain the signing procedure guidelines that may be followed in protecting your relationship and contracts with Exxon.

1/80

Exxon Company, U.S.A. P.O. Box 2180, Houston, Texas 77001

A Bulletin from The Exxon Extra

Exxon

Exxon
#5**EXXON COMPANY, U.S.A.**

111 MADISON AVENUE, MORRISTOWN • NEW JERSEY 07960

MARKETING DEPARTMENT
NORTH JERSEY DISTRICT

January 7, 1980

S/S #2092

Mr. Al Ruth
Rt 4 Exxon
302 Broadway
Elmwood Park, N.J.

Dear Mr. Ruth:

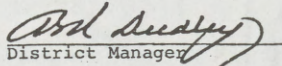
The purpose of this letter is to inform you of certain actions Exxon branded motor fuel dealers should take prior to their sale of non-Exxon motor fuel. These actions, further described in the attachment, include adequate signing, indemnification for certain liabilities, and the limitation of motor fuel credit card sales assignments to Exxon branded motor fuel only. These actions are considered reasonable and necessary by Exxon to prevent a trademark violation and adequately inform consumers of non-Exxon motor fuel offerings.

Exxon is opposed to any action that would compromise the integrity of its trademark or would diminish the value of its brand reputation. Exxon contracts support this position. Please refer to your Exxon Extra Bulletin which provided further information on Exxon's position regarding the sale of non-Exxon motor fuel by Exxon branded dealers.

You should be aware that under the provisions of the Petroleum Marketing Practices Act, a trademark violation is grounds for termination or non-renewal of the franchise relationship.

If you have any questions regarding this material, your sales representative will be available to assist you.

EXXON COMPANY, U.S.A.


District Manager

RECEIVED

DATE

EXXON COMPANY, U.S.A.

Exxon
5A
pg. 1.

March 1, 1980

ATT: Al Ruth, President of the Greater New Jersey
Service Station Association.

Dear Mr. Ruth,

My name is Anthony Brienza and I own an Exxon station on the corner of Morlot Avenue and Plaza Road in Fair Lawn, New Jersey.

Back in December of 1979, I started selling gasohol. December 14, 1979, was the day I started. About a week later, my sales rep Tom Tatum gave me a visit and told me that Exxon did not want me selling gasohol. He also told me that Exxon would take their pumps and sign out of my location. I told him that I was going to keep right on selling gasohol until I received a letter from Exxon stating that I could not sell gasohol.

He then said that Exxon would not send a letter and he was telling me for Exxon. When I kept on insisting, "I want it in writing," he then got on the phone and called in to the company. He talked about five minutes and, when he was finished, he told me to forget everything he just told me.

A few days later, Tom Tatum--my rep-- came back to my station and started to take pictures. He said he had orders from Exxon to do this. He took pictures of my pump, which was the "EXTRA" pump. I no longer use this pump to sell "EXTRA." I now use it to sell gasohol. I took Exxon's name off that pump and put gasohol on it. I also put on the pump that this was not an Exxon product and Exxon would not be responsible for this product.

I also had a sign in front of my station, approximately 4x8, telling the public all about gasohol. He also took pictures of that.

At this point, Exxon came out and said that I could sell gasohol, but I could not accept Exxon credit cards for the sale of the gasohol. They didn't send me a letter, but told me in person about this. However, since I did not receive a letter addressed to me stating that I could not accept the credit cards, I continued to accept the credit cards for the sale of the gasohol.

When I accepted the credit cards for gasohol, I wrote right across the face of the ticket "gasohol" so that Exxon could see that I was still using it for the sale of the gasohol.

Exxon
#5A
#2

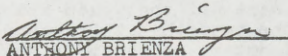
At this point, I began to notice that my checks from Exxon were not coming back as quickly as they used to for my credit cards. Since I've been using them for gasohol, they've been holding my assignments up and not reimbursing me as quickly as they had been. They were checking my assignments --handpicking them-- and seeing how many I was using for gasohol.

When I did receive a check from the company for the credit cards, in that same envelope there was a note saying that they were paying me for their credit cards but that, at a future date, I could be charged back for the ones I was using for gasohol.

Approximately a week or so later, Exxon came out with a bulletin to all dealers, regardless of whether or not they sold gasohol, stating that they could sell gasohol at their stations. Then they also came out with a bulletin stating that Exxon would accept credit cards for the sale of gasohol.

I've been selling gasohol for a few months now and still don't know what Exxon is planning to do. They've been coming out with, "You can do this, but not this," and "this, but not this." I really don't know. They haven't been bothering me for a while and I hope that they won't again, but I really don't know.

Sincerely,


ANTHONY BRIENZA



State of New Jersey
DEPARTMENT OF LAW AND PUBLIC SAFETY
DIVISION OF CRIMINAL JUSTICE

JOHN J. DEGNAN
ATTORNEY GENERAL

13 ROSZEL ROAD
CN 14
PRINCETON, NEW JERSEY 08540
TELEPHONE 609-452-9500

EDWIN H. STIER
DIRECTOR

Exxon #6
JAN 18 1980
RECEIVED

January 17, 1980

Charles C. Abut, Esq.
Lowen & Abut
One Executive Drive
Fort Lee, NJ 07024

Re: Exxon Refusal of Credit
for Gasohol Sales

Dear Mr. Abut:

Thank you for your letter of January 10, 1980 and its enclosure. I recently read in the newspapers that Exxon had retracted its prior decision and was presently honoring credit transactions for gasohol sales. If so, I would think this problem is moot.

Please let me know if this is still a problem. If it is, I would appreciate it if you could give me any further information as requested by my prior correspondence.

Very truly yours,

Charles D. Sapienza
CHARLES D. SAPIENZA, Chief
Antitrust Section

CDS:fal

New Jersey Is An Equal Opportunity Employer

"Exxon Now Permits the Sale of Gasohol on Exxon Credit Cards"

Exxon #7

A few weeks ago, all Exxon dealers and distributors were mailed an Exxon Extra bulletin, entitled "Sale of Non-Exxon Motor Fuels," outlining Exxon's position on the sale of these fuels, including gasohol, by Exxon dealers and distributors. That bulletin included the statement, "... Exxon will limit its acceptance of assignments of Exxon credit cards for motor fuel sales, to sales of Exxon branded motor fuel only."

The Exxon credit card has been and remains an important part of our marketing program. Costs associated with the credit card system—which are significant—are recovered as a part of the gasoline price. Historically, we have permitted automotive services and T&A offered by our dealers to be charged on the credit card as a convenience to the customer, as well as to assist dealers in building this profitable aspect of their business. However, because the credit card is an integral part of the branded gasoline business, we have restricted assignments to only Exxon branded gasolines.

Exxon's position in this matter has received increasing attention over the past few weeks. Although we feel our position is correct, we have, until further notice, modified our credit card policy and will now accept assignment of credit card sales of non-Exxon products sold as unbranded motor fuels, including gasohol. This change has been made to eliminate the current controversy surrounding gasohol sales on credit cards.

This change in our credit card policy in no way alters the signing and other trademark protection measures outlined in the earlier bulletin. Furthermore, Exxon will accept no credit card assignments from any dealer who elects to sell only non-Exxon motor fuels.

With regard to gasohol, Exxon believes that all energy sources, including alcohols, should be evaluated as a potential means of reducing oil imports. Unfortunately, essentially all the ethanol currently available in this country comes from manufacturing processes which consume as much, or more, petroleum and natural gas energy than the ethanol yields when it is used as a fuel supplement.

To date, our primary efforts in alternative fuels development have concentrated in areas such as synthetic fuels from coal and oil shale which we believe offer the greatest promise to reduce America's dependence on imports. However, Exxon continues to explore other alternative energy sources, including gasohol where it can be derived from processes using non-petroleum energy sources which will make a positive contribution to U.S. energy supplies.

2/80

Exxon Company, U.S.A. P.O. Box 2180, Houston, Texas 77001

A Bulletin from The Exxon Extra

Exxon Extra

EXXON COMPANY, U.S.A.

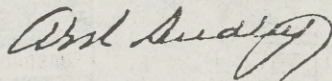
EXXON #8

Dear Exxon Retailer:

Attached is an Exxon Extra bulletin which outlines that, until further notice, we have modified our credit card policy to accept assignment from you of credit card sales of non-Exxon products sold as unbranded motor fuels, including gasohol.

This action was taken to eliminate the current debate surrounding gasohol sales on credit cards and allow more attention to be focused on the real issue, which is the role gasohol can play in reducing America's dependence on foreign oil. Unfortunately, essentially all ethanol currently available in this country comes from manufacturing processes which consume as much or more petroleum and natural gas energy than the ethanol yields when it is used as a fuel supplement.

The change will also accommodate the retail customers of Exxon dealers and resellers who elect to use this fuel supplement. However, it in no way alters the signing and other trademark protection measures required when a non-Exxon motor fuel is sold through an Exxon branded outlet.



District Manager

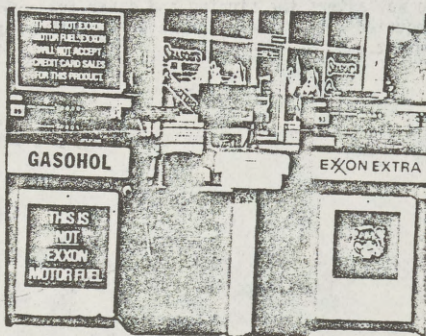
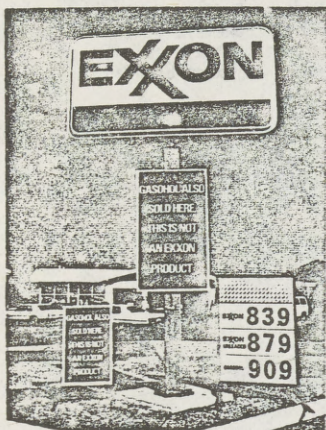
*Exxon Agreement
with Retailers
For Gasohol #9A*

Page 1 of 4

GUIDELINES FOR THE SALE OF GASOHOL WHILE CONTINUING TO SELL ONE OR MORE EXXON BRANDED MOTOR FUEL GRADES

The following describes the preferred procedure to be used by any branded Exxon dealer who offers gasohol and continues to offer one or more Exxon branded motor fuel grades for sale to the public.

1. Indemnify Exxon regarding the sale of gasohol (per attached INDEMNITY LETTER AGREEMENT).
2. Limit assignment of Exxon credit cards for motor fuel sales to sales of Exxon branded motor fuel only.
3. Display a sign(s) on major ID pole(s) that effectively communicates an appropriate message and cover affected Exxon motor fuel brand designation on price signs and substitute gasohol as illustrated on the picture below. As an alternate to the pole sign, A-frame signs (also pictured on this page) located at each end of each island area are acceptable.
4. Completely cover the product identification panels and product color panels (skirts) on each dispenser offering gasohol for sale and equip each such dispenser with signing that effectively communicates appropriate messages as illustrated in the picture below. As an alternate, the pump skirt may be covered with signing that more closely associates the dispenser with gasohol. Any such alternate signing on the skirt should include a message that THIS IS NOT EXXON MOTOR FUEL. Should you encounter difficulties caused by requirements of sign ordinances in displaying the appropriate messages, please consult your sales representative for assistance in developing acceptable alternatives.



If you plan to expand your non-Exxon motor fuel sales beyond gasohol, contact your sales representative for additional guidance.

The pole sign, A-Frame insert sign, price sign decal, pump topper, grade name panel and pump skirt signing materials as illustrated above are available from Screen Graphics, Inc. (see attached order form — page 3).

Exxon #98

Page 2 of 4

GUIDELINES FOR RETURNING TO SALE OF EXXON BRANDED MOTOR FUEL BY DEALERS SELLING GASOHOL
--

Dealers selling gasohol should take the following actions before re-identifying the appropriate Exxon branded motor fuel grade for sale to the public.

A. Leaded Motor Fuel

1. Draw down gasohol until suction is broken.
2. Receive quantity of Exxon branded product to dilute with a minimum of 10 to 1 ratio (example — 1500 gallons Exxon branded product to 150 gallons of gasohol). X
3. In these circumstances only, such resultant product will be accepted as Exxon branded motor fuel and dispensing equipment and price signing may be re-identified as Exxon branded. Pole sign(s) (or A-frame signs) may be removed. *

B. Unleaded Motor Fuel procedure is the same as described for leaded motor fuel plus:

4. Provide Exxon representative with a sample of the resulting unleaded motor fuel for testing (lab fees paid by dealer).
5. Upon confirmation from Exxon representative that the lab test verifies the motor fuel satisfies specifications for lead content, dealer may re-identify appropriate dispensing equipment and price signing to Exxon branded product. Pole sign(s) (or A-frame signs) may be removed.

[All de-identification and re-identification expenses are to be paid by the dealer.]

Exxon 9c

Page 3 of 4

ORDER FORM FOR GASOHOL DE-IDENTIFICATION SIGNING MATERIALS
--

Screen Graphics, Inc.
P. O. Box 55366
Houston, Texas 77055

Attn: Mr. James B. Tyree

Gentlemen:

Please ship freight prepaid, Exxon de-identification signing material as illustrated on page 1 to the following location and in the quantities indicated. (Please call Mr. Tyree regarding any special signing needs not covered by this order form at (713) 468-9661.)

	No. Required	@	Total Cost
<u>POLE SIGN</u>			
PO-4 (Gasohol)	_____	\$35.00 =	_____
<u>A-FRAME INSERTS — 2 PER SET</u>			
AF-4 (Gasohol)	_____	(sets) 5.35 =	_____
<u>DISPENSER SIGNS — 2 PER SET (EXCEPT PUMP TOPPER)</u>			
DI-1 (Pump Topper — 2 sided)	_____	9.24 =	_____
DI-2 (Grade Name Panels — Gasohol)	_____	(sets) 9.00 =	_____
DI-3 (Pump Skirts)	_____	(sets) 3.78 =	_____
<u>PRICE SIGN DECAL — 2 PER SET</u>			
PR-3 (For SS-1 Three Product Signs — Gasohol)	_____	(sets) 3.00 =	_____
*PR-4 (For SS-1A Two Product Signs — Gasohol)	_____	(sets) 3.85 =	_____
*Not illustrated		State Tax	
		(Texas deliveries only)	
		Shipping Charge	\$ 4.00
		Grand Total	_____

Shipping Address: _____

Enclose check or money order made to Screen Graphics, Inc.

Your order will be shipped within three days of receipt.

Exxon #9D

INDEMNITY LETTER AGREEMENT

I, _____, the undersigned operate a petroleum marketing business at _____

By execution of this document, I hereby indemnify Exxon Company, U.S.A. (a division of Exxon Corporation) from any liability and costs, including attorney's fees, resulting from any actions in either federal or state courts, or administrative actions, which may arise in connection with or resulting from the sale, storage, handling or other operations involving gasohol at the above location. This agreement specifically includes liability or costs resulting from the sale of gasohol which fails to meet environmental requirements established for the sale of unleaded gasoline by any federal or state authority.

I recognize that considerable research is ongoing with respect to the uncertain effects of gasohol in petroleum storage tanks and pumps. Therefore, this indemnity shall include costs of fines or penalties, costs of maintenance and repair of tanks and pumps owned by Exxon (including all clean-up costs and damages to third parties associated with leakage of said tanks and pumps) and any other costs when it can be established that the cause of such costs was due to the peculiar effects of gasohol as distinguished from other types of motor fuels.

SIGNATURE

WITNESS

DATE

IT was
Exxon
LIABILITY
to cover
action

Getty #1

February 5, 1980

Getty Refining and Marketing Company
86 Doremus Avenue
Newark, New Jersey 07105

Dear Mr. Cook:

My name is Anthony Brienza and I recently bought the J & P Getty Service Station, located at 97 Lafayette Avenue, Hawthorne, New Jersey.

I am writing this letter in reference to my recent attempts to contact you. I spoke with my representative Ron Clarke about getting Gasohol into my station. He advised me to hold off until I heard from you because he felt that Getty did not want Gasohol in any of their stations at this time. However, I have not been able to reach you.

Your response to this letter would be greatly appreciated as soon as possible. Thank you for your anticipated cooperation in this matter.

Sincerely,

ANTHONY BRIENZA
97 Lafayette Avenue
Hawthorne, New Jersey 07506
(201) 423-9827

7405661

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE EXTENDED -
BY FIRST CLASS CERTIFIED MAIL

(See Reverse)

SENT TO GETTY Ref. Company 86 Doremus Ave. Newark, N.J. 07105		POSTAGE \$ 1.50	
CERTIFIED FEE \$.80		TOTAL POSTAGE AND FEES \$ 2.30	
SPECIAL DELIVERY RESTRICTED TO DELIVERY DURING BUSINESS HOURS ON MONDAY AND TUESDAY		POSTMARK ON DATE FEB 5 1980 USPO	
SHOW TO WHOM DATE AND ADDRESS OF DELIVERY			
RETURN RECEIPT SERVICE OPTIONAL SERVICES			
CONSULT POSTMASTER FOR FEES			

PS Form 3800, Apr. 1976

Getty #2

February 25, 1980

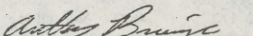
Dear Mr. Ruth,

This letter was sent to Mr. Cooke (our district manager), Certified Mail, on February 5, 1980. Although I did not receive a letter in return from Mr. Cooke, I did receive a visit from him along with Ron Clark (my representative) about two-and-a-half weeks later.

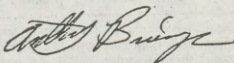
At this time, Mr. Cooke advised me that I could not sell gasohol at this station. He also told me that some of the sales reps for Getty are using gasohol and, by doing this, will make their own decisions on whether or not to sell it at their stations. He said that he would get back to me.

As of right now, which is February 25, I cannot sell gasohol at my station.

Sincerely,


ANTHONY BRIENZA

I, ANTHONY BRIENZA, DO HEREBY AUTHORIZE
THE GREATER NEW JERSEY SERVICE STATION
ASSOCIATION TO UTILIZE THIS LETTER ON
BEHALF OF THE ASSOCIATION.



OIL EXPRESS

exclusive report serving informed petroleum marketers nationwide

January 21, 1980

Moves in the market

Amoco +4.0¢ all grades gasoline; +3.0¢ distillates, 1/18;
 Arco +2.0¢ all grades gasoline, 1/16; +3.0¢ distillates, 1/14;
 Ashland +2.0¢ distillates, 1/14;
 Apco +1.5¢ all grades gasoline, 1/12;
 Champlin +1.0¢ all grades gasoline & distillates, 1/8;
 Citgo +0.8¢ No. 2 & diesel, 1/12;
 Conoco +1.0¢ all grades gasoline ex. unleaded in PAD 1 where +2.0¢; +2.0¢ distillates, 1/15;
 Ina +3.0¢ all grades gasoline & distillates, 1/15;
 Koch +3.0¢ all grades gasoline, 1/11; -5.5¢ distillates, 1/14;
 Mobil +3.0¢ all grades gasoline, 1/17; +3.0¢ distillates-nationwide ex. western region where +4.0¢, 1/11;
 Rock Island +2.0¢ all grades gasoline, 1/10;
 Shell +5.0¢ all grades gasoline & distillates, 1/17;
 Sun +2.0¢ all grades gasoline in PAD 1, 1/12, in PADs 2 & 3 on 1/14; +2.0¢-3.5¢ distillates, 1/12-1/14;
 Tenneco +2.0¢ all grades gasoline & distillates, 1/12;
 Texaco +3.0¢ distillates, 1/17;
 Total +1.5¢ all grades gasoline, 1/11;
 Tosco +2.0¢ all grades gasoline, 1/15.

Exxon: 'Sell any fuel on our card'

Exxon marketers are now free to sell another supplier's gasoline on Exxon's credit card, the company announced last week.

The policy decision came in response to pressure from dealers and national political figures critical of Exxon's refusal to permit charges on gasohol sales. But the decision applies to all motor fuels, Exxon says.

In a January 11 announcement, the firm said it "will permit the sale of non-Exxon branded motor fuel, including gasohol, on the company's credit card."

"As far as the business principle is concerned, we do not differentiate between non-Exxon branded gasoline or gasohol," a company spokesman said last week.

Does that mean an Exxon dealer can offer, say, Gulf, gasoline and charge it on the Exxon card? Yes, says an Exxon spokesman in Houston. But the dealer must strip the tank of all Exxon identification.

Refiners ease gasohol restrictions

Branded marketers ask:

- Can I sell gasohol under my refiner's flag?
- Can I blend alcohol with my supplier's gasoline without being accused of adulterating or commingling the branded product?

- Can I take the refiner's credit card on gasohol sales?

Six months ago we asked refiners those questions and published their answers. But since then many have changed their policies. Here's an update:

Gulf: Last week Gulf reversed policy and now allows gasohol charges on the Gulf card. Marketers are free to sell gasohol as long as they debrand pumps, spokesman Nick Flocbos says. And those marketers who take possession of their inventory when it's delivered are free to blend Gulf unleaded into gasohol. But Gulf dealers who don't own the gasoline in their storage tanks, must switch to Gulf's so-called "buy/sell" type arrangement before blending gasohol. "Otherwise, there would be tremendous difficulties in accounting," Flocbos notes. Gulf will begin test marketing gasohol at six company operated stations in Philadelphia next month.

Exxon: Exxon also changed its policy last week to permit sale of "non-Exxon branded motor fuel, including gasohol" on the company's credit card. Marketers are also free to blend Exxon gasoline into gasohol, but in both cases they must debrand pumps. Though Exxon says it has no plans to test

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Bruce Levenson, publisher

Ed Peskowitz, editor

Nancy Koran, associate editor

Penny Trainor, circulation

market gasohol, company officials are checking the compatibility of tanks and other equipment with alcohol and gasohol, sources say.

Citgo: Citgo has done nothing to discourage its marketers from selling gasohol, says official Stan Dean. They are free to blend Citgo product to make gasohol and they may charge gasohol sales on the Citgo credit card. They should debrand pumps. Citgo is test marketing in four cities.

Shell: Dealers and jobbers are free to sell gasohol and may use Shell product to blend gasohol, but they should debrand pumps and accept sole responsibility for quality, spokesman Tom Denman says. Shell is accepting gasohol sales on its credit card. The company is not presently test marketing gasohol, but that policy is open to change.

Union: Dealers and jobbers are free to market gasohol and can blend their own gasohol from Union product, says spokesman Barry Lane. But marketers should debrand pumps to show that gasohol is not Union's product. Union has no formal policy on gasohol sales on credit cards, but so far charges for gasohol have been accepted. That policy is under review. Union currently has no plans to test market gasohol.

Chevron: Chevron marketers are free to buy and blend gasohol, a company spokesman says. Marketers must debrand pumps, and let customers know that gasohol is not a Chevron product. Marketers may use the Chevron credit card for gasohol sales, "on a temporary basis," the company says. It has announced plans to test market gasohol through 30 stations outside Seattle.

Mobil: Branded jobbers and dealers are free to sell gasohol, but they must remove the Mobil brand and they may not use Mobil's distinctive round pumps. Mobil sells pump disguises for this purpose. Lessee dealers must install a separate gasohol tank and pump at their own expense. Mobil has no objection to a marketer's blending gasohol with Mobil product, spokesman Jim Amanna says, and Mobil will accept gasohol sales on the company credit card.

Texaco: The company offers branded Texaco lead-free gasohol to independent marketers in areas where Texaco sells the product, says spokesman Bob Cutter. These marketers can use the Texaco brand on pumps and can use the Texaco credit card. Marketers may also blend Texaco product to make gasohol or buy it blended elsewhere. But these marketers must debrand the pumps, cannot use the credit card, and must post a sign in the window explaining they are selling unbranded gasohol. Texaco is selling Gasohol at 600 stations in eight states and will add 500 more stations by March, Cutter says.

Sun: The company is currently reviewing its gasohol policies at the highest levels, and they may change soon, spokesman Bob Dietshe says. Independent marketers can sell preblended gasohol, and they can blend Sun product to make gasohol. The company does not want its credit card used for gasohol sales, but that issue is being restudied.

Amoco: Independent dealers are free to sell gasohol but they should debrand pumps to avoid confusion with branded Amoco gasoline currently being test marketed in four cities. Marketers who blend Amoco product to make gasohol may use the Amoco credit card. Marketers who buy gasohol blended with other than Amoco product should not use the credit card, spokesman Carl Meyerdirk says.

Make premium...

American Automobile Assn. advised members last week to blend two parts unleaded premium with one part leaded regular as a substitute for leaded premium in areas where the product is no longer available.

More alcohol from ADM

Archer Daniels Midland Co. plans to be turning out 225,000 gals./day of fuel-grade alcohol at its Cedar Rapids, Iowa, corn refinery. The new facility is to be built by mid-1981.

Jobber woes told...

Jobbers need a 7.7¢/gal. margin without cost justification, plus another 1.5¢/gal. for those marketers that can justify the increase, North Carolina Oil Jobbers Assn. told DOE. A poll of members shows that equipment costs increased 88% since 1974, cost of paving jumped 73.1%, and cost of truck tractors rose 79%. Jobbers' gross profit margin dropped from 17.59% in 1974 to 10.8%, added President Tom Potter.

'Key person' questioned

A House panel has asked the 40 largest oil companies about "key person" clauses in their contracts, and may hold hearings on the issue this spring. In a letter last week, Rep. Berkley Bedell asked the firms whether they require "key person" provisions for all or some contracts, whether they had recently dropped, or planned to add "key person" provisions soon, and for the language of any existing "key person" clauses. His Small Business subcommittee has received several complaints from marketers in recent weeks, Bedell says.

Additional Submissions of Wayne Konitshek

EXXON COMPANY, U.S.A.4400 DACOMA
POST OFFICE BOX 1322 · HOUSTON, TEXAS 77001MARKETING DEPARTMENT
CREDIT CARD CENTER

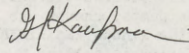
1-10-80

WAYNE KONITSHEK
HARVARD S/S
HARVARD * WAVERLY
STAMFORD, CT 06802

Enclosed is Exxon Company, U.S.A.'s check # 159206 in the amount of \$ 951.24 representing reimbursement for your credit card assignments as follows:

<u>Date of Assignment</u>	<u>Assignment Numbers</u>	<u>Amount</u>
1/4	344914	951.24

Please note that while this check is for the full amount of said assignments, ~~Exxon reserves the right to charge back at a later time any individual credit card assignments which are identified as representing the sale of other than Exxon branded motor fuels.~~ However, we do not wish to unduly delay reimbursement for the legitimate assignments until this identification process is completed.



George J. Kaufmann

bc: J.-L. Fischer

FORM NO. 175-0073A

SETTLEMENT OF ACCOUNT
THE ATTACHED CHECK IS IN FULL
PAYMENT FOR THE ITEMS SHOWN
BELOW AND CONSTITUTES RECEIPT

EXXON COMPANY, U.S.A.
A DIVISION OF EXXON CORPORATION
MARKETING ACCOUNTING CENTER

DESCRIPTION

Reimb Konitshek #344914

328 407 900 5 12 81 00400			
BERTHA S AUGBURN		RETURNED	
* <i>Unauthorized Product</i>		DATE EXXON 26	
103 HOPE ST.		40	
SPRINGDALE, CT.		242517 54529	
777362-325-1743		091079 977359	
37773629		946-070N M-7-79	
ITEM	QTY.	UNIT	AMOUNT
EXXON ☐ UNLUBED ☐ EXXON ☐			
UNLUBED ☐ EXXON ☐ EXXON ☐			
<i>Gasoline</i>			4.00
AUTH.	VEHICLE LICENSE & STATE	Sales TAX	
TOTAL \$		4.00	X <i>Bertha S. Augburn</i>

Total includes all applicable Federal, state and local taxes.

Additional Submission of
Exxon, Inc.

EXXON COMPANY, U.S.A.

STATEMENT SUBMITTED FOR THE HEARING RECORD

OF MARCH 5, 1980

ON S.2251, THE GASOHOL COMPETITION ACT

TO

SENATE COMMITTEE ON THE JUDICIARY

SUBCOMMITTEE ON ANTITRUST, MONOPOLY, AND BUSINESS RIGHTS

AND THE

SENATE SELECT COMMITTEE ON SMALL BUSINESS

Exxon Company, U.S.A. has reviewed and analyzed written submissions and oral statements made before the Senate Committee on the Judiciary Subcommittee on Antitrust, Monopoly, and Business Rights and the Senate Select Committee on Small Business on March 5, 1980.

Many of the allegations concerning Exxon cannot be supported by an objective evaluation of available information and facts. The purpose of this statement is to supply clarifying information and facts.

CREDIT CARD POLICY

ALLEGATIONS:

From written submission of the Greater New Jersey Service Station Association:

Beginning with Exxon exhibit #1, a letter by Exxon responding to a customer [Ms. Hilda Schwartz] complaint, Exxon set forth its official policy on credit card usage:

"Exxon has not changed its policy with regard to the sale of credit cards. At all locations which are operated directly by the Company, credit cards are accepted for all purchases and we encourage dealers to follow the same procedure." (p. 11)

From oral testimony of Wayne Konitshek:

...Exxon wrote up the leases and the credit card agreement saying that we will accept a credit card for motor fuel, we will accept a credit card for antifreeze, we will accept a credit card for accessories. They never dreamed their dealer would ever sell somebody else's motor fuel because they don't have to worry about competition.

So we pointed out to them that it doesn't say we can't use the credit card for gasohol. Gasohol is a motor fuel.

Well, the largest corporation in the world known to man sent out a post card undated, unregistered and tried to amend their credit card agreement which is a multi-billion dollar agreement with a post card, "Dear dealer, section 4 is now amended. We meant Exxon branded motor fuel only is allowed on the Exxon credit card." (p. 82)

Then they follow it up with another letter saying that they will not allow Exxon credit cards. The only problem -- the mistake they made is we started taking Exxon credit cards in August. They didn't catch on until we went into New Jersey which was December. We probably ran hundreds of thousands of dollars of their own credit cards through their own little Houston credit card center before they even knew what was going on. By the time they figured it out it was too late. They had already paid me and I feel accepted legally the practice of me using it for non-Exxon products. (pp. 82, 83)

...the Holiday Inn across the street which also used the Exxon credit card to stay. (p. 83)

From oral testimony of Wayne Konitshek:

Basically, we started -- the Exxon credit card thing started because of my dealers. We are the only Exxon dealers in the nation selling gasohol on their credit cards. (p. 77)

EXXON RESPONSE:

Exxon Did Not Change Its Credit Card Acceptance Position in Order to Inhibit the Sale of Gasohol

The September 14, 1979 letter to Ms. Hilda Schwartz was not intended to be an "official statement" of the Exxon position on acceptance of credit card assignments from our dealers. The letter was in response to a complaint by

Ms.Schwartz that one of our dealers had refused to accept her Exxon credit card for automotive services which were acceptable for assignment to Exxon. The response simply pointed out that at Exxon company-operated stations, credit cards are accepted for all purchases -- since we do not make sales of unauthorized items at these stations -- and that we encourage dealers to do the same by offering them the ability to assign credit card sales of automotive services and TBA. The letter pointed out to Ms.Schwartz that the dealer is an independent businessman and is free to establish his own operating practices including the decision of whether or not he is willing to accept the Exxn credit card for authorized purchases for subsequent assignment to Exxon for collection.

The Exxon credit card has been and remains an important part of our marketing program. Sales of motor fuel represent, by far, the most significant portion of charges made on credit cards. Because the cost of the credit card system (which is free to our dealers) is primarily recouped as a part of the wholesale motor fuel price, our position has been to limit credit card assignments for motor fuels to Exxon-branded motor fuels. Historically, we have permitted automotive services and TBA, which represent only a small portion of credit sales, to be charged on the credit card as a convenience to the customer, as well as to assist dealers in building this profitable aspect of their business.

Before the Exxon dealers in Connecticut first began the sale of gasohol in Connecticut, we had begun work on clearly defining for our dealers the steps that should be taken for the sale of nonbranded motor fuel. In response to dealer inquiries on the subject, plans had already been put into motion to issue an amendment to the Credit Card Guide to clarify our position restricting credit card sales to Exxon branded motor fuels only.

This was done according to our normal procedures on August 15 and 16, 1979, by First Class mail clearly marked "IMPORTANT." In fact, some of the Connecticut dealers indicated that Exxon credit cards would not be accepted for gasohol sales. Thus it appears that they were aware of Exxon's position of nonacceptance of credit cards for nonbranded motor fuels. The fact that certain dealer credit card assignments which included gasohol sales tickets were processed and paid does not constitute acceptance of the dealers' practices.

In response to inquiries received this past spring and summer, all Exxon dealers nationwide were advised of Exxon's credit card position in August and again in late December or early January. Then on January 11, 1980, to eliminate the controversy surrounding charges that we were limiting the use of credit cards to inhibit the sale of gasohol, we modified our position to permit the sale of nonbranded motor fuels, including gasohol, on the company's credit card.

Contrary to Mr. Konitshek's statement, the Exxon credit card was not honored at Holiday Inn locations in 1979, nor is it currently being honored at such Inns. The Marriott Hotels and Best Western Motels do accept the Exxon credit card and pay Exxon a fee to do so.

Mr. Konitshek's statement that "We are the only dealers in the nation selling gasohol on their credit cards" is also inaccurate and misleading. It is difficult to discern which dealers Mr. Konitshek is including, but on

March 5, 1980, there were approximately 40 dealers from the states of Connecticut, New Jersey, New York, Pennsylvania, Maryland, Georgia, and Washington honoring the Exxon credit card for gasohol sales.

ALLEGATIONS:

From written submission of the Greater New Jersey Service Station Association:

Retailers who went ahead and sold gasohol despite the warning that they would be totally responsible for resolving customer complaints on gasohol, were subjected to a hand-screening of their credit card invoices, normally submitted to Exxon for eventual payment by Exxon.

The hand-screening process, a cumbersome substitute for computer screening, meant delays in cash payments to retailers of up to ten days in some instances, causing cash flow problems. In one case, the total credit card amount withheld by Exxon, for one retailer amounted to \$25,000. (pp. 11, 12; see also oral testimony of Wayne Konitshek, pp. 80, 81, 82)

From oral testimony of Wayne Konitshek:

The first letter I have from them -- here is one when they started to grab, and this went up to like \$22,000, they were holding from our dealers, their dealers, of our money, for not only gasohol credit card sales, but also other products that had nothing to do with gasohol. They would hold up the credit card which used to take a week. We would mail the cards to Houston. We would get reimbursed within one week. That week's process came to be over three weeks process. This two weeks of holding this money ruins a dealer's cash flow. That was enough to really panic the dealers.

When they finally did get a check, the letter said, "Please note. While this check is for the full amount of the same assignments, Exxon reserves the right to charge back at a later time any individual credit card assignments which are identified as representing the sale of other than Exxon branded products." (p. 81)

I have with me one of the credit cards that they have bounced on us. I will leave this with the committee. This is an Exxon credit card, \$4.00. This is \$4.00, little dollars, which I can't even give you a percentage of what that is to Exxon's revenue, unauthorized product. No other reason to bounce this card, but unauthorized product. (p. 83)

EXXON RESPONSE:Manual Processing Procedures Did Not Result in Credit Card Assignments Being Delayed Two Weeks, Up To \$25,000

Credit card assignments are normally processed automatically by our credit card centers in one day or less. As an example, for the month of February 1980, 99.8% of the assignments received were processed within 24 hours. This automatic procedure is our preferred procedure and is normally used. However, a special manual processing procedure is necessary whenever we have reason to suspect that the assignments contain unauthorized sales. This procedure is used in a variety of instances, such as when there is an inordinate number of unauthorized cards used, when a high number of stolen cards is being accepted, and when it is suspected that cash is being exchanged on credit. When the dealers in New Jersey began selling gasohol in December, 1979, there were indications that they would be assigning to Exxon credit card sales of gasohol. Therefore, we began the process of manually screening and evaluating assignments from all dealers selling nonbranded motor fuels. After assignments were identified as having nonbranded motor fuel sales included, we simply made copies of them and then processed the assignments for payment to the dealer. The dealers were advised by letter that Exxon reserved the right to charge back at a later time any individual credit card assignments which were identified as representing the sale of other than Exxon branded motor fuels.

The screening process used typically extended the dealer's credit card processing time by only one or two days. Our records indicate that the

maximum number of days that our credit card center was in possession of any one of the dealer's assignments was six days. This was due to the Christmas holidays which extended the handling of all credit card assignments. Beyond the one or two days normally required for this process, any delay could have been caused by holiday mail service or the amount of time that it took the dealer to submit the credit card tickets. The maximum total dollar assignments being processed for any one dealer during this time totaled \$9,252.26 and this was from a dealer not located in Connecticut. In this case, six days' assignments were received at the Credit Card Center in one day. A check was mailed the next day.

To our knowledge, no gasohol credit card sales tickets were charged back out of those identified in December and January. The \$4 chargeback referred to by Mr. Konitshek was made in September when the gasohol charge was identified. This card was identified in the normal course of business and was returned as an unauthorized purchase.

All dealers were advised by letter of our January 11 decision to modify our position and to permit the sale of nonbranded motor fuels, including gasohol, on the company's credit card.

INDEMNIFICATION

ALLEGATIONS:

From written submission of the Greater New Jersey Service Station Association:

Finally, Exxon attempted to insure that it would not be liable for any sales of gasohol by its retailers, by requesting them to sign indemnification agreements, exhibit #9, which essentially placed all responsibility for gasohol sales on the backs of the retailers. (p. 13)

In short, the conditions under which Exxon sought to control the sale of gasohol at its branded service stations, in my estimation, beyond a doubt discouraged the sale of gasohol, by making it clear to its retailers that the risks in selling gasohol were greater than the advantages. (p. 13; see also oral testimony of Victor Cino, pp. 72, 73)

EXXON RESPONSE:

Exxon Policy on Indemnification and Customer Complaint Resolution Relative to Gasohol Sales is Based on Sound Business Principles

Exxon does not require its dealers to furnish their own pumps or tanks for the sale of non-Exxon motor fuel. However, in view of the growing interest in gasohol, there has been a general concern with regard to the compatibility of gasohol with motor fuel handling and storage system components. Because of this concern and uncertainty we have asked our dealers engaged in the sale of gasohol to sign an indemnification agreement. This agreement relieves Exxon of liability and responsibility when any damage results from selling gasohol.

Exxon is not alone in requiring indemnification with regard to gasohol. Several manufacturers of epoxy storage tank linings used at our stations have indicated that tests show incompatibility of their linings with gasohol. As a result, they have notified us that the introduction of gasohol into tanks will void their warranties on these specific linings.

Exxon advised its dealers in a bulletin dated December 1979 that the company will not be responsible for resolving customer complaints which arise from the sale of nonbranded motor fuels. This is consistent with our position of not accepting responsibility for products we do not sell to the dealer. Our reason for sending this bulletin was to clarify our position on this issue to all our dealers and was not intended as a warning or to restrict sales to Exxon-branded motor fuels only. In fact, in this same publication, we again clearly stated that we do not prohibit the sale of non-Exxon products sold as unbranded motor fuel.

We have practical and economic reasons for not accepting responsibility for resolving customer complaints which arise from products we do not sell. Exxon has no assurance of the quality of these products; to underwrite the responsibility for related customer complaints, while receiving no revenue from such sales, would simply be poor business management.

TRADEMARK PROTECTION

ALLEGATIONS:

From written submission of the Greater New Jersey Service Station Association:

Exxon exhibit #5, a letter by Exxon district manager, Art Dudley, to Mr. Albert Ruth, Exxon retailer, contained a carefully worded reminder that Mr. Ruth should be aware that under the provisions of the Petroleum Marketing Practices Act, a trademark violation is grounds for termination or nonrenewal of the franchise relationship.

But one retailer's sales representative was not so careful. He told Mr. Anthony Brienza, an Exxon retailer, that if he sold gasohol through his branded Exxon station, that he would take pumps and signs out of his station (p. 12; see also oral testimony of Victor Cino, pp. 73, 74, 75)

EXXON RESPONSE:Exxon's Policy Precludes the Termination of a Dealer Solely for Selling Gasohol or Other Nonbranded Motor Fuel

While Exxon does not prohibit the sale of nonbranded motor fuels, it is essential that steps be taken to protect the Exxon trademark. This right is supported by long-established state and federal laws as well as by the Petroleum Marketing Practices Act of 1978. In addition, Exxon's agreements with its dealers clearly provide for the protection of consumers from misleading trade practices. Dealers or resellers who desire to sell nonbranded motor fuels must take steps to insure that consumers are not led to believe they are purchasing an Exxon product when they are not. These steps include posting signs designed to inform retail service station customers making a purchasing decision of this fact.

The January 7, 1980 letter from Exxon District Manager Art Dudley to dealer Al Ruth did not constitute a threat of termination; rather, it contained a communication of Exxon's position on trademark protection. It simply stated the well-recognized and accepted fact that under the Petroleum Marketing Practices Act, a trademark violation is grounds for termination or nonrenewal of the franchise relationship.

The statement attributed to Mr. Anthony Brienza regarding an alleged action by an Exxon sales representative is inconsistent with our policy and practices, and furthermore is denied by the Exxon sales representative. Mr. Brienza's sales representative states that he did not threaten to remove the pumps and sign from the location if Mr. Brienza continued to

sell gasohol. Exxon policies regarding the sale of nonbranded motor fuel were communicated to Mr. Brienza orally and by letter in a manner used for all Exxon dealers selling such products.

The guidelines we ask our dealers to follow in the sale of nonbranded motor fuel are reasonable and not burdensome. We have no reason to believe these steps would discourage a dealer from selling gasohol.

ALCOHOL BLEND MARKETING IN ENGLAND

ALLEGATIONS:

From oral testimony of Alfred M. Campbell:

Exxon is a perfect example. They had a subsidiary called Cleveland Discol, in England. They marketed a gasohol blend up to 33 percent alcohol for over 30 years. Yet, in their company material they say that we have to test it and there are driveability problems.

But in my enclosed material, they endorse gasohol or the concept of a gasoline-alcohol blend through Cleveland Discol probably more eloquently than I do, in my marketing material. (pp. 95, 96)

EXXON RESPONSE:

Exxon Has Not Marketed a Gasoline/Ethanol Blend Motor Fuel in England Since 1939

Cleveland Petroleum, an English company which was a subsidiary of Standard Oil of New Jersey (Exxon), consolidated into an Exxon affiliate in 1974, marketed a motor fuel (Cleveland-Discol) containing up to 14% ethyl alcohol from approximately 1935 to 1939. During this period of relatively low-octane quality of most gasolines, addition of alcohol resulted in significant octane improvement. Branded gasoline marketing was suspended

with the outbreak of World War II. When the Cleveland-Discol brand returned after the war, gasoline octane was generally higher, owing to improvements in refining methods. Ethyl alcohol was not blended into Cleveland-Discol brand gasoline; small amounts (1-2%) of other alcohols were used postwar, primarily as anti-icing agents.

The Cleveland-Discol promotional material submitted by Mr. Alfred M. Campbell of Mar-Cam Industries, is from the prewar period. For Mr. Campbell to state that this 40-year old material is an endorsement by Exxon of gasoline-alcohol blends is misleading and unjustified.

SUMMARY

- Exxon had a position of accepting assignments from dealers for credit card sales for Exxon-branded motor fuels only; this position continued until January 11, 1980,^H when a modification was made to permit the sale of non-Exxon products sold as unbranded motor fuel including gasohol, on the credit card.

Manual processing procedures did not result in credit card assignments being excessively delayed. Such a procedure, used when there is reason to suspect that the credit card tickets being submitted do not adhere to our assignment requirements, typically extends a dealer's processing time by only one or two days.

- Exxon's position on indemnification and customer complaint resolution relative to gasohol sales is based upon sound business principles and is not intended to prevent the offering by dealers of nonbranded motor fuels.

- Exxon's agreements with its dealers do not prohibit the dealer from selling motor fuel, including gasohol, purchased from other suppliers. Further, we have not taken any steps to prevent the offering of nonbranded motor fuel by our dealers, and Exxon's policy and existing law precludes termination of a dealer solely for selling nonbranded motor fuel. Exxon does require that reasonable steps be taken to protect the Exxon trademark and its reputation. This right is supported by state and federal laws as well as the Petroleum Marketing Practices Act of 1978.
- A gasoline/alcohol blend, Cleveland-Discol, was marketed by a Standard Oil of New Jersey (Exxon) subsidiary in England during the years 1935 to 1939 primarily to offer an improved octane product. When branded gasoline marketing returned after the war, octanes were generally higher and ethanol was no longer blended with the Cleveland-Discol brand gasoline. To state that this 40-year old experience of a subsidiary company constitutes an Exxon endorsement of gasoline/alcohol blends is wholly unjustified.

Prepared Statement of
W.E. Riddle and E.S. Lipinsky

Removing Impediments to Ethanol Use in Automotive Fuels

W. E. Riddle and E. S. Lipinsky

Thank you for the opportunity to make some comments concerning removing impediments to the use of ethanol in automotive fuels. This testimony does not concern the impediments at the retail level, as this aspect of the problem is outside the scope of our experience. Although the impediments to be discussed occur at the processor and wholesale level, they have significant impacts at the retail level and consequently on retail prices.

There are many opportunities to replace imported petroleum. We should not get hung up on whether the replacements should be coal or shale or alcohol. Even if we work hard to develop all of these areas, we still may not be able to achieve the degree of energy independence needed within a time frame that is satisfactory to both the United States and the OPEC countries. Therefore, it is important that action be taken to eliminate the impediments to using ethanol in automotive fuels.

Use of Ethanol as an Octane Booster in Unleaded Gasoline. The present federal law that provides incentives for gasohol and related alcohol fuels confines the incentives to the Federal Highway Tax credit for fuels that incorporate 10 percent ethanol*. The high octane rating of anhydrous ethanol renders it an excellent octane booster for unleaded gasoline when used in amounts ranging from 2 percent to 12 percent. The quantity of ethanol to be used depends upon the octane rating of the refinery's output at a given time and needs to be adjusted continually.

The wording of the present law does not provide any incentive to the refiner for using ethanol as an octane booster at levels either less than or greater than 10 percent. The result is that an opportunity to incorporate significant amounts of ethanol into unleaded gasoline in the near term is being missed. Instead, refiners are using aromatic hydrocarbons that are derived from petroleum for octane boosting. This

* The ethanol must be produced by fermentation.

use of aromatics is not as desirable, because gasoline yields from a barrel of crude oil are reduced. Using ethanol as an octane booster could result in greater gasoline yields from crude oil yields and help to reduce oil imports. The intent of the law was to provide a tax incentive to promote ethanol use. Permitting ethanol to be used at any level and providing the appropriate tax credit would greatly increase ethanol use in motor fuels.

Energy Balance. Many hundreds of pages have been written on energy balances for the production of ethanol from various biomass resources. The results appear to be rather clearcut for stalk crops such as sugarcane or sweet sorghum. More energy is produced than is consumed in agricultural production, transportation, processing, and conversion to ethanol. The most controversial area is that of the manufacture of ethanol from corn grain. The best available technology in mid-1979 led to a ratio of 0.83 units of energy output for every unit of energy input.* If premium fossil fuels, such as fuel oil or natural gas, were employed for ethanol distillation, the energy balance would be negative. However, if coal and/or biomass residues were used as the source of fuel, a net reduction in petroleum imports would result. Since mid-1979, additional improvements have been made in distillation efficiency, yeasts that tolerate high concentrations of ethanol, and other elements of technology, resulting in even greater improvements in the energy balance for ethanol from grain.

Capital Investments. It must be recognized that sizable efforts to reduce our dependence on foreign energy sources will be capital intensive. For example, a steam generating facility for an ethanol plant might cost \$3 million when operated on natural gas, but cost over \$20 million when operated on high-sulfur coal.

* "Net Energy Analysis of Alcohol Fuels", D. M. Jenkins, T. A. McClure, and T. S. Reddy, API Publication No. 4312, November, 1979.

Large coal liquefaction investments are high risk ventures, not only because of the high capital investments, \$1 to 3 billion, but also because construction times tend to be lengthy and the risk of costly overruns great. Frequently, the coal-to-automotive-fuel ventures have an investment of \$5 per annual gallon, while the typical ethanol facility will have capital costs of approximately \$2 per annual gallon. Existing ethanol technology, while capital intensive, is less of a financial risk because a large number of relatively small plants can be constructed and each could be financed by the present banking and investment community. Because the investment differential between domestic and foreign energy sources is great, incentives must be provided to help reduce the risk. Such incentives could be in the form of rapid depreciation, extended investment credits, or government purchases of unsold output at a base price.

The solution to the U.S. energy problem will come from a combination of technologies and products. Alcohol fuels are a key part of the overall equation and important to the near-term relief from rising energy costs. Removal of existing barriers and helping to reduce part of the long-term risk will go far to bring about a development of an important energy resource--alcohol fuels.

Prepared Statement of
Donald I. Hertzmark

Mr. Chairman, I appreciate the opportunity to testify today before the distinguished members of the Subcommittee on Antitrust, Monopoly and Business Rights on the subject of alcohol fuels.

Analyzing the energy value of alcohol fuels has been an endless source of confusion for both laymen and specialists in the area. However, the pre-occupation of some with the question of the "net energy balance" of alcohol fuels, in my judgment, misses the point because it fails to distinguish between the value of energy in different forms. Our goal is not simply to obtain more energy -- more BTUs, regardless of the form. We have little use for raw energy. What we need are various forms of energy - heat, liquid, gaseous, solid - that conform to the ways in which we use energy.

Alcohol Fuels and the "Net Energy Balance" Question

The prime motivation for production of alcohol fuels is the replacement of the 170,000 barrels/day of refined gasoline that is currently imported or that which is made from imported crude oil. To compare ethanol to alternative liquid fuels we must look at the energy requirement of producing ethanol from agricultural sources versus other uses for the energy that is needed to process ethanol. The issue is complicated by the array of products that can be obtained from a modern ethanol distillery. This problem is similar to determining which refined petroleum products are to be charged with the energy use of a refinery complex.

We don't stop to ask whether oil refineries produce a net energy output - the answer is obviously no. A fraction of the petroleum that is input to the refinery must be burned to provide the energy to separate the various fractions of crude. More energy must enter the refinery than leaves the refinery. In fact, for every 100 gallons of gasoline that we use at least 10 and as many as 20 gallons of oil or equivalent of natural gas must be used in refining. This relationship is shown on the first of three tables appended to the written testimony which you have before you. We are willing to incur this debit in our energy accounts because refined products such as gasoline, diesel, or chemicals are more valuable to us than is crude

petroleum. In a similar way, we give up at least 2 units of energy as waste for every unit of electricity that we obtain from coal. Again the reasoning is simple - electricity is worth more to us than is coal in its raw form.

The situation is much the same with synthetic fuels from both fossil and renewable sources. The production of fuel oil, gasoline, or methanol from coal require that some of the energy in the coal be lost in the processing of the ultimate fuel - usually about 30 to 40%. When wood is processed to produce methanol - one of two alcohol fuels which can be derived from renewable resources - only 70% of the energy value of the wood is usefully transformed. This figure is roughly the same for methanol derived from coal. However, if we use wood or other renewable fuels at all stages of the transformation, then we get a clear and unambiguous increase to our net fuel supplies.

This reasoning carries over to ethanol derived from grain. Using available technologies and assuming that coal is used as the primary fuel in the distillery, then obtaining ethanol from grain is at least as efficient in the use of coal as any fossil synthetic fuel that we can obtain using coal as the primary energy source. Unlike fossil fuels, however, we recover other useful products such as feeds and cooking oils from the production of grain alcohol. These joint products have value in human and animal diets for reasons that have nothing to do with their energy contents. Given the variety of useful by-products that can be obtained from an ethanol distillery, it is incorrect to ascribe all of the processing energy and agricultural energy to the ethanol alone as most studies have done. For example, a substantial amount of nitrogen fertilizer, the major energy input to corn, is required to produce a high protein grain. It is even less defensible to count the joint products for their energy values alone. A better approach is to look at the costs in terms of both energy and dollars of producing an array of food, feed, and energy products by alternative means. We have done this and the results (given in Table 2) indicate that the total fossil energy requirements for producing equivalent amounts of food, feed, and fuel

are less in an integrated agriculture and energy system than in the type that characterizes the present situation. (That is, separate production of foods and fuels.) If we focus more closely on the liquid fuel question alone (and if we assume that coal is used in the distillery), then the production of ethanol will save a significant amount of liquid energy in both the processing and the content of gasoline that would otherwise be consumed.

It is impossible to have any type of energy system that produces more energy than it consumes - such schemes are in the realm of perpetual motion fantasies. What is entirely possible, however, is to upgrade low quality energy resources to more useful and valuable forms. To do so requires some type of energy input. The important issue is whether the production of alcohol fuels increases or decreases our use of liquid fossil fuels. And on this point we can say that modern fuel alcohol systems lead to unambiguous reductions in the consumption of liquid fossil fuels.

The Economics of Alcohol Fuels

A second issue that has been raised with respect to alcohol fuels is that they are too costly at the present time. Too costly compared to what? Logically, this is how the situation should be viewed. Unfortunately, it seldom is. Given the multiple prices for both domestic and foreign crude oil, determining the actual costs of petroleum products is a confusing and often tricky business. To simplify the issue, ethanol represents an increment to our domestic supplies of liquid fuels. Thus the proper comparison for determining the desirability of using ethanol as a fuel is to compare its cost to the cost of other "incremental" supplies -- that is, imported oil or new domestic sources of petroleum. In addition, when additional supplies will become available either from ethanol or from other sources is of paramount importance if we are to reduce our vulnerability to increasingly costly and uncertain supplies of foreign oil. What alternatives exist in the near term? How costly are the various alternatives? And what are the effects on other sectors of our economy?

Federal policies which have resulted in a multiple pricing structure for crude oil have obscured the true cost to our economy of oil imports. Regardless of how we achieve an average price for a barrel of crude oil, the fact remains that each barrel of oil imported now costs at least \$26.00 and as much as \$40.00 per barrel - two to three times the average price per barrel. Picking a midpoint of imported oil costs of \$33.00 per barrel and adding a transport charge of \$2.00 per barrel gives an average landed price for imported oil of \$35.00 per barrel. The cost per gallon of raw material for imported oil is thus at least \$0.83 per gallon (in actuality the gasoline feedstock will exceed \$0.83/gallon in price since it comes from the lighter, more valuable, fraction of a barrel). Using a standard refining cost multiplier of 1.64, we arrive at the refinery gate price of \$1.36 per gallon of gasoline. Adding taxes, transportation and markup implies a retail price of gasoline from imported oil of at least \$1.65 per gallon. This is the marginal cost of gasoline from conventional sources such as imported crude or domestic stripper crudes.

Marginal supplies of motor fuels from fossil synthetic fuels range in price from an estimated \$0.50 per gallon for methanol from coal to \$1.53 per gallon for Fischer-Tropsch gasoline from coal. This implies a retail price of \$1.82 per gallon for gasoline from the Fischer-Tropsch process. Given the fact that no coal synthetic fuel plants have been constructed and that long lead times will be necessary, we can expect no supplies from these plants until the mid-or late-1980s. For purposes of economic comparison, current supplies of ethanol and those due to come on stream within the next two years should be weighed against gasoline from imported or stripper crudes. I have taken the time to go through this forest of numbers in order to look at the costs of alternative fuels to ethanol that are currently in use. The average refinery gate price of \$0.85-0.95 per gallon offers a misleading basis of comparison to new supplies since it is weighted to a large degree by historically cheap crude supplies. When compared to the significantly higher cost of gasoline which, increasingly, is refined from marginal petroleum stocks, it is apparent that alcohol fuels are an attractive alternative.

SERI has analyzed the agricultural sector of the U.S. economy to assess its potential as an energy resource. We have developed a range of wholesale prices for fuel ethanol at various production levels up to one billion gallons per year by 1983 (equal to about 40 percent of our current gasoline imports). A modest program of twice the current level of fuel ethanol production will result in wholesale ethanol prices of \$0.69-1.11 per gallon. This compares to the conservative estimate of \$1.36 for a gallon of gasoline from imported oil and significantly higher costs of synthetic gasoline from other feedstocks.

The wide spread in the cost of ethanol produced from grain is due to the great differences in production costs for the traditional beverage techniques versus such advanced distillation technologies as continuous fermentation and vacuum distillation. Different processes also yield different by-products, with the ones produced by the corn wet milling techniques exceeding in value those of the beverage technique. Higher levels of alcohol production show a slight rise in the gross feedstock price (corn) and a decline in the joint product feed prices. The lowest possible wholesale price for a one billion gallon annual production level rises to \$0.75 per gallon for advanced technologies; the farm still cost increases to \$1.17 per gallon.

Several factors affect the price estimates given above. First, the use of spoiled grains as a feedstock will carry only the cost of disposal of the wet residues in addition to the fermentation and distillation costs. Since agricultural prices have historically been more flexible both downward and upward than have other prices it is possible to experience actual declines in feedstock prices (this also implies a possible reduction in joint product prices, although this relationship is far from perfect). A program of ethanol production more extensive than one or two billion gallons annually will require export of the joint product feeds and diversification in the feedstock base.

Because ethanol plants are much smaller than the proposed synthetic fuel plants that use coal as a feedstock, the lead times involved in planning and construction are far less. Known expansion plans for ethanol show an increase of more than 100% over the next year (the Energy Daily, 2/19/80).

This does not include the proliferation of small stills so that the actual rate of increase will likely be larger than 100%.

Mr. Chairman, I do not wish to imply that alcohol fuels are a panacea for our Nation's diverse and complex energy problems. However, alcohol fuels from grains, wood, wastes and other renewable resources do afford an economically attractive opportunity in the near-term to economically displace a significant amount of the energy we must now import from abroad. The production technology for ethanol fuels is not perfect but is quite efficient, both in terms of energy requirements and cost, when compared to other synthetic fuels in its use of feedstocks and fuels.

Alcohol fuels from renewable resources fare quite well when compared to imported oil or synthetic fuels. I am concerned, however, that the full potential of alcohol fuels will not be realized if they must compete against gasoline refined from oil wells which were developed in the 1950s. Clearly, a national commitment to realize the full potential of renewable alcohol fuels would represent an economically attractive means to help ensure a secure energy future.

Mr. Chairman, this concludes my testimony. I would welcome questions from members of the Subcommittee.

Table 1 EFFICIENCIES OF ALTERNATIVE ENERGY FORMS¹

Energy Form	Outputs/Inputs (BTU out/BTU in)	
	All Energy	Fossil Energy Balance
Electricity (from coal) ²	.26	.26
Refined petroleum	.83	.83
Natural gas	.91	.91
Synthetic fuels		
methanol from wood ³	.69-.91	8.4-
methanol from coal	.67	.67
Fischer-Tropsch	.58	.58
syncrude from coal ⁴	.63-.72	.63-.72
Ethanol ⁵		
modern fuel plant	.70	1.16 ⁷
beverage plant ⁶	.33	.33

Sources: Chapman, Leach, and Slessor, 1978; Bullard and Herendeen, 1978; Hill, 1980; API, 1979.

Notes

1. These data are from disparate sources and will not be uniform in assumptions about rates of production, scale, etc.
2. This is delivered to the point of use.
3. An efficiency ratio >1 means no net fossil fuel consumption.
4. Gasoline from syncrude requires further refining, consuming another 10-15% of the energy of the coal.
5. This includes the fertilizer and processing to produce the protein and oil joint products. Analysis shows that the production of protein requires at least 25% of the agricultural energy use and a similar proportion of the processing energy. Additional energy to grow forage crops is not included in total. No consideration is given to increased combustion efficiency of ethanol.
6. Assume that plant is set up to use fuel oil or natural gas.
7. Assume that cogeneration of electricity and steam uses biogas and stoves.

Table 2 COMPARATIVE ENERGY USE FOR CONVENTIONAL AND BIOMASS REFINERY SYSTEMS

Conventional System		Biomass Refinery		
	1000 Btu		1000 Btu	
Agricultural Energy (1 bu corn)	184	Agricultural Energy Corn (1 bu) ² Hay (17 lb) ²	184 81.3	
Gasoline (2 gal) ¹ content	250	Ethanol (2.5 gal) ^{3,4}	Fuel 120	Beverage 370
Processing	50			
Total	484	Total	385	735

Source: Chambers, et al., 1979, p. 791; Pimintel, et al., 1975, p. 755.

1. Assume 1 gallon of ethanol is equivalent to .81 gallons of gasoline. This figure accounts for both the lower energy content and higher combustion efficiency of ethanol vis-a-vis gasoline. Thus as a liquid fuel, ethanol has an effective energy content equivalent to 101,688 Btu/gallon. (See Carlson, et al., 1979; Chambers, et al., 1979).
2. According to Hertzmark and Gould (1979, p. 38) at a 10% dietary penetration, each pound of DDG in a dairy ration will replace about 1 lb. of corn grain and require an additional 1 lb. of alfalfa hay.
3. This assumes fossil fuel use in distillery. The lower figure is the process energy requirement for a modern plant. The latter figure is for a beverage plant. Figures for vacuum distillation with recovery of methane are lower.
4. This figure overstates the energy use of the biomass refinery relative to the conventional system since no processing of the corn is assumed for the conventional system. Current average figure for wet milling of corn is 80,000 Btu/bu. The energy consumption for the conventional system rises to 564,000 Btu/bu. if wet milling is included.

Table 3 ETHANOL COSTS FOR ALTERNATIVE SCENARIOS (\$/Gal)

	1983 Production (million gal/yr)		
	200	500	1,000
Corn ^a	1.00	1.01	1.01
Credits			
Farm still ^b	.34	.34	.29
Corn processor ^c	.56	.54	.51
Fermentation and Distillation ^d	.25-.45	.25-.45	.25-.45
Total ^e	.69-1.11	.72-1.12	.75-1.17

a) Equivalent to corn at \$2.49, 2.52, 2.58, 2.74/bu, respectively.

b) Equivalent to distillers' grains at \$.377, .343, .287/gal. of alcohol.

c) Equivalent to gluten meal at \$.227, .208, .176/gal. of alcohol and corn oil at \$.336/gal.

d) \$.25/gal. is the cost for corn processors (vacuum distillation); \$.45/gal. for small-scale still.

e) At low levels, the alcohol is essentially a by-product. This accounts for the low costs of alcohol at modest production levels.

Prepared Statement of
Scott Sklar

I would like to thank the Committee for inviting me to testify on S. 2151 and related issues regarding alcohol fuels production and utilization.

The National Center for Appropriate Technology, a non profit organization funded principally by CSA, is a research and development group who's mission involves developing and demonstrating low cost, small scale technology for low-income people. At present, NCAT has a biofuels research program and a demonstration project to build five on-farm ethanol units for training and demonstration around the country.

I only have brief comments regarding the viability of ethanol as a fuel and as a fuel-extender. Most people had been skeptical of the use alcohol as a fuel in both Washington, D.C. and in the energy industry. Yet, after continued demonstrations by the farm community of its current and past viability, many policymakers have taken the time to look into the issue more seriously.

The White House released the President's alcohol fuels program on Januray 11, 1980. The Department of Energy has appointed key people to focus on the alcohol fuels issue. The Department of Agriculture is presently setting up guidelines for guaranteed loans for ethanol production through the Farmer Home Administration Loan program and Congress has created the National Alcohol Fuels Commission. Clearly, the Feds have gotten the word that alcohol is an important contributor to the United States' energy picture.

The petroleum industry has been divided as they were in the past on the ethanol and gasohol issue. Some petroleum companies such as Texaco are actively promoting gasohol distribution. Others have written fairly negative articles on the energy balance, automobile performance, and food vs. fuel as detracting reasons for embracing ethanol as a fuel.

Some energy opposition is just out of pure ignorance. For instance, in most of the negative articles out of certain sectors of the petroleum industry, they maintain that ethanol production can not have a positive energy balance. I have attached two articles from Science which contradicts such allegations. Another major concern voiced by several companies concerns the driveability of vehicles using gasohol. Volkswagon is producing a pure ethanol car for the Brazil market and gasohol has been used widely in Brazil and the United States without any of the serious consequences that were forewarned by the industry. I have enclosed a GM advertisement supporting my contention.

With hundreds of gas stations now providing gasohol throughout the country, several major oil companies marketing gasohol, and the Federal government actively promoting gasohol, it seems that this subcommittee should ensure that the climate for expansion, profit and survivability be maintained. As a recent poll indicated, Americans support gasohol over synfuels and are willing to pay more for it. So in business terms, the alcohol fuels future would seem to look rosey.

However, the industry is not all that secure. In three other times in U.S. history, an alcohol industry was created and then destroyed. This was true as recently as the 1940 when ethanol was used as the base chemical for butadiene, a major ingredient for synthetic rubber. Coal was later substituted as the feedstock. Several companies are supporting methanol-to-high-octane-gasoline as a way to shortcut the ethanol problem. In one case, an official of the Department of Energy held meetings with petroleum industry representatives on how best they could control and 'guide' this new gasohol industry.

On the bright side, the investment community is interested in financing large and small plants. On-farm stills are beginning to become more reliable and sophisticated and hopefully marketed soon. And public support in both rural and urban areas climb. The question remains, 'Can the U.S. maintain a

renewable-based, decentralized liquid fuel industry?' Will the Federal government actively support responsible development? In NCAT's policy paper, Energy and the Poor, our scientists maintain that the U.S. could save 710,000 barrels per day of petroleum with such a program.

Therefore, it is essential that the antitrust subcommittee preserve this industry: in terms of national security, for rural development and preservation of the family farm, and for liquid fuel independence. The United States has very few short-term options to offset imported petroleum. Weatherization and conservation programs will have a major impact. Alcohol fuels for use alone, as an automotive and turbine fuel, and as a gasoline extender can also play a significant part in a much shorter time than any proposed syn-fuel program. I appreciate the Subcommittee's and Senator Metzebaum's interest in this issue and NCAT's assistance to the Subcommittee in terms of analysis of technical data is forthcoming.

CUSTOMER INFORMATION FROM GENERAL MOTORS

YOUR CAR AND TOMORROW'S FUELS

AS THE SUPPLY OF OIL DROPS, SYNTHETICS BECOME MORE ATTRACTIVE.

General Motors is not in the fuel business. But since the cars we build depend on fuel, we have to be on top of the energy situation. Here's the way it looks to us.

All the cars we build are powered by internal combustion engines. These engines work by burning petroleum-derived gasoline or diesel fuel under high pressure. So far, petroleum has been the safest, least expensive source of these hydrocarbon fuels, which pack a lot of energy per gallon. But automotive fuels can also be obtained from many other sources, ranging from oil shale to coal and even corn stalks. The problem is to turn these solid materials into safe, convenient, environmentally sound, cost-efficient liquid fuels.

At GM, we have evaluated a variety of domestic resources and alternative fuels.

Fuels made from shale oil are the best current alternatives. Shale oil is produced by heat-treating oil shale, an abundant American resource. Gasoline and diesel fuel could be refined from shale oil. What is needed,

however, are the plants to convert the shale rock into the shale oil. As petroleum becomes more expensive, it will be cost-efficient to build these plants. The mining of shale, though, still presents serious environmental problems that must be solved.

Coal is the next best option. Coal can also be turned into gasoline and diesel fuel, but the process is more expensive and complex than that for oil shale. As with oil shale, coal mining also poses environmental problems.

Biomass (vegetation and organic wastes) is another possibility. The main advantage of biomass is that it is a renewable resource. However, biomass is difficult and expensive to collect and process.

The only automotive fuel currently being made that uses biomass is gasohol. Gasohol is a blend of 10% ethyl alcohol and gasoline. The use of gasohol in present-day cars can save gasoline and causes no insurmountable difficulties.

Hydrogen has often been discussed. Although engines can be run on hydrogen, its production potential appears limited, and the practical problems of safe and efficient distribution and storage haven't yet been solved.

Although electricity isn't a fuel, it can be generated from non-petroleum resources. Some electrically-powered cars are already on the road. The problem is that with current lead-acid batteries they're only capable of traveling relatively short distances between battery charges. We're continuing to do extensive research on advanced zinc-nickel oxide storage batteries.

Nothing is more important than ensuring the supply of fuels needed to keep our country strong. At GM we are confident that if government and industry cooperate and work together to explore alternative energy sources, the problem of providing sufficient fuels for the future, at the lowest possible cost, can and will be solved.

This advertisement is part of our continuing effort to give customers useful information about their cars and trucks and the company that builds them.

General Motors

People building transportation to serve people

The Washington Post

SUNDAY, AUGUST 19, 1979

[Alcohol, continued from page SR2]

found that organic farmers are also conserving energy. When compared to conventional farms, the organic farmers consumed one-third as much energy for crop production, but were just as profitable.

Organic farmers promote the concept of improving the organic matter levels of the soil for improved fertility "self-sufficiency", as well as for lower soil erosion and reduced nutrient depletion. Energy consuming conventional N-P-K fertilizers, which are becoming more costly, are not part of the organic farmer's program. A combination of "balancing" micro-nutrient levels, composting of farm manures, and crop rotations helps improve fertility without major energy inputs.

Perhaps such standards of soil fertility maintenance should be practiced, bringing soil fertility to certain levels, before crops and crop residue are used in fuel production, as in proposed ethanol processes. However, the conversion to organic farming is a long-term process, taking some four or more years, and many farmers are not willing to make the transition. Others are willing, but need the technical support to make the change-over.

Economics and Net Energy

ALCOHOL PRODUCTION ENERGY

For some time, economists have produced reports suggesting that alcohol fuels are not economically feasible, particularly in the case of gasoline, due to a low net energy yield. Dr. Paul Middaugh of So. Dakota State U. refutes their argument. "Many of the economists are working with a 50 year old data base," Middaugh, a microbiologist conducting alcohol research and a strong advocate for small, on farm plants, notes that technology has improved during those years making plants more efficient. But, in addition, beverage industry figures are usually used, he reports. "It takes 1/3 less energy to make fuel alcohol with impurities than beverage alcohol." 1/3 of beverage energy alone can be saved at the farm level by eliminating the drying of the by-product. Middaugh suggests that the beverage industry requires 144,000 Btu to produce a gallon of ethanol having an energy content of 84,000 Btu/gal. Vogelbusch-Bohler Brothers of America, although promoting larger than farm-size plants, has determined that an ethanol plant requires under 48,000 Btu/gal. for ethanol plant operation, not including the drying of the distillers grains or protein feed. Alan Zeithamer agrees similarly with these figures. "We invest about 1 Btu to get 2 Btu back in alcohol."

COST OF PRODUCTION

Zeithamer suggests that the cost of the fuel alcohol produced in his Minnesota plant costs near 50 cents per gallon to produce. Paul Middaugh, who has demonstrated alcohol production by his research equipment, indicates, however, that the cost of alcohol production by that system still has to be analyzed to determine its feasibility for the farm.

ENERGY USE IN ALCOHOL CROPS

A major factor to be considered in the alcohol production is energy requirements at the farm level for crop production. Although energy for fertility or irrigation can be figured as an input to the protein feed by-product in alcohol production, close attention should be paid to it. If high commercial fertilizer and irrigation rates replace dry-land low fertility production for alcohol production, the net energy yield drops significantly.

ENERGY OUTPUT OF ALCOHOL FUEL

The energy content of ethanol is 84,000 Btu/gal. compared to 125,000 Btu/gal. for gasoline. Many authorities suggest that more alcohol would be consumed per unit of work. Mark Kirik, Canadian Ag. Engineer, notes, "The alcohol engine gives equal fuel consumption to that of a gasoline engine, with a substantial bonus of greater power from the same size of engine." Kirik, who is conducting research on alcohol fuel use, however, favors an engine of higher compression than the gasoline engine as the "alcohol engine" for optimum efficiency. Kirik has developed steps for converting diesel engines to alcohol engines.

SFEP Report, 5/79

New and Current Technologies

Some basic steps are required in the conversion of crops to alcohol. Grain is first ground or milled prior to converting the starch to sugar by cooking and by using various enzymes. Sugar crops, such as sugar beets, can bypass the starch conversion step. After conversion, the sugar of the "mash" is fermented to a low percentage alcohol. The resulting "beer" is distilled to higher proof alcohol. The total process requires several days.

NEW TECHNOLOGIES MAY BE ON THE WAY

Many improvements are being made in alcohol fuel technology that will improve the net energy further, and lower the cost of production. Bill Holmberg of DOE states, "It's a mistake for farmers to form large corporations and large distillery operations." Farmers need to experiment on their farms, first, he says. "We ought to dissuade farmers from going into alcohol until the technology is developed unless they use on-farm systems," like Zeithamers' of Minn., Holmberg adds.

A wide range of new technologies could improve the alcohol fuel picture by reducing equipment cost and energy inputs, including energy from crop residues. A few of the potential new technologies are listed here:

—Methane could represent a renewable input energy.

—A "molecular sieve or reverse osmosis" has been suggested by Alan Zeithamer to replace conventional distillation, lowering input energies, but perhaps available in 3-5 years.

—Carbon dioxide, a by-product of fermentation can be used for preservation of grain.

—Extruders, similar to those used in soybean processing, have been suggested for replacing high energy cookers.

—Vacuum distillation might replace present distillation methods giving better efficiencies.

—Solar distillation has been promoted by Lance Crombie of Minn. But he says, "To be honest, it is experimental."

MANUFACTURERS TOOL UP

New technologies appear to be developing rapidly, making today's technology obsolete tomorrow. Despite the potential changes in technology, several short-line farm equipment manufacturers are reportedly gearing up for production of alcohol fuel equipment for the farm. Paul Middaugh of SDSU has demonstrated his distillation equipment around the country. In Washington, D.C. at the ACT 79 Appropriate Technology Fair, the system produced 22 gal. of ethanol per hour. The alcohol was produced from corn. The mobile system was also demonstrated in Colby, Kansas on May 19th. Middaugh indicates that the system has performed as it was designed.

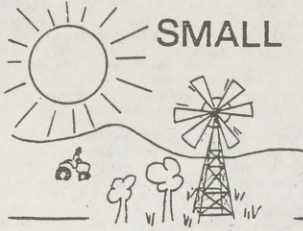
Alcohol Production at the Farm

FUEL USE DIFFICULTIES

Farm alcohol production does not come without its share of difficulties. After the fuel is produced, utilization in tractor engines may require some modifications. However, the Philippines used tractors and trucks manufactured by U.S. companies in the 1940's specifically for using straight alcohol fuels. So, there is little question that engines can use the fuel. Some carburetor parts of today's engines may not be compatible with alcohol. Plastic parts may require replacement with metal parts. Alan Zeithamer reports that the neoprene tip of the needle valve in his Allis Chalmers WTD swelled up and had to be replaced with a steel tip. Starting in cold weather with 100% alcohol may require the use of ether.

Scott Sklar of NCAT has suggested the use of an old windshield washer pump to inject gasoline from a small tank into the carburetor for ease of starting. Richard Blazer of the International Biomass Institute has helped to develop the more efficient NAHBE engine, and it is hoped that in the future kits will be available to modify conventional engines to the technology. (See SFEP News, 9/78).

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SMALL FARM ENERGY PROJECT

Newsletter

MAY, 1979
Issue #18

"With the goal of 'energy self-sufficient farms' as the future of agriculture."

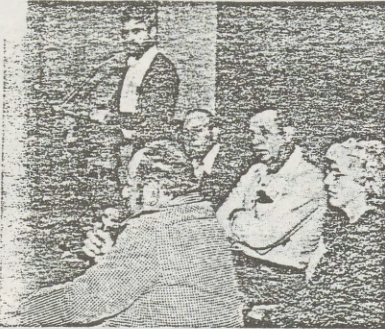
A Project of the Center for Rural Affairs

Spring Energy Workshops Held

A series of energy workshops were held during the spring months by the Small Farm Energy Project in Iowa, Minnesota, So. Dakota and Nebraska. The workshops were co-sponsored by local groups and organizations. The spring sessions were designed to provide the public with information gained by the demonstration project in Cedar County, Nebr.

Informational Workshops

Informational workshops were held in Iowa, Minnesota and South Dakota during the months of March and April. On April 7th, nearly 200 persons, mostly farmers, attended the workshop co-sponsored by the Sioux Valley Empire Electric Assn. at Colman, S.D. Participants heard presentations by farm cooperators on energy innovations used on their farms. On April 21st, another workshop was held at Willmar, Minn.,



Cooperators of the Energy Project provided a panel discussion to explain their work with energy-saving innovations at an energy workshop of Colman, S.D., in early April. Dennis Dammel of the Energy Project, standing, moderated the session. Farm cooperators are left to right, Earl Fish, Gary Young, LaVern Truby and Ruth Ellen Truby.

attracting nearly 300 farmers from the southwest Minnesota area. The workshops indicated high interest by farmers in the efforts being made by Energy Project cooperators.

Construction Workshops

The Dan Hauptmeier farm at Sterling, Nebr., was the site for a solar grain dryer workshop in early April. The solar collector system was mounted on a 6000 bu. round steel grain bin. Hauptmeier will dry milo with the system next fall. The Southeast Nebr. Community College assisted the Energy Project in coordinating the workshop. Local farmers participated in the construction. The workshop represented the second construction, "hands-on" workshop of the year by the Energy Project outside of Cedar County. An earlier workshop was held in January in Walthill, Nebr., for the construction of a vertical wall collector.

At the end of April, Project staff also coordinated a construction workshop for a solar grain drier and a solar vertical wall collector at the ACT '79 Appropriate Technology Fair in Washington, D.C. An estimated 100,000 persons attended the Fair to visit the hundreds of exhibits on display.

Workshops Assist in Development of Project Future

The construction and informational workshops held by the Energy Project during the past spring represented a variety of types of workshops. The workshops offered a diverse means of transferring results of the Energy Project to the public, particularly farmers. The series of sessions has provided Energy Project staff with the opportunity of testing the various types of informational transfer used. The results will assist in determining what techniques are most effective for future outreach activities.

NOTICE: Visits to Energy Project

The Energy Project is currently being deluged with requests for information and visits to cooperating farms. The summer months represent a period of high traffic from out-of-town visitors to the Energy Project. Potential visitors are asked to make reservations by phone at least two weeks in advance. Both cooperating farmers and Project staff are very busy during the summer months, and advance planning is important.

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less γ is dropped to under 2 percent per annum. At $\gamma = 2$ percent, there appears to be little difficulty in keeping CO_2 concentrations down. Figure 2 shows some examples of the effects of varying these parameters.

The best estimates of climatic change resulting from increasing concentrations of atmospheric CO_2 indicate the occurrence of critical conditions some 50 years ahead, coincident with market penetration times for new energy sources. The large uncertainties in magnitude of the climate change predictions make the situation potentially even more critical, and the market penetration time results presented here suggest the need for immediate action if the change is to be averted. However, before undertaking the pursuit of such a radical step, we would be well advised to question further the validity of the market penetration time concept as it might apply to energy source replacement.

Marchetti's derivation of market penetration times (2) was based entirely on empirical evidence on transitions between the predominant use of various primary energy sources, such as from wood to coal and from coal to oil. His empirical fits to logistic curves are indeed impressive, as are those derived earlier by Fisher and Pry (8) for technology transfer rates. Although recommending a penetration time of 50 to 100 years for projecting future energy scenarios, Marchetti had no causal explanation for his results, and it is difficult to accept its global applicability and the irreducible value of market penetration time. Peterka (4) has provided a theoretical basis for the logistic curve (Eq. 1), but his analysis suggests that penetration times might not be bound to the 50-year time frame. Thus, put briefly, Peterka's model assumes that the two energy production systems are in economic competition and that, after a short initial period of venture capital use, the growth of production is limited by the amount of capital that can be generated solely from their own profits. This feature serves to limit the rate of growth of even a much less costly energy production system. However, if in fact the two energy sources are cost-competitive but are owned by the same controlling group (be it a government or a large corporation), Peterka's assumption would appear to break down, since profits from the old production system can be transferred to provide capital for the new.

Since immediate policy questions are strongly affected by the coupling of the CO_2 effect with market penetration time

concepts, the applicability of the large market penetration time figure to the CO_2 question must be carefully scrutinized. As yet and perhaps because the market penetration idea in application to global energy systems is relatively new (9), it has not attracted the attention of economic theorists to whom we might appeal in order to establish or refute its predictive veracity.

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6. The 56 percent is the fractional retention, omitting any contribution from slash burning of forests. If in fact deforestation has made significant contributions to atmospheric CO_2 release in the past, forest depletion in the future would lead to atmospheric CO_2 concentrations below those projected based on the use of the constant 56 percent rate that I have assumed here.
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8. J. C. Fisher and R. H. Pry, "A simple substitution model for technological change" (Report 70-C-215, General Electric Company, Schenectady, N.Y., 1970).
9. Historical time trends for energy sources have been discussed much before Marchetti's quantitative analysis, as, for example, in P. C. Putnam, *Energy in the Future* (Van Nostrand, New York, 1953). I am indebted to a reviewer for pointing out this fact.
10. The 50-year figure is taken by Marchetti (2) to be a minimum value for market penetration time.
11. The results presented here are part of a continuing study being conducted for the Electric Power Research Institute, Palo Alto, Calif.; a partial description of this work, applying the material alluded to here in (5), is to be published in an article entitled "Climate change from fossil fuel generated carbon dioxide and energy policy" in *Environment International*.

27 November 1978; revised 17 April 1979

Dehydration of Ethanol:

New Approach Gives Positive Energy Balance

Abstract. Water was removed from aqueous ethanol by using cellulosic materials, starch, corn, and other agents. The combustion energy of the ethanol product can exceed the energy needed to carry out the dehydration by a factor of 10.

We have found a way to dehydrate ethanol in which the combustion energy of the ethanol product exceeds the energy needed to carry out the dehydration by a factor of 10. Drying of aqueous ethanol by materials such as cellulose, cornstarch, shelled corn, corn (cellulosic) residue, (mineral) oxide, hydroxide, or sulfate results in a product that is up to 99.8 percent water-free.

Alcohols are made from either grains or biomass by first converting these materials to fermentable sugars (4). The sugars are then fermented, typically with yeast, to give a broth containing 6 to 12 percent ethanol along with small amounts of aldehydes, ketones, amyl alcohols (fusel oils), and methanol (5). The final step, distillation to water-free alcohol, consumes 50 to 80 percent of the energy used in a typical fermentation ethanol manufacturing process (1, 2). The energy intensity of traditional distillation techniques is frequently cited in criticizing the potential of biomass-derived ethanol as a liquid fuel (1-3).

Recovery of ethanol from the fermentation broth is at least a three-step process: (i) distillation of dilute aqueous alcohol to its azeotrope (95.57 percent eth-

anol by weight) (5), (ii) distillation using a third component—either an organic solvent (7) or a strong salt solution (8)—to break up the azeotrope and remove the remaining water, and (iii) distillation to separate water from the third component so that it can be recycled. Trace constituents, including pentanol (fusel oil) and methanol, can be removed by additional distillation, but this is not necessary for ethanol to be blended with gasoline (2).

Analysis of the ethanol-water distillation, using the McCabe-Thiele method for analysis of fractionation columns (9), indicated the energy-sensitive regimes. Energy consumption greatly increases with decreasing ethanol concentration in the feed below 4 percent alcohol, since a disproportionately larger quantity of feed must be vaporized to obtain the same amount of product. Current fermentation technology results in a product containing 5 to 12 percent ethanol (11), so this energy problem is avoided. Most of the energy consumption occurs in distilling above 85 percent ethanol, as shown by the equilibrium diagram in Fig. 1a. With increasing alcohol product concentration (92.2 percent by weight in Fig.

), the rectifying operating line approaches the equilibrium line. Hence, one theoretical plate (one step) corresponds to one plate in Fig. 1a) are required to obtain a column with a reasonable number of plates (fewer than 40) for producing ethanol of higher purity. The slope of the rectifying line must be increased. This requires a higher reflux ratio and therefore more energy input. By constructing such diagrams and using appropriate mass and energy balances (9), we obtained the results plotted in Fig. 1b. The energy requirements in g. 1b are based on a reflux ratio 1.5 times the theoretical minimum for distillation of a saturated 12 percent ethanol. Figure 1b shows that the energy content of 12 percent alcohol, distilled to 99 percent purity, is 11 times the energy needed for distillation. Above 90 percent the energy ratio drops precipitously, and as the azeotrope is approached the distillation energy input approaches the ethanol energy output. Additional energy is required to carry out the other distillations to break the azeotrope.

The problem is to produce dehydrated ethanol in an energy-efficient manner, starting from 90 percent or lower concentrations. One solution is to use a non-still process. We found that aqueous ethanol can be dehydrated by preferential adsorption of water on adsorbents that are inexpensive and require relatively little energy for use or regeneration.

Initially, calcium oxide (CaO) was tried. Ethanol-water vapor was passed through a 20-ml condenser tube (heated at 88° to 95°C) filled with CaO. The vapor coming from the tube was condensed, collected, and then analyzed for water content by the Karl-Fischer (KF) water analysis procedure (12). Vapor with a starting composition of 89 percent ethanol and 11 percent water was successfully dehydrated in this way to give a product with 99+ percent ethanol. This result is not surprising since CaO is known to react with water [$\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$ + 2527 Btu's per pound of water] and would not be expected to react with ethanol. The energy efficiency of this approach is not intuitively obvious, however. The total energy consumed is 1577 Btu's per pound of alcohol: 1190 Btu's for distillation to 89 percent alcohol, 277 Btu's for heat of regeneration [Ca(OH)_2 + heat $\rightarrow$ CaO + H_2O], and 110 Btu's to evaporate the water released in regeneration. Hence, eight times more combustible energy (12,760 Btu's per pound for ethanol) is obtained than is used in the dehydration process.

Table 1. Comparison of alcohol-dehydrating agents.

Material	Ethanol (%)	
	Starting	Dehydrated
Cornstarch	73.7	99.0
Sucrose	72.5	90.7
Corn	77.0	97.7
Avicel (microcrystalline cellulose)	88.9	98.6
Whatman CF-11 cellulose	88.8	96.4
Buckeye CM cellulose	84.8	99.8
Corn residue	85.2	92.0
NaOH	80.7	97.6
CaSO ₄	90.1	98.0

Calcium oxide was reported to be capable of drying ethanol 40 years ago (13). By further experimentation, we found other alcohol dehydrating agents, some to our knowledge not previously reported in the literature, some of which are more energy-efficient than CaO. With the same experimental procedure used for CaO, we observed dehydration with the materials listed in Table 1. Although the water-adsorbing properties of cellulose and starch are known (14), preferential adsorption of water in the presence of ethanol was unexpected. Furthermore, the energy balance is more favorable than that obtained with CaO. For example, the heat of wetting of cellulose, on the order of 50 Btu's per pound (15), is less than the heat of reaction of CaO. The total energy requirement with cellulose as the dehydrating agent is 1235 Btu's per pound of alcohol: 1050 Btu's per pound for distillation (from 12 to 84.8 percent) and 185 Btu's per pound for cellulose dehydration. Hence, ten times more (combustible) energy is obtained than is used in obtaining the product.

Quantitative properties of selected dehydrating agents are summarized in Fig. 2. These materials were heated before

use: NaOH (pellets) at 90°C, cornstarch (Argo Division, Corn Products Co.) at 90°C, CM cellulose (type CLD, Buckeye Co.) at 110°C, Avicel and CF-11 at 60°C in a vacuum (30 inch-Hg), and corn (shelled and cracked) at 90°C. Aqueous ethanol at a concentration of C_0 percent by weight was put into an insulated 300-ml round-bottom flask heated by an electric mantle. A jacketed column, 20 ml in volume, was placed vertically in the flask neck. The column was maintained at temperature T_{col} by using a Haake model FE circulating-water bath. A receiver, placed immediately at the outlet of the column, condensed and collected the vapor from the column. All non-heated parts of the apparatus were well insulated.

Before each run, ethanol was placed in the flask and the entire system was heated to steady state. After the heating, and before filling the column with dehydrating agent, control values were obtained. "Distillate" as well as the contents of the flask ("bottoms" at C_b) were sampled and analyzed by the KF procedure for water. The results are indicated in Fig. 2. Preheated dehydrating agent was then quickly placed in the column. Weights of materials were NaOH, 15 g; cornstarch, 7.3 g; CM cellulose, 3.4 g; and corn, 7.5 g.

Sodium hydroxide (Fig. 2a) gave 96.5 percent ethanol. This is above the azeotrope (95.6 percent) and considerably higher than the control value (89 percent). Hence, the enhancement of the ethanol concentration is due to dehydration and not solely to additional fractionation effects of the packing material in the column. Passage of ethanol vapors over starch (Fig. 2b) gives a dramatic dehydration, yielding 99 percent ethanol from a 73 percent starting concentration. Similarly, cracked corn kernels also dehydrate alcohol (Fig. 2d). This result in-

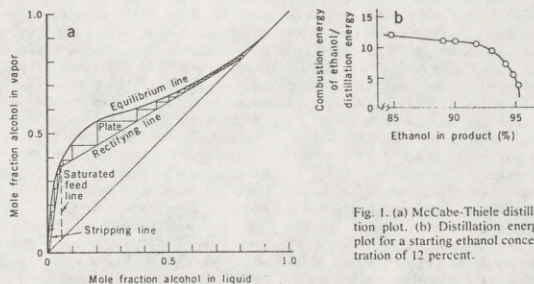


Fig. 1. (a) McCabe-Thiele distillation plot. (b) Distillation energy plot for a starting ethanol concentration of 12 percent.

indicates the potential use of grain to dehydrate alcohol before the grain is converted (by wet processing) to alcohol in a grain alcohol plant. The effectiveness of M cellulose (Fig. 2c) suggests that other modified carbohydrate polymers such as superadsorbent starch ("superslurper") (10) might have the potential to dehydrate alcohol.

Column temperature has a significant effect on dehydration. At $T_{col} = 91^\circ\text{C}$, corn readily dehydrates alcohol (Fig. 1d). At $T_{col} = 79.5^\circ\text{C}$ the dehydration capacity is diminished, even though the starting ethanol concentration is 7 percent higher. Similar phenomena were observed for other dehydrating agents. The vapor contact times are short: on the or-

der of 4 seconds for NaOH, 14 seconds for starch, 28 seconds for CM cellulose, and 5 seconds for corn.

From a practical point of view, the classes of compounds discussed in this report are attractive since they are readily regenerated by heating and can be recycled. Furthermore, cellulosic materials, corn residue, and cornstarch are materials that would be available, or could be generated internally, in plants converting cellulosic residues or grains to alcohol. Another advantage of using organic rather than inorganic dehydrating agents is that the temperature of regeneration is lower for starch or cellulose (60° to 110°C) than it is for CaO (160° to 170°C). Hence, lower temperature ener-

gy, not usable elsewhere in an alcohol production facility, could be utilized for regenerating a dehydrating agent such as cellulose or starch. This might result in further energy economy.

The principle of drying ethanol by a nondistillation process was demonstrated more than 40 years ago with CaO. Since other dehydrating agents work equally well, and processes for energy-efficient production of ethanol are now needed, it seems appropriate to suggest that research that was apparently discontinued in the 1930's be started again and carried forward.

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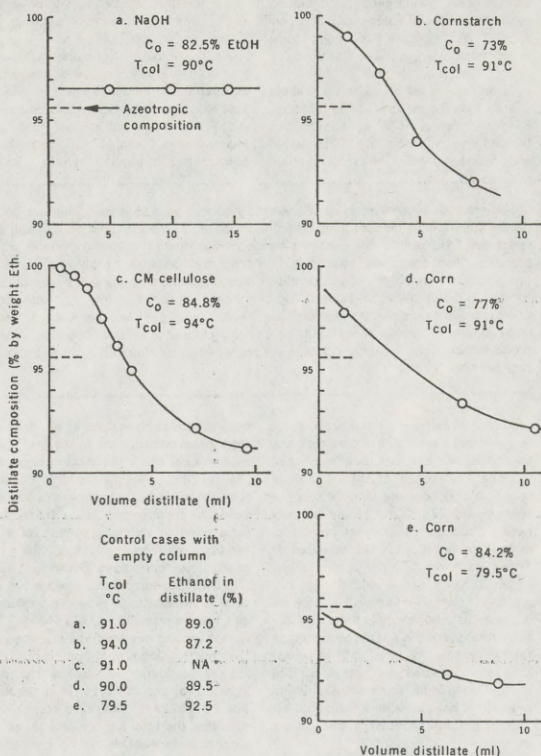


Fig. 2. Ethanol composition as a function of vapor condensed and collected after passage through a column containing the indicated dehydrating agent. Control cases show the enrichment effect obtained with an empty column before runs (a) through (e).

Gasohol: Does It or Doesn't It Produce Positive Net Energy?

R. S. Chambers, R. A. Herendeen, J. J. Joyce, P. S. Penner

Gasohol, a mixture of 10 percent ethyl alcohol (fermented from agricultural materials) and 90 percent unleaded gasoline (10/90), is one of the more controversial topics of the current energy debate (1). Widespread media coverage plus the fact that gasohol is now being sold in at least 14 states, have increased its visibility (2). Proponents claim that widespread use of gasohol would reduce oil imports while providing a market for grain surpluses: farm prices would stabilize and the national trade deficit would be reduced. Opponents argue that farm prices would skyrocket as a result, and that too much energy is required to process grain into alcohol: total fossil-fuel consumption will increase rather than decrease, and a program designed to reduce oil imports would actually raise them.

The gasohol debate includes a host of other issues, such as those of automobile performance, air pollution, and land depletion (3). In addition, there is the issue of using foodstuffs to power cars. Economic feasibility, however, is no longer an issue because of federal and state subsidies. Besides a 4¢ per gallon (1 gallon = 3.8 liters) exemption from the federal automobile fuel tax (4), gasohol currently receives additional tax breaks in several states; for example, in Iowa, 10¢ per gallon minus a state sales tax of 3 percent = 7.0¢ per gallon (5); Montana, 2¢ per gallon (6); Nebraska, 5.5¢ per gallon (7); Colorado, 5¢ per gallon (8); and Arkansas, 9.5¢ per gallon minus a sales tax of 3 percent = 6.5¢ per gallon (9). The total subsidies therefore range from 4¢ to 11¢ per gallon of gasohol, or ten times these amounts per gallon of ethanol (ethyl alcohol). Since current prices for an unsubsidized gallon of ethanol vary from \$1.30 to \$1.60, the subsidies can make ethanol cheaper than the gas-

oline it is mixed with. Largely in response to these subsidies, sales of gasohol are brisk. But as gasohol production expands, a central energy question persists: "Will gasohol production yield positive net energy; will it provide more energy than it consumes?"

In this article we consider the gasohol energy balance in some detail as it applies to present U.S. agriculture and technology. While many fermentable materials are potentially usable, our ap-

proach concentrates on one crop, corn, and stresses a consistent framework and approach. We also discuss a number of "classic" difficulties of energy analysis (see Table 1), and we identify them in context (10-13). There have already been several energy analyses of ethanol or gasohol, but they are characterized by rather extreme differences in conclusions. Reconciling these differences is a major purpose of this article. A more important goal, however, is to establish a consistent system in which the numerous future gasohol projects can be quantitatively evaluated and compared. The energy balance for these projects is impossible to determine until the actual details of gasohol production and use are more clearly established.

Before proceeding we illustrate the disagreements. At the University of Nebraska, for example, researchers find that "the production of industrial ethanol by the fermentation of grain is an attractive process from both economic

and energy considerations" (14). In contrast, at Iowa State University it is concluded that "it cannot be claimed that ethanol by fermentation of corn produces energy. The opposite is instead true" [see (15, 16)]. Recently published results from Brazil (17, 18) show that sugarcane has a "very favorable energy balance" in the production of ethanol. A mixed response can also be found in political circles: Representative Edward Madigan (R-Ill.) has criticized gasohol because "it takes as much energy to make a gallon of gasohol as that gallon will give you" (19); Senator Birch Bayh (D-Ind.) contends that alcohol fuels "will make a significant contribution toward reducing our nation's dependence on petroleum products... while at the same time, opening new markets for American farmers" (20).

As the debate continues, significant gasohol legislation has been introduced that explicitly requires an energy balance analysis. The Food and Agriculture Act of 1977 (21) has authorized four loan guarantees of up to \$15 million each for construction of plants to produce industrial hydrocarbons (such as ethanol) from biomass. Explicit in the law is the requirement that "the total energy content of the products and by-products manufactured in the operation must exceed the total energy input from fossil fuels used in the manufacture of such products and by-products." More recently, Representative Berkeley Bedell (D-Iowa) has introduced much more extensive legislation to promote a national gasohol program (22). Up to \$600 million in loan guarantees are to be provided for the construction and operation of plants for the production of alcohol fuel from agricultural commodities. It is required that an applicant "has taken steps to ensure that the total energy content of the alcohol fuel manufactured by such applicant will exceed the total energy input from petroleum or petroleum-based products used directly in the manufacture of such alcohol fuel. . . ." Requirements such as these, as we shall show, are subject to several interpretations.

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The Process

Throughout this analysis corn is considered as the starch source or substrate (23). In principle, any material containing sugar, starch, or cellulose could be considered, although the conversion of cellulose has not been proved economically. As an indication of magnitude, the entire corn surplus in the United States could be as high as 1×10^6 bushels per year (about one-sixth of the crop) (24) and would produce 2.5×10^6 gallons of alcohol per year. (One bushel of corn weighs approximately 56 pounds or 25.4 kilograms.) This is only 2.3 percent of the total gasoline consumed by surface vehicles in the United States, about 110×10^6 gallons per year.

From the viewpoint of an energy analyst, the gasohol process may be represented by Fig. 1. Within the solid-line boundary of gasohol production we find (usually): (i) grinding of grain and mixing with water; (ii) cooking to convert starch to sugar by enzymatic action; (iii) fermentation of sugar into ethanol; (iv) distillation to produce either anhydrous ethanol or an ethanol-gasoline mixture; (v) blending (or further blending) with unleaded gasoline to produce the desired grade of gasohol; and (vi) preparation (for example, drying) of the feed by-product. Step (v) could take place at the distillery, at a gasoline distribution depot, or at the filling station, but the blending location is irrelevant to the energy balance.

By bringing the gasoline supply into the system boundary a considerable amount of ambiguity is eliminated. First, it is apparent that the energy balance can pertain only to the mixture—gasohol—and not to either component alone. Second, the energy cost of producing the gasoline component (an important energy term that is often neglected) is automatically included. Third, one of the processes discussed here does not produce pure ethanol to be blended later with gasoline, but instead distills gasohol directly from a mixture of gasoline and a fermented grain-water mixture. A possible dis-

advantage of discussing only gasohol (10/90) is, of course, that the energy balance for ethanol is now diluted: even if ethanol could be produced with zero energy cost, gasohol would require 90 percent as much energy as gasoline.

The significant energy inputs include all nonrenewable or "primary" energy requirements at the distillery, on the farm, at the petroleum refinery, and for all intermediate transportation. In general, we have used empirical data for the various material and service inputs, which have been converted to energy required to produce them (25). Consistent with the aim of energy analysis, we have tried to include all indirect energy costs such as refinery losses for refined petroleum, fertilizer for crops, and depreciation of capital equipment in every associated economic activity. The various aspects of energy analysis techniques are documented in (26). We emphasize that we account for nonrenewable energy (coal, oil, gas, nuclear fuel) in the inputs, but not solar energy (except for hydroelectricity which is treated, according to convention, as if it were produced by burning fossil fuel). The gasohol process is thus evaluated as a technology to convert nonrenewable energy resources into useful energy, the solar input being considered "free" and ignored (27).

The process has two significant outputs: the gasohol and a high-protein by-product, which is a valuable part of a cattle feed ration. In addition, one may consider corn stalks and cobs as a gasohol by-product. These may be available to the distillery or, perhaps, to the open market as fuel.

In Table 2 we list the nonrenewable energy requirements for gasohol production according to three different sources: Scheller and Mohr (14, 28), Reilly (15, 16), and ACR (29). Scheller and Mohr, and Reilly refer to conventional distillation of ethanol for subsequent blending with gasoline; the ACR report refers to a new process that has been designed specifically to produce gasohol (not ethanol) with a low energy consumption. There are other energy saving processes

being developed for the distillation industry (30), but ACR is the only process for which detailed and quantitative data have been presented (31). Also included in Table 2 are the output quantities reported by the three sources. We ignore all other outputs, such as CO_2 and fusel oil, which are insignificant to an energy balance.

Data Comparisons

Table 2 shows Scheller and Mohr (14, 28) and Reilly (15, 16) agree on conventional process energy inputs, 370 and 368 kBTu per bushel of corn, respectively ($1 \text{ kBTu} = 1000 \text{ Btu} \times 1.055 \times 10^6 \text{ joule}$). Energy consumption data from Midwest Solvents, Atchison, Kansas, for the production of ethanol by industrial fermentation agree very well with these estimates (32). On the other hand, ACR (29) claims by "extensive heat exchange and novel distillation practices" to have reduced the process input energy to 120 kBTu. There are a few small discrepancies in accounting procedures among the three sources (for example, inclusion of capital equipment), but the ACR process does appear to reduce process energy significantly.

Scheller and Mohr, and Reilly agree on the agricultural energy consumption (33). The ACR estimate of agricultural energy consumption is somewhat higher, a consequence of using data that better account for indirect energy requirements (34).

There are no significant discrepancies in the output production quantities except Scheller and Mohr's inclusion of corn stalks (35), ignored by others. (This is problem 1 in Table 1.) This turns out to be crucial, however, because of its magnitude. The inclusion of gasoline as a process input by ACR is, of no consequence in the energy balance since the same quantity of gasoline is both an input and an output.

As we have indicated, many interpretations of these data are possible. Our approach is to construct a set of options

Table 1. Methodological problems in energy analysis. These problems are discussed in (26).

Problem*	Examples for gasohol
1. Specification of system boundary.	Should agricultural energy be included as an energy input? Are the crop residues a valid output of the process?
2. Comparison of different energy types.	Should the energy balance be calculated for total nonrenewable energy, or for only one type, particularly petroleum (that is, does the process save oil even if it does not save coal)?
3. Consideration of end use.	Does gasohol get better miles per gallon than one would expect on the basis of its heat of combustion?
4. Consideration of joint product.	How is the energy content of feed by-product counted? Is it credited to gasohol or is it neglected?
5. Question of negative costs versus positive benefits.	Should feed by-product energy be added to output or subtracted from input? (This does not change balance but does change energy ratio.)

*Note that the problems are not independent; for example, problems 1 and 4.

for gasohol production that reflect the various interpretation possibilities. Then, for any specific project the appropriate options can be selected for a quantitative energy balance. Differences of opinion may remain, of course, but it is hoped that the issues will be more clearly defined.

Options

Examples of options in gasohol production are listed in Table 3 along with their qualitative effects on the energy balance. We repeat that many of the options do not reflect changed technology, but merely opinions on what factor should or should not be considered. For purposes of comparison we select a "base case" and compare the effect of the options to it. While the choice of the base case is arbitrary, we believe its general features reflect current distillation practices. We do, for example, include the energy inputs to agriculture since most distilleries buy corn on the open market. We assume that the feed by-product is dried because today a typical ethanol producer relies heavily on the sale of the by-product, and it must be dried to be transported any distance without spoilage. (Only when the distillery is close to the feedlot can the animals consume the undried slop.)

To discuss the energy balance it is easiest to compute the energy value for the base case, and for energy debits or credits of the various input and process options. In addition, all material outputs must be assigned an energy output and all by-products an energy credit. We find that while assigning values to the energy inputs is straightforward, calculating the output energies and credits is more ambiguous.

If we desire a calorimetric energy balance, it is appropriate to use the energy content (enthalpy of combustion) of the various input and output materials. However, effectiveness in accomplishing a given task (such as distance traveled in an automobile) may not be proportional to the enthalpy of combustion. Since our goal in this energy analysis is to estimate the overall impact of gasohol production and use on nonrenewable energy consumption, an end-use analysis of the outputs is often more appropriate. Several examples of end-use analysis follow.

Energy value of agricultural residues (stalks and cobs). (This is problem 4 in Table 1.) To take an energy credit for the stalks (or any combustible by-product in general) one must actually burn the stalks to produce energy. In addition,

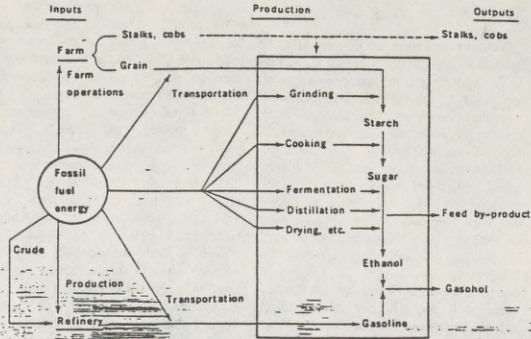


Fig. 1. Schematic of gasohol production. Stalks and cobs may be used for fuel in production or treated as an output. Gasoline may be blended with alcohol during production or at a distribution point, but the blending location is irrelevant to the energy balance. Only the major streams are shown.

several "energy penalties" should be subtracted from the energy content of the by-product. These include the energy consumed on the farm to prevent soil depletion (if any), "energy harvesting" and transportation costs associated with the by-product, and energy costs of manufacture or modification of furnaces or

boilers (including special pollution controls). While two sources (17, 28) have assumed use of crop residues for fuels, they have not dealt with these difficulties. In our analysis we rather arbitrarily assume that half of the energy content of the by-product is required to account for these factors; that is, 1 Btu

Table 2. Total nonrenewable energy inputs and material outputs as presented by three sources. All are for 1 bushel of corn (energy units = 10^6 Btu).

Energy	Scheller and Mohr (28)	Reilly (16)	ACR (29)
Inputs			
Agricultural energy, including	119 ^a	135 ^a	184 ^c
Direct on-farm			66
Fertilizer and chemicals			80
Transport			21
Capital equipment			17
Process energy, including ^d	370	368	120
Cooking and fermentation	64		
Distilling and centrifuging	105		
Purifying (95 → 100) percent	37		
Evaporation	113		
Drying	51		
Capital equipment			7 ^e
Process plus agricultural total	489	503	304
Petroleum energy, including ^{d,e}			3398
Content			2813
Energy production cost			585
Outputs^f			
Ethanol (gallons)	2.6	2.6	2.5
Feed by-product (pounds)	18.6	17.1	16.8
Stalks, for example (pounds)	53.7 ^g	0	0
Gasoline (gallons) ^h			22.5

^aScheller and Mohr attribute this to Pimentel *et al.* (13).

^bIn his first analysis, Reilly (15) chose to neglect the agricultural energy.

^cBased on (34) with additional calculations.

^dAssuming a boiler efficiency of 80 percent.

^eThe process produces an alcohol-gasoline mixture and a dry feed by-product (29).

^fEstimated from dollar cost and 10^6 Btu per dollar.

^gBased on (16). The ratio of nonrenewable energy consumed to the energy produced is 1.208. This number is expected to increase as petroleum reserves dwindle.

^hAll processes assume a final product of 10 percent ethanol, 90 percent gasoline. Since the first two sources assumed conventional distillation to produce pure ethanol, they did not discuss the gasoline explicitly. ACR does so because gasoline actually passes through the distillation process. The figures given are for $9 \times 2.5 = 22.5$ gallons of gasoline.

ⁱSmall energy outputs such as fuel oil are ignored.

^jBased on (25) which assumes 75 percent removal from the field and 6000 Btu per pound.

^kIn his first analysis, Reilly (15) chose to neglect the agricultural energy.

^lBased on (34) with additional calculations.

^mAssuming a boiler efficiency of 80 percent.

ⁿThe process produces an alcohol-gasoline mixture and a dry feed by-product (29).

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^rSmall energy outputs such as fuel oil are ignored.

^sBased on (25) which assumes 75 percent removal from the field and 6000 Btu per pound.

of corn stalk in the field yields 0.5 Btu to be used productively.

Energy value of distillers' grains. (This also is problem 4 in Table 1.) Although the distillery feed-by-product has some heating value when burned, it will probably continue to be used as a foodstuff for cattle. We shall treat the energy content of this by-product as an "upper limit" option to the feed-by-product energy credit. The option of burning this by-product yields an energy credit equal to the enthalpy of combustion; with the option of feeding this by-product to cattle we try to estimate how much less nonrenewable energy would then be consumed throughout all sectors of the cattle feed industry. On the basis of its food caloric content, one bushel of input corn displaces about 0.3 bushel of normal market corn (29). The energy credit of the by-product is equal to the nonrenewable energy saved, $0.3 \times (184 - 21) = 49$ kBTu. (The transportation energy, 21 kBTu, cannot be credited, since the entire bushel is transported to the distillery.) Another possible option here is to account for the fact that distillers' grains are higher in protein than corn and can actually displace soybean meal; we do not consider this.

Energy value of gasohol. (This is problem 3 in Table 1.) Since the gasoline component is both input and output, it presents no problem in the energy balance. From (36) the nonrenewable energy input is 151 kBTu per gallon; 26 kBTu

of this is consumed in the production of gasoline. Any gasoline that is consumed by the agricultural or production sector has already been included elsewhere.

The combustion energy of the alcohol component, about 77 kBTu per gallon (lower heating value), is only 62 percent of that of gasoline. Whether this is important depends on the end use. The predominant use of gasohol will probably be for automobiles (37). If fuel efficiency were proportional to enthalpy of combustion, one would expect an approximate 4 percent decrease in miles per gallon, compared with gasoline. Supporting this is a report by the American Petroleum Institute which concludes that for alcohol-gasoline blends as vehicle fuels, "fuel economy measured in miles per gallon generally decreases, approximately in proportion to the alcohol content of the blends" (38). Yet Ecklund (39) of the U.S. Department of Energy has concluded in the past that "most researchers agree that with regard to fuel economy . . . there is no significant technical advantage or disadvantage to use of 10 volume percent alcohol/gasoline blends compared to gasoline. This in itself is an advantage, since the blend contains 4 or 5 percent less energy than the gasoline alone." More recently, a number of dynamometer tests have indicated that there is an approximate 2 percent average decrease in miles per gallon with gasohol, as compared with gasoline (40). These tests, however, usually compare

gasohol with indoline and not with the gasoline that is actually available to the consumer (41).

In contrast with the dynamometer research data, a number of claims have been made in the popular press that gasohol improves miles per gallon. At present, however, no scientifically defensible road tests have been completed for gasohol. The most widely publicized study, the Nebraska "two-million-mile test" (44), reports an average 6.7 percent increase in miles per gallon for automobiles operated on gasohol, compared with gasoline, but a final report has never been released.

With so many conflicting conclusions, there can be no consensus at present on the miles-per-gallon question. Pending further study, we leave the choice of fuel efficiency as an option. From existing fuel-efficiency data, however, some observations should be made.

- 1) The relative fuel efficiency of gasohol with respect to gasoline is dependent on technology and can change as different vehicle motors and fuels are marketed. Gasohol (10/90) and pure gasoline can be used interchangeably in today's cars, which are now tuned for optimal gasoline-use efficiency.
- 2) Extrapolation from studies on alcohol-rich fuels (for example, containing more than about 15 percent alcohol) appear to be invalid, since alcohol as an additive component affects combustion of the gasoline component.

Table 3. Options for energy analysis of gasohol.

Option	Effect on energy balance compared with base case*	Comment
Input		
Use corn from corn belt, not national average	Decrease inputs	Better crop yields
Use wheat, instead of corn	Increase inputs slightly	
Do not dry corn on farm	Decrease inputs	Requires short distance between farm and plant
Use surplus, inferior, or spoiled crop	Decrease inputs or leave unchanged	A dilemma, probably best to treat it like an unspoiled crop
Use waste materials from other processes (for example, cheese, starch, dog food)	Uncertain	Need to analyze specific source
Production process		
Do not dry feed; sell as slop	Decrease inputs	Requires proximal consumer
Burn corn stalks and cobs in process	Decrease inputs greatly	Questions of soil depletion, technical feasibility
Improve distillation technology	Decrease inputs	
Do not cook substrate	Decrease inputs	Usually applies only to such crops as sugar beets, not to grain, which is mostly starch
Increase fermentation yield	Decrease inputs proportionately	Speculative
Produce gasohol on the farm	Uncertain	Less efficient than large-scale production but easier to use biomass fuels and to consume the feed by-product
Use distillation waste heat	Decrease inputs	Usual problems of waste heat use
Output		
Sell excess stalks and cobs for fuel	Increase outputs	Questions of soil depletion, suitability as a fuel, pollution
Correct for miles per gallon of gasohol	Increase outputs greatly	Very sensitive; evidence indicates that gasohol (10/90) gets better miles per gallon than expected on Btu basis
Credit feed-by-product with energy cost of corn production instead of caloric content	Decrease outputs	Energy input to corn production is less than caloric value of crop

*Base case: National average corn production, conventional fermentation, conventional distillation energy as given by Scheller and Mohr (28), dried feed by-product.

If a multiplier consistent with the Nebraska two-million-mile road test is selected [Scheller and Mohr (14)], $m = 1.067$ and the energy balance is much more positive [see the curve for Scheller and Mohr (14) on Fig. 2].

The stated position of ACR (29) is also shown on Fig. 2. ACR assumes the base case with option 7, the process energy savings. The net input energy is

$$x = 505 - 250 = 255 \text{ kBTu} \quad (5)$$

ACR explicitly assumes no change in miles per gallon, making a "conservative" assumption that $m = 1.0$, and conclude that the net energy balance is positive.

For comparison, we have also plotted the results from Da Silva *et al.* (17) on Fig. 2, although their data are for ethanol production, not gasohol. A relatively low agricultural energy input, combined with the use of crop residues to offset industrial energy inputs (18) produces a positive energy balance.

Thus the energy balance one obtains depends on what options are assumed. Reilly, and Scheller and Mohr differ almost entirely because of the latter's assumption that the stalks and cobs are burned productively. Figure 2 shows, however, that without a significant increase in the fuel efficiency of gasohol with respect to gasoline, all U.S. processes (including ACR's) have energy balances that are uncomfortably close to or less than zero. Some efforts may "pay" but not spectacularly. In contrast, because of the sensitivity to the end-use question, if it is conclusively established that gasohol gets better miles per gallon than gasoline, the energy balance for gasohol production will be positive for several different options.

Until now, we have refrained from discussing a net energy ratio (problem 3 in Table 1). It is necessary, however, to make some normalizing statement to put Fig. 2 in perspective. For example, from Fig. 2 we see that a net energy saving (or loss) relative to gasoline of the order 100 kBTu per bushel of corn (or 100 kBTu per 2.5 gallons of ethanol, or 100 kBTu per 25 gallons of gasohol) is possible. This amounts to a saving (or loss) of about 100 kBTu per 3100 kBTu, or about 3.2 percent. In this example, to move a car a unit distance would require about 3.2 percent less (or more) nonrenewable energy than using pure gasoline.

Options Dictated by Legislation

The choice of options is not always arbitrary. The present and proposed federal ethanol legislation specifies that cer-

tain options must be selected. The Food and Agriculture Act of 1977 (21) requires a comparison of the total energy contents of products and by-products with the fossil fuel consumed in manufacture. It therefore allows the selection of virtually all agricultural and production energy input options (options 1 to 11) (47), subject to the proposed agricultural methods and production technology. It requires, however, output option 13 and a miles-per-gallon multiplier of 0.961.

The bill proposed by Bedell (22), moreover, stresses only the petroleum-derived or petroleum-substitutable energies. The energy value of the feed by-product (option 14) is ignored, and a miles-per-gallon multiplier of 0.961 is implied, but unlike the earlier bill, coal, natural gas, and electricity not derived from petroleum can be ignored in the energy balance (problem 2 in Table 1).

Table 4. Quantitative energy effects of options on base case (national average corn production, conventional processing, feed by-product dried with "corn substitution" energy credit). The data are normalized to 1 bushel of corn that produces ~2.5 gallons of ethanol to produce ~25 gallons of gasohol (units = 10^3 BTu).

Option ^a	Input
Base case	505
Agricultural energy input options	
1. Ignore agricultural energy	-184
2. Use corn-belt corn (better yields)	-66
3. Use wheat instead of corn	+6
4. Do not dry corn	-15
5. Harvest corn with the cob ^b	-13
6. Use surplus, inferior, or spoiled crop	0
Production energy input options	
7. ACR process	-250
8. Do not cook substrate	-52 ^c
9. Do not dry feed by-product; sell as slop	-70 ^d
10. Burn cobs in process ^e	-42
11. Burn cobs and stalks in process ^f	-161 ^g
Output options	
12. Sell excess stalks for fuel ^h (after use in option 11)	0
13. Credit feed by-product with the by-product energy content ⁱ	-68
14. No by-product energy credit	+49

^aThe following additional options are so speculative or peripheral that no analysis was performed: (i) use unconventional fermentation. Schemes to increase yields to 4 gallons per bushel are discussed but unproved; (ii) use waste materials from other processes; (iii) use distillation waste heat. ^bEither option 4 or 5 may be selected. ^cThis point is always debatable. The energy inputs to a surplus, inferior, or spoiled crop have already been consumed; hence we think they ought to be counted. ^dOptions 8 and 9 cannot be used with option 7. ^eThe energy credit is given as half of the energy content of the by-product removed, up to 75 percent of total removal. The maximum combined energy credit for options 10, 11, and 12 is 161 kBTu. ^fIf option 7 is selected the correct figure is -109. ^gThis option assumes an energy content value of 117 kBTu, from Scheller and Mohr (28).

Petroleum-Only Balance

We therefore ignore the coal, gas, hydroelectric, and nuclear energy and calculate the amount of crude petroleum energy required to produce the petroleum substitute. Petroleum is unnecessary for almost all inputs to ethanol, with one major exception, agriculture. We assume that today's technology regarding agricultural inputs persists: about 59 percent of that energy comes from crude petroleum (34). Otherwise, we assume that almost all energy can be nonpetroleum, such as coal. (Coal is the boiler fuel in many ethanol distilleries today.) The base case is the same as that chosen for the total energy balance. The petroleum energy base case is given by

Agricultural	+109 kBTu
Processing	+ 5
By-product credit	- 29
	85 kBTu

Here the petroleum inputs are much less than even the heat of combustion of the ethanol component (typically, 193 kBTu per 2.5 gallons). Applying the options in Table 4 has a much smaller effect on the petroleum energy balance, since their savings in boiler fuel affect only nonpetroleum inputs.

To obtain a quantitative estimate for the reduction in petroleum consumption per input bushel of corn, one can express the energy balance in Eq. 2, in terms of petroleum energy

$$E_p = y c_p (10 m - 9) - x_p \quad (6)$$

where E_p is the net petroleum energy, c_p is the total petroleum energy cost of petroleum production [147 kBTu/gal (36)], and x_p is the net petroleum input energy (85 kBTu for the base case).

In contrast to the inconclusive comments we have made about the total energy balance, because x_p is so small, the petroleum-only balance is positive for most practical situations.

In this case a normalizing statement can be made in terms of the displacement of crude oil input. Dividing Eq. 6 by c_p , we obtain the net volume, v_p , of crude oil displaced per bushel of corn (or per 2.5 gallons of ethanol, or per 25 gallons of gasohol),

$$v_p = y (10 m - 9) - x_p / c_p \quad (7)$$

For $m = 0.961$, $v_p = 0.95$ gallon, while for $m = 0.98$, $v_p = 1.42$ gallons. Thus, in contrast to the inconclusive statement about total energy balance, for a petroleum-only consideration, we can say that to move a car a unit distance by burning gasohol requires about 5 percent less crude oil than by burning pure gasoline.

3) Carefully controlled laboratory tests are less useful than carefully monitored motor vehicle road tests in determining gasohol's practical fuel efficiency.

al Energy Balance

The net energy balance of gasohol production is defined to be positive if the nonrenewable energy requirement of producing gasohol to perform a specific task is less than the nonrenewable energy cost of producing gasoline to perform the same task. In this analysis the end-use "task" is distance traveled in a motor vehicle. We normalize to the farm production of 1 bushel of corn.

In Table 4 we assign quantitative values to a base case and to several options that reflect various interpretations in the gasohol energy debate. Energy credits for the by-products are listed as negative inputs (problem 5 in Table 1). The base case is computed from national average market corn with agricultural inputs from Penner and Joyce (34), conventional inputs from Scheller and Mohr (28) and the "corn substitution" option for the feed-by-product credit:

Agricultural input	184 kBTu
Process input	370
By-product credit	-49
Base case total	505 kBTu

The reader may add or subtract the options as he wishes (42). The total thus obtained is defined as the total input energy, x , and is the net input energy to produce alcohol from a bushel of corn.

The quantitative energy balance for gasohol production is then calculated as follows. The alcohol yield, y , of the bushel has a typical value of 2.5 gallons (43). The total amount of gasohol produced is ten times the alcohol yield. The total nonrenewable energy consumed to produce the gasohol is therefore equal to $x + 9 yc$, where c is the nonrenewable energy cost to produce a gallon of gasoline. The present value for c is 151 kBTu per gallon, which includes processing losses. If one wishes to omit processing losses for gasoline, c is set equal to the energy content of gasoline, 125 kBTu per gallon (44).

The gasoline that must be produced to move a vehicle the same distance as the gasohol produced from a bushel of corn is equal to $10 ym$, where the end-use multiplier, m , is defined as the relative volume efficiency of gasohol with respect to gasoline (45). The total nonrenewable energy consumed to produce this gasoline is equal to $10 ycm$.

Fig. 2. Net energy per bushel, E , plotted against miles-per-gallon multiplier, m , for gasohol, assuming an alcohol yield of 2.5 gallons per bushel and a nonrenewable energy cost of 151 kBTu per gallon for gasoline. For a given input energy, x (calculated from Table 4 and indicated by the diagonal lines), and miles-per-gallon multiplier one can read the net energy. The various points indicate the stated or implicit positions of several authors. [Reilly (16) includes agricultural energy; Reilly (15) ignores agricultural energy.] All of the authors implicitly assume that $m = 0.961$, which is equivalent to assuming that gasohol's miles-per-gallon rating is proportional to its heat of combustion. Only Scheller and Mohr (28) and Da Silva *et al.* (17) show positive energy; this is because Scheller and Mohr include the use of crop residues for fuel, and Da Silva *et al.* assume reduced agricultural energy consumption and use of crop residues in industrial processing [see (18)]. Scheller and Mohr (14) assume $m = 1.067$, the result claimed from the Nebraska two-million-mile test. The ACR report (29) assumes $m = 1.0$.

The difference in nonrenewable energy consumption between gasohol production and gasoline production, E , is therefore given by

$$E = 10 ycm - (9 yc + x) \quad (1)$$

or

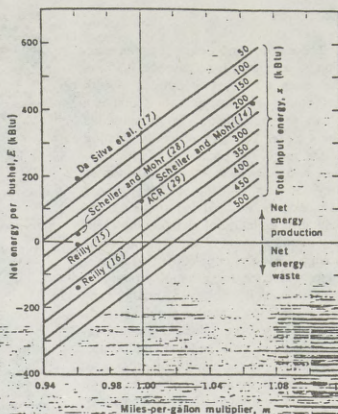
$$E = yc(10m - 9) - x \quad (2)$$

If E is positive for a given set of options then the net energy balance of gasohol production, subject to these options, is positive. Note that E is strongly dependent on m .

Figure 2 can be used for $y = 2.5$ gallons per bushel and $c = 151$ kBTu to determine graphically the net energy balance for a particular set of options. One computes x using Table 4, selects the appropriate line on Fig. 2, and reads the energy balance, E , as a function of the end-use multiplier, m .

We can use Fig. 2 to identify the two conflicting positions quoted earlier. For Reilly (15, 16), we select corn-belt corn, option 2 (Table 4), and use the energy content of the feed by-product for the by-product energy credit, option 13, to obtain $x = 505 - 66 - 68 = 371$ kBTu (46). Reilly implicitly assumes an end-use multiplier which is consistent with the relative heats of combustion of the two fuels; that is, by discussing only heat of combustion he implies that gasohol's usefulness will be proportional to it. Hence,

$$m = 120.1/125 = 0.961 \quad (3)$$



This set of options is plotted on Fig. 2 [see curve for Reilly (16)]. The energy balance is negative and is the basis for the statement that we referred to earlier: "fermentation of grain to produce ethanol does not produce net energy" (15, 16).

Even if agricultural energy is ignored altogether (option 1 instead of option 2), the energy balance, although much improved, is still slightly negative [see curve for Reilly (15) on Fig. 2]. Scheller and Mohr (28) propose the use of corn stalks and cobs as boiler fuel (option 11) (46). There is much energy here, if it can be so used. (Scheller and Mohr assume that 75 percent of the stalks and cobs are removed from the field and take full credit for the energy content, that is, assume it can be delivered with no further energy cost.) Combining this with Reilly's selections (options 2 and 13) the net input energy is

$$x = 505 - 66 - 68 - 161 = 210 \text{ kBTu} \quad (4)$$

If $m = 0.961$, as before, the net energy balance, although small, is positive [see curve for Scheller and Mohr (28) on Fig. 2]. This is the basis for the statement in Scheller and Mohr (14): "the process is attractive energetically." In this case, the simple option of the inclusion or exclusion of stalks and cobs as boiler fuel explains the controversy.

From Fig. 2 it is evident that the effect of increasing the end-use multiplier is to increase dramatically the output energy.

Conclusion

There is no simple answer to the question of net energy from gasohol. We have discussed a number of options in both technology and interpretation that can affect the conclusion. In broad terms these cover the agricultural production of the grain, the processes of fermentation and distillation, the disposition of crop residues, and the efficiency of end use. An analysis assuming the use of standard agricultural production techniques and conventional distillation technology leads to a conclusion that the net energy balance for gasohol production is negative. If, however, energy-conserving farming practices are developed, energy-conserving industrial technology is utilized, or crop residues are burned productively in the distillation process, it is possible to construct a realistic set of options with a modestly positive energy balance. It should also be noted that reduction of the energy requirements for the distillation process increases the probability that the energy can be supplied from crop residues without soil depletion. Conclusions are very sensitive to end use. If it is assumed that gasohol gets better mileage than gasoline in automobiles, then the chances of obtaining a positive energy balance are greatly increased.

If one analyzes the petroleum-only energy balance, then gasohol unambiguously produces positive net petroleum energy. This is a consequence of the fact that except for some inputs to agriculture and transportation, all energy inputs to the production of ethanol can be provided from nonpetroleum sources such as coal; hence consideration of the various options has little effect on this conclusion.

References and Notes

- Other blends are possible (some with methyl alcohol). In Nebraska, Gasohol is a registered trade name and refers specifically to the 10/90 ethanol mixture; we adhere to this terminology.
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- See, for example, N. Wade, *Science* 204, 928 (1979).
- Energy Tax Act of 1978, Public Law 95-618.
- D. Snyder, private communication. The Iowa exemption is effective until 30 June 1984.
- N. Nichols, private communication. The present 2¢ exemption increases to 4¢ in 1983 and to 6¢ in 1987. The law (House Bill 402) expires in 1989 but contains a default clause allowing the governor to rescind the tax exemption instantaneously if he deems that the revenue losses are significantly affecting construction of state or interstate highways.
- E. Dean, private communication. Duration is unlimited until the law is changed.
- B. Spyskura, private communication.
- G. E. Hicks, private communication.
- For a critique of energy analysis see, for example, Webb and Pearce (11); Huettner (12); and Leach (13). We acknowledge the various criticisms of energy analysis, both in terms of its usefulness for policy (11, 12) and its own internal methodological problems (13). We view energy analysis as one of many valid inputs to decision-making.
- M. Webb and D. Pearce, *Energy Policy* 3, 318 (1975).
- D. A. Huettner, *Science* 192, 101 (1976).
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- W. Scheller and B. Mohr, *Chem. Technol.* 7, 616 (1977).
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- "Economics and energy requirements for ethanol production," manuscript, Department of Chemical and Nuclear Engineering, Iowa State University, Ames, January, 1978. In this paper Kelly has discussed the effect of end use (miles per gallon) on the energy balance; he and we have developed this independently.
- J. G. Da Silva, G. E. Serra, J. R. Moreira, J. C. Gonçalves, J. Goldemberg, *Science* 201, 903 (1978).
- A few aspects of the Brazilian work (17) require comment. Agricultural energy consumption is about 25 percent (per gallon ethanol) of that in the United States, which is reasonable, given the different degrees of mechanization. Process energy use is in agreement with that in the United States, given that sugarcane requires no cooking, the by-products are not dried, and the product is not anhydrous. No correction is made, however, for boiler efficiency to produce the process steam. In the United States this would increase the process fuel energy requirements by about 25 percent. The way in which the results are presented illustrates some of the difficulties of energy analysis. Table 2 of Da Silva et al. (17), for example, adds the combustion enthalpies of ethanol and crop residues to obtain "energy produced from ethyl alcohol." As we discuss later, whether or not residues should be included is a controversial issue in the United States and their omission or inclusion seriously affects the energy balance.
- "Madigan backs gas hike, reactor," *The Morning Courier*, Urbana, Ill., 21 January 1978.
- "News from Birch Bayh," press release LR 142-78, 12 June 1978.
- Food and Agriculture Act of 1977, Public Law 95-113, Sec. 1420, and subsequent notice soliciting pilot project applications, *Fed. Reg.* 42, October 1977).
- U.S. House of Representatives, 96th Congress, 1st Session, Bill H.R. 3905, introduced by Berkeley Bedell (D-Iowa) 3 May 1979.
- The framework developed here can be used for substrates other than corn. All agricultural energy inputs, by-product credits, and outputs must be recalculated; with data from (23).
- F. Downing, private communication.
- Energy and U.S. Agriculture, 1974 Data Base, 76/459 (FEA/D-76/459, U.S. Department of Agriculture, Washington, D.C., September 1976), vol. 1.
- Energy Analysis (Workshop Report S-10246, International Federation of Institutes for Advanced Study, Stockholm, Sweden, 1974).
- If any solar technology were used to provide other inputs (for example, solar grain drying), it would be analyzed similarly. The nonrenewable energy used to develop the technology would be counted, the solar input ignored.
- W. Scheller and B. Mohr, paper presented at the 171st National Meeting of the American Chemical Society, New York, 7 April 1976. We include the energy to produce anhydrous ethanol, but not the additional energy required for a last distillation to produce a beverage-quality product.
- ACR Process Corporation, "Energy balance," part of a preliminary pilot project application to the U.S. Department of Agriculture (21), April 1978. A copy may be obtained from one of us.
- Three examples: (i) The process Chempac/T.E.R. process integrates alcohol production with food processing (Chempac, Woodbury, N.Y., 1977). Energy analysis of this joint product technology requires energy consumption and marketing data that are now unavailable. (ii) Process energy requirements should be vastly reduced if membrane technology can be realized. See, for example, H. P. Gregor and C. D. Greger, *Sci. Am.* 239, 112 (July 1978). (iii) Energy saving similar to those of the ACR technology are discussed by R. Katz in a report for the Department of Energy, contract No. E1-78-C-01639 (Department of Energy, Washington, D.C., November 1978).
- R. S. Chambers, Alcohol Fuels Policy Review, Department of Energy, Public Hearings in Chicago, 30 November 1978.
- C. Gray, Jr., prepared testimony before the Subcommittee on Advanced Energy Technologies and Energy Conservation Research, Development, and Demonstration, U.S. House of Representatives, 13 July 1978. Gray stated that "it still takes 139,000 Btu to make one gallon of ethyl alcohol."
- D. Pimentel, L. E. Hurd, A. C. Bellotti, M. J. Forster, I. N. Oka, O. D. Sholes, R. L. Whitman, *Science* 182, 443 (1973).
- P. S. Penner and J. J. Testani, "Background energy cost calculations for ACR gasohol production," report to ACR Process Corporation, November, 1977. A copy may be obtained from one of us (R.S.C.). This study is based on data in (23). The national average corn yield in 1974, however, was unusually low, about 71 bushels per acre. Average yields (with the same energy inputs) could be 25 percent higher, but since the Food and Agriculture Act of 1977 (21) stipulates that this data base be used in calculating an energy balance, we have used it here. Readers wishing to correct for this may reduce the non-transportation portion of the agricultural energy by 20 percent; that is, 0.72 (184 - 21) = 33 kJ per bushel of corn. A reviewer has questioned the use of this data base. If national corn were put into production as would be expected in a large-scale program, we have not addressed this; extrapolation to a national program using present data would have little value.
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- R. A. Henderson and R. W. Bullard, *The Energy Cost of Goods and Services*, 1963 and 1967 (CAC Document No. 140, Center for Advanced Computation, University of Illinois at Urbana-Champaign, November, 1974).
- The choice of a specific end use—propulsion of automobiles—depends on energy analysis to an economic constraint which is not certain, but likely, to obtain.
- Alcohols: A Technical Assessment of Their Application to Fuel and Chemicals, American Petroleum Institute, Washington, D.C., July 1976.
- E. E. Ecklund, "Alcohol fuels for highway vehicles," paper presented to U.S. Senate Agricultural Research and General Legislation Subcommittee, Indianapolis, Ind., 12 December 1977.
- See for example, J. R. Allsup and D. B. Eccleston, in *Proceedings of the 3rd International Symposium on Alcohol Fuels Technology* (Asilomar, Calif., 28 May 1979), vol. 1.
- Indoline and other research fuels may not be representative of commercial motor fuels. In addition, Allsup and Eccleston (40) conclude that "a much larger sampling of vehicles is necessary before a statistically meaningful number can be attributed to the fuel economy effect of large-scale usage of ethanol blended with gasoline."
- In general, the increasing cost of energy makes the options in Table 4 practical in a wide variety of situations. At current energy prices the production cost of alcohol can be reduced by about 25¢ per gallon with new distillation technology, a strong incentive for technological change. Values listed in Table 4 may be somewhat conservative for some applications, but the reader should support any modification with reliable data. Additional options, of course, may be incorporated into the present framework (for example, sugar generation from renewable energy sources).
- The output yield normally ranges from 2.3 to 2.65 gallons per bushel and includes the starch loss to grow yeast and to produce enzymes at the distillery (29).
- One reviewer has claimed that it is improper to charge the energy cost of processing and refining to produce gasoline since, without refining, crude oil has no alternative use. We feel there are sufficient uses for crude oil, or at least heavy less-refined fractions, to justify inclusion of the refining energy. Only by including refinery energy consumption can one compare the total non-renewable energy consumed.
- In practical terms, m = (miles per gallon for gasohol/energy per gallon for gasoline). We are neglecting a slight volume change that results when alcohol is mixed with gasoline.
- The authors do not actually consider this analysis. We have constrained their analysis and data to the present framework.
- The application rules in (21) place a few restrictions on the selection of options 1 and 6.

tospheric plasma (2). The application of this torque in turn requires that the ionosphere (and the magnetospheric flux tubes magnetically connected to the ionosphere) rotate somewhat slower than the neutral atmosphere.

A straightforward analysis of this coupling process (3) predicts a specific radial dependence of the required corotation lag, which becomes significant at distances of the order of $L_0 R_J$, with R_J = Jupiter radius and

$$L_0 = (\pi \Sigma R_J^2 B_p^2 / \dot{M})^{1/4}$$

where Σ is the effective height-integrated Pedersen conductivity of Jupiter's ionosphere, B_p is the dipole field strength at the surface, and $\dot{M}$ is the rate at which plasma mass is produced and transported outward in the magnetosphere. Pre-Voyager 1 estimates of Σ (~0.1 mho) and $\dot{M}$ (~ 10^{28} amu/sec) yielded the expected length scale $L_0 \sim 60$ (3).

The Voyager 1 plasma detector (4) has provided the first measurements of plasma flow in the Jovian magnetosphere. The results (5) are shown in Fig. 1. The departure from ideal corotation is seen to be significant as close in as $L \sim 10$. Figure 1 also shows theoretical curves derived directly from my earlier result (3) for three different values of L_0 , corresponding to three possible values of the ratio $\Sigma/\dot{M}$. The large-scale radial dependence of the data is represented adequately for a value $L_0 \sim 20$.

Two interesting conclusions can be drawn from this comparison. First, it is qualitatively apparent that the atmosphere-magnetosphere coupling is indeed too weak to enforce corotation, a possibility that had been anticipated (2, 3) but not generally appreciated before Voyager 1 observations. Second, the comparison indicates that the pre-Voyager 1 estimate of L_0 (~60) was too large by a factor of 3, implying that the ratio $\Sigma/\dot{M}$ was, during the Voyager encounter, some two orders of magnitude smaller than anticipated. The pre-Voyager estimate of Σ (~0.1 mho) would appear, if anything, to be a lower limit because it is based on an ionosphere model that neglects the effects of auroral electron precipitation, which tends to increase the atmospheric conductivity (6). We are thus left with the conclusion that the mass-loading rate $\dot{M}$ was, during the Voyager 1 encounter, much larger than anticipated, namely, ~ 10^{30} amu/sec (corresponding, for example, to 3×10^{28} S⁺ ions per second. This exceeds by nearly an order of magnitude the S⁺ injection rate suggested by Voyager 1 ultraviolet observations of the Io-associated plasma torus (7), which was itself much larger

than had been anticipated. Recent analysis of Voyager 1 plasma data near Io's orbit tends to confirm the large mass-loading rate inferred above (8).

The large fluctuations of the data about the "average" ($L_0 = 20$) profile may be attributable to transient effects, inhomogeneities in Jupiter's ionospheric conductivity, localized convection cells, time variations in the mass-loading rate, and so forth. I will, however, follow the advice of the plasma experimenters that "structure in the curve should not be overinterpreted" (5).

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References and Notes

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- F. V. Coroniti, *Astrophys. J. Suppl. Ser.* 27, 261 (1974); C. F. Kennel and F. V. Coroniti, *Space Sci. Rev.* 17, 957 (1975); see also (3).
- T. W. Hill, *J. Geophys. Res.* 84, 6554 (1979).
- H. S. Bridge et al., *Science* 204, 987 (1979).
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- See, for example, A. J. Dessler and T. W. Hill, *Astrophys. J.* 227, 664 (1979); see also (3).
- A. L. Broadfoot et al., *Science* 204, 979 (1979).
- G. L. Siscoe, personal communication.
- A comparison similar to that made in this report was first presented by G. L. Siscoe (paper presented at the Magnetospheric Boundary Layer Conference, Alpbach, Austria, June, 1979). I am indebted to H. S. Bridge for furnishing a pre-publication copy of the data shown in Fig. 1 and relevant details of the data analysis. I have enjoyed stimulating discussions on this subject with A. J. Dessler and G. L. Siscoe. Supported in part by NSF grant ATM78-21767.

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Net Energy Analysis of Alcohol Production from Sugarcane

Abstract. Energy requirements were calculated for the agricultural and the industrial phase of ethyl alcohol production from sugarcane grown in Louisiana. Agricultural energy requirements comprised 54 percent of all energy inputs, with machinery, fuel, and nitrogen fertilizer representing most of the energy subsidies. Overall net energy benefits (output:input) for alcohol production ranged from 1.8:1 to 0.9:1 depending on whether crop residues or fossil fuels were used for industrial processes.

In the search for alternative energy sources, considerable attention has been directed toward the production of alcohol to serve as a gasoline extender (gasohol) for internal combustion engines (1-4). Many gasoline retailers in the Mid-

west are already selling gasohol for use in automobiles (4). Although most industrial alcohol is produced from petroleum, most ethyl alcohol presently produced for blending with gasoline is based on agricultural crops as the raw material.

The gasohol production process needs to be thoroughly examined, however, before a large-scale production commitment is made in the United States. With the energy and land constraints that already exist for food production, it is important to analyze the net energy yield of alcohol production from agricultural crops, and to examine the consequences of the removal of significant portions of agricultural land from the food production base (5-9). In this report we analyze the net energy yield of fuel alcohol derived from sugarcane. The net energy analysis methodology presented here is adaptable to the analysis of other food (grain) crops and can therefore be used to make direct energy comparisons.

In modern agricultural systems, cultural energy subsidies have become integral and indispensable to the production process. In this study, direct energy (energy used for product manufacture as process heat) and material energy (capital equipment, services, labor input) subsidies to sugarcane were evaluated. Environmental inputs (rain, sun, wind, and soil; see Gilliland (10)) were not included, nor were federal, state, or local drainage project subsidies and costs of

Table 1. Energetic cost of sugarcane production in Louisiana.

Input	Amount (per acre)	Energy expended ($\times 10^3$ kcal/ha)	Percent of total
Labor*	16.4 hours	22	0.3
Machinery†	\$83	1576	18.6
Fuel‡	47 gal	4063	47.9
Nitrogen§	96 lb	1992	23.5
Phosphorus	32 lb	120	1.4
Potassium¶	48 lb	125	1.4
Seed	83,000 kcal	205	2.4
Insecticide§§	2.0 lb	54	0.6
Herbicide	10.6 lb	288	3.4
Total		8481	100

*From Campbell (11, 12); based on 8723 hours of labor per 675-acre farm plus one full-time manager at 45 hours per week; calorie equivalent, 544 kcal per man-hour (6).
†From Campbell (11, 12); Pimentel et al. (6), and Ricard (20); see (14) for explanation.

‡From Campbell (11, 12); includes transportation, tractors, harvesters, loaders, pickup trucks, and repair trucks; hours used times gallons per hour or miles per gallon; 35,000 kcal per gallon (22).

§From Campbell (11, 12) and Carville (13); 120 lb of nitrogen, 40 lb of phosphorus, and 60 lb of potassium per acre planted. From Pimentel et al. (6) 8400, 1520, and 1050 kcal per pound for nitrogen, phosphorus, and potassium, respectively.
||From De Silva et al. (5); calorie equivalent of cane plant, 820,000 kcal/ha per 4 years.
|||From Campbell (11, 12) and Carville (13); 2.25 lb of insecticide per planted acre and 10.6 lb of herbicide applied per acre per year. From Pimentel et al. (6); 11,000 kcal per pound of insecticide or herbicide.

transporting alcohol and blending it with gasoline.

Crop data and yields for Louisiana sugarcane were from Campbell (11, 12) and Ancelet (13). Labor, machinery (14), for fuel use, fertilizer, and insecticides were translated to an energetic basis by using the conversion factors reported by Pimentel *et al.* (6), Heichel (8), and Da Silva *et al.* (5). The energy components were calculated for fallow plowing, planting, cultivation or production, harvesting, and other farm operations. Calculations were based on a late summer sugarcane planting, two ratoon crops, and a winter, spring, and summer fallow period. At any one time, one-quarter of the Louisiana sugarcane acreage is fallow, one-quarter has cane less than 1 year old, one-quarter has 2-year-old cane (first ratoon), and one-quarter has 3-year-old cane (second ratoon crop). The average annual yield of first-crop cane and two ratoon crops of sugarcane is 53 net millable tons (wet weight) per hectare (11, 12, 15). This average includes a rotation in fallow after the second ratoon crop.

Energy requirements for alcohol production from sugarcane (5) included the energy necessary for raw material processing and absolute (anhydrous) alcohol distillation, which is accomplished by steam generation. Capital costs of processing plants were also included (16). Distillery energy requirements were determined and compared for sugarcane crop residues (5) and fossil fuel as fuel.

The materials used in producing sugarcane and their energetic equivalents are listed in Table 1. In this high-technology enterprise three inputs (fuel, nitrogen fertilizer, and machinery) account for 90 percent of all energy inputs to the agricultural phase of alcohol production. Fuel used to operate machinery accounts for the highest consumption of energy, approximately 48 percent of the total. Labor comprises less than 0.3 percent of the energy inputs to sugarcane production in Louisiana.

For the industrial phase of alcohol production it has been shown that 66 liters of anhydrous alcohol are produced per ton of sugarcane, that 1 liter of alcohol consumes 5.5 kg of steam for production, that 1 ton of sugarcane produces 250 kg of bagasse, and that 1 kg of bagasse produces 204 kg of steam (5, 16).

A net yield of 53 tons of cane per hectare in Louisiana would allow the production of 3498 liters of anhydrous alcohol from 250 kg of bagasse, and 31,800 kg of steam. Of the steam produced, 12,561 kg is excess over that required for distillation. This is equivalent to 6.78×10^6

Table 2. Energy balance of alcohol production.

Quantity	Value	Total	Net energy balance*	Output: input
Agricultural yield (ton/ha-year)		53		
Alcohol production (liters)				
Per ton	66			
Per hectare per year	3498			
Energy expended ($\times 10^6$ kcal/ha-year)				
Agricultural	8.5			
Industrial structure	0.4			
Industrial fuel	10.4	19.3		
Energy produced ($\times 10^6$ kcal/ha-year)				
Case 1				
Converting all bagasse to steam	17.2			
Content of alcohol produced	18.4*	35.6	+16.3	1.8:1
Case 2				
Converting enough bagasse to meet all industrial requirements	10.4			
Content of alcohol produced	18.4	28.8	+9.5	1.5:1
Case 3				
Burning fossil fuel to meet all industrial requirements	0			
Content of alcohol produced	18.4	18.4	-0.9	0.9:1

*See (27).

kcal [at 540 kcal per kilogram of steam (5)].

The energy balance of ethyl alcohol production from sugarcane is presented in Table 2. The total energy requirement is 19.3×10^6 kcal/ha-year (44 percent is related to the agricultural phase). Total energy produced depends on the type of fuel used to run the industrial plant. If all available bagasse were converted to steam, total energy produced would be 35.6×10^6 kcal/ha-year, and if fossil fuel rather than bagasse were used, total production would be that attributable to alcohol only, or 18.4×10^6 kcal/ha-year. This analysis shows that alcohol production has a net energy yield between 1.8:1 and 0.9:1 (output:input). It should be noted that with the high estimate, 27 percent of the energy yield is in the form of excess steam, the utilization of which is highly doubtful. At present, plants under design in Louisiana will use approximately a 50:50 mixture of bagasse and fossil fuel to fire the industrial apparatus (17). The resultant net energy balance would then be 1.2:1.0. Such a small return on energy investment is not likely to help solve the national energy problem. If the industrial phase were dependent entirely on fossil fuel rather than sugarcane bagasse, alcohol production would be an energy sink (18). For comparison, the net energy benefit of gasoline from Gulf of Mexico oil is about 6:1 (19).

Da Silva *et al.* (5) showed that sugarcane could be used quite efficiently for producing alcohol in Brazil. Compared to Louisiana, the agricultural phase of sugarcane production was less mechanized and used less fertilizer, insecticide, and herbicide. Fuel, machinery, and ni-

trogen inputs represented only 83 percent of all inputs, compared to 90 percent in Louisiana. Labor made up 3 percent of the total. Agricultural yield in Brazil was similar to that in Louisiana (54 versus 53 tons per hectare) but had only 49 percent of the cultural energy inputs. Consequently, the net energy balance of the agricultural and industrial phases of alcohol production was a positive 2.4:1 (21.3×10^6 kcal/ha-year).

These results emphasize the importance of site-specific energy balance evaluations of crops used for alcohol production. All industrial and agricultural processing inputs must be considered if we are to find a satisfactory substitute for or extender of petroleum. For sugarcane, the net energy analysis indicates that, with current agricultural practices, alcohol production is a marginally profitable enterprise energetically if plant by-products are used to supply at least 10 percent of the industrial energy requirement. Alcohol from crops produced in excess of food requirements will not make a significant contribution to national energy needs.

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References and Notes

1. The House Agricultural Committee adopted an amendment to its sugarcane bill that is aimed at providing a new market for crops while lessening U.S. dependence on oil imports—that is, alcohol from crops (Baton Rouge Morning Advocate, 10 January 1979).
2. Governor E. W. Edwards of Louisiana disclosed plans of an international conference to study the conversion of sugar into a fuel (Baton Rouge Morning Advocate, 14 January 1979).
3. According to Wade (4), Congressman B. Bedell

Graphoglyptid Burrows in Modern Deep-Sea Sediment

Abstract. The complex, highly patterned, invertebrate burrow systems known as "graphoglyptids" in ancient sedimentary rocks have now been recovered from modern deep-sea sediment. *Spiroraphe*, *Cosmoraphe*, and *Paleodictyon* occur as grooves in the tops of washed cores, and they apparently were produced by horizontal tunnel systems just a few millimeters below the seafloor. These burrows, which are important as indicators of deepwater seafloor environments in ancient strata, have been predicted in the modern deep-sea but have not been found there until now.

Complex, geometrically patterned burrow systems of benthic invertebrates are especially characteristic of deep-sea environments, and they are abundantly preserved in ancient flysch deposits all over the world (1-4). The most spectacular of the flysch trace fossils are those burrows belonging to the group known informally as "graphoglyptids" (5), highly organized systems of tunnels arranged in meandering, radiating, or anastomosing netlike patterns. Such burrow systems are very important in paleoecological and paleoenvironmental investigations as indicators of deepwater sedimentary environments. Graphoglyptid burrows have been predicted in the modern deep sea on the basis of ancient trace fossils (5), but heretofore they have not been found there.

I report here the first recoveries of modern graphoglyptids from the deep ocean floor. The ichnogenera *Spiroraphe*, *Cosmoraphe*, and *Paleodictyon* (6) were collected in deep-sea box cores on four Scripps Institution of Oceanography cruises between March 1975 and November 1978 (7). All the graphoglyptids occurred in pelagic calcareous ooze, and all were observed as surface features on the box core tops. None of the burrows contained the animal responsible for producing it.

Spiroraphe (Fig. 1, A and B) may be the most abundant graphoglyptid in modern sediment as it is one of the most common biogenic structures on deep-sea box core surfaces (8). Several specimens of the tightly coiled trail *S. involuta* [figure 5a in (5)] were collected on each of the four cruises at depths ranging from 3358 to 5119 m (Table 1). *Spiroraphe involuta* is distinctive in that the course of the trail spirals inward to the center, where it makes a 180° turn and spirals outward again alongside the earlier trail. In the box cores, the trail was always about 2 mm wide and the circular outline of the whole structure varied from 3 to 13 cm in diameter. In nearly every case *S. involuta* occurred in the form of rounded, spiraling furrows on the core tops. No vertical repetition of *Spiroraphe* specimens, such as stacked tiers of spirals, was observed in any box core.

Cosmoraphe (Fig. 1C), a uniformly

meandering horizontal trail, is abundant in modern deep-sea sediments as *Spiroraphe*. Partial specimens recovered in box cores from both the Atlantic and the Pacific at depths from 4296 to 4742 m (Table 1), curved as regularly meandering incised several millimeters into the sediment on the box core top specimen in core INMD 98BX (from the Gambia Abyssal Plain) central Atlantic was particularly worthy in that the first- and second-order meanders that characterize the genus (6) were easily recognizable. The occurrence of the grooved trail it about 2 mm wide; the amplitude of the first-order meanders was about that of the second-order (7) was about 5 mm. This specimen fit the diagnosis for *C. sinuosus* has been reported in Eocene deposits of Spain by Seilacher (4), and a, b, and c in (5) and Crin 7c in (3) and in Eocene flysch by Książkiewicz (figure 2, a, b, and c in (1)).

Paleodictyon (Fig. 1D) is a tinctive burrow system with tunnels anastomosing to form a net with hexagonal mesh. *Paleodictyon* specimens to 1 mm in diameter were collected from two cores from the South Atlantic, one (sample INMD 109B) western flank of the Mid-Atlantic Ridge and the other (sample INMD 128BX) northern flank of the Rio Grande Rise (Table 1). As with the *Spiroraphe* specimens, all *Paleodictyon* specimens appeared in the tops of the box cores. Specimens of different sizes occurred in INMD 128BX (Fig. 1D). But to be *Paleodictyon* (*Glenodictyon*), which is common in Tertiary flysch deposits (14) and plate 2a in (5), patch of 1-mm-wide polygons; the other was a patch of 1-mm-wide polygons 9 cm in diameter; the structures had been washed away by water from the box core at the time of collection; hexagonal shape of several

- (D-lower) has prevented a bill that would lend \$600 million for building alcohol fermentation plants. The U.S. Department of Agriculture has increased funds for research on alcohol by \$4 million and has lent \$30 million for pilot plant construction. President Carter has promised \$11 million for plant construction.
4. N. Wade, *Science* 204, 928 (1979).
5. J. G. Da Silva, G. E. Serra, J. R. Moreira, J. C. Cocalves, J. Goldemberg, *ibid.* 201, 903 (1978).
6. D. Pimentel, L. E. Hurd, A. C. Bellotti, M. J. Foster, I. N. Oka, O. D. Sholes, R. J. Whitman, *ibid.* 182, 443 (1973).
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10. M. W. Gilliland, *Science* 189, 1051 (1975).
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12. Louisiana State University Agricultural Experiment Station, paper prepared for the Contact Committee Meeting, Saint Gabriel, La., 15 June 1978.
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14. An estimate of the energy input for the construction and repair of tractors, harvesters, plows, trucks, and other farm machinery was obtained from Pimentel et al. (6), who calculated the energy equivalent of a unit weight of machinery (20.69 kcal/kg); equipment functions for 4 to 15 years (12). Repairs were assumed to be 6 percent of total machinery production (6). Ricard (20) estimated the total weight of Louisiana sugarcane machinery to be 72 kg/ha-year (see (1)) for sugarcane equipment lists).
15. L. Fielder, Jr., and S. L. Guy, *La. State Univ. Agric. Exp. Stn. Dep. Agric. Econ. Res. Rep.* 496 (1975).
16. H. S. Birkett and J. A. Polack, *Sugar J.* 40 (No. 12), 9 (1978).
17. J. A. Polack, Audubon Sugar Institute, Louisiana State University, Baton Rouge (personal communication, May 1979).
18. However, as discussed by Wade (4), price incentives and tax subsidies allow alcohol production to be economically appealing. Tax benefits amount to \$44 per barrel of alcohol in Iowa. Supposedly, the purpose of tax breaks is to stimulate increased fuel supplies. But this analysis shows that there will not necessarily be a net energy gain. At the same time, there will be a substantial loss of government revenues.
19. H. T. Odum et al., *Congressional Record*, 25-26 March 1976, pp. 255-302.
20. R. Ricard, in *Handbook on Energy Utilization in Agriculture*, D. Pimentel, Ed. (CRC Press, West Palm Beach, Fla., in press).
21. On the basis of total Louisiana sugarcane acreage, total alcohol production could equal the energy content of 36 percent of the gasoline consumed in the state. However, for plants in design that will use a 50:50 ratio of crop residues and natural gas for industrial fuel, the net energy yield will be 4.3×10^6 kcal/ha-year. This is only 9 percent of state gasoline consumption and would be insignificant in the context of total energy consumption in Louisiana. It should be noted that all labor-energy conversions in this analysis are based solely on the food energy consumed by a worker laboring a unit length of time. A more accurate assessment would include the cost of production and maintenance of a worker, as is done for machinery. These costs can be estimated by converting the worker's salary to energy (assuming all salary is spent on meeting the food, clothing, shelter, and entertainment needs of a worker's family), using the 1970 dollar:energy ratio of 51:20,000 kcal (6). With this approach, labor represents 19 percent of all agricultural energy inputs and is second in importance to fuel energy inputs. The resultant net energy ratios in Table 2 then become 1.7:1, 1.4:1, and 0.8:1 for cases 1, 2, and 3, respectively.
22. C. D. Hodgman, R. C. West, and C. W. Wallace, Eds., *Handbook of Chemistry and Physics* (CRC Press, West Palm Beach, Fla., ed. 35, 1953).
23. We appreciate manuscript review by J. G. Goswami. Supported by the Louisiana Sea Grant College Program, part of the National Sea Grant College Program maintained by the National Oceanic and Atmospheric Administration, U.S. Department of Commerce. This is Coastal Ecology Laboratory publication LSU-CEL-79-09.
24. Present address: Marine Institute, University of Georgia, Sapelo Island 31327.

July 1979; revised 29 October 1979

Ncat the National Center for Appropriate Technology

PO Box 3636 Butte, Montana 59701 (406) 494-4572

November 5, 1979

BIOFUELS RESEARCH PROGRAM AT NCAT

NCAT currently has three projects dealing with the production of alcohol fuels from renewable resources. Two of these projects are research and development orientated while the third is a demonstration project. The staff personnel will consist of a program manager/senior scientist, a project manager/coordinator, a microbiologist, a chemical engineer and two technicians. The overall goal of the program is to provide appropriate technologies that can be utilized by low-income farmers to produce liquid fuels from renewable resources. We are currently concentrating our effort on ethanol fuels, produced by fermentation and dewatered by distillation.

Research in the microbiology of fermentation is being conducted with the goal of improved ethanol production efficiency. Improvements would include reduction in the time required for fermentation, increased ethanol yields and control of contamination. The approach is to isolate strains of yeast or other fermentation microorganisms with improved ethanol production characteristics. The ability to grow at high sugar concentrations in the mash, tolerance of high ethanol concentrations and the ability to ferment at higher temperature are among the characteristics being sought. Improved strains developed in the laboratory will be tested in a pilot-scale ethanol production facility.

Other fermentation work will include preparing a publication on small scale fermentation as a guide for people who operate or plan to operate small scale alcohol production plants. This paper is scheduled for completion at the end of May 1980.

The objective of the alcohol separations task is to develop the technology for efficient small scale separation methods for obtaining fuel-grade ethanol (approximately 90% ethanol). The main emphasis will be on distillation techniques for small size farm units of 50 gallons per day or less. Areas of research include equipment design (low cost and reliable) i.e. use of packed columns, process control, and energy input. Other separations will be researched and tested including solar process heat and solar distillation.

The alcohol demonstration project will consist of the construction of five small - 30 gallon/day - alcohol production facilities using accepted technologies. These units will be designed, built, and tested at NCAT in Butte, Montana. The source of raw feedstock materials will determine the particular "beer" preparation procedures and hardware requirements. The completed units will be transported to selected locations around the country and the participating-agency staff will be instructed in the safe and efficient operation of the system. These units will then serve as a demonstration of the small scale production of the alcohol fuel.

James D. Kersetter, Ph.D.
Biomass Program Manager
Research & Development Division

Alcohol Fuels

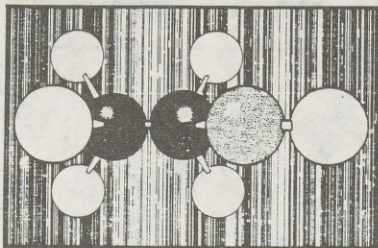
an
annotated
bibliography

National Center for Appropriate Technology

P.O. Box 3838

Butte, Montana 59701

406-494-4572



Alcohols as a serious liquid fuel option have only recently come into the public eye. Thus, the literature is sketchy and limited in scope. This bibliography is a current compilation of the best publications available. As new information becomes available, the bibliography will be updated.

The source materials listed are limited primarily to the production of alcohol through fermentation. Other processes, such as cellulose hydrolysis and pyrolysis, are mentioned only briefly to help the reader obtain a more thorough understanding of alcohol production options.

The three best works in the bibliography for the serious producer and student alike are Lance Crombie's *Making Alcohol Fuel*, Robert S. Chambers' *Small Fuel-Alcohol Distillery Workbook*, and the National Alcohol Fuel Producers Association *Learning Guide for Alcohol Fuel Production*. We strongly recommend these reference guides.

S.S. & J.D.K.

This publication was prepared with funds provided by the U.S. Community Services Administration to fulfill a grant requirement. The opinions expressed herein are those of the authors and do not necessarily represent the views or policies of CSA.

Bibliographies available from NCAT:

- B001 Solar
- B002 Wind
- B003 Organizing Community Gardens
- B004 Economic Development
- B005 Building and Energy
- B006 Alternative Waste/Recycling Systems
- B007 Methane from Anaerobic Fermentation of Manure
- B008 Biological Management of Passive Solar Greenhouses
- B009 Alcohol Fuels from Renewable Resources

To order, write:
Information
National Center for Appropriate Technology
P.O. Box 3838
Butte, Montana 59701

BOOKS

Makin' It on the Farm

Prepared by:
Micki Nellis
Available from:
American Agriculture Movement
P.O. Box 100,
Iredell, Texas 76649

1979	88 pages	\$2.95
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A step-by-step guide to production of fuel ethanol from farm crops, based on the experiences of Eugene Schroder and family in Campo, Colorado. The booklet includes success stories (Albert Turner, Archie Zeithamer, Lance Crombie & more), information on regulations, cost figures for stills, contacts for equipment, engine modifications information and suggestions for starting out. One of the most solidly researched books on alcohol production, backed up by years of actual experience. Fully illustrated, including detailed plans.

Making Alcohol Fuel - Recipe and Procedure

Prepared by:
Lance Crombie
Available from:
Micro-Tec Laboratories, Inc.
Rt. 2, Box 19
Logan, Iowa 51546

1979	40 pages	\$4.50
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This pamphlet provides current, practical information not available from other sources, including temperatures and yeasts data, as well as how to apply for a still permit and other how-to-do-it ideas. This work precedes a larger manual on alcohol production soon to be published by Micro-Tec Laboratories.

Making Wine, Beer and Merry

Prepared by:
Howard & Gibat
Available from:
Micro-Tec Laboratories, Inc.
Rt. 2, Box 19
Logan, Iowa 51546

1978	182 pages	\$4.50
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Howard and Gibat explain the fermentation process for beverage drinks in any easy-to-understand manner. The book is good for the beginner — before one starts fuel production.

Methanol and Other Ways Around the Gas Pump

Prepared by:
John Ware Lincoln
Available from:
Garden Way Publishing
Charlotte, Vermont 05445

1976	134 pages	\$5.95
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An excellent resource book on automobile conversion to methanol fuels, methane and alternative engines. The author also discusses the history of alcohol and other automotive information. It's an important book for those interested in alternative auto fuels.

Chemistry of Wine Making

Prepared by:
A. Dinsmoor Webb
Available from:
The American Chemical Society
1155 16th Street, N.W.
Washington, D.C. 20036

1974	311 pages	\$22.50 hard cover \$8.50 paperback
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This resource is an anthology of papers presented at a symposium sponsored by the Division of Agricultural and Food Chemistry at the 165th meeting of the American Chemical Society, Dallas, Texas, on April 12, 1973. The papers address topics such as: winemaking as a biochemical sequence; Malo-lactic fermentation; chemical aspects of distilling wine into brandy; and an enzymology paper. The book should be read for a thorough understanding of fermentation.

Survey of Alcohol Fuel Technology

Prepared by:
The Mitre Corporation
Available from:
National Technical Information Service
U.S. Department of Commerce
Springfield, Virginia 22161
NTIS Acquisition No. PB 256-007
PB 256-008

1975	2 volumes	\$12.50
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The survey, prepared for the Office of Energy R&D Policy of the National Science Foundation, ranges from fermentation to hydrolysis. It is well documented although its analysis is dated and contains some inaccuracies. Nonetheless, the work is the most complete accumulation of alcohol technologies to date and is an important resource book.

The Small Fuel-Alcohol Distillery: General Description and Economic Feasibility Workbook

Prepared by:
Robert S. Chambers
Available from:
ACR Process Corporation
808 S. Lincoln Avenue, No. 14
Urbana, IL 61801

1979	21 pages	Free
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Chambers documents a thorough walk-through of the economics (including financing and payback),

technology and marketing. The workbook is practical for the would-be alcohol fuel entrepreneur. Chambers, perhaps the foremost researcher in the field, reviews alcohol production in a systematic way.

The Practical Brewer

Prepared by:
Edward H. Vogel and others
Published by:
Master Brewers Association of America
Second Edition
Available from:
Micro-Tec Laboratories, Inc.
Rt. 2, Box 19
Logan, Iowa 51546

1977	475 pages	\$37.50
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Written for the practical brewer working in large scale systems, this detailed book covers water, malting, safety, terminology, brewing control and storage. Although the book deals specifically with drinkable alcohol, the information is invaluable to the alcohol fuels producer.

Efficiencies of Methanol Production From Gas, Coal, Waste or Wood

Prepared by:
Dr. Thomas B. Reed
Available from:
Solar Energy Research Institute (SERI)
1536 Cole Blvd.
Golden, Colorado 80401

1976	12 pages	Free
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Reed is one of the foremost methanol experts in the country and has published numerous papers on methanol, ethanol and biomass fuels. His papers cover automobile modifications and statistics, fuel and fertilizer production, to name a few.

Design of a Two-Bushel Per Day Continuous Alcohol Unit

Prepared by:
William B. Altsheller and others
Available from:
National Center for Appropriate Technology
P.O. Box 3838
Butte, Montana 59701

1947	5 pages (photocopied)	\$.60 prepaid
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This paper is one of the first appropriate technology papers on fuel production. It documents the use of sulfuric acid hydrolysis and continuous fermentation that yields 190-proof alcohol in eleven hours. The paper, prepared by five Seagram scientists, is still technically relevant and deserves attention, although it is out of print.

Indiana Grain Fermentation Alcohol Plant

Prepared by:
A.T. Brackett and others
Available from:
Indiana Department of Commerce
State House, Room 336
Indianapolis, Indiana 46204

1976	80 pages	Free
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The Indianapolis Center for Advanced Research and R.L. Longardner Associates prepared this excellent process and economic survey of a large scale system. The book covers anhydrous production and addresses cattle feedlots and other closed system scenarios.

Grain Alcohol Study

Prepared by:
Fred S. Lindsey
Available from:
Indiana Department of Commerce
State House, Room 336
Indianapolis, Indiana 46204

1975	67 pages	Free
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The book was put together by Rock Island Refining Corp., along with Longardner and Associates for the Indiana Department of Commerce. It's an indexed handbook on alcohol blended motor fuels, alcohol production, industrial alcohol, agricultural capabilities, economics and conclusions. This fine resource handbook is set up in an easy-to-use manner, footnoted and well documented.

Denatured or Industrial Alcohol

Prepared by:
Rufus F. Herrick
Published by:
John Wiley and Sons
Out of print

1907	516 pages	Library of Congress or local library
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This book is one of the first American publications to treat the subject of ethanol as a source of fuel. It is written at an elementary level, yet covers the field of power alcohol very well. After discussing the manufacture of alcohol, the book describes many different types of distillation apparatus. One chapter deals with the determination of alcohol and includes useful tables. The rest of the book addresses end-use applications, including alcohol as an illuminant, alcohol heating and cooking apparatus, as well as alcohol engines. Check for this book at your college library or used-book store. It will not disappoint your efforts to find it.

Motor Fuels from Farm Products

Prepared by:
P. Burke Jacobs and Harry P. Newton

Available from:
National Center for Appropriate Technology
P.O. Box 3838
Butte, MT 59701

1938	129 pages (photocopy)	\$4.00 prepaid
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This historic U.S. Department of Agriculture publication outlines the factors to consider with regard to alcohol production from farm products. The crop yield, economics and supply situations have all changed, but the basic technology and methodology are still valid. This book represents a good guide to the national alcohol fuel potential, but is out of print.

Food for Thought

Prepared by:
H.F. Willkie and P.J. Kolachov
Available from:
Indiana Farm Bureau, Inc.
130 East Washington Street
Indianapolis, IN 46204

1942 (reprinted 1978)	209 pages	\$2.00
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This book, prepared in 1942 by scientists from Seagram and Sons, Inc., for the Indiana Farm Bureau, discusses the technical aspects of ethyl alcohol as a motor fuel and also the availability of raw materials for the production of alcohol. The lengthy appendix contains three papers dealing with the development and design of continuous cooking, washing and fermentation systems. The experimental procedures and data will be helpful to people interested in the cooking and fermentation aspects of alcohol production.

Learning Guide for Alcohol Fuel Production

Prepared by:
National Alcohol Fuel Producers Association
Available from:
National Alcohol Fuel Producers Association
2444 B Street
Lincoln, Nebraska 68502

1979	600 pages	\$75.00 including membership
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This book has been put together as a textbook and working manual for an alcohol production course offered at Colby Community College in Colby, Kansas. It deals with a variety of subjects ranging from historical notes on brewing to markets for alcohol. There are chapters on financing an alcohol fuel production system, regulatory requirements, feedstocks for alcohol fuel, building a plant, fermentation, distillation, and more. The appendices include lists of manufacturers, ATF regulations, and a bibliography. If you want just one book for your library on alcohol fuel, obtain this one.

The Lore of Still Building

Prepared by:
Gibat and Gibat

Available from:
Micro-Tec Laboratories
Rt. 2, Box 19
Logan, Iowa 51546

1978	125 pages	\$4.00
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One of the few publications to address the subject on an introductory level, this book describes the preparation and distillation of alcoholic beverages. It discusses the preparation of mash and wine in non-technical language. The chapter on distillation is a good introduction for the lay person just beginning.

Grain Motor Fuel Alcohol Technical and Economic Assessment Study

Prepared by:
Ralphael Katzen Associates

Available from:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

1979	349 pages	\$14.00
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This engineering and economic report deals with a large (50 million gallons per year) fuel alcohol facility. It is a good model for those interested in large plants. The basic engineering and economic principles apply to plants of all sizes, and thus, should be of interest to all those considering the construction of an alcohol plant as a profit-making operation. It is more technically oriented than the other publications listed in the bibliography.

ACCESS LISTINGS

Alcohol Fuels: Citations from the NTIS Data Base

Prepared by:
Diane M. Cavagnaro

Published by:
National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161
NTIS No. PS-78/0673

1978	187 pages	\$28.00
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Essentially, this resource is a technical literature search from the NTIS data base, including papers from production to automotive use. The bibliography covers Federally funded research on alcohol based fuels, as well.

Annotated Bibliography on Alcohol Fuels

Prepared by:
Scott Sklar

Published by:
Selwyn Roberts Publications
153 East 116 Street
New York, New York 10029

1978	250 pages	\$16.75
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A complete bibliography on alcohol fuels from technical papers to news items, the resource is cross-referenced by topics: agriculture, automotive, biomass, coal, conversion processes, general articles, economics, health, history, implementation processes, industrial, international, policy and silviculture. There is also a co-author index.

Bio-Energy Directory

Prepared by:
Carol Camello and Paul Bente

Available from:
Bio-Energy Council
Suite 825 A
1625 Eye Street, N.W.
Washington, D.C. 20006

1979	534 pages	\$40.00
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This very useful directory contains one-page summaries of hundreds of projects concerned with energy from biomass. There are 37 projects that deal specifically with alcohol. They are divided into sections on hydrolysis, fermentation and alcohol technology. Have your library order a copy if it does not already have one.

Oak Ridge National Laboratory Bibliography

Published by:
Environmental Resource Center
Information Center Complex
P.O. Box X, Building 2029
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

The laboratory information service has lists of technical papers on the alcohol fuel issue. The information is not always complete for each citation but the quantity of papers is impressive. The lists are constantly updated and costs vary.

PERIODICALS

Alternative Sources of Energy

Published by:
Alternative Sources of Energy, Inc.
Route 2
Milaca, Minnesota 56353

Subscription Price: \$6.00 per year

The articles in this bimonthly magazine emphasize the development of alternative technologies for energy production, agriculture, architecture, transportation and communication in a decentralized society. They have run several features on alcohol fuels and will continue to do so.

Notimes

Published by:
The International Biomass Institute
1522 K Street, N.W., Suite 600
Washington, D.C. 20005

Subscription Price: \$10.00 per year including membership etc.

This monthly newsletter concerns itself primarily with energy sources not reliant on fossil fuels and scientific ecological farming which optimizes production on a long term. IBI, a membership organization, has an active alcohol fuels information program.

Gasohol U.S.A.

Published by:
National Gasohol Commission
Gasohol U.S.A.
P.O. 9547
Kansas City, Missouri 64133

Subscription Price: \$12.00

This monthly newsletter discusses almost every aspect of alcohol fuels including production, sales outlets, government regulations and meetings. Ethanol is emphasized in this publication.

The Mother Earth News

Published by:
Mother Earth News
P.O. Box 70
Hendersonville, N.C. 28739

Subscription Price: \$15.00 per year

This popular bimonthly magazine deals with alternative technologies and do-it-yourself projects. *The Mother Earth News* has frequent articles on still plans and automobile modifications.

Biomass Refining Newsletter

Published by:
Dr. Larry J. Douglas
Solar Energy Research Institute
1536 Cole Boulevard
Golden, Colorado 80401

Subscription Price: Free

This quarterly newsletter reports on the fermentation activities of the Biomass Energy Systems Branch at the Department of Energy. It deals with current research results and emphasizes the conversion of cellulose to ethanol. It is most relevant for researchers.

Other newsletters that provide alcohol information but do not have information in every issue are:

Solar Life

Published by:
SEINAM (Solar Energy Institute)
1110 Sixth Street, N.W.
Washington, D.C. 20001

Subscription Price: \$5.00 per year; monthly

Small Farm Energy Project Newsletter

Published by:
Center for Rural Affairs
P.O. Box 736
Hartington, NE 68739

Subscription Price: Free; bimonthly

People and Energy

Published by:
Institute for Ecological Policies
1413 K. Street, N.W.
8th Floor
Washington, D.C. 20005

Subscription Price: \$15.00 per year; monthly

RESOURCE LIST

**The Department of Energy
Information Number**

The Office of Consumer Affairs has set up two toll-free phone numbers - 800-535-2840 and 800-533-5333 - for people interested in alcohol fuels. The program has the technical back up of Nicholls State College in Thibodaux, Louisiana, and the Southwest State University in Marshall, Minnesota.

The DOE contact in Washington, D.C., is Harry Loper, 202-252-5141.

Many people have been very interested in relevant "hands on" alcohol fuels data and technical assistance. The following non-profit organizations have ongoing alcohol fuels programs and are willing to assist you:

NCAT
P.O. Box 3838
Butte, Montana 59701

National Alcohol Fuel Producers Association
2444 B Street
Lincoln, Nebraska 68502

Midland Energy Institute
900 Grand
Kansas City, Missouri 64106

The Mother Earth News
P.O. Box 70
Hendersonville, N.C. 28739

Alternative Energy, Ltd.
Rt. 1, 650 Pine
Colby, Kansas 67701

The following people are resource contacts on alcohol issues, automobile modification, still construction and overall technology:

*Main expertise:

A - Automobiles
I - Issues
S - Still Construction
T - Overall Technology

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Urbana, Illinois 61801
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(S)

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Drury, Missouri 65638
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Houston, Texas 77043
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Chicago, Illinois 60606
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Philadelphia, Pennsylvania 19103
Phone: 215-299-8000

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8708 Maennedorf
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or U.S. contact for this
firm:

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230 Crossways Park Dr.
Woodbury, New York 11797
Phone: 516-364-2100
Attention: Rene Loser

Jackson Yu
Bechtel Corporation
50 Beale Street
15th Floor - Room B15
San Francisco, California 94119
Phone: 415-768-2971

**EXAMPLES OF SMALL AND
MEDIUM - SIZED ALCOHOL STILLS**

Mother Earth News
P.O. Box 70
Hendersonville, NC 28739
3" still

Alan and Archie Zeilheimer
Rt. 2 Box 63
Alexandria, MN 56308
12" still

Gene Schroeder
Campo, CO 81029
12" still

Pat Torgerson
Lambert, MT 59243
2" still

Albert Turner
SW Alabama Farm Co-ops
Selma, AL 36701
10" still

Paul Middaugh
South Dakota State University
Brookings, SD 57007
12" still

Alternative Energy Ltd.
Rt. 1, 650 Pine
Colby, KS 67701
8" still

Prepared Statement of Alfred M. Campbell

Good afternoon. I am Mo Campbell. Along with my partner, Buzz Marcus, I founded MAR-CAM Industries of Glenside, Pennsylvania in July of 1978 in order to market, promote, and distribute Gasohol. Buzz Marcus and I had been involved with the midwest grass roots movement to develop Gasohol since 1977. MAR-CAM Industries is responsible for the first retail sales availability of Gasohol in Missouri, Virginia, Maryland, South Carolina, Delaware, Pennsylvania, New Jersey, and the District of Columbia. From six outlets in June of 1979, MAR-CAM has grown to become America's largest independent Gasohol marketer with over 750 stations today from New Jersey to Florida. MAR-CAM's growth has been the hurdling of one obstacle after another.

In statements and testimony before the Environmental Protection Agency (September 1978), the Department of Energy (December 1978), the House Small Business Anti-Trust and Restraint of Trade Subcommittee (September 1979), the National Alcohol Fuels Commission (October 1979), and the Senate Committee on Government Affairs Subcommittee on Energy (December 1979), I have publicly stated the opposition from the major oil companies to the development of Gasohol.

To set the record straight, not all of the oil companies have been openly hostile to Gasohol or MAR-CAM. Cities Service or CITGO cooperated fully with MAR-CAM and Dave Fannan Petroleum of Alexandria, Virginia, where we pioneered the first Gasohol ever sold on the East Coast. CITGO, incidentally, continued their support of Gasohol by becoming one of the first large oil companies to test-market Gasohol in company stations. CITGO's record is excellent.

The over forty independent oil jobbers with whom MAR-CAM Industries works represent branded outlets for the gasoline products of Texaco, ARCO, Gulf, Mobil, Union 76, Phillips, Sunoco, BP, CITGO, Shell and AMOCO. Of this list, Sunoco, BP, Union 76, Phillips, Shell and AMOCO have remained neutral, from our viewpoint. The others, Texaco, ARCO, Gulf, and Mobil have openly resisted Gasohol through their independent outlets, as the enclosed material clearly documents.

In preparing for today's testimony, I reviewed massive amounts of reference material on Gasohol collected by Richard F. Merritt, energy consultant to the National Gasohol Commission and a pattern emerged. The First Stage of oil company opposition to Gasohol came in the form of propaganda. This can be seen in the enclosed API position paper, the Mobil Penick and C&tner letters, Mobil's President's statements in Philadelphia, and especially in Mr. Hinton's Mobil testimony of today.

The last four pages of this testimony show radically hypocritical material disseminated by EXXON. The very hard to read photocopy of the EXXON News refers to "driveability problems" and states, "A high level of research is necessary to resolve the technical and economic problems associated with the use of alcohol as motor fuel." This is a Stage Two piece, for it attempts to slow down the pace of Gasohol development by calling for a "high level of study." This is clearly a stall tactic because Cleveland Discol, a subsidiary of EXXON's Standard Oil of New Jersey, marketed an alcohol blend in England from 1935 to 1964. EXXON knows the quality of alcohol blends. Read

the enclosed Cleveland Discol advertisement. It is so positive about gasoline alcohol blends that it should have a MAR-CAM copyright. Incidentally, they marketed up to a 33 1/3% alcohol blend.

The accumulated damage to the free, rapid, and necessary development of Gasohol by Stages One and Two is astronomical. The Grass Roots movement for Gasohol has been one of dedication by hundreds of thousands of Americans spending their personal time and money to implement Gasohol. The ability of the major oil companies, by virtue of their sheer economic and political vastness to spread negative comments on Gasohol is overwhelming.

Stage Three in opposing Gasohol can be termed marketing restraints. This is the part we are discussing today regarding credit card usage. It is the most documentable and the most visible. I feel, however, that all Five Stages are equally oppressive and dangerous to American alternative energy development, the American economy, and our national defense.

I have spoken with the other Gasohol marketers on today's panel and we all face the exact same Stage Three marketing restraints. My documentation lies with ARCO, Texaco, Mobil, and Gulf. The credit card issue is merely the tip of the iceberg that can be seen and touched as it protrudes from the icy waters.

Initially, Texaco cooperated fully with their independent oil jobbers who blended and marketed Gasohol. In my House Anti-Trust and Restraint of Trade Committee testimony, I had nothing but praise for Texaco, because they fully backed MAR-CAM's introduction of

retail Gasohol sales for the first time ever in Pennsylvania and New Jersey. This was done through a Texaco independent oil jobber, B.R. Peters Company of East Stroudsburg, PA. Approximately 60 days later a Texaco division manager told this same jobber not to purchase Texaco no-lead gasoline for the purposes of Gasohol blending, suggesting the jobber buy non-Texaco no-lead and market that Gasohol blend from a Texaco branded station. Three business days after that direct statement was made MAR-CAM's national sales manager, Andrew P. Sternberg testified about it to the National Alcohol Fuels Commission, chaired by Senator Birch Bayh. The policy was immediately dropped and revised by Texaco. Several of the enclosed press clippings in the jobbers local papers document this occurrence. Currently, Texaco does not allow its independent oil jobbers who are buying and blending their own Gasohol to use the Texaco credit card. Recently Texaco released a Press Release that implied that any non-Texaco branded Gasohol was "psuedo" Gasohol. I would like to submit this press release to the Committee within a week.

Texaco jobbers have stated to me that up until last year, Texaco had a product exchange agreement with Ashland Oil Company to supply the Buffalo market with gasoline. Although this gasoline met Texaco specifications, it was not a Texaco product. It was marketed in Texaco stations and sold on the Texaco credit card. Last year, Texaco pulled out of the Buffalo market due to the termination of its product exchange agreement with Ashland.

Last Monday, February 25th, an independent Texaco oil jobber in eastern Pennsylvania was told by his sales representative that the blending of alcohol and Texaco no-lead would constitute adulteration of product and possible grounds for termination of his contract. The jobber was told that Texaco sales of Gasohol in the northeast had been poor and that is why Texaco brand Gasohol was not yet available in the Philadelphia market. The jobber was told to wait until Texaco brand Gasohol was available in Philadelphia. I had never spoken to this jobber or any representative of his company until Monday, February 25, when I called him from the Senate Anti-Trust Subcommittee office, accompanied on the phone by a sub-committee staff member. I have not distorted the jobbers statements of that phone conversation.

After the jobber applied pressure, got letters from his dealers agreeing to de-brand the pump, not accept Texaco credit cards, and not hold Texaco liable for any product liability, Texaco's position became, according to the jobber, "Well, I guess we can't stop you."

We will never know how many jobbers and dealers throughout America have not gotten into Gasohol because of verbal, non-documentable threats from oil company representatives causing fear that the jobber or dealer would be terminated by his supplier.

The enclosed ARCO material documents how they prevented a patriotically motivated, independent jobber in Doylestown, Pa., from opening Gasohol. The jobber stated that he would not market Gasohol

MO CAMPBELL

until he had received written permission from ARCO that it would not constitute grounds for termination of his contract. He taught me a great lesson by saying, "What the majors say and what they do are two different things. I can't risk my business without having it in writing." That jobber has yet to receive a letter from ARCO that he requested. ARCO's public relations supervisor said that it should take about two weeks. That was June 26, 1979.

DE BRANDING

showing a sign
Last Wednesday, February 27th, ARCO threatened one of its distributors because he did not have a sign on his pump in *ridiculous?* three inch letters stating "Gasohol--This is Not an ARCO Product." *pretty reasonable?*
Also, last Friday, February 29th, ARCO hassled an independent jobber who entered their Paulsboro, New Jersey area terminal with 10% alcohol in his tank truck. The jobber was eventually loaded, but ordered never to come on the terminal property with 10% alcohol in his compartments again.

Incidentally, ARCO has marketed a 5 to 7% blend of alcohol in their gasoline east of the Mississippi for over the last five years. Their alcohol comes from non-renewable feedstocks of petroleum or natural gas, not from renewable agricultural crops.

Last November, Gulf threatened to pull out the pumps at Bill Brooks' Gulf Station at 5120 Georgia Avenue, N.W., Washington, D.C. when the area representative was informed that a coalition of Brooks, the Greater Washington-Maryland Service Station Association, MAR-CAM Industries, and Dave Fannon Petroleum planned to open the first-ever

Gasohol outlet in the Nation's Capital. As the enclosed material documents, the President of Gulf had to intervene two days before the grand opening and sell the pump to Brooks. Brooks' November 8, 1979 contract is enclosed and it prohibits Brooks' use of the Gulf credit card.

Concluding my in the field documentable examples is Mobil's track record of resisting Gasohol at every level possible. It should be noted that Mobil has two products in direct competition to Gasohol namely: Premium 91.5 octane no lead gasoline and also a patented conversion process to transform coal to alcohol to gasoline. The process is energy inefficient, yields approximately only 1 gallon of gasoline for every 2.3 gallons of methanol produced from coal, and was paid for by taxpayer funding from D.O.E., although Mobil owns the patent completely. In the enclosed material a letter from a Mobil district manager orders a MAR-CAM jobber to cease and desist the use of the Mobil credit card for Gasohol sales, because Mobil does not extend credit card privileges to third party non-Mobil products. On the back of that letter is reprinted a flyer contained in my nephews current Mobil credit card statement promoting a way to save every by charging a quilt for warmth, on the Mobil credit card. The product is offered through the Mobil Merchandise Center. Mobil has already used its massive profits to buy Montgomery Wards and diverts corporate energies and fuels into the sale of third party novelty items. Is this quilt Mobil's master plan to save energy?

Stage Four can finally be told. With the introduction of over 700 Texaco branded Gasohol stations, the implementation of over 600 AMOCO Gasohol stations, and several other majors beginning the marketing of Gasohol, Stage Four is the area of control of current alcohol supplies. Already alcohol is in tight supply. Independent jobbers in the midwest are being cut way back on the gallonage they have contracted for. Although the independent oil jobber created the Gasohol market by risking his own time, effort, money, equipment, reputation, and personnel, he is now faced with possible extinction from the market by the major oil companies. No law prohibits a distillery from selling all of their production to one source, such as a major and thereby preventing the independent jobber from obtaining alcohol. Today's greatest threat to the small business pioneers of Gasohol is the major oil companies economic and distributional ability to corner the entire alcohol supply in America, virtually overnight.

Stage Five looks at the vertically integrated major oil companies and says, what if they try to do it again in the alcohol industry as they have tied up all phases of the oil industry. The oil companies can afford to build and control alcohol production plants. They can also afford to purchase America's farmlands to produce the raw materials that supply these fuel producing distillers. At a time when independent dealers and jobbers are calling for divergiture, and politicians and citizens are calling for nationalization, the Federal government has an obligation to provide oversight restricting the major vertically

integrated multinational oil companies from becoming involved in the production of food and fuel through the alcohol industry.

The independent marketers of Gasohol believe the track record of the major oil companies as outlined in today's hearings clearly points to an irresponsible and anti-competitive attitude toward the development of non-hydrocarbon alternative energy forms. Even today the same majors who are marketing Gasohol are denying to supply unleaded allocations ordered by the Office of Hearings and Appeals to over 100 independent oil jobbers. Something must be done and today's hearings are clearly a concerned step by the U.S. Senate in the right direction. Thank you.

Frankly Speaking . . .

with VIC RASHEED

GULF AIDS GASOLINE DEBUT

Bill Brooks' grand opening as Washington's first gasoline distributor, took place, only through the direct intervention of Gulf's corporate chairman, Jerry McAfee.

Two days prior to the well-publicized opening, Brooks was informed by his sales rep that Gulf would have to remove the pump intended for gasoline sales, since company policy prohibited the sales of non-Gulf product through its pumps.

What made this case a little different however was the fact that Bill Brooks bought his location from Gulf some years ago. Gulf, however, retained ownership of the pumps to enable it to sell to him at DTW prices rather than those of an independent distributor.

I called Jerry McAfee who with me, was one of 14 executives representing the U.S. oil industry who attended the White House, energy "summit", meeting with Jimmy Carter on May 31; and told him of Brooks' dilemma. Gulf's policy towards gasoline he said was due in part to its experimental nature and Gulf's reluctance to accept responsibility for sales thru its pumps of an untested product. He gave an assurance that Gulf supported the national interest and the development of gasoline, and that he would figure out a way to solve the problem.

The next day Gulf officials from Baltimore presented Bill Brooks with a sheaf of papers which gave him title to one half of the dual-pump to be used to pump gasoline . . . for one dollar.

The company men then took brush and paint and painted that half of the dual dispenser, green and yellow (the gasoline colors) and placed a neat sign above it to say this was not a Gulf product.

Thanks to Jerry McAfee, Bill Brooks had a triumphant opening and a continuous line of new customers for gasoline . . . and has almost doubled his allocation, with sales of up to 2,000 gallons of gasoline in one day thru his single pump. Sales of Gulf gas have also picked up.

In Washington, Brooks pays 101.5¢ for 200-proof, 91 octane gasoline. In Maryland with a 10% reduction in the state fuel tax for gasoline distributors and one cent less state tax, the price is 99.5 cents. It sells for about \$1.12.

Senator Russell Long, chairman of the Senate Finance Committee, has a bill before his committee to remove the current 4 cent per gallon rebate of the Federal fuel tax from distributors of gasoline, unless they are also producers. Also to give gasoline producers a 40¢ per gallon tax credit with no guarantee that it would be passed on. Long is believed to have a friend who is planning gasoline production in Louisiana.



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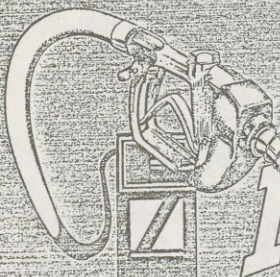
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THE NOZZLE

AUTOMOTIVE SERVICE TODAY

OFFICIAL PUBLICATION OF GREATER WASHINGTON-MARYLAND SERVICE STATION ASSOCIATION

NOVEMBER, 1979

GASOHOL COMES TO WASHINGTON, D.C.

Gasohol came to Washington, D.C. recently through a special allocation of unleaded gasoline awarded to a local jobber, by DOE, after an eight-month wait. The approval signified a change in DOE policy in favor of gasohol production, using a 10% mix of 200-proof ethanol alcohol, (made from corn) and 90% unleaded regular.

Bill Brooks, who owns his location on Georgia Ave. in D.C. was the first dealer to sell gasohol, and eliminated his high-test. His customers eagerly accepted the 91 octane gasohol as a substitute.

His grand opening was attended by Congressman Berkeley Bedell, of Iowa, chairman of the anti-trust subcommittee of the House Small Business Committee. His committee recently held hearings on the use of gasohol. It was told by GWMSSA executive director Vic Rasheed in testimony, that major oil companies were discouraging dealers from selling gasohol.

In his opening remarks, Congressman Bedell told an eager crowd that extensive use of gasohol could cut dependence on foreign oil by the amount of imports from Iran. A Brazilian delegation also attended the opening. A spokesman said that his government was now experimenting with the use of 100% alcohol in 70 government cars. Brazil has become the world's largest producer of alcohol and the largest user of gasohol. It currently uses a 20% mixture of alcohol and gasoline instead of the 10% mix used in this country. It plans to go to a 25% mixture in the near future in a vigorous effort to cut its oil imports.

The Greater Washington/Maryland Service Station Association is planning to introduce gasohol to several other locations in the Baltimore/Washington areas, using the allocation made available locally.

Cont. from P. 7

out that the first year, trial franchise provision is not covered. The companies insisted that the one-year trial franchise can be waived . . . no one has a record of it ever being done however. Meanwhile Congress under pressure from business lobbyists, continues to do a number on the F.T.C., by cutting its budget in appropriation bills, which specifically forbid it to spend money on certain projects.

Funeral homes across the country recently paid \$500 each to hire a top business lobbyist to work on a congressional committee to overturn an F.T.C. disclosure rule, requiring funeral homes to disclose prices. It worked! A similar campaign is underway to kill F.T.C.'s used-car disclosure rule requiring a checklist to be posted on each car.

NOVEMBER, 1979



Bill Brooks is congratulated by Chuck Clinton after filling his car with the first tank of gasohol sold in Washington.



A steady stream of cars pours into the station for a sample of gasohol after the opening.



Bill Brooks with his new gasohol sign.

