

# Committee Meeting

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of

## ASSEMBLY ENVIRONMENT COMMITTEE

### ASSEMBLY CONCURRENT RESOLUTION No. 126

(Determines that DEPE regulations setting new standards for the oxygen content of motor vehicle fuel are not consistent with legislative intent)

### ASSEMBLY CONCURRENT RESOLUTION No. 127

(Memorializes the United States Congress to pass legislation eliminating the oxygenated fuel requirement under the Federal Clean Air Act and directing EPA to reevaluate the program)

**LOCATION:** Committee Room 8  
Legislative Office Building  
Trenton, New Jersey

**DATE:** April 26, 1993  
10:00 a.m.

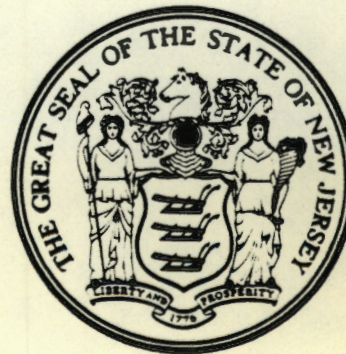
### MEMBERS OF COMMITTEE PRESENT:

Assemblywoman Maureen Ogden, Chair  
Assemblyman Lee A. Solomon  
Assemblyman Jeff Warsh

### ALSO PRESENT:

Assemblyman John C. Gibson, District 1  
Assemblyman Stephen A. Mikulak, District 19

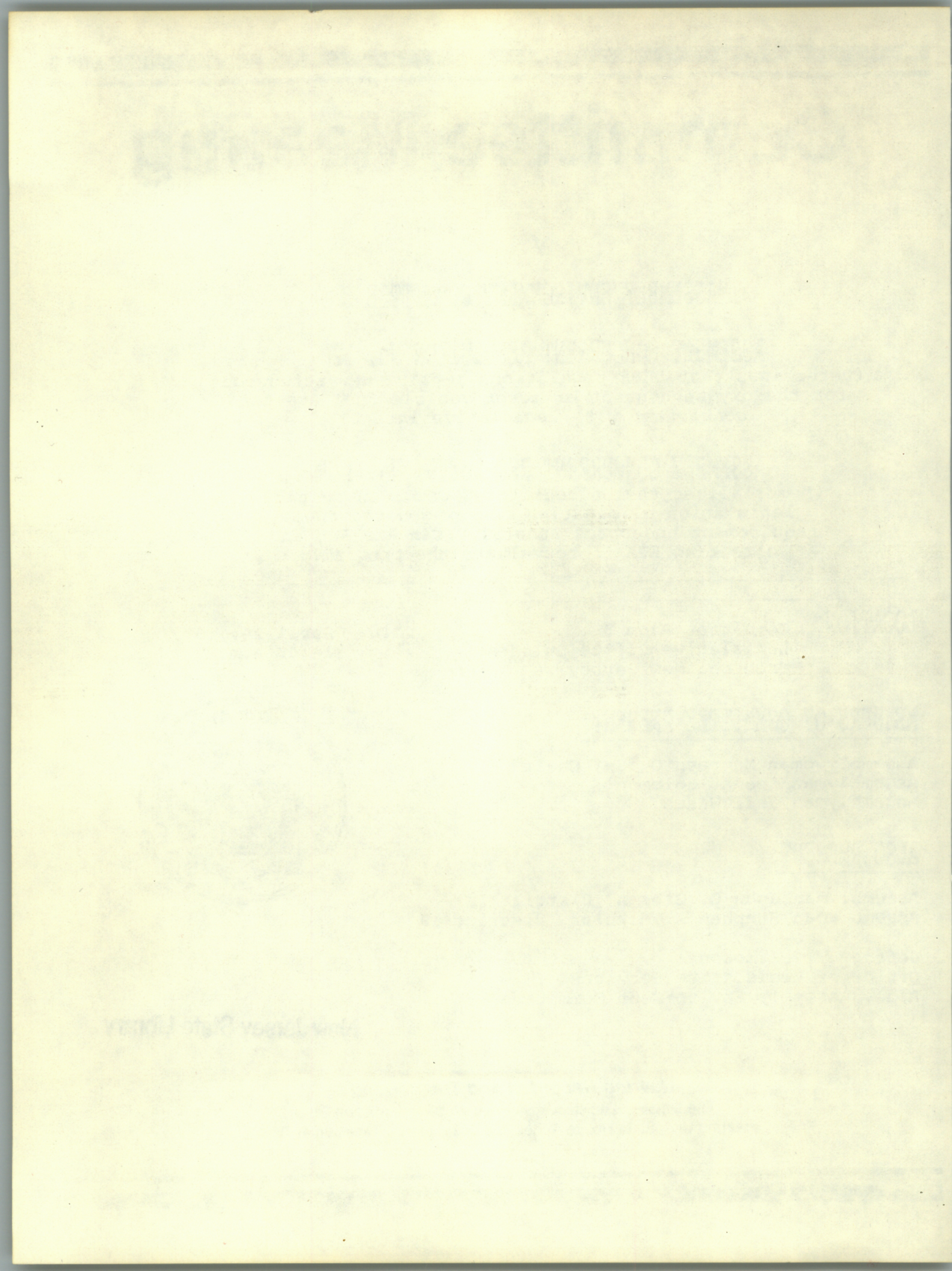
Jeffrey T. Climpson  
Office of Legislative Services  
Aide, Assembly Environment Committee



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**New Jersey State Legislature**

ASSEMBLY ENVIRONMENT COMMITTEE  
 LEGISLATIVE OFFICE BUILDING, CN-068  
 TRENTON, NEW JERSEY 08625-0068  
 (609) 292-7676

**COMMITTEE NOTICE**

TO: MEMBERS OF THE ASSEMBLY ENVIRONMENT COMMITTEE  
 FROM: ASSEMBLYWOMAN MAUREEN OGDEN, CHAIR  
 SUBJECT: COMMITTEE MEETING - April 26, 1993

*The public may address comments and questions to Jeffrey T. Climpson or Lucinda Tiajloff, Committee Aides, or make bill status and scheduling inquiries to Elva Thomas, secretary, at (609) 292-7676.*

-----  
 The Assembly Environment Committee will meet on **Monday, April 26, 1993 at 10:00 AM in Committee Room 8, Legislative Office Building, Trenton, New Jersey**, to discuss the following topic:

**The Use of Oxygenated Gasoline in New Jersey and the State Implementation of the Oxygenated Fuels Program.**

The Committee will also hear testimony, for the purposes of discussion only, on the following bills:

- |  |  |
|--|--|
| ACR-126<br>Mikulak/Hartmann<br>(pending intro) | Determines that DEPE regulations setting new standards for the oxygen content of motor vehicle fuel are not consistent with legislative intent.                                      |
| ACR-127<br>Gibson<br>(pending intro)           | Memorializes the United States Congress to pass legislation eliminating the oxygenated fuel requirement under the federal Clean Air Act and directing EPA to reevaluate the program. |

Issued 04/13/93



# ASSEMBLY CONCURRENT RESOLUTION No. 126

## STATE OF NEW JERSEY

INTRODUCED MAY 6, 1993

By Assemblymen MIKULAK and HARTMANN

1 A **CONCURRENT RESOLUTION** concerning legislative review of  
2 Department of Environmental Protection and Energy  
3 regulations pursuant to Article V, Section IV, paragraph 6 of  
4 the Constitution of the State of New Jersey.

5  
6 **BE IT RESOLVED** by the General Assembly of the State of  
7 *New Jersey (the Senate concurring):*

8 1. Pursuant to Article V, Section IV, paragraph 6 of the  
9 Constitution of the State of New Jersey, the Legislature may  
10 review any rule or regulation of an administrative agency to  
11 determine if the rule or regulation is consistent with the intent of  
12 the Legislature.

13 2. The Legislature finds that the regulations adopted by the  
14 Department of Environmental Protection and Energy to set new  
15 standards for the oxygen content of motor vehicle fuel and to  
16 require the sale of oxygenated motor vehicle fuel in New Jersey  
17 during the winter months (N.J.A.C.7:27-25.1, 25.2, 25.3, 25.4,  
18 25.7, 25.8, 25.9, 25.10, 25.11, 25.12, and 7:27A-3.10; published at  
19 24 N.J.R.3539-3558) are not consistent with the legislative intent  
20 of the "Air Pollution Control Act (1954)," P.L.1954, c.212  
21 (C.26:2C-1 et seq.).

22 3. The Secretary of the Senate and the Clerk of the General  
23 Assembly shall transmit a duly authenticated copy of this  
24 concurrent resolution to the Governor and the Commissioner of  
25 the Department of Environmental Protection and Energy.

26 4. The Department of Environmental Protection and Energy  
27 shall, pursuant to Article V, Section IV, paragraph 6 of the  
28 Constitution of the State of New Jersey, have 30 days following  
29 transmittal of this resolution to amend or withdraw the  
30 regulations or the Legislature may, by passage of another  
31 concurrent resolution, exercise its authority under the  
32 Constitution to invalidate the regulations.

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### STATEMENT

36

37 This concurrent resolution expresses the finding of the  
38 Legislature that regulations adopted by the Department of  
39 Environmental Protection and Energy to set new standards for  
40 the oxygen content of motor vehicle fuel and to require the sale  
41 of oxygenated motor vehicle fuel in New Jersey during the winter  
42 months are not consistent with legislative intent pursuant to  
43 Article V, Section IV, paragraph 6 of the State Constitution.

44 The Department of Environmental Protection and Energy shall  
45 have 30 days following transmittal of this resolution to amend

1 withdraw the regulations or the Legislature may, by passage of  
2 another concurrent resolution, exercise its authority under the  
3 Constitution to invalidate the regulations.

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8 Determines that DEPE regulations setting new standards for the  
9 oxygen content of motor vehicle fuel are not consistent with  
10 legislative intent.

# ASSEMBLY CONCURRENT RESOLUTION No. 127

## STATE OF NEW JERSEY

INTRODUCED MAY 6, 1993

By Assemblymen GIBSON and Rocco

1 **A CONCURRENT RESOLUTION** memorializing the United States  
2 Congress to pass legislation eliminating the oxygenated fuel  
3 requirement under the federal Clean Air Act Amendments of  
4 1990 and directing the United States Environmental Protection  
5 Agency to reevaluate the program.  
6

7 **WHEREAS**, In order to reduce the unhealthy levels of carbon  
8 monoxide in the air, the federal Clean Air Act was amended in  
9 1990 to require that every state with nonattainment areas for  
10 carbon monoxide submit a state implementation plan providing  
11 for the sale of oxygenated gasoline with a minimum of 2.7%  
12 oxygen by weight and requiring its sale for up to 12 months of  
13 the year and a minimum of four months of the year as  
14 determined by the United States Environmental Protection  
15 Agency; and

16 **WHEREAS**, The State complied with this requirement through the  
17 State Department of Environmental Protection and Energy,  
18 which included implementation of an oxygenated gasoline  
19 program in the State's implementation plan which it submitted  
20 to the United States Environmental Protection Agency and  
21 adopted regulations implementing that program; and

22 **WHEREAS**, Since the programs's implementation, many  
23 complaints and concerns have been expressed, including reports  
24 of adverse health effects and economic impact on consumers,  
25 and these reports include consumer complaints concerning  
26 increased cost and decreased fuel economy and health  
27 complaints ranging from headaches, nausea and dizziness on  
28 the part of motorists to similar complaints and skin irritation,  
29 cracking and bleeding on hands, arms and in the nasal cavities  
30 of gas station attendants; and

31 **WHEREAS**, These complaints are not isolated to New Jersey and  
32 have resulted in at least one nonattainment area, Fairbanks,  
33 Alaska, refusing to sell the oxygenated fuel despite the absence  
34 of state authority to opt out of the program and the possibility  
35 of federally-imposed penalties and sanctions for violating the  
36 federal law; and

37 **WHEREAS**, The State does not have the authority to eliminate  
38 the requirement to sell oxygenated fuel or alter the amount of  
39 oxygenation required, but is responsible for the health and  
40 well-being of its residents who are daily confronted with these  
41 adverse effects and will be asked to do so again in years ahead  
42 if the fuel formulation and program requirements are not  
43 reevaluated and these health and consumer questions are not  
44 addressed sufficiently to correct for these problems; and

1 WHEREAS, It is altogether fitting and proper for the Legislature  
2 of this State to memorialize the United States Congress to pass  
3 legislation that would eliminate the requirement to sell  
4 oxygenated fuel pursuant to the provisions of the 1990  
5 amendments to the federal Clean Air Act and would direct the  
6 United States Environmental Protection Agency to reevaluate  
7 the program so that the health and consumer issues raised by  
8 the program's implementation are adequately addressed; now,  
9 therefore,

10  
11 BE IT RESOLVED *by the General Assembly of the State of*  
12 *New Jersey (the Senate concurring):*

13 1. The United States Congress is respectfully memorialized to  
14 pass legislation that would eliminate the requirement to sell  
15 oxygenated fuel pursuant to the provisions of the 1990  
16 amendments to the federal Clean Air Act and would direct the  
17 United STATES Environmental Protection Agency to reevaluate  
18 the program so that the health and consumer issues raised by the  
19 program's implementation are adequately addressed.

20 2. Duly authenticated copies of this resolution, signed by the  
21 President of the Senate and the Speaker of the General Assembly  
22 and attested by the Secretary and the Clerk, respectively,  
23 thereof, shall be transmitted to the Vice President of the United  
24 States, the Speaker of the House of Representative, the  
25 Administrator of the United States Environmental Protection  
26 Agency, the Commissioner of the State Department of  
27 Environmental Protection and Energy and each member of the  
28 Congressional delegation from this State.

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31 STATEMENT

32  
33 This concurrent resolution memorialized the United States  
34 Congress to pass legislation that would eliminate the requirement  
35 to sell oxygenated fuel pursuant to the provisions of the 1990  
36 amendments to the federal Clean Air Act and would direct the  
37 United States Environmental Protection Agency to reevaluate the  
38 program so that the health and consumer issues raised by the  
39 program's implementation are adequately addressed.

40 The federal requirement was established in order to lower  
41 carbon monoxide levels in the air, especially during winter  
42 months when these levels increase to unhealthy levels and usually  
43 exceed the national ambient air quality standards. However,  
44 since the oxygenated gasoline program was implemented in New  
45 Jersey in December 1992 pursuant to the federal requirement,  
46 there have been numerous consumer complaints concerning  
47 increased cost and decreased fuel economy and health complaints  
48 ranging from headaches, nausea and dizziness on the part of the  
49 motorists to similar complaints and skin irritation, cracking and  
50 bleeding on hands, arms and in the nasal cavities of gas station  
51 attendants. These complaints are not isolated to New Jersey. At  
52 least one carbon monoxide nonattainment area, Fairbanks,  
53 Alaska, has refused to sell the oxygenated fuel despite the  
54 absence of state authority to opt out of the program and the

1 possibility of federally-imposed penalties and sanctions for  
2 violating the federal law.

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8 Memorializes the United State Congress to pass legislation  
9 eliminating the oxygenated fuel requirement under the federal  
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**ASSEMBLYWOMAN MAUREEN OGDEN (Chair):** I would like to call the meeting of the Assembly Environment Committee to order at this time. Although we do not have a quorum, we certainly have a very full audience, and out of consideration to everyone who has come a distance for this meeting, we will get started. As many of you know, we do not need to have a quorum when we are not taking action on a bill. Although I know that other members who are scheduled to come here would certainly like to hear the complete testimony of everyone, I am sure that three other members who have said they were coming are going to be coming relatively shortly.

I have asked the two sponsors of the resolutions that are before us -- Assemblyman Mikulak, sponsor of ACR-126, and Assemblyman Gibson, sponsor of ACR-127 -- to sit with the Committee, to be able to have the opportunity to interact with members of the public who testify.

In addition, we have a list of those who are interested in speaking, who signed up prior to this meeting. If there are others here in the audience who would also like to speak, would you please sign up so we can give you the opportunity to do so.

Jeff, would you call the roll, please?

**MR. CLIMPSON (Committee Aide):** Assemblyman Kronick? (no response) Assemblyman McEnroe? (no response) Assemblyman Solomon?

**ASSEMBLYMAN SOLOMON:** Here.

**MR. CLIMPSON:** Assemblywoman Heck? (no response) Assemblyman Warsh?

**ASSEMBLYMAN WARSH:** Present.

**MR. CLIMPSON:** Assemblyman Russo? (no response) Assemblywoman Ogden?

**ASSEMBLYWOMAN OGDEN:** Here.

Before beginning, I would also like to give credit to Assemblyman Jeff Warsh, who originally asked for this hearing

as a result of complaints from various constituents in his district. He expressed to me his desire during the period when we were not having regular Committee hearings, although it seems to me that we have had more Committee hearings than normal even this month -- but to have a hearing to address this issue. After he brought this to my attention, we found out that two other members of the Assembly were also very concerned about this issue -- Assemblyman Mikulak and Assemblyman Gibson. Before beginning with those who have signed up to testify, I would like to give each of the two members of the Assembly who have resolutions an opportunity to present the essence of their legislation. Also, Assemblyman Warsh, if you would like to make a statement before we start--

ASSEMBLYMAN WARSH: Thank you, Madam Chairwoman. I would like to thank you for agreeing to my request to hold this hearing today. As you can tell from our full room, it is certainly the controversy that I think it is.

Also I would like to say, just as a general message, that before entering the Legislature, and certainly after entering the Legislature, I have had a basic belief that the Legislature needs to do a lot more oversight and a lot less bill passage. I want to compliment you for certainly living up to that throughout my tenure on the Assembly Environment Committee.

Oxygenated fuels finds us between the proverbial rock and a hard place, because on the one hand we have a mandate, which is an important mandate, and attached to that mandate is the very chilling prospect that if we do not live up to the Federal Clean Air mandates, we are going to lose hundreds of millions of dollars worth of highway and mass transit construction funds, and face the even more chilling prospect that the Federal government will take over our regulatory program in New Jersey, which is a frightening prospect indeed.

What I would also like to comment on today, Madam Chairwoman, is the fact that while we have two resolutions pending that would seek to wipe out the Oxygenated Fuels Program, a responsible Legislature gathers facts first and then acts only if necessary. That is what we are here to do today, and I believe we will do a yeoman's job of gathering facts.

What we need to understand -- and I am sure we will hear this today -- is that it is not just a matter of MTBE or nothing. There is a variety of other alternatives that will allow us to meet our Federal Clean Air mandates. Having had extensive conversations, in particular with Sun Oil Company, I have learned that they have been a leader for generations in developing new fuels.

If I may put in one quick pitch to the other members, my district was the beneficiary of a substantial cash contribution to an environmental group -- the Edison Wetlands Association -- from the Sun Oil Company. It was much appreciated. The money is going to Greenway Development in Middlesex County.

Lastly, Madam Chairman, I would like to compliment members Mikulak and Gibson, particularly Assemblyman Mikulak, my Middlesex County colleague, for being the first of the legislators to use the means established by the Haytaian/Warsh constitutional amendment that allows the Legislature to veto administrative rule activity.

With that, Madam Chairman, I thank you.

ASSEMBLYWOMAN OGDEN: Thank you. Assemblyman Mikulak?

ASSEMBLYMAN MIKULAK: Thank you, Madam Chairlady, for having this meeting. I want to thank Assemblyman Warsh for calling for the meeting.

First of all, let me say that my voice is not too good. I have a respiratory problem which possibly could be related to oxygenated fuel. I spent a lot of time in my car over the weekend. But, the show must go on.

Let me explain to this Committee how my resolution -- which Assemblyman Warsh pointed out -- is basically the power given us by constitutional amendment in November. I will read the statement: "This concurrent resolution expresses the findings of the Legislature that regulations adopted by the Department of Environmental Protection and Energy to set new standards for the oxygen content of motor fuel, and to require the sale of oxygenated motor vehicle fuel in New Jersey during the winter months, are not consistent with legislative intent pursuant to Article V, section 6, paragraph 6 of the State Constitution. The Department of Environmental Protection and Energy shall have 30 days following the transmittal of this resolution to amend or withdraw the regulations, or the Legislature may then, by passage of another concurrent resolution, exercise its authority under the Constitution to invalidate the regulations."

As of this time, I believe Senator Scott contacted me, and he has either introduced an identical SCR, or he is planning to in early May. This is a fairly conservative process. This gives us the option-- When it is passed, it will put the ball back in the DEPE's court so they will revisit their regulations. It gives them 30 days to amend or withdraw.

Now, since the program for oxygenated fuel ended in South Jersey at the end of February and will end in North and Central Jersey on May 1, really there is no time limit until next November when the program would resume. So, this is just a way of getting DEPE's attention and getting them to act, because conceivably there is some leeway in these amendments.

The next time this Committee meets, I would like to release this and get it posted in the Assembly so we can get the process going and put them on notice, so they would have to sit down and go over these regulations.

Okay. Now let's talk about oxygenated gas and the reasons for it. I believe in the winter of '92, there were two

occurrences in New Jersey where we were in excess of carbon monoxide -- two times, okay? This year, there have been no occurrences. People, proponents of oxygenated gas, MTBE in particular, would suggest that this is due to their product. There are mixed results throughout the country. I think there are 39 areas, regions, in the country. There are some areas that do not have oxygenated gas where they came into compliance, and there are other areas where they have oxygenated gas and they are not in compliance. New Jersey, and the East Coast, was the victim of a pattern of northeasters, two real huge storms and a series of smaller storms, that did two things: 1) it cleaned the air; it circulated the air, and 2), it cut down on a lot of driving.

The interests will tell you that we are not using more gasoline; they are not selling more gasoline this year than the past year, but people did a lot less driving. I, for one-- I don't know about you, but I, for one, am getting at least 20 percent -- approximately 20 percent less mileage with oxygenated fuel. I am filling my tank up a lot more. On top of that, for these two occurrences of carbon monoxide, we are paying approximately seven cents more per gallon; we are getting less gas mileage; and at the last estimate there were over 6000 complaints nationally about the irritating nature and the side effects.

The Federal government has mandated oxygenated gas, but it does not mandate a particular oxygenated gas and there are a number of different products there. During the late '70s -- the middle to late '70s during the gas crisis -- I used to use predominantly a product called "gasohol" in my car. I didn't notice a strong odor from it, and I didn't notice a drop-off in fuel economy.

I would suggest that we have to rethink-- The research clearly should have been done before the people of this State were subjected to this. It wasn't. Now, in

retrospect, I hope that the research will be done before we come back into this program next fall. The proponents of oxygenated -- of the MTBE also say that this is a very safe product that has been utilized for about 15 years. That's true, but it was first used as an additive to replace lead. That was a very small percent. Now, to oxygenate the gas, the percent is very high, and a lot of people are noticing the odor and the other ill effects. I am particularly concerned about the people who have to handle it.

With that in mind, I would ask, Madam Chairlady and the Environment Committee, that you hear the testimony today and consider releasing this bill at your next meeting in May.

Thank you very much.

ASSEMBLYWOMAN OGDEN: Thank you. Assemblyman Gibson?

ASSEMBLYMAN GIBSON: Thank you, Madam Chairman. I would like to thank the Committee for their attention to this matter and for their willingness to hold this hearing and air this issue.

Assemblyman Mikulak and myself saw eye to eye on this thing initially and thought it was a matter that should be brought to the whole Legislature. As we developed the bill -- or, the resolutions -- we parted slightly. The resolution that I have introduced is slightly different than Assemblyman Mikulak's, in that it memorializes Congress to revisit this issue in order not to put the State in any kind of jeopardy of sanctions.

Briefly, as I see the issue, the use of oxygenated fuel has some questionable health side effects. It lowers fuel efficiency and increases fuel costs. By my calculations, based on myself as an average user, I believe the vehicle I drive had an increased cost this past year of \$100. If you apply that and extend it to North Jersey, and simply take seven-fourths of the \$100, I believe every car in North Jersey, or every average car, will have an increased cost of \$175. Assuming those

figures are reasonably close, it is a rather expensive way to achieve better air -- a better quality of air. And of course, we all want a better quality of air. But is this, at least for New Jersey, and maybe adjacent states, a reasonable answer as far as the expense that we are going through to achieve this?

Based on the things that I have learned since I have gotten into this issue -- and I am here today to learn, and I think we are all going to do that -- the DEPE adopted rules consistent with the Federal regs; very, very close to the Federal regs. I believe every county that is involved is consistent with the Federal regs, other than, perhaps, Warren County. It was rather practical to include them, since it might make delivery problems difficult just to simply have that one county not having the same fuel.

The range, however, is a 2.7 percent to a 3.5 percent. I suppose we will hear from industry today as to what kind of tolerances they can achieve, but it does seem to me on the surface that there may be at least one answer in reducing this range toward the lower level, if we do nothing else. Perhaps next winter get closer to the 2.7; hopefully achieve the same air quality; and perhaps reduce the price and have less exposure to whatever health side effects there may be.

So, with those brief remarks, Madam Chairman, I will sit and will be glad to listen to whatever is presented to us. Thank you.

ASSEMBLYWOMAN OGDEN: Thank you.

I would like to first call Mary Smith, of the Office of Mobile Sources of the United States Environmental Protection Agency.

**W I L L I A M B A K E R:** Madam Chairman, I am William Baker. I am Chief of the Air Programs Branch in the Region II Office of the EPA. I am here accompanying Ms. Smith to answer any questions.

ASSEMBLYWOMAN OGDEN: Thank you.

**M A R Y T. S M I T H:** Good morning, Madam Chairwoman and members of the Committee. I am Mary Smith, Director of the Environmental Protection Agency's Field Operations and Support Division within the Office of Mobile Sources. I am responsible for implementing the Federal Oxygenated Fuels Program which is run by the states. I am pleased to appear before you today to testify on EPA's Oxygenated Gasoline Program.

The subject of this hearing, the Oxygenated Gasoline Program, is mandated by the Clean Air Act amendments of 1990, and was the first major program to be implemented by these 1990 amendments. This program began on November 1, 1992 in 37 areas of the country not attaining the National Ambient Air Quality Standards -- NAAQS -- for carbon monoxide, better known as CO. Included in these 37 areas were the Philadelphia/Wilmington/Trenton areas of Pennsylvania and New Jersey, and the New York City/Northern New Jersey/Long Island metropolitan areas in the States of New York, New Jersey, and Connecticut. The Oxygenated Gasoline Program required that the oxygen content of the gasoline sold within these areas during winter months be no less than 2.7 percent oxygen by weight, a requirement met largely through the addition of the oxygenates methyl tertiary butyl ether -- MTBEs -- and ethanol. This is about 7.7 percent ethanol by volume; about 15 percent MTBE by volume.

The extra oxygen contained in these gasolines enhances automobile fuel combustion, which tends to be less efficient in cold temperatures. Oxygenated gasolines also offset the effects of fuel-rich operating conditions which occur during vehicle startup in the cold winter months. These two adjustments result in significantly lower carbon monoxide emissions from automobiles, particularly in older vehicles which have less sophisticated operating systems. A gasoline mixture containing 2.7 percent oxygen by weight will reduce

carbon monoxide emissions from motor vehicles between 15 percent and 20 percent.

Because carbon monoxide is predominantly a wintertime pollution problem, Congress directed EPA to establish the control period during which only oxygenated gasolines may be sold in the polluted cities. This control period is set based on the statutory minimum of four months and each area's historical CO data. Most of the 37 areas in the country are required to have programs of four months in length, such as the program implemented in southern New Jersey this year which ran from November 1 to February 28. The New York City metropolitan area, which has a more severe CO pollution problem, is required to implement the program for seven months each winter, from October 1 through April 30.

Each Oxygenated Gasoline Program this past winter was administered by state and local air pollution control agencies, such as the New Jersey Department of Environmental Protection, with the cooperative oversight of EPA. Leading up to the November 1, 1992 start date, EPA worked closely with State and local officials, including those at NJDEPE, to assist them in developing their regulations and in implementing their Oxygenated Gasoline Programs. It is our opinion that the Oxygenated Gasoline Program has had a highly successful first season.

Preliminary data on the ambient air quality in the oxygenated gasoline areas indicates that there has been a dramatic decline in the number of violations of the CO standard from November 1992 through the end of January 1993 compared to similar periods in previous years. In the areas that implemented Oxygenated Gasoline Programs for the first time in 1992 (excluding California), the number of exceedances of the national ambient air quality standard for CO during the months of November, December, and January declined from 43 last year to four this year, a 95 percent reduction in the number of

exceedances. In California, which required only 2 percent oxygen by weight in gasoline, there was a decrease in the number of exceedances from 86 to 15. The previously existing oxygenated gasoline areas had a decrease from 22 to 11. Overall, there was an 80 percent reduction in the number of exceedances. New Jersey experienced a 100 percent reduction in its number of exceedances of the CO standard, registering -- and here I would like to correct my written testimony -- five exceedances of the national standard in the winter of 1991-1992 and none this past winter.

Congress has identified carbon monoxide as a criteria pollutant, because carbon monoxide is a dangerous pollutant that has numerous adverse effects on human health. CO is an odorless, colorless pollutant which inhibits the blood's capacity to carry oxygen to organs and tissues. People with heart disease may experience chest pains on high-pollution days. Exposure to elevated levels of CO is associated with impairment of visual perception, manual dexterity, and learning ability. Exposure to CO can also cause headaches, dizziness, and confusion. Elderly people, expectant mothers, small children, and people with asthma or cardiovascular diseases are especially susceptible to high levels of carbon monoxide.

Another benefit associated with the use of oxygenates is that overall, the use of oxygenated fuels decreases public exposure to toxic pollutants, such as benzene and 1,3-butadiene, as compared to the use of nonoxygenated gasoline. Both of these toxic air pollutants are proven human carcinogens.

Although the programs in most cities have run relatively smoothly, citizens in a few cities have voiced concern over the use of MTBE. Some complaints have been registered by citizens in Fairbanks and Anchorage, Alaska, as well as Missoula, Montana, which have associated the use of the gasoline additive to health-related concerns -- headaches,

nausea, and dizziness. In reaction to a large number of complaints, the Governor of Alaska suspended the Oxygenated Gasoline Program in Fairbanks. I should note that these complaints came on the heels of a 14-cent increase in the price of gasoline. I should also note that later on in the season, Anchorage gasoline went down to a seven-cent increase. In Missoula, where fewer complaints were registered, the City Health Department addressed the issue by convening an expert panel of physicians and politicians to investigate the issues. This panel did not recommend suspension of the program, but is awaiting the results of some EPA lead health studies, as is the State of Alaska.

We are aware that there has been a fair amount of press coverage regarding oxygenated fuels in New Jersey, but according to the NJDEPE, only a handful of health complaints, along with complaints about decreased fuel economy, have been received. Let me address the fuel economy issue first.

There is both a perception and a reality associated with the fuel economy effects of oxygenates. Let me begin with the perceptions. It is demonstrated that drivers typically experience reduced fuel economy in the winter months due to a variety of reasons unrelated to the use of oxygenated gasolines. One of the major reasons is related to standard industry gasoline blending practices. In the summertime, the Reid Vapor Pressure of gasoline is approximately nine pounds per square inch. This measure of the volatility of gasoline means that the gasoline is fairly dense and high in energy. On the other hand, wintertime blends are typically in the 13.5 parts per square inch range, making the fuels lighter with less energy content; hence, decreased fuel economy is seen. This volatility difference is not the only factor unrelated to oxygenated gasoline which contributes to demonstrated wintertime reductions in fuel economy. Some other factors are: Driving in cold temperatures; heaters; drivers who use

chains, as well as drivers who do not use chains and experience tire slippage; and increased idling time in the winter.

The real effects of oxygenated gasoline on fuel economy varies with the vehicle and its state of maintenance, but on the average the effect should be around 1 percent. Older vehicles generally operate better using oxygenated gasoline as a result of the improved air/fuel ratio, allowing more complete combustion of the fuel and operating more efficiently. Later model vehicles, however, may indeed experience minor losses in fuel economy, but again, this varies with the model. I should note that the fuel economy effect does not vary with oxygenated. It is the same basically for ethanol and MTBE. I should also make a personal observation: In Washington, D.C., we also have MTBE in the gasoline, and I did not notice any decrease in the fuel economy in my vehicle.

Let me now turn to the concerns that have arisen regarding the health effects of MTBE. I should note that these complaints of health symptoms have been completely unexpected for three reasons: First, MTBE has been used in the United States since 1979 as an octane enhancer. Primarily, it has been blended with "premium" gasoline, although at lower levels than used in the Oxygenated Gasoline Program. We are not aware of any complaints regarding these exposures to MTBE.

Second, seven Oxygenated Gasoline Programs had been operating in the U.S. prior to November 1, 1992, with few to no health-related complaints. Primarily the health-related complaints, too, have been about the smell. During the first year of program implementation in the seven areas, such as Denver, which is the oldest program, operating since 1988, early concerns related to the use of oxygenated gasoline focused on issues other than health: off-road engine use; vehicle driveability; fuel economy, etc. In all cases, virtually all complaints significantly tapered off in the second year of program implementation.

Finally, pursuant to a 1987 consent order under the Toxic Substances Control Act, EPA required that industry conduct extensive studies of the health effects of MTBE in laboratory animals to estimate potential effects on humans. While none of the acute, or short-term exposure animal studies suggested cause for concern, the animal studies would not have been able to detect the kinds of symptoms, that is, headaches, being reported by people after acute exposure.

In order to address the issue of health symptoms associated with acute exposures to MTBE-blended gasoline, EPA is now leading an intergovernmental and industry reserach program to determine whether there are acute effects associated with MTBE-blended gasoline. As the first part of this effort, EPA has completed an evaluation of the potential for public health risk associated with the use of MTBE-blended gasoline. The report, "MTBE-Oxygenated Gasolines and Public Health Issues," summarizes the existing data on health effects of MTBE and identifies areas where more information is needed on the acute effects of oxygenated gasoline. I have left several copies of this report for the Committee.

Additionally, EPA has been working with the Centers for Disease Control -- CDC -- the State of Alaska, where the complaints originally surfaced, and industry to undertake additional research. This includes field studies by the CDC, commuter exposure studies, analysis of air and fuel samples, and human clinical exposure studies. All in all, the Agency has dedicated almost \$1 million to this effort. These comprehensive studies are expected to yield the information needed for an improved understanding of potential acute effects from MTBE. This research is now underway, and we expect it will be completed in mid-July.

We are also continuing to examine the potential for chronic or long-term health effects linked to exposure to MTBE. Based on current scientific information, there does not

appear to be a significant risk for chronic noncancer effects from pure MTBE, although the risk of MTBE as part of a complex mixture, i.e., in gasoline, is unknown. Cancer studies were required to be performed by the industry as a result of a 1987 consent order issued by EPA under the Toxic Substances Control Act. Conclusions about cancer risk cannot be reached until EPA completes its assessment of recently received data. This assessment is expected to be completed early this summer. I should note that one study does report -- one study among many, I should note -- does report that lifetime exposures of lab animals to MTBE causes tumors of certain types at doses that are far in excess of likely human exposures.

I should note that this is one of many studies. The authors of the study indicate that proteins found in the rats may cause the tumors, and that this effect would not be seen in humans.

In summary, the Oxygenated Gasoline Program has been a very effective tool this past winter in remedying the nation's, and New Jersey's, CO nonattainment problem. This CO nonattainment problem affects over 70 million people and the Oxygenated Gasoline Program is the major CO reduction strategy required by the Clean Air Act amendments of 1990. Some vehicles may experience increases or decreases in fuel economy, but overall the decrease is no more than 1 percent.

Finally, some unexpected concerns have been raised regarding health effects of the oxygenate MTBE. EPA is working with other governmental organizations and industry on this issue, and expects to complete extensive new studies before the start of next year's Oxygenated Gasoline Program.

This concludes my comments on the Oxygenated Gasoline Program. Thank you for this opportunity to address these issues. I shall be happy to answer any questions you may have.

ASSEMBLYWOMAN OGDEN: Thank you very much.  
Assemblyman Mikulak?

ASSEMBLYMAN MIKULAK: Through the Chair-- Let's see: New Jersey has had five occurrences in excess of carbon monoxide from '90 to '92. That's three years. Is that correct?

MS. SMITH: No. That would be the '90-'91 winter season.

ASSEMBLYMAN MIKULAK: Okay. What was last year? I believe it was two.

MS. SMITH: In '92-'93 there were none.

ASSEMBLYMAN MIKULAK: In '90-'91, '92-'93--

MS. SMITH: No, we have '91--

ASSEMBLYMAN MIKULAK: In '91-'92--

MS. SMITH: Right.

ASSEMBLYMAN MIKULAK: --there were--

MR. BAKER: Five.

MS. SMITH: Five exceedances in the months of November, December, and January.

ASSEMBLYMAN MIKULAK: No. You said in '90-'91--

MS. SMITH: I'm sorry.

ASSEMBLYMAN MIKULAK: --there were five.

MS. SMITH: I correct myself. It was '91-'92, November, December, and January. There were five. In November, December, and January of 1992-1993, there were none.

ASSEMBLYMAN MIKULAK: Okay. You said your car does not experience-- You have not experienced any loss of fuel. Is that your EPA Federal government car or your own personal car?

MS. SMITH: My own personal car.

ASSEMBLYMAN MIKULAK: Oh.

MS. SMITH: I don't have any EPA government car.

ASSEMBLYMAN MIKULAK: Okay. Thank you.

Do you think that maybe EPA should have anticipated some of these problems and done some research before implementing this program? There is extensive research being done, which is an admission that there may be a problem.

MS. SMITH: I think when research is done, it isn't an admission of a problem; I think it is a responsible response to any introduction of a chemical. I would say, though, that acute effects are something that really cannot be predicted on a chemical. It is a very difficult thing to try to test a chemical on a human and get the kind of approval you need for that kind of testing ahead of time. So by and large, the testing for acute effects is not done on humans, and it is very difficult to do such testing on animals, because the animals cannot tell you whether they are feeling a little sick, or whether they have a headache. So it is really difficult to pin down this issue of acute effects. Obviously, we had a lot of data from the existing seven programs indicating that there were health issues.

ASSEMBLYMAN MIKULAK: Okay. I would like to read a couple of things that I think would contradict you. This is from "U.S. Oil Week." It says: "A quarter of U.S. cities formerly classified" -- this is March 22, 1993 -- "as CO nonattainment, have come into compliance without any oxyfuel mandate." How do you explain that? Is that nature, God--

MS. SMITH: Well, for CO, most all of the CO cities in nonattainment were required to have this program. I think there might be two cities that were not required to have this program. So I would say that the vast majority of cities that are in CO nonattainment were required to have this program, and have had dramatic results. We think it is primarily associated with the use of oxygenated fuels.

ASSEMBLYMAN MIKULAK: Okay. For example, Fayetteville, North Carolina, had substantial reductions in CO this winter without any oxyfuel mandate; without subjecting people to that mandate, the costs and the possible health risks. Similar reductions were found in Raleigh, Durham, and Greensboro, where the EPA mandated oxyfuels. Ironically, in the same months the CO pollution improvements in nonoxyfuel,

Fayetteville, actually exceeded the CO improvements in the oxy cities. I mean, I think there may be some mixed results.

U.S. Senator Tom Harkin of Iowa, chairing the Senate Subcommittee on Health hearing on oxyfuels said, "There is a real concern that while MTBE is supposed to be cleaning the air, it may also be polluting people's bodies." "U.S. Oil Week" first revealed the initial results of a Centers for Disease Control study that found that oxyfuels make 30 percent of those with moderate to heavy exposure sick.

MS. SMITH: Well, let me comment on the CDC study. The only CDC study known at the time was done in Fairbanks. There are several concerns about that study. First of all, to really say what is or is not associated with a chemical, you need to do a study where the chemical is in the environment, and a study where the chemical is not in the environment, i.e., a controlled group. In the Fairbanks study, there was no control group done, so it is hard to draw any hard and fast conclusions.

Second of all, there were a lot of leading questions done -- asked of the people who participated in that study. Thirdly, there was an awful lot of publicity in Fairbanks associated with this program, so there was a heightened sense of awareness. Fourthly, there was a very small survey sample here, so it is really very difficult to draw any hard and fast conclusions from that Fairbanks study, which is the only CDC study done to date.

I should note that EPA has funded the CDC to go into a couple of additional areas. They have just completed a study in Connecticut, which is part of the New York CMSA which includes northern New Jersey, to look at an area where there was not a heightened sense of press and awareness of oxygenates, to get a sense of what was happening there. The CDC will then do a study in another nonoxygenated gasoline city as a control group to the Connecticut study. There we should

have a better sense of things. Again, this study in the nonoxygenated control city should start within the next week, and again, we should have results from these studies which I think will be more valid, by the summer.

ASSEMBLYMAN MIKULAK: Thank you.

ASSEMBLYWOMAN OGDEN: Assemblyman Gibson?

ASSEMBLYMAN GIBSON: I have no questions for the witness. Thank you.

ASSEMBLYWOMAN OGDEN: I am curious about where you said that in California it is only 2 percent oxygen by weight in gasoline, and we are talking in our areas about 2.7 percent. Is the difference-- We think of California -- Los Angeles -- as being the most polluted in the whole country. Does that apply to the carbon monoxide?

MS. SMITH: The 2.7 percent program applies across the country, including California. California adopted a 2 percent program based on a potential waiver they expect to get from us. That is still an outstanding issue. They are concerned with the fact that they have a NO<sub>x</sub> problem in California during the wintertime, in Los Angeles, for example. They are the only area in nonattainment for NO<sub>x</sub> in the country. They are concerned that oxygenates may have an increase in oxides of nitrogen, and therefore they think they need to have a 2-0 program to compensate for that. That is a really open issue as to whether or not oxygenates contribute to increased NO<sub>x</sub>, and that will certainly be the subject of a proceeding on the California petition which is now before the Agency and is going to public hearing in May, and will obviously be decided later this year.

ASSEMBLYWOMAN OGDEN: Is that issue going to be resolved, then, before next November?

MS. SMITH: Yes, we hope so.

ASSEMBLYMAN MIKULAK: One additional question: I was just glancing through my notes here. There is a just-released

study on aldehyde pollution in Brazil. Are you familiar with that?

MS. SMITH: No, I'm not.

ASSEMBLYMAN MIKULAK: Maybe you should get that study and make yourself familiar with it. It found that while people have suffered-- That is the heaviest user of ethanol/methanol blends -- Brazil. It says that people who have suffered nausea, vomiting, nosebleeds from MTBE, oxyfuels, and ethanol gasoline, gasohol blends-- There is even more danger now. It is producing cancer-causing peroxyacetyl nitrate -- PAN.

MS. SMITH: I am not a toxicologist.

ASSEMBLYMAN MIKULAK: Neither am I. P-e-r-o-x-y-a-c-t-y-l nitrate compounds into the air. Continuing air studies for the Brazilian government show a disturbing increase in PAN compounds used by oxyfuels.

I would like you to maybe contact the Brazilian government and get their studies, because they are the number one user of oxyfuels.

MS. SMITH: Oxyfuels do increase aldehyde somewhat. However, they substantially decrease benzene and 1,3-butadiene, so overall from toxic air pollutants there is a decrease in the use of oxygenates.

I should also note that in terms of formaldehyde, it is primarily a summertime problem, and you will find higher levels of aldehydes in your house than you will in the outdoors.

ASSEMBLYMAN MIKULAK: Nothing further.

ASSEMBLYWOMAN OGDEN: Thank you. Assemblyman Warsh?

ASSEMBLYMAN WARSH: Thank you, Madam Chair. You indicated, Ms. Smith, in your testimony a whole host of factors that could have lowered fuel economy other than the impact of MTBE, and yet you gave no attention whatsoever to the other factors that could have contributed to a lowering of carbon monoxide. Could there be other factors, like atmospheric conditions?

MS. SMITH: Sure. You know, weather is a big component of CO reductions. However, we believe that the milder the winter, the less the CO problem. It has been a mild winter, but the winter of 1991-1992 was also a mild winter. So we think that the very significant reductions in CO nonattainment of the standard is, in large part, due to the Oxygenated Program. I am not saying that absolutely every bit of it was due to the Oxygenated Gasoline Program. Some may have been weather in some areas, but I don't think you see those kinds of dramatic decreases without an explanation. I think the only thing we are really seeing that is real different is the introduction of these fuels.

ASSEMBLYMAN WARSH: Diesel fuels are exempted from this program. What is that? As a correlated question: Is the EPA doing anything with respect to the carbon monoxide results of the use of diesel fuel?

MS. SMITH: First of all, carbon monoxide from diesel fuel is traditionally extremely low. Okay? Carbon monoxide from diesel vehicles is extremely low, so it is not really the issue. The CO problem in the cities is primarily due to gasoline-fueled vehicles. I can't tell you why Congress decided not to deal with the diesel fuel area, other than the fact that the CO emissions from diesel vehicles are extremely low. It has not traditionally been used in diesel and is not legally permissible in diesel fuel at the current time.

ASSEMBLYMAN WARSH: Regarding the other comment you made that there has been a history of significantly lower complaints in the second year of a MTBE program, couldn't that be due to a lot of other factors, like the fact that people are used to getting hammered by their government and what does it matter anyway to complain, and, "Hell, we'll just muddle on however we can"? Or, is it due to the fact that we have developed an increased tolerance to these kinds of chemical additives?

MS. SMITH: Well, I would say, first of all, that the complaints in the old programs, which are our best history of all of this, primarily related to things other than health. There was a handful of complaints related to health, primarily with regard to the smell from MTBE, and most of the complaints dealt with things like off-road use. People were nervous about, "What if I use my chain saw or my snowmobile? What is the effect of this new kind of fuel on that?" They were concerned about drivability, which frankly is not an issue, but with a new fuel people are always concerned about its effects on vehicles. I think the reason you saw so many complaints, for instance in Denver, where there were something like 2000 complaints the first year, was because people were very nervous about a new fuel, and as a result raised a lot of concerns. The Denver people did an excellent job in addressing those concerns by answering each and every one of them. I think that because of the excellent job they did in educating people and addressing each and every one of the concerns, that is why you saw the decrease in the number of complaints the second year.

ASSEMBLYMAN WARSH: In your testimony you quote that the, "NJDEP has received only a handful of health complaints."

MS. SMITH: It is my understanding that it would be best to ask the DEPE people. It was about 60.

ASSEMBLYMAN WARSH: Sixty complaints in the entire State of New Jersey? I received maybe about 100 in the 18th Legislative District. That is actually formal complaints, in addition to, I would say, maybe one out of five people I see publicly who say, "Hey, Warsh, what is going on with the fuel? It is costing me more money. It has lowered my fuel economy. It is making me sick. It bothers my children." Maybe it is because we have -- that due to other reasons, we have a very congested district in terms of automobiles. It is very common to find yourself to be the 10th or 11th car in line. With motorized vents these days, you are actually sucking in what is

being produced in the car in front of you -- sucking it into your passenger compartment. All those factors.

But to say that there is a handful of health complaints, I think, is missing the mark. Either the NJDEP needs to improve in gathering data from complaints, or we have to get involved in it. I have related these concerns to them. I can say that while this isn't the thing that we get the most complaints about in the 18th Legislative District, to say it is a handful is falling way short of the mark.

MS. SMITH: My opinion, obviously, is based on conversations with the NJDEPE.

ASSEMBLYMAN WARSH: I would also say, just overall as a comment on your testimony, that I think it was-- While it was well-researched on your side of the argument, I would hope that the EPA is not here as an advocate of any given position, but is here to protect the public health. As we all know, there is a very delicate balance to be brought here. I think your testimony was enormously balanced in favor of the current program. I think that while I, in general, have a problem with the EPA and its mandate of protecting the public health, I feel most often you fall very short of the mark, as far as I am concerned.

In this instance, this might as well have been an expert witness for the MTBE industry, rather than your being here as a public health expert, here to protect our health. I will read the "MTBE-Oxygenated Gasolines and Public Health Issues" report which you presented. Hopefully that will be more balanced, but your testimony was, if anything, balanced the other way.

MS. SMITH: I would like to note that we are very concerned about health. That is why we have sponsored all these additional studies to look at this issue, which was an issue before this season. I think, you know, we sat down in January and put together a long list of health studies that

would be done, and we have worked aggressively to get those things done. We have found funding which has not been targeted for this, obviously because no one thought it was an issue. I have targeted a lot of funding towards answering some of these questions.

ASSEMBLYWOMAN OGDEN: Assemblyman Solomon?

ASSEMBLYMAN SOLOMON: Thank you. I just have a couple of questions: Did the EPA track fuel efficiency in the Denver area and other cities where the MTBEs have been used in a greater volume since 1988?

MS. SMITH: We did not track it. It was not an EPA-sponsored program. These were programs that the state took on on its own to reduce its carbon monoxide pollution problem.

ASSEMBLYMAN SOLOMON: Are there state records tracking what fuel economy was, or what fuel consumption was since the program was instituted?

MS. SMITH: I don't know. They tracked the complaints, but I don't know whether they have tracked the specific sense of the consumer as to what their fuel economy might or might not have been. Plus, I would say that generally when people complain, they complain about a decrease, so there would be a lot of data out there that is missing, you know, probably both negative and positive.

ASSEMBLYMAN SOLOMON: I think it would be very useful to find out whether the state has any record or any study that was conducted to determine the long-term impact of this program on fuel efficiency or fuel economy.

MS. SMITH: We could certainly contact the state and provide the Committee with that information.

ASSEMBLYMAN SOLOMON: Secondly, in those cities which have been using it for several seasons-- One of the problems I have with making a judgment about a program as broad based as this is, is that to take the data from one season and try to extrapolate it across several years is very, very difficult to

but it has been in place in several cities for many years -- for five or six years.

What have studies revealed about carbon monoxide levels in the atmosphere for those cities that have used it over several years? Has there been a steady decline? Has it been up and down? Have they empirically related the use of MTBE to a reduction of carbon monoxide in the atmosphere?

MS. SMITH: Well, first of all, it was both MTBE and ethanol that were used in the existing cities.

ASSEMBLYMAN SOLOMON: Fine.

MS. SMITH: I would say, for instance, Denver indicated that they had a decline in the range of 15 percent to 20 percent.

ASSEMBLYMAN SOLOMON: Steadily? Each year it went down 2 percent or 3 percent, or--

MS. SMITH: Well, I think this: That is why you might want to separate the data from existing programs to new programs. Obviously, once you have introduced it, you might see a decline. Now, whether you continue to see a decline each year, of course, is questionable, because once you have introduced it you have gotten your basically 2.7 percent reduction from it. Then, if there are still CO problems there, I don't know that further reductions are going to be seen. You are going to keep at a plateau.

ASSEMBLYMAN SOLOMON: I understand that, and I think we have dealt with enough studies here that we understand that as well. We are capable, I think, and certainly our staff is capable, of deciphering the information and determining whether in the first year there was a significant reduction. That was a mild winter. In the second year there was no reduction; it jumped right back up. That was a cold winter. I mean, I would like to see the data to see whether there was any steady decrease or whether it leveled off, you know; basically, the

studies that were done to determine was there a correlation between this program and carbon monoxide reduction in the atmosphere?

I think we and our staff are perfectly capable of looking to see what effect atmospheric conditions had and what effect MTBE or ethanol have had. I would be very interested in that, because I think for us to make a judgment about what is going to be best for New Jersey based upon what we saw in a single year is very, very difficult. For us to make a judgment based on what has been going on in the country for many years is much easier.

I will say this: Empirical data has an impact on me. I mean, if I see that we have introduced a program and in a single year there has been a substantial environmental benefit, that has an effect on me. I mean, you know, it is the old thing of circumstantial evidence. If you get up in the morning and there is snow on the ground, it probably snowed the night before. If there is a steady decline because the program was introduced, that has an effect, but I think we have to look at the data that has been around the country for several years.

MS. SMITH: We can get that data for you. The only thing I note is that some of the older programs didn't have the level of 2.7 always.

ASSEMBLYMAN SOLOMON: Understood.

MS. SMITH: So, you know, you would have to look at that. We will note that on our submission so you can look at it yourself.

ASSEMBLYMAN SOLOMON: Thank you.

ASSEMBLYWOMAN OGDEN: Are there any further questions from members of the Committee? (no response) Thank you very much for coming and testifying.

MS. SMITH: Thank you very much.

ASSEMBLYWOMAN OGDEN: Next I would like to call the Assistant Commissioner of DEPE for Policy and Planning, Richard Sinding.

A S S T. C O M M. R I C H A R D V. S I N D I N G:

Thank you very much, Madam Chairwoman. I am being joined momentarily by John Elston, who is the Administrator of the Office of Air Quality Management, and he will handle any of the technical questions you might have on this important issue.

First of all, let me echo the remarks of EPA and others in thanking you for the opportunity to be before you today. Let me also indicate to both of the sponsors -- Assembly Mikulak and Assemblyman Gibson -- the fact that we welcome the opportunity to comment on a piece of legislation that clearly has some important ramifications, not only with respect to the Oxygenated Fuels Program, but with respect to the relationship between the executive and legislative branches of government. Any comments that we may have which would take exception to characterizations about the Oxygenated Fuels Program should in no way suggest any disrespect for the process that you have undertaken in reviewing and overseeing the regulations of the Department of Environmental Protection and Energy.

I think it is very important -- and Assemblyman Warsh set the tone -- to gather facts first and then taking action thereafter. What we would like to do in the fairly limited amount of time here this morning, is to try to present you with some of the factual data and information upon which the State of New Jersey based its decision to go ahead with an Oxygenated Fuels Program for the winter of 1992-1993; what the results of that program have been in terms of what we know; to examine briefly some of the things that we do not know; and to try to work collaboratively with this Committee to determine where we, as a State, go from here.

You have already heard from Mary Smith of the EPA and from the sponsors of the legislation, who have given you a pretty good idea of the background, both federally and in the State, that led up to the adoption of the oxygenated fuel

rule. I would like to reemphasize for the Committee and for the general audience that there are certain properties of carbon monoxide that make it an especially deleterious product, which, for a variety of very important reasons, the Federal Clean Air amendments of 1990 have targeted for reduced emissions.

Carbon monoxide is classified toxicologically as a chemical asphyxiant. That is because, as we all know, if one were to compartmentalize one's self and allow emissions of carbon monoxide in a locally contained area, one would suffer the worst of all consequences, and that is a rather quick death.

Now, environmentalists are fond of saying -- and there is really a considerable amount of truth to this -- that when you take carbon monoxide and instead of putting it into an enclosed area you put it into a somewhat more contained outdoor area, instead of dying a swift death, one dies a slow death. I would use as an example of that the urban areas of New Jersey in which what takes place is a so-called canyon effect, where cars in the wintertime months are belching out unsafe amounts of carbon monoxide which is trapped, literally trapped, inside those urban canyons and which is being breathed at unhealthily high levels by a very large percentage of New Jersey's population.

New Jersey is not a garage. We are not totally contained, and we are not going to die instantly from the inhalation of carbon monoxide. But carbon monoxide is a very, very dangerous substance. The Congress of the United States, the Environmental Protection Agency, and other environmental bodies and legislative bodies have quite properly targeted it as a substance which we want to substantially reduce in terms of its ambience in the environment.

The National Health Standard for Carbon Monoxide was established pursuant to the Federal Clean Air Act amendments of 1990. There has been some discussion this morning as to how

many exceedances New Jersey had in the 1991-1992 winter season. As best I can tell, there were, in fact, five exceedances on two different occasions, so perhaps you are both right; two days, but five exceedances. The fact is, the Federal Clean Air Act amendments of 1990 indicate that every state must come into compliance with the National Air Quality Standards for Carbon Monoxide, and that those standards are not to be exceeded more than once a year. If, in fact, those standards are exceeded more than once a year, then New Jersey not only faces the sanctions process that the Clean Air Act contemplates, but, more importantly -- getting back to my original comment -- we expose our citizenry to unhealthily high levels of carbon monoxide.

We went through a rule-making process here in New Jersey, as did the 36 other metropolitan areas around the country which were required to come into compliance with the Federal Health Standards for Carbon Monoxide, and those regulations took effect during this past winter season. The consequence of that was that oxygenates went into New Jersey's gasoline on November 1 and, as others have testified already, the period of operation went from November 1 to February 28 in southern New Jersey, and from November 1 to April 30 in northern New Jersey.

I think it noteworthy to point out that the NJDEPE will be petitioning the Environmental Protection Agency to declare South Jersey an attainment area on the basis of the experience that we have had not just this past winter, coming to zero exceedances, but also with respect to the general trends that have been occurring over a period of time in South Jersey.

We are also going to be petitioning EPA to reduce the period of effectiveness of the oxygenated fuels in North Jersey hopefully to four months, more likely to five months, but somewhat shorter than the seven-month period which it currently

constitutes. It is somewhat easier to do this in southern New Jersey than it is in the north, because in southern New Jersey we don't need to have the cooperation of Pennsylvania in order to petition EPA independently to have South Jersey declared as an attainment area. But in terms of reducing the number of months in which the Oxygenated Fuels Program would be in effect in North Jersey, we need to seek a cooperative agreement with the State of New York, and we are actively seeking to do that.

The future of oxygenated fuel, regardless of what happens at this hearing and regardless of what takes place in New Jersey or nationally over the next couple of years, is an interesting one and one we probably ought to spend a couple of minutes discussing. At most, the Oxygenated Fuels Program in the Northeast will have one more winter season to go, and that would be the winter season of 1993-1994. The reason for that is that effective January 1, 1995, all of the states in the Northeast, provided that they are able to demonstrate that they have achieved attainment for carbon monoxide, will phase into something called the Federal Reformulated Gasoline Program. That means that there will be one single blend of gasoline that will be sold both in the summertime and in the wintertime in those states in the Northeast that were previously in nonattainment for carbon monoxide. So we will no longer have the issue of blending one gasoline with oxygenates for the wintertime, another blend for the summertime, and again, as Mary Smith pointed out, having to do with some of the characteristics of oxygenated fuel having a beneficial effect during the wintertime, but having a deliterious effect during the summertime leading to NO<sub>x</sub> and VOCs, which are ozone-causing compounds. This will be eliminated by the Federal rule making the establishment of the Federal reformulated fuel.

Now, what do we know at this point about the Oxygenated Fuels Program in New Jersey? We know for a fact -- and we have passed around some charts and graphs to demonstrate

this -- that the levels of carbon monoxide in New Jersey's ambient air have declined by 14.9 percent in the first four months of the 1992-1993 season. There may be -- as several people have already suggested -- a number of different reasons for this. Without being able to control for all of the different factors that may have contributed to this phenomenon, it is questionable that we have achieved this 15 percent reduction. We would speculate -- and I emphasize the word "speculate" -- in the scientific and technical community that a very large part of that achievement is as of a consequence of the introduction of oxygenated fuels.

We also know that prices went up. Actually what we know is that they went right up as soon as the Oxygenated Fuels Program came into effect, and we also know that they have come back down again, and have come back down now to the point of preoxygenated fuel levels.

We also have anecdotal reports of adverse human health effects that have taken place as a consequence of the introduction of oxygenated fuels, and this is the area that we consider to be most problematic. We take very, very seriously the reports that we have received. While it is true that the DEPE had received, up until about mid-February, on average, probably about two or three phone calls per week complaining about adverse human health effects, there was a flurry of phone calls in late February and early March. We could all speculate as to the reasons for that flurry of activity, but we have received a much larger number of complaints, or at least concerns, that have been registered regarding potential adverse human health effects relating to oxygenated fuels.

We do take them seriously, because they were unexpected. They were particularly unexpected in New Jersey for a couple of reasons. The incidents that took place in Fairbanks, Alaska, and in Missoula, Montana, were isolated to those two locations. Those are climates that are considerably

colder than New Jersey's. In addition, New Jersey has two other factors: One is that we do not have any self-service gasoline. For that reason, the likelihood of inhalation of somebody in the process of filling up a tank is unlikely. We are also the only State in the country with Stage II vapor recovery, the little accordian that is on the end of the nozzle. That also eliminates the release of the fumes as the gasoline is being entered into the tank.

So, it was of particular concern to us when we began to hear reports of adverse effects having to do with oxygenated fuels. We immediately entered into discussion not only with EPA and CDC, whose reports and discussions and studies you have already heard about, but much closer to home the Environmental and Occupational Health Sciences Institute, which is a joint operation of Rutgers and the UMDNJ, which is in the process now of gathering important data and investigating the effects and the experiences of people using different types of fuels over different periods of time, given different driving habits, different types of vehicles that they have been using, in order to try to get a handle on exactly how close the relationship is between the introduction of oxygenated fuels and the adverse human health effects.

We know also that there has been a reduction in terms of fuel economy. Although an awful lot of opinions have been voiced and personal experiences seem to vary widely, there was never any question from the outset, and I think most of the programs, including New Jersey's, that implemented the Oxygenated Fuels Program tried to make it very clear at the outset, that there would probably be some kind of a penalty that we would all pay in terms of fuel efficiency. Number one, by adding oxygenates to the fuel you reduce the BTU value of the fuel and therefore a certain amount, probably somewhere on the order of 1 percent to 3 percent of a fuel reduction in terms of fuel economy, would be expected. That, in fact, as we

understand it, had been the experience in other jurisdictions in which oxygenates were introduced before they were introduced in New Jersey.

One would also expect, because of the difference in terms of the type of gasoline that is used in the wintertime from in the summertime, and that is even before the introduction of oxygenates -- but how fuel combusts in the wintertime, the different driving conditions in the wintertime, that there is almost always somewhere in the neighborhood of a 3 percent to a 5 percent reduction in terms of fuel efficiency between summertime and wintertime.

All right. That taken together would probably account for somewhere between a 4 percent and a 7 percent or 8 percent difference, but when we start hearing experiences like Assemblyman Mikulak's of 20 percent, it seems to me that one of two things is occurring: either he ought to go and get his car tuned up real fast--

ASSEMBLYMAN MIKULAK: I did.

ASSISTANT COMMISSIONER SINDING: --or there is something inherently taking place here that goes beyond what the science and technical community has said ought to reasonably occur as a consequence of the introduction of oxygenated fuels.

It is my understanding, in response to the question about whether any studies have been done about fuel economy in other jurisdictions, that, in fact, the automobile manufacturers have taken a look at this issue and have generally concluded that in those other jurisdictions where oxygenated fuels were introduced earlier, that there has been something on the order of a 3 percent to a 5 percent reduction. So again, anecdotal evidence to suggest that the reduction in New Jersey would be substantially more than that certainly would be cause for concern and would require further analysis and study.

I guess the central question that we would like to focus on now would be, "Well, what do we do?" Given what we know in terms of the salutary effects of the introduction of oxygenated fuel and in terms of the potential adverse effects, what should we, the DEPE, as the agency responsible for carrying out the Clean Air Act in New Jersey, and what should we collectively -- the citizens and residents of New Jersey -- do to respond to the issues that have been raised here?

Well, I think the first point is one that comports very closely with what Assemblyman Warsh said, and that is that we gather the facts first. We make decisions that are based on good, sound science and on proven data. We need to gather more facts on fuel economy and on human health effects, and I think it is important that we are in the process of doing that, both at the local level through the EOHSI and also at the regional and national levels through the CDC, EPA, and others.

We need to investigate MTBE both in the laboratory and in the field. Fortunately, or unfortunately, because of the experience we have had during the past several months, we now do have field experiences that have been tested in Fairbanks by EPA and CDC. In fairness, what they found in Fairbanks was that there were elevated levels of MTBE in the blood, and that is cause for concern. We do not have that kind of epidemiological data yet in the Northeast, and that is something that the EOHSI is looking into. I understand they are here today, and I hope they will be able to bring you up-to-date on the actions they have taken.

We need to examine price fluctuations, not just in New Jersey but elsewhere, and see what kind of a correlation or relationship there is between the introduction of oxygenates and increases in price, and we need to share data and information among the affected jurisdictions. We need fundamentally to get to the bottom of the question of why Fairbanks, Alaska, Missoula, Montana, and isolated spots in New

Jersey, but not Minneapolis or Cleveland or Baltimore or Memphis. It just doesn't make any sense. Frankly, until we have more data and more information to make some sense out of those inconsistencies, we need to step cautiously and we need to try to gather all the data and facts we can.

I would say item number two in terms of what we do now is to avoid quick, emotional, hasty action. A return to the days of so-called "normal" or unoxygenated fuel is not an acceptable answer from the standpoint of human health and the environment, because that simply takes us back to the days of unacceptably high levels of carbon monoxide. It not only makes us vulnerable to the well-known EPA sanctions of failure to comply with the Clean Air Act, which includes not only the loss of all of our Federal transportation dollars, but also a denial of our ability to site any new sources of air permits, but much beyond that, and really much more important than that, it exposes the 7.5 million people of the State of New Jersey to unhealthily acceptable levels of carbon monoxide; the carbon monoxide levels that we were subject to before the implementation of the Oxygenated Fuels Program. That should serve to remind us that a return to the good old days is simply unacceptable.

Finally, what I think we need to do is, we need to work together: the EPA, the Centers for Disease Control, EOHSI, the oil companies, the chemical companies, this legislative body, our Department, and others, both in the scientific and the political arenas, to find solutions that will help us to protect human health and the environment at a reasonable cost and without adverse impacts.

I hope that is why we are here today. In furtherance of that aim, John and I would both be happy to answer any questions you may have.

ASSEMBLYWOMAN OGDEN: Thank you very much, Rick.

I would also like to acknowledge that we have been joined by the Vice-Chair of the Committee, Assemblyman David Russo.

Are there any questions from Committee members or sponsors?

ASSEMBLYMAN MIKULAK: Yes, Madam Chair, through you. I am glad that the DEPE acknowledges the fact that they need to gather additional data on this program. Let me suggest that in the future before you use the people of New Jersey as guinea pigs, you gather your data in advance. Okay?

I am also glad to hear that South Jersey is becoming an attainment area and you are petitioning EPA to reduce the Oxygenated Program to four or five months. That's progress. Okay.

I would like to ask you, though, why did DEPE mandate MTBE over other types of oxyfuel that were available under Federal regulations?

ASSISTANT COMMISSIONER SINDING: DEPE has not expressed either a preference or a mandate for any particular oxygenate. We have left the decision on what oxygenates to use to the flexibility of the industry.

ASSEMBLYMAN MIKULAK: Okay. So New Jersey gets MTBE primarily?

ASSISTANT COMMISSIONER SINDING: Because of the marketplace.

ASSEMBLYMAN MIKULAK: Because of the marketplace?

ASSISTANT COMMISSIONER SINDING: Yes.

ASSEMBLYMAN MIKULAK: Okay.

ASSISTANT COMMISSIONER SINDING: There are, in fact, oil companies in New Jersey that use only ethanol.

ASSEMBLYMAN MIKULAK: Okay. I am one of these-- You have to go slowly with me, because I am one of these nontechnical people--

ASSISTANT COMMISSIONER SINDING: Welcome to the crowd.

ASSEMBLYMAN MIKULAK: --that the bureaucrats refer to.

I would like to know, in the Federal regulations there is a range, a 3.5 percent, a 2.7 percent of oxygenated capacity, the oxygenating agent, and weight of the fuel. Is that correct?

ASSISTANT COMMISSIONER SINDING: John would know better than I in terms of the technical terms, but that is essentially correct.

ASSEMBLYMAN MIKULAK: Okay. How come DEPE opted for the high side in New Jersey?

J O H N E L S T O N: Our rule only says no less than 2.7 percent. Now, in some-- Again, a flexibility market. Some manufacturers could put up to 3.5. But we have not to exceed, and that is what the Clean Air Act says.

ASSEMBLYMAN MIKULAK: Okay, but you put it in the Federal range. You could have put it in a lower range. Maybe if we have to have this program next year, you might want to consider-- Well, maybe we will redraw the regs for you. You know, we'll do that. We could put that in. But I would like you to consider that if California's oxygenated content is 2.5 percent, maybe New Jersey shouldn't be so far in excess of California, because I don't think we have the same kind of air problems.

I'm glad we're here and we're all talking about all this. I hope we can come up with some solutions before next November. Thank you.

ASSEMBLYWOMAN OGDEN: Assemblyman Gibson?

ASSEMBLYMAN GIBSON: Thank you.

Deputy Commissioner, good morning. I was encouraged by your testimony. Who is doing the measuring? Is your Department doing the measuring?

ASSISTANT COMMISSIONER SINDING: The monitoring of CO levels?

ASSEMBLYMAN GIBSON: Of the air stations.

ASSISTANT COMMISSIONER SINDING: Yes, that's our Department.

ASSEMBLYMAN GIBSON: I noticed on your chart that Freehold was excluded. Is that because that station is not installed yet?

ASSISTANT COMMISSIONER SINDING: It is installed; it just hasn't been working right.

ASSEMBLYMAN GIBSON: Okay. The attainment area you are considering for South Jersey-- I want you to repeat that. Does that mean that this is a formal request, or a formal decision that oxygenated fuels need not be used in South Jersey next winter?

ASSISTANT COMMISSIONER SINDING: No, and that is an important distinction. In order to achieve attainment, what a region that is out of attainment must demonstrate is that they have achieved attainment and that they have a plan in effect to maintain that achievement. An Oxygenated Fuels Program for CO attainment would have to last at least one more year in order to demonstrate to the EPA that attainment had been achieved.

ASSEMBLYMAN GIBSON: It is possible-- I will put this in the form of a question: Is it possible that if, in fact, you followed Assemblyman Mikulak's question and lowered your range from 2.7 to 3.0-- Again, we are not experts, and we will probably hear more on this today. If you lowered it to a narrower range-- Is that available to you? Can industry react to that and produce that kind of fuel, as far as you know?

ASSISTANT COMMISSIONER SINDING: I can't answer for industry. It goes the other way. If we were to lower the threshold, it would go from 2.7 down to 2.3 or 2.0, rather than up. It is the percentage within the total volume that we are talking about.

I don't know what the answer is in terms of whether industry could accommodate that, and I don't know what the answer is in terms of how EPA would respond to that. It would

take a demonstration on our part that despite a reduction in the oxygenated content of the fuel, we would still be able to achieve compliance. That is certainly something that we will look into, at your suggestion.

ASSEMBLYMAN GIBSON: You mentioned Stage II vapor recovery. We have the accordion type hoses, and they are rather expensive. I think one small station told me that it would cost maybe \$6000 a pump -- does that make sense? -- to put those in.

MR. ELSTON: Closer to \$3000.

ASSEMBLYMAN GIBSON: Three thousand. How effective are they? Do you have some way of measuring, or does the manufacturer suggest some percentage of the vapors you capture? I presume that some still gets out.

ASSISTANT COMMISSIONER SINDING: Go ahead, John.

MR. ELSTON: They are rated at 95 percent effective. Now, you'll notice that there are two cords; one that goes over the top of the gas pump. Our enforcement people do look at these from time to time, but they shouldn't be broken in any way, because if they are, then the whole aspect of the system is not working properly..

But in theory-- If you looked in the summertime, perhaps last summer, you found that there were no wavery lines anymore of gasoline being wasted when the vehicle is being filled. We were very surprised to see the aspect that people were, indeed, smelling it.

ASSEMBLYMAN GIBSON: Well, assuming it is 5 percent, it is still-- I have an idea in my head. I don't like spending a lot of time at the gas station. I find myself going there on and on and on, especially as I commute to Trenton. If we could have 10 percent less time at the pump, that would be of benefit to the driver; it probably would save the cost of pumping gas. Just a larger fuel tank-- I wonder if that is part of the equation that could be in here. A larger fuel tank

which would -- and I know there would be problems there that are beyond New Jersey to solve-- A message could be sent. With a larger fuel tank, we would not be spending as much time pumping gas.

You are losing just 5 percent, which you have gotten narrowed. But there are other states that do not have this at all, so they are losing quite a bit. If they weren't pumping gas as often because they had a little bit larger fuel tanks, I think this would be an efficiency, and I think it would contribute to air quality.

The last thing is: Assemblyman Mikulak's car-- You or a prior witness indicated that he may have needed a tune-up. Well, my own experience was 25 percent. It was with a new Taurus, which I leased this fall. Because it is just something I like to do, I was measuring -- before I was even interested or had any knowledge of this program-- I was measuring my fuel, because that is just something that I enjoy doing. I had it to 26 miles per gallon, and as soon as this came in, it dropped to 21 and 20 miles per gallon. So I clearly experienced a 25 percent reduction -- 25 percent.

Now that the gas has stopped, it has gone back up. As a matter of fact, it is higher than the original 26 miles per gallon I had. So it is clearly -- and I didn't have a tune-up in the meantime-- I clearly experienced 25 percent, and it is back up again.

Now, I have learned this morning, and I have to admit, I do not know how much the winter weather contributed to that reduction. How much of that was oxygenated fuel, and how much of that was winter weather? I believe that a large part of that was as a result of this fuel. So I don't think we are exaggerating too much when we are into these much higher percentages than the 1 percent and 3 percent which have been offered this morning.

ASSISTANT COMMISSIONER SINDING: I'm just curious, Assemblyman. You said you leased the car this fall?

ASSEMBLYMAN GIBSON: Yes, in September.

ASSISTANT COMMISSIONER SINDING: Okay, so you had the experience then of having driven it without the oxygenated fuel for September and October.

ASSEMBLYMAN GIBSON: Yes.

Thank you, Madam Chairman. Those are all of my questions.

ASSEMBLYWOMAN OGDEN: Are there any others?  
Assemblyman Solomon:

ASSEMBLYMAN SOLOMON: Madam Chairman, I just have a couple. You said a few interesting things that I hadn't really thought about. The first was, let's assume the Federal government decides we are in compliance. We will continue the program for one more winter season, and then we will begin to implement the phase-in of the year-round fuels.

ASSISTANT COMMISSIONER SINDING: Right.

ASSEMBLYMAN SOLOMON: So what we are really talking about here is changing the regulations for that one season, because after that we will be locked into a phase-in anyway.

ASSISTANT COMMISSIONER SINDING: Well, we are not necessarily locked in. Actually, we hope to be locked in, because what we hope to be able to do is demonstrate that we have achieved attainment so that we can--

ASSEMBLYMAN SOLOMON: Yes, okay. If the determination is made that we have achieved attainment, we are going to be locked into that phase-in anyway, which ultimately we are going to be locked into somewhere down the road whether we have achieved attainment or not.

ASSISTANT COMMISSIONER SINDING: Yes.

ASSEMBLYMAN SOLOMON: I have nothing further.

ASSEMBLYWOMAN OGDEN: There is just one question I have along those lines: Do we have any knowledge, at this

point, how much oxygenated fuel will be incorporated into the federally reformulated fuel -- as to whether it will be a significant component?

ASSISTANT COMMISSIONER SINDING: If the current formulation is 2.7 percent in New Jersey, my understanding is that for the Federal reformulated fuel it would be 2 percent -- 2.0.

ASSEMBLYWOMAN OGDEN: Same as California?

ASSISTANT COMMISSIONER SINDING: Right. So, if you were to use the MTBE percentage-- If MTBE now makes up 15 percent of the oxygenated fuel, that would be cut back to about 10 percent in the Federal reformulated fuel.

ASSEMBLYWOMAN OGDEN: So the studies that are ongoing in answering these questions are going to continue to be valid for the federally reformulated fuel?

ASSISTANT COMMISSIONER SINDING: Absolutely.

MR. ELSTON: I might add, though, Assemblywoman, that, again, the 2 percent is an averaged mechanism, where some manufacturers could put in greater than 2.0 percent. It could go as high as perhaps 3 percent, while some could go as low as 1 percent. The reason for that is that there are some advantages economically for some blenders to use one type of additive at a higher level than with another. So it is a cost basis on why EPA allows averaging. It could very well be that there would be some relatively high oxygenate in the reformulated fuel at the Federal government level. That is part of the Clean Air Act.

ASSEMBLYWOMAN OGDEN: No further questions. Thank you very much.

ASSISTANT COMMISSIONER SINDING: Thank you.

ASSEMBLYWOMAN OGDEN: Next, from the National Center for Environmental Health Strategies, I would like to call Mary Lamielle.

M A R Y L A M I E L L E: Good morning, Assemblywoman Ogden. My name is Mary Lamielle. I am President of the National Center for Environmental Health Strategies, a national, nonprofit organization based in Voorhees, New Jersey.

Our Center has recorded health complaints attributed to the use of oxygenated fuels for the last several years, initially from people in Denver and in the Southwest, and this year from people in other areas of the country. The majority of people we were contacted by prior to this year -- the 1992-1993 oxygenated fuel season -- were people with chemical sensitivities. Many of these individuals found that the oxyfuels -- methyl tertiary butyl ether, ethanol, or methanol -- triggered mild to severe and debilitating symptoms for them. As the program became more widespread this year, health complaints came from people beyond our network, including members of the public who claimed no sensitivity to chemicals, and those in the industry, including people who deliver gasoline, service station owners and attendants, and auto mechanics.

Health complaints attributed to the oxygenate methyl tertiary butyl ether -- MTBE -- have been numerous and compelling. While we appreciate the seriousness of ambient carbon monoxide levels, we don't want to trade off one health problem for another. MTBE, in our opinion, is the wrong solution to a bad problem. A gasoline with MTBE, from the reports we receive, burns the skin and mucous membranes, causes severe headaches, acts as an anesthetic, makes people nauseous, triggers nosebleeds, and provokes coughing, bronchitis, and asthma attacks.

Here is a sampling of the types of reported problems we received. The first few are actually from people within the industry. I think they are just very serious, and we have grave concerns. The first report is about a gentleman who delivers gasoline to gas stations. Initially he found that the

gas basically penetrated the gloves he normally used; caused open sores on his hands, and sores on his knuckles. He switched to leather gloves. The leather gloves became -- if they became damp or saturated with the fuel, and if he brought them back into the cabin of the truck, he became so sleepy that it literally put him to sleep at the wheel of a tanker. That is not something we want to see on the roads of New Jersey.

We found that gas delivery workers, service station attendants, and mechanics also had serious severe headaches during this past winter. Many folks in those areas said that they lived on Advil during this whole season, the headaches were just so intense.

Another person, a salesman from South Jersey who normally made several trips to New York City and beyond during a week's period of time, drove about 1000 miles a week. He normally made those trips and returned home to Camden County. He claimed that he could not make the return trip without stopping in the afternoon to take a nap, he was that fatigued from driving.

Other motorists reported to us driving with the window down basically to keep enough air in the car so they could think and function and stay alert. That was a very common complaint among the general public.

We also had several South Jersey motorists who actually reported driving to Delaware to get gasoline because they were having some serious problems with exposure to the MTBE from their own autos.

We had another gentleman -- this was out-of-state in North Carolina -- who was-- I guess in a way this presents some of the major problems for the public, although there are some of which we do not have in New Jersey. This gentleman was pumping his own gas at a self-service station in North Carolina, and he became very disoriented. He went to the men's room basically to put some water on his face, passed out there,

and ultimately he was diagnosed as having had a seizure. Basically, in New Jersey we do not have self-service; we do have vapor recovery. But I think those are serious concerns in this program as it stands now nationwide.

The other thing I would say to you is, should you doubt any of these types of reports and everything, or the seriousness of the problem, I would challenge you to just pick up a telephone book from your local district and call anyone, particularly in the auto industries -- auto mechanics, people who pump gas, whatever. I think you will hear similar complaints. Again, there have been serious levels of complaints.

We do not think MTBE is the answer. Furthermore, we do not want to see the program abandoned, or abandon one guilty oxygenate, and just say, "Okay, we are not going to use MTBE. Let's switch to ethanol. Let's switch to methanol." We really think there is a need for serious testing and study before we take any other action in this area.

Our role very much at this time is to see a clean bill of health for a public that we see very sickened and drugged by the oxygenate MTBE. We think that halting the current program, as it stands in New Jersey and nationwide, is the answer to that.

That's it.

ASSEMBLYWOMAN OGDEN: Thank you. I have to tell you that I am not familiar with your National Center. Could you just briefly describe it? Is it governmentally supported?

MS. LAMIELLE: No. We are a private, nonprofit, tax-exempt organization. In the broadest spectrum we deal with environmental and public health issues. In a more narrowed focus, we deal with issues such as: indoor pollution issues, sick schools and sick buildings, people who become injured or damaged in those situations, and frequently people who become chemically sensitive. In that area we deal with: housing

issues, employment, accessibility to medical services, disability rights, discrimination, and such.

ASSEMBLYWOMAN OGDEN: I see. Thank you. Are there any questions or comments from members of the Committee?

ASSEMBLYMAN WARSH: I would just to ask one quick question: Are you more concerned about MTBE and the other oxygen-rich alternatives than you are about the definite proven health hazards associated with carbon monoxide?

MS. LAMIELLE: Well, what I would say to you is, I am concerned about the level of complaints we have had about the use of MTBE. I think the acute health complaints-- Again, I was very surprised. I knew within the community of people who were hypersensitive that-- My guess would have been that those people would be having health effects from this. Again, they were reporting very serious health effects. But what I later found was that so many people in the general public, people, you know, housewives, people driving to work, or whatever, were experiencing fatigue, lack of alertness, acute problems on a day-to-day basis, and then definitely the industry folks. I think those are very, very serious concerns.

So, I think those are immediate concerns that, in my opinion, right now -- and again, I am not a scientist -- outweigh what we know about carbon monoxide, which is a huge problem that we have had for years and we know we need to deal with. But again, I just don't think that the trade-off that we have right here is working out. Again, I have serious concerns about the health effects that have been reported to us.

ASSEMBLYMAN WARSH: How do you go about gathering the data as to the complaints received on MTBE?

MS. LAMIELLE: We, as our normal network, prior to this year-- We have a network of folks who are either members or people who contact us. In those instances we have had some of those folks telling us, or telling networks of folks in other areas, that they are having problems with this. This is

the first year that we actually received complaints beyond that network on any significant level. Those were generated essentially by -- initially by media stories that referred to us and said that this was an area we were involved in. When such a story would occur -- for example, an article in a South Jersey paper -- we might get, you know, 50 to 100 phone calls after that.

One of the other things I want to express, because I don't know that this was clearly stated previously, is, I would tell you that people who are having problems were clearly frustrated with the fact that there was no route for them to contact a governmental official, a Department of Health person, an EPA person, somebody for them to tell their problem to. I think that was a very serious problem. We would receive calls and these people would say to us, "We're so glad we found somebody to tell this to, because we did not know who to contact." Very clearly in the beginning of the season, back in November and December, we were told of people who called the Department of Health and called DEPE, and their complaints were basically brushed off. They were just told, "There is no problem with this." That was it. So again, there was that level of people being very frustrated with not knowing that there was a vehicle.

Within the industry folks we were essentially told that-- I guess right now my understanding is that the industry clearly knew that people were having serious problems. The people we talked to there were primarily people who deliver gasoline and have firsthand contact with the gasoline. When those folks later told me that they posted signs in their canteen encouraging coworkers whom they knew were also sick to contact us and let us know, or contact someone and let them know they were having problems-- Those notices were essentially ripped down by supervisory people. Basically they

were told, "There is no problem. You don't need to be complaining here."

So again, I think that the avenues were not open for clearly stating the fact that you were, indeed, having some level of a health problem.

ASSEMBLYMAN WARSH: Have you a count of New Jerseyans affected with respect to MTBE?

MS. LAMIELLE: It is probably several hundred now, but I don't have that quantified. Another problem is the fact that as an organization-- I think it is a major problem, but it is a small piece of the spectrum of what we deal with. Unfortunately, our budget and such just do not provide that.

ASSEMBLYMAN WARSH: Thank you, Madam Chairman.

ASSEMBLYWOMAN OGDEN: Thank you very much.

ASSEMBLYMAN MIKULAK: Thank you.

ASSEMBLYWOMAN OGDEN: Next I would like to call the New Jersey Petroleum Council.

**J A M E S E. B E N T O N:** Good morning, Madam Chairwoman. My name is Jim Benton. I am the Executive Director of the New Jersey Petroleum Council. We are a division of the American Petroleum Institute located here in Trenton, New Jersey.

As you are aware, the Petroleum Council represents the major oil companies which refine and supply gasoline to New Jersey motorists. And as this Committee is intimately familiar, we are actively involved in working with the State Legislature and the administration on the important air quality issues facing our State.

What we have done today is put together a panel of experts from industry which we believe will offer to you a representative sampling of the information and assistance that we are willing to provide this Committee in addressing this issue.

With me today, on my immediate right, is Dr. Gerhard Raabe, Director, Epidemiology and Medical Information Services

from Mobil's Research Center in Princeton, or more accurately, Hopewell Township. To my immediate left is Dr. Albert Hochhauser of Exxon Research and Engineering in Florham Park and Linden, and to my far left Albert Talbot of Sun Company Research and Development.

The major testimony today will be given by Dr. Raabe. I wish to make a few key points to the Committee regarding the petroleum industry's role in the Oxygenated Fuels Program. Following Dr. Raabe's presentation, Mr. Talbot would like to make a few comments on behalf of the Sun Oil Company. Then we will be prepared to answer any questions you may have.

It is important to bear in mind that the petroleum industry was required by regulation to meet the oxygenated fuel standards in New Jersey and 37 other metropolitan areas this past winter to reduce carbon monoxide and improve air quality. These regulations, as you are aware, stem from the Federal Clean Air Act amendments of 1990.

Our member companies have made substantial financial investments to comply with the oxyfuel requirements. Further, the Petroleum Council and our member companies worked cooperatively with the Department of Environmental Protection and Energy on the development of the State's Oxygenated Fuels Program, long before the proposal and adoption of the regulations last summer.

Our cooperative efforts were also extended to the New Jersey Legislature. During this first season of the oxyfuels compliance period, my office assisted some of the members of this Committee as well as your other colleagues in the Assembly and Senate in responding to concerns about oxygenated gasoline expressed by your constituents.

We are pleased to learn that these efforts and investment of the petroleum industry have paid dividends in reduced carbon monoxide pollution this past winter, according

to the testimony most recently presented by the Department of Environmental Protection and Energy.

The petroleum industry is required by law to comply with the Oxygenated Fuels Program, and we are committed to its successful and beneficial administration.

In a moment, Dr. Raabe will describe a comprehensive series of studies sponsored by the industry designed to address the public's concerns about the acute health effects of gasoline using MTBE as an oxygenate.

Meanwhile, the Petroleum Council pledges its continued cooperation to the Committee, the Legislature, and the Department in reviewing the first season of oxygenated gasoline in New Jersey.

With that, I give you Dr. Raabe to talk about the health effects of MTBE.

**G E R H A R D R A A B E, D.P.H.:** Thank you. Chairwoman Ogden and members of the Assembly Environment Committee, thank you for this opportunity to present our views on the Oxygenated Fuels Program. Today, I would like to talk about two things:

First, I wish to clarify some misinformation over health effects from exposure to oxygenated gasoline, and in particular one of the oxygen-enriching additives, methyl tertiary butyl ether, or MTBE for short.

Second, as Jim benton mentioned, I will outline for you the industry-sponsored health effects research which is currently underway.

But first, some background. I am Chairman of the American Petroleum Institute's Ad Hoc MTBE Committee. The work group comprises representatives from 10 oil companies, and is coordinated by API's Health and Environmental Affairs Department.

The work group was created to look into issues involving exposure and health effects of MTBE, and to

coordinate activities and communications between industry and government environmental and public health agencies.

API supports the Federal Oxygenated Fuels Program that has been in effect this winter. The use of MTBE in gasoline, as part of this program, has been successful in reducing carbon monoxide.

The Oxygenated Fuels Program has been successfully used to reduce CO in western states since 1988. However, New Jersey motorists first came to know about oxygenated fuels when they pulled into service stations back in November and saw a sign that informed them that the pump dispensed something called "oxygenated fuels." They also may have noticed an unfamiliar and distinctive odor in the gasoline they purchased.

The fact of the matter is, MTBE has been a component of gasoline since 1979 when it was first approved as a substitute for unleaded gasoline by the United States Environmental Protection Agency, although certainly not at the levels required for the Oxygenated Fuels Program.

MTBE is a chemical compound known as an ether. It is made from a combination of isobutylene and methanol. Adding oxygenates like MTBE to gasoline makes it burn more completely, reducing emissions coming from a car's tail pipe. MTBE is preferred by some refiners because it is easy to blend, high in octane, and when blended with gasoline it can be transported in existing pipelines.

Since 1969, there have been a total of 44 MTBE health-related studies sponsored by industry and other scientific organizations. To date, there is no documented evidence of damage to human health from the use of MTBE in fuel. We have for the Committee a list of those studies, which is attached to our statement.

Researchers at the Health Effects Institute, for example, have concluded that MTBE exposure is not considered acutely toxic to animals. Toxicology tests indicate that acute

toxic levels are seen in test animals only when exposures are 18,000 to 30,000 times greater than the expected exposure of motorists. Scientists at the Canadian Health and Welfare and Environment Ministries determined that exposure to MTBE over a lifetime would be a very small fraction of the amount necessary to cause harmful effects.

Nevertheless, there have been isolated complaints by motorists and service station attendants of nausea, headache, eye or skin irritation. As I mentioned previously, MTBE has a distinctive odor, and it is not clear whether the complaints were triggered by the smell or whether some individuals are particularly sensitive to oxygenates.

Due to some customer complaints since oxygenated fuels have been in wider use in recent months in New Jersey and elsewhere, API believes additional research on MTBE is appropriate, and we and the government have both commissioned such studies. A four-tiered research program on oxygenated gasoline sold during the past winter has been commissioned by API. The program will include:

- \* A study at service stations to measure concentration of MTBE and other gasoline compounds at the pump island and service station perimeter, and to monitor pollutant concentrations in breathing zones of selected customers and service station attendants during refueling.

- \* A study cofunded by API and the Oxygenated Fuels Association -- which will be testifying later in this hearing -- to determine exposure to commuters in their vehicles to MTBE emissions.

- \* A study of the odor threshold for MTBE in gasoline. MTBE as an ether has a very low odor threshold. It can be smelled even with Stage II vapor recovery.

- \* Studies to determine the extent of customer complaints since the expanded Oxygenated Fuels Program was

initiated last fall, and other data on occupational and nonoccupational exposure are also being solicited.

The industry-sponsored research is in addition to a larger effort described earlier by EPA and the Centers for Disease Control and Prevention to evaluate MTBE. The research on commuters will be conducted by the Environmental and Occupational Health Sciences Institute -- EOHSI -- at Rutgers University. Preliminary results from all of these programs are expected by mid-summer.

Work on the research project commenced in early March.

To summarize my comments, MTBE has been safely used in gasoline for more than a decade. MTBE has been extensively studied and to date there is no scientific data leading us to believe there are adverse human health effects expected. Nonetheless, the industry has initiated a four-tiered research program, which is currently underway to address these complaints.

After our next speaker, I will be happy to answer any questions.

MR. BENTON: At this point, Madam Chairwoman, I would like to introduce Al Talbot, of Sun Oil Company, to speak on behalf of Sun. Al?

A L B E R T T A L B O T: Thank you, Jim. I would like to emphasize a point that Mr. Benton made earlier. Although I am part of the API panel, my comments, which I will read, do represent Sun Company's experience with MTBE, and do not necessarily-- They are not necessarily fully subscribed to by API.

Good morning, Chairwoman Ogden, members of the Committee, ladies and gentlemen. I am Al Talbot, Section Chief of Fuels Product Development for the Sun Company. It is both an honor and a pleasure to appear here today to share with you some of Sun Company's experiences with MTBE. Sun will be

submitting more detailed written comments for the record in connection with this session.

As for my own background, I have been a research scientist at Sun's Research and Development Laboratories in Marcus Hook, Pennsylvania, for nearly 27 years, working almost exclusively on fuel products or on fuel-related manufacturing processes.

As you may know, Sun markets petroleum products throughout the northeastern states, and in New Jersey through nearly 400 Sunoco-branded service stations, including the service plazas located on the New Jersey Turnpike.

The general business philosophy which Sun has adopted is to provide its customers with the widest practical choice of quality fuel products. For example, Sun's custom blending gasoline dispenser offers customers a choice of five octane grades, including a differentiated high octane premium gasoline which is traded as Ultra. Ultra rolled out in 1984 as the highest octane gasoline available from a major brand supplier. For certain Sun Company refineries to achieve the octane level for the expected demand of Ultra, methyl tertiary butyl ether, or MTBE, was determined to be a cost-effective, high octane alternative to other octane compounds traditionally used in gasoline manufacture.

Thus, over the nearly 10 years since its introduction, Sun Ultra gasoline may have contained from zero to the maximum amount of MTBE allowed under the law. Considerably in advance of this introduction, Sun undertook a series of independent testing programs to ascertain the relative health risks associated with exposure to varying concentrations of MTBE and to MTBE in gasoline. Dr. Raabe has attached to his comments, for your information, a chronological list of MTBE health-related studies conducted by industry and by others. You will notice that 12 of the first 13 studies were conducted either by or for Sun Company, and that for nearly a decade

these studies were the only ones known. The number currently shown on Dr. Raabe's list now stands at 44.

Based on the positive results of these studies, the U.S. Environmental Protection Agency -- EPA -- granted waivers allowing the addition of 7 volume percent MTBE, subsequently increased to the equivalent of 2 weight percent oxygen, which would translate to about 11 volume percent MTBE in gasoline. Consequently, Sun purchased MTBE to add to its Ultra gasoline, as noted earlier. During the initial phase of the 1984 rollout period, several employees complained of nausea and headaches. These complaints, however, did not persist following modifications to the barge loading and sample handling procedures, along with the offer of additional optional safety equipment, which was ultimately declined by the employees.

In 1988, EPA expanded its definition of "substantially similar," which effectively increased the permissible concentration of MTBE in gasoline to 15 volume percent, the equivalent of 2.7 weight percent oxygen. This was granted after the presentation of significant documentation on the effects of MTBE at this level. In anticipation of this, Sun Company built a MTBE plant in its Marcus Hook, Pennsylvania, refinery to augment Sun's purchased MTBE supply. No complaints were recorded following the start-up of the MTBE processing plant.

During Calendar Year 1990, two complaints were filed by employees after exposure to high levels of meat. By meat I mean, let's say, the pure compound, rather than MTBE in gasoline. All the complaints cited were investigated and, where appropriate, additional exposure monitoring was conducted. The result was that none were classified as reportable under EPA's Toxic Substance Control Act. Information on these health-related complaints will be included in our written comments.

More recently, the Clean Air Act of 1990 required the addition of oxygenates in gasoline during the carbon monoxide nonattainment control period, essentially the winter season. Concentrations of 15 volume percent MTBE or 10 volume percent ethanol were added, by choice, to all gasolines sold in nonattainment areas to meet the CO emissions requirement. Consequently, the introduction of MTBE at these concentrations in all grades of gasoline raised some health effects issues, particularly in the subfreezing climate of Fairbanks, Alaska. Other nonattainment areas received consumer complaints as well. In the fall of 1992, Sun received one customer and two employee complaints on MTBE effects following the introduction of MTBE blend gasoline as part of the CO noncompliance effort.

To put this into perspective, that is one consumer complaint in all the markets in which Sun supplied MTBE blend gasoline. The markets included all or parts of the States of New Jersey, Maryland, New York, Connecticut, and Pennsylvania. Reports of complaints from other sources prompted Sun to correspond with the field marketing personnel to solicit any complaints received regarding the effects of MTBE gasoline and report this information to the Corporate Risk Management Department, even if only anecdotal. This effort did not surface any additional subsequent complaints.

To complete the research cycle on the effects of MTBE, Sun has provided a test location for an industry-sponsored evaluation of MTBE, in cooperation with the United States EPA and the American Petroleum Institute. Sun, in conjunction with other API members, is sponsoring exposure assessments at gas pumps, and the definition of MTBE odor and test thresholds under a variety of exposure conditions.

We at Sun believe our own experience, as well as the current literature, provides ample evidence that MTBE can be safely blended into gasoline at the concentrations permitted by EPA. However, any new data -- and there certainly seems to be

some new data coming -- when compiled, should be made available for public review and technical scrutiny.

Thank

ASSEMBLYWOMAN OGDEN: Thank you. Have any of these studies tried to determine whether there is a correlation between the complaints and extremely cold weather; you know, as we think about Alaska and Montana?

DR. RAABE: The answer that. The majority of these studies were designed to assess the full range of acute, subacute, and chronic health effects from MTBE. They are done in laboratories where the environmental conditions are rigidly controlled for the comfort of the animals. So the basic answer is, none of these studies have addressed the wide temperature difference.

Some of the research that EPA has underway in Region X in Alaska is specifically designed to look at impacts on tail pipe emissions in subarctic conditions with these oxygenated fuels. That will give us an indication of what types of -- if there are any changes in tail pipe emissions that might be related to the complaints being observed up there.

ASSEMBLYWOMAN OGDEN: Assemblyman Mikulak?

ASSEMBLYMAN MIKULAK: Madam Chair-- I would like to know why the industry uses MTBE in the Northeast over other oxyfuels?

MR. BENTON: Let me initially respond, and then I will allow the panel to respond. Every company that manufactures oxygenated fuel has the option of using a variety of oxygenates, so the decision on what oxygenated fuel to use varies from company to company. The petroleum industry-- Some companies may choose MTBE because they are able to get an adequate supply of it to handle their needs at a better price than a different oxygenate. An additional consideration is that MTBE blends can be shipped through existing pipelines,

which, as you are probably aware, service a lot of New Jersey's supply. Other alcohol blends cannot.

Would anyone like to add anything?

MR. TALBOT: I can add a few comments: Sun does not use exclusively MTBE in support of the nonattainment effort. In the Northeast, however, we do because that is the location of many of our pipelines. Jim has alluded to economics, and certainly economics does drive this decision. If you have a pipeline that is going through an area, if it is going to carry MTBE gasoline, in all likelihood all terminals spotted along that pipeline are going to be pulling out MTBE gasoline.

There are certain locations where it has been economical for us to use ethanol rather than MTBE. I can cite Dayton, Cleveland, Syracuse, as some examples of places where we have used ethanol.

ASSEMBLYMAN MIKULAK: Who manufactures MTBE? Is it the petroleum industry, or is it other chemical companies, or both?

DR. RAABE: It's both.

ASSEMBLYMAN MIKULAK: Okay. So you have--

DR. RAABE: They is us, and they is they.

ASSEMBLYMAN MIKULAK: Okay. So, there are people who manufacture it outside the petroleum industry, and the petroleum industry also manufactures it. Okay.

Why does the industry use the higher percent range of weight as offered under EPA and DEPE regs, the 3.5 percent, as opposed to the 2.7 percent? Is that a standard practice? There is a range in the regs. Somebody drew up these regs and they said, "You can offer a minimum of 2.7 percent in weight and a maximum of 3.5 percent. It is my understanding that we are getting the maximum.

A L B E R T M. H O C H H A U S E R, Ph.D.: I think in New Jersey we are generally getting the minimum because we use the MTBE. You can't use any more than 2.7 percent oxygen if

you put MTBE into the gasoline. If you use ethanol, you can go all the way up to 3.5 percent oxygen, or 10 percent ethanol. But I think generally we are much closer to the lower end than to the higher end.

DR. RAABE: On the MTBE side, you are on the low end.

ASSEMBLYMAN MIKULAK: Okay. Did the industry help the New Jersey DEPE in formulating the regulations for this Oxygenated Program -- gas program -- that we had this winter?

MR. BENTON: Assemblyman, we participated in all of the public workshops and the regulatory proceedings that accompanied this in a standard fashion through the Administrative Procedure Act. We responded fully to that.

In addition, we also assisted the Department in disseminating some literature regarding this. Obviously, we have complied with their regulations requiring signs at service stations. Some other companies have gone to the trouble of printing up brochures or distributing State-printed brochures.

ASSEMBLYMAN MIKULAK: I have one further question: Approximately how much money has the industry made off of MTBE? Can it be measured in the hundreds of millions of dollars or in the billions of dollars?

MR. BENTON: I think it is important to recognize that the industry was responding to a mandate from the Federal Clean Air Act that was promulgated by the State of New Jersey. I think the amount of money that was made or not made would vary from company to company, depending on their ability to procure a supply of the appropriate oxygenate fuel to meet the requirement, the ability to store that, the ability to ship it to the consumer so that we, in turn, can enjoy an adequate supply of energy, which is part of what fuels are in New Jersey economy and provides for our life-style.

I think it is important to underscore that certainly MTBE is one of the alternatives to meeting that standard which

is a cost-effective response. I think that is why you are seeing it in the marketplace today.

Would anyone else like to add to that?

MR. TALBOT: Well, I wish it were that easy, but I indicated earlier that prior to the EPA mandate that determined that oxygenates had to be used, Sun Company did a rather sophisticated economic analysis and determined that for its Ultra gasoline it was economical to use it. That changed as time went on with respect to the pricing of different octane components.

This new period has brought in a situation where we are required to use a high octane component across all grades, whether it is economical or not. So there is that constraint which calls for additional--

ASSEMBLYMAN MIKULAK: I appreciate that it is a Federal mandate and that industry and government interact on the regulations. But, I mean, somebody did make billions of dollars, I'm sure, off of this additive, and then the program itself.

DR. RAABE: I don't know why you say that or from where any evidence of that could come.

ASSEMBLYMAN MIKULAK: Well, I'm asking you, you know.

DR. RAABE: I can tell you that Mobil purchases most of its MTBE in the United States from others. Certainly, we are not benefiting from its manufacture. I think there is a wide variability on who is making money and who is not making money. I think speculating like that doesn't take us--

ASSEMBLYMAN MIKULAK: Well, this is a fact-finding Committee, so I am going to ask you again: Could you get the answer to that? How much has the industry made off of MTBE in the last year?

MR. BENTON: The answers to that question, as responsive as we can be, might not be immediately available, as you can anticipate--

ASSEMBLYMAN MIKULAK: Well, you have time.

MR. BENTON: --given the competitive nature of the industry. You might have a company, for example, that went out and purchased a particular oxygenate in anticipation of a broad use and a particular economic circumstance, which perhaps, in securing that MTBE, may have lost money because, perhaps, the marketplace did not allow him to recover that. You might have another company which, perhaps, employed a little more judicious planning, in hindsight, for the arrival of the oxygenate.

ASSEMBLYMAN MIKULAK: I am not going to hold you to a figure. I am not going to say that you lied if it is off by a couple of billion dollars here. What is a couple of billion dollars among friends? I am just looking for a ballpark figure -- \$5 billion, \$10 billion. There was a big profit made.

MR. BENTON: Well I think, again, to use your definition of the words, "billions of dollars of profit"-- I don't think that fairly portrays the type of reward that would go to anyone who appropriately and properly planned for this. But I think it is important to underscore in closing that this program was anticipated by State and Federal government and the petroleum industry. Gasoline prices initially rose at the start of the program last October. Since that time, retail prices of gasoline have actually dropped below the average retail price recorded prior to the start of the program, according to the State DEPE Office of Energy.

So, I think you are looking at a scenario where, yes, the initial prices did go up, but over the period of the Oxygenate Program the prices declined. I don't know--

ASSEMBLYMAN MIKULAK: I must be buying my gas at the wrong stations, because it's--

MR. BENTON: Perhaps that is the case.

ASSEMBLYMAN MIKULAK: Thank you, gentlemen.

DR. RAABE: Thank you.

ASSEMBLYWOMAN OGDEN: Assemblyman Gibson, did you have a question?

ASSEMBLYMAN GIBSON: Yes, I have a question or two: Early on in the hearing we were looking for possible relief -- at least I was -- a lowering of the percentage. I thought maybe that would be some relief. But based on the testimony that came from this panel, as I understand it -- and I am just going to ask you to repeat it -- you are down at the lowest percentage that the regulations permit, which is 2.7. What we are consuming in New Jersey across all the different brands of gasoline that we might stop at at the pump, they are all basically using 2.7 and they are using this MTBE.

DR. HOCHHAUSER: My understanding is that there are some companies that are using 10 percent ethanol, which would be the 3.5 percent, but I think the majority are down at the 2.7 level.

ASSEMBLYMAN GIBSON: Those companies that are using 10 percent ethanol-- How does that relate to--

DR. HOCHHAUSER: That's 3.5 percent oxygen.

ASSEMBLYMAN GIBSON: That's 3.5 percent weight. How does that compare as far as economy or price-wise with other companies which are using the 2.7 percent MTBE?

DR. HOCHHAUSER: I can't answer that. That is not my area of expertise.

ASSEMBLYMAN MIKULAK: The price at the pump?

MR. BENTON: The price at the pump would be predicated on a variety of factors. Because of the general nature of your question, I don't know that there is a specific response. I think you are talking about the lower range where MTBE would enter into, typically, 2.7 percent. The upper range was at 3.5 percent to allow for the ethanol blend of oxygenate to be used. The price differential would vary from company to company, and we would not have, as an association, that immediate pricing information available.

ASSEMBLYMAN GIBSON: It's apples and oranges, or something like that?

MR. BENTON: But all fruits.

ASSEMBLYMAN GIBSON: The introduction of the MTBE at 2.7 percent-- That replaces something else, I guess just gasoline. The MTBE has a price and what it replaces has another price. Can you give me an idea of what that is, maybe on percentage, or, if it is a dollar per gallon ultimately, does the MTBE at 2.7-- Does it cost five cents, four cents, and then you replace a penny of the other so that ultimately the increase is four cents.

Can you give me an idea of that?

DR. RAABE: Early on, there was a lot of economic analysis done by EPA and others in preparation for -- as part of the deliberations on the Clean Air Act amendments. The speculation was that adding the oxygenate -- any oxygenate of a sort of neutral oxygenate value -- would be in the range of 3 percent to 5 percent -- in the range of a three cents to five cents per gallon increase in cost to the manufacturer. That is where the speculation numbers of what increases might be foreseen in the Oxygenated Program would be -- somewhere between three cents and five cents per gallon.

As Jim alluded to, of course, as soon as that happens, the marketplace takes over and all other kinds of things happen.

ASSEMBLYMAN GIBSON: That preliminary estimate was a net increase after replacing whatever it pushed--

DR. RAABE: It was a net increase. The economic costs of manufacturing, distributing, storing the oxygenate would cost manufacturers three cents to five cents a gallon in the sale price of the fuel.

ASSEMBLYMAN GIBSON: I guess, to get some sort of feel for the thing, what does the MTBE cost per gallon, maybe, I guess, at the refinery, if that is a fair question?

DR. RAABE: Perhaps you could save that for the Oxygenated Fuels Association.

ASSEMBLYMAN GIBSON: All right. Thank you very much, Madam Chair.

ASSEMBLYWOMAN OGDEN: Assemblyman Warsh?

ASSEMBLYMAN WARSH: Thank you, Madam Chair. I see, Dr. Raabe, in the 44 health studies that you have provided to the Committee today, that the vast majority of them are dealing with rats. In four of them, the experimentation protocol involved the use of monkeys. One of the studies, however, the one you refer to as Study 27, dealt with the occupational exposure, release, and toxicity of MTBE. In your positions within your respective companies, would you receive any notice of complaints received from employees dealing with MTBE?

DR. RAABE: Absolutely. All manufacturers in the United States that manufacture, use, or distribute materials like MTBE, fall under the obligations of the Toxic Substance Control Act. We are required to document any health allegations under a number of different sections of those statutes, some of which are just documentation if EPA were to ask; others require us -- if those are significant health effects--

ASSEMBLYMAN WARSH: Dealing with employees?

DR. RAABE: Dealing with employees, or customers. The Act is neutral on that subject. It would be any health allegations that we receive.

ASSEMBLYMAN WARSH: We heard testimony earlier from an environmental study center that they receive complaints that employees dealing with the actual pumping of the gas, I guess from tankers to the underground storage tanks, have open sores, etc. Have you received any complaints like that?

DR. RAABE: None whatsoever. We have received two complaints: one from a service station, and one from a customer. I am now speaking for Mobil. Part of the research

program we have underway is to assemble this data nationally to get a better understanding, because we actually have not seen the kinds of allegations that are being discussed here. Certainly it has a distinct: . I will not say that a number of workers do not say, "Boy, this stuff smells," but an equal number of workers say, "Gee, I like this ether smell."

So, this is sort of "the eye of the beholder" kind of thing. One person's adverse smell is another person's-- It's different. But we have only, inside Mobil, to date, received two complaints from our workers.

ASSEMBLYMAN WARSH: As a result of the increased percentage of MTBE in the fuel, have you had to change the kinds of protective equipment that your employees use in handling the fuels?

DR. RAABE: No. MTBE is virtually -- not nontoxic, but almost nontoxic from an acute perspective. In fact, the American Industrial Hygiene Association, which actually looks at worker protection issues, in 1991 recommended an exposure level of 100 ppm averaged over an eight-hour time period. That is a substantially higher number than any customer would ever see. Based on that recommendation and our own analysis of these health effect studies, you would not need to treat this any differently from regular gasoline.

ASSEMBLYMAN WARSH: That 100 ppm-- Does that include employees as well as customers?

DR. RAABE: That was specifically recommended for eight-hour employees.

ASSEMBLYMAN WARSH: Is there a similar level recommended for employee exposure?

DR. RAABE: This was for employee exposure.

ASSEMBLYMAN WARSH: Oh, okay, I'm sorry.

DR. RAABE: Are you asking the question for customers?

ASSEMBLYMAN WARSH: No. With respect to employees, what level has your tests shown that they are exposed to in a given eight-hour period?

DR. RAABE: That is part of the ongoing program. I mean, I can give you some ranges of Mobil experience. Part of the API programs actually assembly that data and get a full-- It is real important that we understand the range. Okay? We do know that the National Institute of Occupational Safety and Health Administration did a number of studies, I guess it must have been in the 1990 winter season, where they measured exposures to service station attendants in Phoenix, and in Phoenix during that period MTBE was in use. They found very low exposures. About the highest exposure in a worker was about 1 ppm. I guess there might have been some short, you know, two-minute numbers that were higher, but on average the numbers were very low.

I wouldn't hold to that number, because I think the exercise that we have underway, both us, the Petroleum Industry, and EPA, is trying to make that information base a lot bigger. By this summer, we will have a good range of understanding of what consumers are likely to be exposed to, self-service Stage II, and what workers are likely to be exposed to in different scenarios. That data is coming in a much more robust fashion.

ASSEMBLYMAN WARSH: If a member was interested in getting a copy of any of these studies, would we contact you in order to do that?

DR. RAABE: Contact Jim. Some of them are copyrighted, but we can generally-- We will find a way to get them to you.

ASSEMBLYMAN WARSH: The number 27 study is actually the one I am interested in.

MR. BENTON: I think 27 is an API study.

ASSEMBLYMAN WARSH: That's an API study?

DR. RAABE: Yes, that is an API study. I would think they could get that.

MR. BENTON: Since it is an API study, I think it would be among the easier ones to prepare, but I do not immediately have it.

ASSEMBLYMAN WARSH: Thank you, Madam Chair.

ASSEMBLYWOMAN OGDEN: Any other questions? (no response) Thank you very much.

MR. BENTON: Thank you, Madam Chairwoman. We will continue to be here in case any other question or need for comment should arise.

Thank you again.

ASSEMBLYWOMAN OGDEN: Thank you.

Next I would like to call Dr. Nancy Fiedler and Dr. Mark Robson, from Rutgers University -- the Environmental and Occupational Health Services Institute.

**NANCY FIEDLER, Ph.D.:** Good morning. My name is Dr. Nancy Fiedler. I am here with Dr. Mark Robson, and we are representing Dr. Bernard Goldstein. I am a clinical psychologist in the Division of Occupational Medicine at the Environmental and Occupational Health Sciences Institute in Piscataway. EOHSI is a joint program of UMDNJ, Robert Wood Johnson Medical School, and Rutgers University. Dr. Goldstein regrets not being able to be here today, but I would like to paraphrase Dr. Goldstein's written testimony and then try to answer any questions.

First of all, I would like to thank you for this opportunity to submit for the record my thoughts on the use of oxygenated gas in New Jersey. Dr. Goldstein apologizes for not being able to attend this Assembly Environment Committee meeting. Unfortunately, he has a longstanding commitment to Chair a national meeting of the Health Effects Institute at which, among other research priorities, we will consider the need for funding studies on the effects of oxygenated fuels.

The Environmental and Occupational Health Sciences Institute, of which Dr. Goldstein is the Director, is proud of

its effort in responding to the concerns raised this winter about oxygenated fuels. EOHSI has over 40 full-time members of the faculty of these two institutions -- Rutgers University and the Robert Wood Johnson Medical School -- who are experts in the discipline related to environmental and occupational health issues. It houses four graduate programs for providing future expertise in this area that is so vital to New Jersey, and is particularly proud of its public outreach, school curriculum, and worker training programs. The efforts of these faculty have led this year to the receipt of over \$13 million in external funding, mostly from the Federal government, which includes all three types of center grants awarded by the National Institute of Environmental Health Sciences.

Our involvement with the issue of MTBE began with a request in December from the Director of EPA's Office of Mobile Sources to learn what we could about the complaints we were receiving about MTBE-containing fuels. Dr. Paul Liroy, Dr. Cliff Weisel, and their colleagues in our Exposure Measurement and Assessment Division found unexpectedly high levels of MTBE within the automobiles using a standard suburban traffic run on Route 18 in New Jersey. Dr. Sandra Mohr and myself, along with other colleagues in the EOHSI Occupational Health Division, are currently involved in studies of various populations, including a defined cohort of chemically sensitive individuals, attempting to determine the relations between MTBE and symptoms; in other words, health effects. And Dr. Michael Iba of the Toxicology Division is looking at ways to determine if MTBE will form adducts to DNA or other macromolecules.

We greatly appreciate the cooperation of DEPE, particularly Assistant Commissioner Sinding's office, the Department of Transportation, the Department of the Treasury, and the Department of Health, as well as the Public Service Electric and Gas Company, in helping us move rapidly to address this issue. Studies of State and PSE&G employees who are

relatively heavily exposed to gasoline fumes should be particularly helpful, as should evaluation of those individuals who have complained to the State agencies -- as you heard earlier today -- and to our EOHSI clinic. We also have received much help and insight from the State of Alaska. The residents of this state have led the nation in the extent of their complaints, and our participation in a study of the environmental health risks of residents of Valdez, Alaska has allowed us to obtain other information about studies in that state.

We have shared our plans with Commissioner Weiner and his staff; with EPA, including a briefing of senior EPA staff in Washington; with industry, and with other governmental agencies, including the Centers for Disease Control and the National Institute of Environmental Health Sciences. The work has been funded by EPA through an existing cooperative agreement; by NIEHS through our Center Grant; by the American Petroleum Institute to perform additional studies of MTBE levels in automobiles primarily in Connecticut, which, unlike New Jersey, does not have Stage II controls on gas pumps and does have self-service gasoline stations; and by EOHSI discretionary research funds for health and toxicological studies. Mary Lamielle of Voorhees, New Jersey, who heads the National Center for Environmental Health Strategies -- who you heard from earlier -- has been particularly helpful as well in our long-term studies of individuals with multiple chemical sensitivities whose response to MTBE will also be evaluated.

Almost all of our studies and those of industry and government are pointing toward completion in time for presentation at a major conference to be held at EPA this summer, July 26 to 28, at which the issue of MTBE will be thoroughly discussed. Presumably that will lead to a decision by EPA concerning future use of MTBE as an oxygenated fuel or for other purposes.

Let me suggest two other points that have become evident as we review this issue. The first is that we must not lose sight of the rationale for adding high levels of MTBE and other oxygenated fuels to our gasoline, which is to decrease carbon monoxide emissions. MTBE is clearly successful in doing so, but one must question whether the extent of the gain, which is the prevention of CO-induced angina attacks in susceptible individuals, compares favorably with the cost of any adverse impact of MTBE, should one be demonstrated.

The second point concerns the situation that American industry finds itself in. Oxygenated fuels were required by Congress in the 1990 Clean Air Act and MTBE has been strongly advocated by EPA. Industry has responded with a relatively large investment in production facilities for what is now said to be the world's largest volume commodity chemical. Our present predicament clearly demonstrates that more research was needed before this decision was made. However, that is in the past. The current situation requires very careful analysis. For example, in Dr. Goldstein's judgment, replacing MTBE with methanol as an oxygenated fuel would be a public health mistake, and the paucity of health information about other oxygenated fuels is frightening.

Dr. Goldstein commends you for having this hearing. He believes that in view of the additional information that will be relatively rapidly available, and the fact that legislative action would have no immediate impact on the MTBE exposure of New Jersey residents, that it would be appropriate to schedule further hearings on this matter when the data is available.

Again, I want to thank you for this opportunity to present this information to your Committee. We would welcome keeping you informed as to the outcome of our studies or as additional information is received.

ASSEMBLYWOMAN OGDEN: Thank you. I am certainly glad that you are as involved as you are in this issue. Are there any comments or questions from members of the Committee? (no response) Thank you very much.

DR. FIEDLER: Thank you.

ASSEMBLYWOMAN OGDEN: Next on the list is Hal Bozarth, of the Chemical Industry Council.

TRIZIA ZITA: Madam Chair, Hal Bozarth couldn't be with us today. He is at another meeting. I am Trizia Zita, from the Chemical Industry Council. With me today I have Mr. Bill Whitney, from the ARCO Chemical Company, and John Kneiss, Executive Director of the MTBE Task Force affiliated with the Oxygenated Fuels Association, Inc. They will be providing you with testimony.

ASSEMBLYWOMAN OGDEN: They are members of the Oxygenated Fuels Association, correct?

MS. ZITA: Yes.

WILLIAM S. WHITNEY: Yes, that is correct.

Madam Chairwoman, members of the Committee, Assemblymen Mikulak and Gibson: We appreciate the opportunity to be here with you this morning. My name is Bill Whitney. I am Manager of Oxygenated Fuels with the ARCO Chemical Company. With me today is John Kneiss and, as Trizia introduced, John is with the Oxygenated Fuels Association. We are here today representing the oxygenated fuels industry, whose products and services have helped to make possible the cleaner gasoline fuels which have resulted in improved air quality for New Jersey residents.

This past winter, New Jersey participated in the first nationwide Oxygenated Fuels Program. The results of this program have been described as one of the most significant improvements in air quality this nation has ever seen. In New Jersey this program reduced the levels of carbon monoxide in

the air -- as reported by the DEPE -- by nearly 15 percent, with similar improvements in 37 other areas around the country.

Despite this success, we are very concerned with reports of headaches, nausea, and other reactions which are being attributed to oxygenated fuels. We understand the Department of Environmental Protection and Energy and the Department of Health have received 30 to 40 health-related complaints this past winter. We take these complaints very seriously, and in January we began conducting tests with the United States EPA to understand the possible causes.

The most important fact we know about the Oxygenated Fuels Program is that there has been an unprecedented improvement in air quality this past winter, resulting in a cleaner, healthier environment.

Described by The New York Times as the "silent threat," carbon monoxide pollution is often discounted by the public because it is odorless and colorless. Yet at high levels, exposure to carbon monoxide can be fatal and its presence in the air we breathe can lead to shortness of breath, headaches, nausea, and fatigue due to the diminished ability of the blood to carry oxygen.

In addition to carbon monoxide -- which we have heard a lot about this morning -- the use of MTBE as part of this program has also reduced the level of toxic aromatics in gasoline by 25 percent to 35 percent. Aromatics include benzene, a known human carcinogen. Reductions in the aromatic content of gasoline means not only less benzene emissions, but also reduced levels of nitrous oxides in vehicle exhaust.

MTBE is not new. It has been used in gasoline since 1979. Over 100 billion gallons of MTBE containing gasoline have been used by United States commuters, much of this fuel being consumed right here in New Jersey.

Initially, MTBE was used to help phase out the use of poisonous lead compounds in gasoline, while providing an economical source of octane to refiners.

In the late 1980s, MTBE became part of an air quality improvement program in six metropolitan areas, including Denver, Colorado and Phoenix, Arizona. The success of these programs led to a proposal by President Bush to incorporate the use of oxygenated fuels in all carbon monoxide nonattainment areas into the 1990 Clean Air Act.

Last winter, as a result of this program over 70 million people, including all of New Jersey, experienced the best air quality and the cleanest gasoline ever.

I would now like to address concerns reported in New Jersey about reduced gas mileage and higher prices. As you have heard from other people earlier this morning, the addition of MTBE to gasoline does reduce fuel economy by 1 percent to 3 percent. This figure is based on 12 studies, including well-documented fleet tests by automobile manufacturers, gasoline marketers, oxygenate producers, and the government. You will see attached to the written copy of my testimony a summary of those 12 programs.

However, there are many other factors affecting fuel economy that typically accompany winter driving conditions. During the winter, gasoline is higher in butane, a compound added to improve cold weather starting. Butane, like MTBE, has a lower energy content than gasoline. This additional butane leads to a drop in fuel economy of about 3 percent to 5 percent. Factors like colder weather, longer warm-ups, and poorer driving conditions also contribute to reduced fuel economy in the winter. More than MTBE, these factors probably account for the losses in fuel economy being reported by many consumers.

The final area I want to address is the cost of using oxygenated fuels. Cleaner gasolines do have a price. Based on estimates from the United States EPA, the cost to refiners for using MTBE is three cents to five cents per gallon of gasoline. As an MTBE supplier, we are not in a position to

answer questions about gasoline pricing to consumers. However, we have compiled data from the Department of Environmental Protection and Energy on actual pump pricing in New Jersey prior to and during the oxygenated fuels program this winter. These data indicate that prices increased four cents to five cents at the beginning of the program last year and then declined steadily throughout the program. Again, there is a graph attached to my testimony which will show you the actual data.

We estimate, accounting for both the fuel economy penalty and the changes in gasoline pricing, that the cost to consumers for this entire program this past winter was about \$10 to \$12 per vehicle. Again, for the gentleman from the northern part of the State, with the seven-month program that would probably work out to be about \$17 to \$20 per vehicle. Considering the public health and environmental benefits provided by MTBE, we feel this cost is quite reasonable.

Mr. Kneiss will now address the questions about health effects and odor.

**J O H N K N E I S S:** Thank you. I am John Kneiss, Executive Director of the MTBE Task Force, affiliated with the Oxygenated Fuels Association, Inc., a not-for-profit trade Association located in Washington, D.C. The Task Force is composed of producers and importers of MTBE for blending as an oxygenated additive to gasoline.

MTBE is one of the most extensively studied components of, or additives to, gasoline. We firmly believe that the body of health effects data on MTBE supports the conclusion that there is little likelihood of a human risk from its use as a gasoline additive.

The Task Force, working with the U.S. Environmental Protection Agency, initiated a testing program in 1987 to investigate potential health effects for MTBE exposures. We believe the results of this \$3.5 million testing program

strongly support the conclusion that MTBE is safe for use as an oxygenated component of gasoline, including at blended levels of 15 volume percent.

Our testing program was developed in recognition of MTBE's continued growth as a gasoline octane enhancer and its anticipated increasing use as an additive to improve auto emission quality. The EPA, as well as other interested parties, concurred with the specific testing program and the health effects data which it would provide.

Our testing involved 11 separate studies which included shorter term, as well as longer term, exposures to laboratory animals at exposure levels up to 8000 parts per million. These exposures are far greater than levels measured in ambient air sampling in New Jersey and elsewhere.

In addition to our research efforts, the industry, the EPA, and other independent researchers carried out numerous health tests of MTBE in laboratory animals beginning in 1969 -- as you previously heard -- including our research program. At least 44 health effect studies were carried out on MTBE. These studies focused on shorter exposure times and acute types of effects, and did not result in any adverse effects at levels hundreds to thousands of times greater than expected human exposures.

We are concerned about the complaints reported by New Jersey consumers. The reports of headaches, nausea, and other symptoms associated with potential exposure to gasoline containing MTBE are inconsistent with our experience of safe use during the past 15 years and in most parts of the country this year. The Task Force, however, takes these reported effects seriously and has undertaken efforts to further ensure MTBE's safety.

We recognize that the extensive body of research in laboratory animals cannot measure objection to odors or responses such as headaches and nausea. We have been working

since January 1983 (sic) with the EPA, the Environmental and Occupational Health Sciences Institute of Rutgers University, and other researchers to design and carry out further study of environmental exposure of MTBE to commuters. As part of a joint industry and EPA work group, we are funding independent research by EOHSI to collect data during standardized commuter auto trips following refueling with MTBE-blended gasoline. This research includes sample collection and measurements of auto cabin air and roadway air during defined rush hour trips in New Jersey. As you heard, this research is ongoing, and we expect to have preliminary results by June.

With this additional information, we can assist the EPA and the Centers for Disease Control and Prevention in defining human clinical studies to evaluate low MTBE exposures for potential responses to its odor. In these studies, volunteers would be exposed to MTBE levels comparable to the measurements made in New Jersey. Questionnaires on health symptoms would be given and other objective tests for acute effects and responses would be performed. The results of the volunteers' responses would be compared to those exposed only to air.

We have met with senior EPA researchers to help design the protocol for the human clinical trials. We expect that these studies will be started as soon as full approval of a human rights committee is obtained.

We believe the human clinical studies will help us to better understand the relationship between MTBE odor and responses being reported by a limited number of people in New Jersey.

Our Task Force is also currently sponsoring additional research in laboratory animals to further evaluate the limited findings observed in the long-term, high-exposure studies. We initiated these tests to further ensure the safety of MTBE in its increasingly important use to improve air quality.

We have moved up our schedule for this research so that data will be available for presentation in July 1993 at the oxygenates workshop being organized by the EPA.

In summary, based on the extensive testing carried out by our Task Force and research data previously available, we believe that MTBE does not cause adverse effects or health risks in people at the exposure levels being measured in New Jersey. We will continue to work with the New Jersey officials, the EPA, the CDC, and other groups to investigate the complaints, and we support the additional study needed to ensure MTBE's safety.

Thank you for your attentiveness to my remarks. I will now turn it back to Bill.

MR. WHITNEY: I would like to close by emphasizing to you that the Oxygenated Fuels Association is very concerned about the problems that have been reported here in New Jersey. We are committed to working with EPA in order to understand the relationship between MTBE and the symptoms that appear to be affecting a small number of consumers. There has been some inconsistency on that, but it seems by and large, listening to the gasoline marketers and the State officials, that that number is somewhat smaller. That also needs to be better understood. We feel MTBE and the Oxygenated Fuels Program provide many benefits, including reduced carbon monoxide and toxic emissions from gasoline, and will continue to provide dramatic health benefits to the citizens of New Jersey.

Thank you for this opportunity to present this information. John and I would be happy to answer any questions you might have.

ASSEMBLYMAN MIKULAK: A few quick questions, because the hour is getting late. What percent in weight of MTBE was used to replace lead when it was phased out of gasoline?

MR. WHITNEY: Well, it would vary, depending upon the octane requirements of the refiner. As the gentleman from Sun

reported, it could be anywhere from zero up to the maximum allowed by EPA. Initially that was 7; then it was moved to 11, and then to 15.

ASSEMBLYMAN MIKULAK: Is that 15 point, 15, or--

MR. WHITNEY: Fifteen volume percent.

ASSEMBLYMAN MIKULAK: Fifteen volume percent.

MR. WHITNEY: The same level that is being used in the carbon monoxide program this winter. That decision would be based on blending economics.

ASSEMBLYMAN MIKULAK: But yet there were no odors noticed then?

MR. WHITNEY: That is correct.

ASSEMBLYMAN MIKULAK: But now there are odors. When you just go up to the pump you can smell them.

MR. WHITNEY: Sure. Well, there were odors before when it was at 15 percent. You can notice, even in the lower level MTBE blends, the odor, but probably not as much. Again, I think it is critical that we differentiate between odor and health effects.

ASSEMBLYMAN MIKULAK: Okay.

ASSEMBLYMAN GIBSON: I have a question for the gentleman from ARCO.

MR. WHITNEY: Yes?

ASSEMBLYMAN GIBSON: Do you produce both the MTBE and the methanol?

MR. WHITNEY: No, we do not. We purchase our methanol.

ASSEMBLYMAN GIBSON: Then maybe the questions might be-- Well, try to answer them with that understanding.

The methanol was kept, from prior testimony, at 3.5 percent.

MR. WHITNEY: No, that would be ethanol.

ASSEMBLYMAN GIBSON: Ethanol?

MR. WHITNEY: Yes. Methanol is generally not used in gasoline except at extremely low levels, on the order of a tenth of a percent, or several tenths of a percent.

ASSEMBLYMAN GIBSON: All right, I'm sorry.

MR. WHITNEY: Methanol is really not a component for gasoline.

ASSEMBLYMAN GIBSON: The two oxygenating gases, one is the MTBE, and the other is ethanol?

MR. WHITNEY: That is correct.

ASSEMBLYMAN GIBSON: Do you produce both of those?

MR. WHITNEY: No, we do not. We produce MTBE.

ASSEMBLYMAN GIBSON: And you purchase the ethanol?

MR. WHITNEY: We purchase methanol to make the MTBE.

ASSEMBLYMAN GIBSON: All right. Can you answer: When ethanol was kept at 3.5 percent--

MR. WHITNEY: That is the current limit for ethanol -- 3.5 percent oxygen.

ASSEMBLYMAN GIBSON: Why couldn't that be lowered to 2.7? The regs permit it, it seems to me.

MR. WHITNEY: It could be. All of these oxygenates are required to be approved by the United States EPA for use in gasoline. What happens is, you generally start at a lower level, and then as more data on the use of the material is developed, either a refiner or a producer of the oxygenates would have to do an extensive amount of test work and then petition EPA for permission. As the gentleman from Sun indicated, initially MTBE was approved at 7 volume percent, and then a waiver was requested and granted at 11 volume percent, and then subsequently another waiver was requested and granted at 15 volume percent. That is percent of the material. We may be confusing you here because a lot of these oxygenates can be compared in terms of the amount of oxygen that they put in the gasoline, which is how carbon monoxide is reduced.

ASSEMBLYMAN GIBSON: The only numbers that I am comfortable with, at least so far this morning, are the 2.7 and the 3.5.

MR. WHITNEY: Okay. That's--

ASSEMBLYMAN GIBSON: I understand that is by weight.

MR. WHITNEY: That is the oxygen contained in the additive, yes.

ASSEMBLYMAN GIBSON: And that is by weight?

MR. WHITNEY: That is correct.

MR. KNEISS: May I add a clarification here?

ASSEMBLYMAN GIBSON: Sure.

MR. KNEISS: The ethanol at 3.5 oxygen corresponds to 10 percent by volume blended into a fuel -- into gasoline. MTBE, which would represent 2.7 percent oxygen, is comparable -- or, is equivalent to 15 volume percent blended into the gasoline.

ASSEMBLYMAN GIBSON: I guess really what I am trying to drive at is, it seems to me from prior testimony that, or I drew the conclusion -- which maybe was wrong -- that the ethanol at 3.5 percent might have been more expensive to the consumer, might have introduced a higher possibility of a health risk, than dropping that down to 2.7. I am assuming it would be lower at 2.7 than at 3.5. Is that a correct assumption?

MR. WHITNEY: Not necessarily. I am not sure I understand your question.

ASSEMBLYMAN GIBSON: Well, is 2.7 lower than 3.5? Somehow--

MR. WHITNEY: Yes, yes.

ASSEMBLYMAN GIBSON: Okay. I wasn't trying to be funny. When I bring this up it sounds like some of the answers come back that maybe that is higher. I know the number is lower, but--

MR. WHITNEY: Right. The 2.7 is required by the Clean Air Act for carbon monoxide control; 2.7 is also the maximum amount of MTBE that is allowed under the EPA waiver. Ethanol, on the other hand, would be required to be at 2.7 to comply

with the Clean Air Act, but ethanol has a waiver from EPA that would allow them to go up to 3.5.

ASSEMBLYMAN GIBSON: Does it cost more to go up to 3.5?

MR. WHITNEY: That would depend on market conditions and the price of the material. It would vary.

ASSEMBLYMAN GIBSON: Is there more material used at 3.5 than at 2.7?

MR. WHITNEY: No.

ASSEMBLYMAN GIBSON: Oh, all right. The prior speaker made a statement just about in closing, and I would like your reaction to that. For example, in my-- Oh, she was talking about methanol. We're back to methanol. All right, that answers that question, too.

Thank you very much. Thank you, Madam Chairman.

ASSEMBLYWOMAN OGDEN: I just have a question along the lines of what Assemblyman Gibson was talking about. Ethanol is basically available in the Midwest because it comes from corn. Is that a fair statement?

MR. WHITNEY: Well, it does come from--

ASSEMBLYWOMAN OGDEN: As opposed to the East Coast.

MR. WHITNEY: No, that is not completely accurate. Ethanol is made from corn predominantly in the Midwest, but there are several gasoline marketers and refiners here in the East who have chosen to use ethanol. One of the provisions of the EPA guidelines in developing the implementation plans, is to encourage the choice of oxygenates, which, even though we only manufacture MTBE, that has been a tradition that we and other oxygenate producers have taken; that it is very healthy to have a choice. There are certain gasoline marketers here in the Northeast using ethanol exclusively.

ASSEMBLYWOMAN OGDEN: Maybe we have gone over this before, but what is the price differential between ethanol and the MTBE? And, is it involved with the cost of transporting it from the Midwest?

MR. WHITNEY: Probably not, because most of the MTBE, at least the MTBE we manufacture, is produced in Houston, Texas. So there are transportation costs associated with all oxygenates. Generally, since the EPA has encouraged a choice of oxygenates and refiners have that choice, you end up with a classic free market situation where the products need to be competitive on an economic basis. Freight is a part of that; availability is a part of that.

ASSEMBLYWOMAN OGDEN: So they currently are then. Is that what you're saying?

MR. WHITNEY: That's true.

ASSEMBLYWOMAN OGDEN: Are there any bad qualities to ethanol, as opposed to what we have been talking about with the MTBE? It seems to me that I once read something about it having some qualities that were not that desirable.

MR. WHITNEY: The major difference -- and this is being discussed extensively by the government and industry right now -- is that the use of ethanol typically increases the vapor pressure of gasoline, which would lead to more hydrocarbon emissions. Other than that, in terms of carbon monoxide reduction and other attributes, they tend to perform comparably.

ASSEMBLYWOMAN OGDEN: If there are no further questions, thank you very much. Oh, do you have one more, Assemblyman Mikulak?

ASSEMBLYMAN MIKULAK: What I asked you before about the volume-- You gave me zero to 11 percent volume used to phase out lead. What would that be approximately -- say 11 percent be in weight?

MR. WHITNEY: Two percent oxygen.

ASSEMBLYMAN MIKULAK: Okay, 2 percent. You are currently using that as a replacement for lead. That's standard, isn't it?

MR. WHITNEY: Well, it is one of many replacements for lead.

ASSEMBLYMAN MIKULAK: Okay, it is one of many. Then, 2.5 percent to oxygenate. Would that be on top of--

MR. WHITNEY: No, no, no, that would be the total.

ASSEMBLYMAN MIKULAK: That would be the total?

MR. WHITNEY: Right.

ASSEMBLYMAN MIKULAK: So, like, it would only be a five-tenths of a percent increase?

MR. WHITNEY: Well, the requirement is a seven-tenths increase -- 2.7 -- but, that is correct.

ASSEMBLYMAN MIKULAK: Okay, okay. Thank you.

ASSEMBLYWOMAN OGDEN: Thank you very much.

MR. WHITNEY: Thank you.

ASSEMBLYWOMAN OGDEN: Next, for a different viewpoint, we have Jerry Ferrara, from the New Jersey Gasoline Retailers Association.

**J E R R Y M. F E R R A R A:** I am Jerry Ferrara, Executive Director of the New Jersey Gasoline Retailers Association, representing approximately 3000 service stations. Alongside of me is my associate, William Dressler. I don't know. Sometimes it is good to be at the end. I had one Senator tell me that when you are talking to the grass roots you might find out some other information.

I am not going to attempt to cover the whole arena, because before me you have heard it. This Committee has asked some excellent questions. I have made some notes, and if I miss anything, it is Bill's job to fill in.

First of all, as far as the mileage -- the drop in mileage -- absolutely there was at least a 20 percent drop. You can smile back there. It's five miles per gallon. We have a Board made up of 60 members who meet once a month. They are in this industry. Forty of them made the test. I was glad, Assemblyman Gibson, that you finally came through -- you are

not in our industry -- to prove the difference before and after. That is a fact. It is a fact that our people are used to filling up their cars in the same spot. Don't go on a hill to measure mileage.

In my particular car, I lost five miles per gallon, and I was asleep. I thought the 1 percent to 5 percent-- I wasn't listening. I thought it was one to five miles per gallon, and I said, "Well, they are not too far off." One percent to 5 percent vis-a-vis almost 20 percent is a big difference.

As far as the performance of the car is concerned, let's stick to some of those things. We will get down to the health issues a little bit later on. A day like today -- it's 76 degrees -- if you are driving a car with oxygenated fuel, the tendency for that car to stall out in traffic, or shake, rattle, and roll, is there. My own wife-- I only hope that she doesn't go out today, because several times in the past couple of months when we had temperatures in the 70s, the car stalled in traffic. We took it back to a good shop. We opened it up. We thought there might have been water in it, maybe dirt. We did everything we could. We raised the idle on it so it wouldn't tend to stall out. That is one of the effects.

As far as being in traffic and odor, that is an issue you can debate all you want. My advice to all of our people was to stay at least one car length behind traffic even when it was stopped. Now that could be a debatable issue where you are going.

As far as profits, the price of gasoline went up anywhere as high as eight cents to nine cents a gallon with the inception of oxygenated fuels. We could not relate to find out whether that was all oxygenated or was an attempt to better the financial structure of the companies. For your answer as to profits, you should do the little thing that I did. I took the four quarters of '92 and looked at the major companies.

Somehow or other the last quarter of 1992 looks a heck of a lot better than it did the first three quarters. Now, the first drop in price when oxygenated went out, came out to three cents per gallon. He had the crazy job -- Bill did -- of trying to keep up with the market. It looked like it went down. Two companies went down; two went up. We could not get a handle, a true handle, on where the price of gasoline went. All of a sudden, it started to level off. It is starting to go back up again right now, and that historically has been the pattern in this industry. So, I cannot tell you where it is coming from, but definitely the differential we saw initially was no more than three cents per gallon.

One other little article: As far as being able to measure mileage in the contact, here is an article which disputes the ability of EPA to measure. It is a consulting firm in California. They unveiled a new study showing that refiners, EPA, and state regulators lack the kind of precision equipment necessary to measure oxyfuel content. Therefore, there is no way for EPA to know what kind of CO improvement it is supposedly getting from the oxyfuel mandate, until EPA first actually measures actual oxyfuel content. Some one of you asked that question. I didn't hear any answer to whether they are efficient or not.

Last, but not least, is, how did we arrive at these various areas? The strangest part of it is to have a division in the State of New Jersey. We sent out these booklets educating our people. In fact, we had to educate some of the majors about some of the language that had to be on the pumps, because they couldn't recognize it themselves.

We had a sphere. They took Mercer County south at an angle with Atlantic County; Ocean County north and Hunterdon County were in the northern part of the New York air share, and the southern air share was the Philadelphia air share. The differential was of several months. The southern air share

went out in February and was supposed to start in November -- we all started in November -- where the northern tier was going to start in October, and it still exists.

Do you know what the strange part of it is? After March 31, the only areas in this entire country still on oxygenated fuels are northern New Jersey, the metropolitan area of New York, and Fairfield County in Connecticut. Tell me what happened to California, Colorado, all the areas where environmental issues were a big thing. We are the only ones at the present time with oxygenated fuels.

To compound our problem, come May 1, we are to go on RVP. RVP is rebate the pressure that is lowered. Probably the one act that they ever did that was efficient was lowering the RVP in the summertime. We tried to get that as a substitute some years back and we were turned down at that time by the oil industry because they were concerned with the volume of butane, etc, etc. We tried to prove to the DEP in this State that it wasn't the Stage II hose that did anything really good; it was the RVP, because they are all measured at the same time.

Now, what is our dilemma? We are told now, as of this week, that we are supposed to lower our gasoline. Don't buy anything because they are bringing in RVP. Where are our dealers? Are they in trouble now with the DEP because we don't have oxygenated fuels in the right amounts? How can we switch over at midnight April 30, blow the gasoline out, and all of a sudden go to RVP? That is the kind of a dilemma they have with the various factors here.

Now, as far as the illnesses, we have to confess that we were remiss in making an issue out of it with people in our industry. Back in January, we were called by two major TV chains in New York about whether we would come in to give them information. We had low-keyed it only on the face. Remember, we represent employees, too, and we did not want to create a

panic out there among our people that some might be legit and some might be illegitimate, as far as claims.

At that time, we did not feel that it was a major thing. I am glad that two people who testified recognized that there are a lot of benefits to no self-serve in New Jersey, other than the ones we proclaimed before. I want to describe the reason why Long Island, New York and other areas have it. If you were to serve yourself gasoline in other areas, you would be required to hold the nozzle. There is no automatic clip on it as it exists in New Jersey among our attendants. You would be bend over. It would be normal to be bent over while you are putting the gas in. Then when you are finished and pull out, you are still bent over. Our help have a habit of putting it in, clipping it, and sometimes they just stand there with their hands in their pockets; other times they go around and service the rest of your car. Hopefully that is what they do. When they pull it out normally they are standing up, so they would not have the tendency to inhale fumes. Along with the State's two hoses -- whatever good that does-- That is the difference on why the complaints were coming in from other areas than us. We did not participate in it. When the articles started to break about the effects, then the phones started to ring off the hook, both from some of our station owners and from consumers who wanted to know what it was all about.

As far as the mileage, the mileage has been reiterated time and time again by the consumer. Something's got to be wrong here. We have all the bureaucrats, all the technicians. We're trying this out on animals. Now, when human beings are telling you their reactions, we have to have laboratory studies on it. Unfortunately, my one daughter who heard a conversation on one of the TV programs -- she happened to be visiting me-- "Dad, that is what is bothering me. Danny and I had an

argument over the mileage. The car isn't tuned up, and we brought it back two or three times. But more importantly, I feel dizzy." She is a sales promoter for one of the major companies and she drives a lot.

I was asked by a researcher, "Would she volunteer?" The reason we low-keyed requests by various researchers was because it requires the giving of blood, etc., etc. In today's age, everybody shudders when they think they are going to give blood. Their imagination runs away from them. That is going to be a difficulty, to get the real guinea pigs, which would be the human beings.

The other issue is: Where do we go from here? You have several choices. Definitely, if we are to have any program, it should be shorter. It should be shorter, no more than December through February. We don't need four months. We're talking about the cold weather, the odds on cold weather, and fluctuating temperatures during those three months will be minimal. No way should there be two areas in New Jersey. I have been tempted for the last month or so when I come down here, to come down real empty in a car and buy fuel down here and go back up, but I am the kind of character if I forget, I am going to be out of gas, because I set mine to the trip gauge, and when the mileage-- In new cars, of course, they tell you now that you're full, you're empty. You have a computer built in. But you should do that. One area, and a shorter period of time.

When it comes to the health issue, you know, I would almost say eliminate it completely. But I don't want to get into a battle as a layman versus those who feel it is better. I don't think it has the advantage. If you are burning 20 percent more gasoline to go the same distance, are we really cutting down? We only had one or two nonattainment days in the whole State, and you're driving that extra 20 percent, 15

percent. Give them anything they want, other than the 1 percent to 3 percent, which is a fallacy completely. When you relate that--

In addition to that, the cost effect of this-- People went from regular gas and went up to high octanes hoping that their cars would run better.

I am going to quit. Time is running out. Bill, if I missed anything, you can--

**W I L L I A M D R E S S L E R:** Well, I don't think you missed anything, Jerry, but I would like to make a comment on Chairwoman Ogden's initial statement that we have a somewhat different point of view. Actually our point of view is much the same as this Committee's. We are experiencing the same situations that you are, which you have voiced in your questions here. So basically, we are all street people. What we are doing here is experiencing the same things, on that side of the table, and on this side of the table also.

I am glad to see that that is happening. We are getting realistic input from this particular inquiry. Thank you.

**ASSEMBLYWOMAN OGDEN:** Thank you.

**ASSEMBLYMAN MIKULAK:** Just a brief statement, Jerry: When people from the real world discover something after they calculate a drop-off like 20 percent in gas mileage, the bureaucrats from DEPE and the EPA smirk and laugh at you because I guess average common people can't calculate these things. You see, the elite know better. That is why so many jobs are leaving this State. Okay? These people in their ivory towers have lost touch with what is really happening out there. That is part of the problem of why we are here today.

**MR. FERRARA:** Well, we are happy to be here. I got an education from one U.S. Senator who got annoyed after listening to all the technicians. He said, "It just shows to go you when you want to know the truth, you talk to the man from the grass

roots." I repeat it because he is a Kentuckian and it was his phraseology that amazed me. I use it pretty often.

ASSEMBLYWOMAN OGDEN: Jerry, I would like to approach the issue of decreased mileage in a different way. Do you have any figures on how much gas was sold, say, the previous year before this was instituted, maybe for the last two months, or valid comparisons between when the oxygenated fuel was mandated to be offered, for instance, versus when it wasn't the previous year?

MR. FERRARA: Well, that is pretty hard, because there was a time when the State gave you the figures. They were always two months behind. We tried to do it in a rather simplistic fashion, asking various stations to compare gallonage this year vis-a-vis last year. We didn't get anything on a level where we could honestly tell you it is there; that they sold more gas, before so many factors come into it. You had snow. So you couldn't really relate to that.

Given the month of December, it seemed to be that gasoline sales might have gone up in some individual stations, but then again, November is a month where if people went shopping-- Okay, but one of the reasons why we feel the economy is off-- We see the shopping malls empty; we see restaurants empty. Again, I couldn't relate it. I tried it, but I could not relate that. I would be very dishonest to tell you that I have it.

ASSEMBLYWOMAN OGDEN: Are there any other questions or comments from any members? (no response) Thank you very much.

We have three more, either groups or individuals who have signed up. Next I would like to call David Aronson of ASME. Is that the American Society of Mechanical Engineers?

**D A V I D A R O N S O N:** That is correct. I have no official position at the Society, but I did discuss this issue over the last few years with engineers and can give a report.

I would rather do that in writing, submit it to you, because there are quite a good deal of technical choices to be made.

Essentially, the problem is this: If you are talking about a 15 percent reduction in carbon monoxide, and you get out of this economic situation you are going to lose that 15 percent in increased activity. The population is likely to go up, and other things will cause that 15 percent to disappear. So, the solutions must be looked at in terms of major reductions in carbon monoxide.

Now, on my own personal level, I first encountered this over 50 years ago when Con Edison in New York found that if they changed the exhaust of their vehicles they improved the employee avoidance of accidents, employee attention, and so on. So this has been around for a long time, and now we are talking really about a moderate change, instead of a major change. It is to this area that most of the engineers with whom I have spoken feel it is a national directive. The National Academy of Engineering, the National Academy of Science, and our major institutions should review the whole program, and not come in with small fixes. This is what I will address in a letter to indicate some of those possibilities.

I thank you.

ASSEMBLYWOMAN OGDEN: We would appreciate that, Mr. Aronson. If you would be able to send that to the Committee, to the attention of the Committee Aide, Jeffrey Climpson, within two weeks-- That is the required deadline to be made part of the public hearing.

MR. ARONSON: What did you say his name was?

MR. CLIMPSON: It's Jeff Climpson.

MR. ARONSON: I'll come up there and get it from you.

ASSEMBLYWOMAN OGDEN: Jonathan Welsh, Welsh Technologies, Inc.

J O N A T H A N W. W E L S H: Thank you, Assemblywoman Ogden and members of the Committee. I thank you for the

opportunity of allowing me to address this Committee. As the Founder and President of Welsh Technologies, a northern New Jersey-based manufacturer of clean burning alternate fuel systems for gasoline and diesel-powered vehicles, we have come to know firsthand the sacrifices that the people and businesses of this State have made over the past six months with oxygenated fuel and their efforts to help the environment.

ASSEMBLYWOMAN OGDEN: Mr. Welsh, I see that your testimony is six pages. If you could please shorten it, everyone would appreciate it.

MR. WELSH: Oh, I'll shorten it up quite a bit. I was going to take out quite a bit of it because some of it has been repetitive already.

ASSEMBLYWOMAN OGDEN: We appreciate it.

MR. WELSH: Basically, some of the things that I wanted to get into irregardless of some of the health issues that have been raised today-- There have been a lot of issues also associated with MTBE and ethanol use and oxygenated fuels that have not been brought up due to our type of installations and the dealers and the mechanics we work with.

Probably the first issue is the economical issue. Number one, besides the cost factor of the gasoline going up about five cents or more per gallon, I would like to bring up some other points. The second one has been addressed a little bit; that is, the reduction in fuel economy of 10 percent to 30 percent. I have heard reports higher; I have heard reports lower. What I would like to bring up about this is, besides the lower costs -- the higher costs to operate the vehicle, the pollution that is really governed, that the normal person would think of as how much pollution it takes you to go on a trip, let's say down the Parkway from Hackensack, where we are based, down to Long Beach Island, is a set number of pollution per number of gallons of fuel you put into that vehicle. If you are

getting a 20 percent to 30 percent reduction in mileage, you are actually putting in more gasoline, and most likely you are probably getting out worst pollution. The EPA and DEPE are not calculating mileage that way, but it is something that we should think about.

Thirdly, due to the oxygenated nature of the fuels, hence the name, it is like the experiences of gasohol. A lot of mechanics -- and I, myself -- are concerned about what is going to happen in six months to a year from now after people in the State being forced to use the fuels. When we had gasohol, about 10 years ago, there were increased incidents of gasoline tanks rotting out fuel lines, fuel injectors, exhaust systems. Are we going to have the same scenario next fall with people finding out that they have additional costs that they have incurred because their vehicles are falling apart?

The basic nature of these oxygenated fuels is to lean out the mixture. Since the Clean Air Act of 1977 has forced OD-1 and OD-2 systems on vehicles using oxygen sensors, this basic lean-out principle is already occurring in vehicles. It is only the older vehicles where this fuel really applies. Since I think DEPE's own figure is that the average vehicle in the State of New Jersey is now 10 years old, for vehicles that are nine years or newer, they have to have on-board systems.

Fourth, I would like to bring up an area that nobody has questioned whatsoever, that I have had some personal experience in being in road rallies with the different fuels involved. When you go to higher percentages of, like, the E-85s and M-85s, very few people have addressed that there is an intoxication effect from following the vehicle. Being alcohol-based fuels, which both additives are, and with the inefficient combustion of the existing engine, the alcohol fumes are coming out the tail pipe of the vehicle. It is like cooking with the fuel. I had my own firsthand experience following a vehicle from Albany up to Montpelier, Vermont, to a

road rally which was sponsored by Con Ed, where Governor Florio was the head of the Commission. After about 45 minutes, I could not follow the ethanol-based vehicle because I felt like I had done 10 shots of tequila. Maybe some of the side effects people are effecting are some of this type of intoxication level. This is something that I do not have any proof on, but it is something that should be addressed just from the basic nature of the things.

Since we are an alternate fuel company making clean burning systems, I think it would be more encouraging for the DEPE and the EPA to encourage alternate fuel use as a means to meeting the Clean Air standards of the Act of 1990. Instead of forcing people to buy fuels, encourage people through economic and practical means to embrace solutions so that they are happy about doing it.

As an example of this, Assemblyman Rick Bagger is proposing legislation to eliminate the State road tax on alternate fuels, propane, and natural gas and offer tax credits to fleets to encourage conversions to clean burning vehicles. With means like this, this might have a much more positive effect on letting the people and businesses of this State embrace the situation, with proper monitoring to see if we actually are lowering the emissions. Let's go forward on a practical basis.

I have written testimony which goes into much more detail and proof to substantiate much of what I have said.

ASSEMBLYWOMAN OGDEN: Are there any questions or comments from Committee members? (no response) Thank you very much.

MR. WELSH: Thank you.

ASSEMBLYWOMAN OGDEN: The last group which has signed up is the Fuel Merchants Association

Is there anyone else in the audience who did not sign up who wishes to speak before we conclude the meeting? (no response)

**C U R T M A C Y S Y N:** Thank you, Madam Chairman. My name is Curt Macysyn. I am here representing the Fuel Merchants Association, a trade group of approximately 100 or so gasoline wholesalers -- we'll call them "jobbers" -- throughout the State. To my left is Carl Braun of Kimber Petroleum of Chatham, New Jersey, one of those gasoline wholesalers I was talking about.

I guess the first thing I would like to do is maybe answer Assemblyman Gibson's question on the ethanol -- the 3.5 ethanol blend -- or attempt to at least. When the regs were promulgated last year, tax breaks were given to ethanol blends of 10 percent or greater, so there is really no scientific reason for the 3.5 percent ethanol blend, but rather an economic reason why that was included in the regulations. That is point one.

The entire program, the economic aspects of it, are intertwined with the environmental effects of the program, throughout it. I concur with the Gasoline Retailers as far as a shortened control period if we do, indeed, need the program, and a uniform control period throughout the entire State, because there is no wall -- 10-story wall -- built between North Jersey and South Jersey. Although some people may want a wall to be built, it does not exist. So, one control period makes public policy sense, from our standpoint.

The other point I would like to make is that this program is, if not impossible, nearly impossible to enforce from a uniform standpoint. The gasoline industry is very complex, in that it is sold and traded amongst a large group of distributors throughout the State. So, to say 100 percent that someone is selling the right blend of oxygenated fuel, in my mind, is impossible to determine. If you are an unscrupulous individual getting gasoline from Pennsylvania, you can derive a four- to eight-cent benefit from hauling that gasoline into the State and selling it to unknowing consumers.

We also concur with the Gasoline Retailers on the oxygenated fuel period ending and the commencement of RVP. It does not take into consideration depletion of floor stocks -- existing floor stocks. So it would be very difficult for a retailer to know 100 percent that he was in compliance with either program at the end of April into early May. We ask DEPE to consider that aspect of oxygenates and RVP.

A final point I would like to make is, there is a study -- there was a study conducted that said that ethanol blends may tend to erode fiberglass tanks. The reason I bring this to your attention is, there are a number of stations throughout the State which have invested capital in upgrades, as required by DEPE, only maybe to see that capital investment -- a detrimental effect to that capital investment by another State program. I will, Madam Chairwoman, get you a copy of that report, and the entire Committee, so you can take a look at it. I just bring that to your attention.

Carl, do you have any other points you would like to make?

**C A R L B R A U N:** I would only add to Curt's testimony relative to the two zones in New Jersey and with regard to neighboring states that are not obligated to sell oxygenated fuels. Those of us who are forced to comply with these oxygenated regulations suffer tremendously when marketers bring nonoxygenated fuels into either South Jersey or North Jersey, depending on the time. I think we could show you that it cost the consumers of New Jersey \$200 million for oxygenated fuels last year. That is a terrible expense for two days of the entire year.

Now, we cannot comment on the real health concerns. We have 200 employees who are responsible who are working in 80-some Amoco service stations. There have been complaints of odor. We have not suffered any lost time as a result, but we

need the regulations to help us in the future, not continuing to hinder us and hurt us economically.

MR. MACYSYN: I guess in conclusion we would advocate a comprehensive costed benefit analysis of this program, at the very least, done by the Department. We have heard a lot of testimony here, a lot of conflicting testimony. We believe that analysis is the least we can do to make sure the facts are out before the public.

ASSEMBLYWOMAN OGDEN: Thank you. Are there any comments or questions from Committee members?

ASSEMBLYMAN GIBSON: I have no questions of these witnesses.

ASSEMBLYMAN MIKULAK: No questions. Thank you.

ASSEMBLYWOMAN OGDEN: Thank you very much.

MR. MACYSYN: Thank you.

ASSEMBLYWOMAN OGDEN: I would like to thank everyone who is here this morning -- this afternoon. Since there is no further business before the Committee, the meeting is adjourned.  
Thank you.

**(MEETING CONCLUDED)**

**APPENDIX**



# MTBE-OXYGENATED GASOLINES AND PUBLIC HEALTH ISSUES

Office of Research and Development  
U.S. Environmental Protection Agency

## 1. INTRODUCTION

The Clean Air Act Amendments of 1990 require the use of oxygenated gasoline in the 39 areas of the country that exceed national health standards for carbon monoxide (CO). Carbon monoxide pollution is caused by incomplete burning of fuels used in internal combustion engines and is generally more severe during cold winter temperatures. That is why the oxygenated gasoline program covers just the typically coldest winter months in areas exceeding the CO standards. Gasoline was changed by adding oxygenates, such as ethanol or methyl tertiary butyl ether (known as MTBE), and reducing certain other organic compounds. The expected result is decreased emissions of CO and some other toxic air pollutants (e.g., benzene). However, some degree of trade-offs are also expected to be necessary between (1) the expected reductions in CO, benzene, etc., and (2) increased emissions of MTBE and, possibly, certain other substances (e.g., formaldehyde).

This report was developed at the request of U.S. Environmental Protection Agency (EPA) Regions 8 and 10 and the Field Operations and Support Division of the Office of Mobile Sources. The request was prompted by public health issues raised by the State of Alaska and health complaints by the public in Missoula, MT, both of which are using oxyfuels with approximately 15% MTBE. Therefore, the following discussion summarizes the current scientific information about potential health risks of CO, MTBE, and a few other air pollutants associated with use of oxygenated gasoline containing approximately 15% MTBE versus conventional gasolines. Oxyfuels with MTBE are widely used. There were seven areas that required oxyfuels before 1992. The Denver, CO, program began in 1988, and five of the other programs have been operating since 1989. The Phoenix, Tucson, and Denver programs have had a market share for MTBE of at least 80%. Independent of the oxyfuels program, regular gasoline in most areas of the country has had a lower level

(2 to 4%) of MTBE, and a significant portion of premium gasoline has had from 6 to 11% MTBE. In these cases, MTBE is used as an octane enhancer.

The discussion is organized in four sections: (1) health effects; (2) emissions, air quality, and exposures; (3) a summary about potential risks that integrates current knowledge of health effects and exposures; and (4) a summary of short-term research needs and programs. This report is not intended to be a complete national evaluation of MTBE oxyfuels. Rather, it focuses on Alaska-related issues, insofar as the information permits. Much of the information, however, has a cross applicability to other areas of the country.

## **2. HEALTH EFFECTS**

Throughout, it is important to understand that conventional gasoline with very low levels of oxygenates can cause health effects, and that health effects are related to the levels and duration of exposure. All chemicals have different types and degrees of health effects. However, these are of public health concern only above certain exposure concentrations, which are different for each chemical. Variations in exposure durations and patterns are also very important in determining the nature and severity of potential health effects. For example, short-term exposures to a chemical can cause different effects from long-term exposures. The level of physical activity (exercise) being performed during the time of exposure and the health status of the person being exposed can also influence the degree of health effects caused by each chemical. This section focuses on the nature of potential health effects, not exposure or consequent risks.

### **2.1 Carbon Monoxide**

The Clean Air Act directs the Administrator of the EPA to establish National Ambient Air Quality Standards (NAAQS) for several widespread air pollutants, based on scientific criteria and allowing for an adequate margin of safety to protect public health. The CO NAAQS is 9 ppm for an 8-h average and 35 ppm for a 1-h average; neither is to be exceeded more than once per year. So many U.S. citizens are potentially exposed to CO that Congress made its reduction a national priority by requiring [Section 211(m) of the Act]

oxygenated gasoline programs in cities that do not attain the CO NAAQS, beginning on November 1, 1992.

The EPA has documented the detrimental health effects that CO can have on populations (U.S. Environmental Protection Agency, 1992). Carbon monoxide is a colorless, odorless, and nonirritating gas that is readily absorbed from the lungs into the bloodstream, there forming a slowly reversible complex with hemoglobin (Hb) known as carboxyhemoglobin (COHb). The presence of COHb in the blood reduces the amount of oxygen available to vital tissues, affecting primarily the cardiovascular and nervous systems. Although the formation of COHb is reversible, the elimination half-time is quite long because of the tight binding between CO and Hb. This can lead to accumulation of COHb, and extended exposures to even relatively low concentrations of CO may produce substantially increased blood levels of COHb.

The lethality of CO that results from exposure to very high concentrations is well known. Effects in individuals suffering from acute CO poisoning cover a wide range, depending upon severity of exposure: headache, dizziness, nausea, vomiting, collapse, coma, and death. Such effects only occur, however, at very high COHb levels (in excess of 10%) associated with at-rest exposures to markedly elevated CO air levels (e.g., greater than 300 ppm for 1 h or greater than 80 ppm for 8 h), as may occur in accidental CO poisoning cases in homes or vehicles with faulty or inadequately vented combustion sources.

The effects of exposure to low concentrations—such as the levels found in ambient air—are far more subtle and considerably less threatening than those occurring in frank poisoning from high CO levels. Maximal exercise performance in healthy individuals has been shown to be affected at COHb levels of 2.3% and greater. The reductions in performance at these levels are small and are likely to affect only competing athletes rather than people engaged in the activities of daily life. Central nervous system effects, observed at peak COHb levels of 5% and greater, include reduction in visual perception, manual dexterity, learning, driving performance, and attention level. Of most concern, however, are adverse effects observed in individuals with chronic heart disease at COHb levels of 3 to 6%. At these levels, such individuals are likely to have reduced capacity for physical activity because they experience chest pain (angina) sooner. Exercise-related cardiac arrhythmias have also been observed in some people with chronic heart disease at COHb

levels of 6% and may result in an increased risk of sudden death from a heart attack. Carboxyhemoglobin levels (3 to 6%) of concern for induction of cardiovascular effects among people with chronic heart disease would be expected, on average, with exposures during light exercise to CO ambient air concentrations of 60 to 100 ppm (1 h) or 20 to 45 ppm (8 h).

The NAAQS set by EPA are intended to keep COHb levels below 2.1% in order to protect the most sensitive members of the general population (i.e., individuals with chronic heart disease). However, elderly people, pregnant women (due to possible fetal effects), small children, and people with anemia or with diagnosed or undiagnosed pulmonary or cardiovascular disease are also likely to be at increased risk for CO effects.

## 2.2 Air Toxics

Toxic chemicals in the atmosphere comprise a broad class of compounds, including numerous chemicals emitted from vehicles due to evaporation (e.g., during refueling) and due to fuel combustion (when the car engine is running). The air toxics of greatest current interest are MTBE (the oxygenate used in Fairbanks, Anchorage, Missoula, and many other U.S. cities in the oxyfuels program), benzene, 1,3-butadiene, and formaldehyde. Other fuel-related air toxics exist, but some are considered of minor significance for direct health effects. Since November, 1992, there have been a number of complaints of health-related symptoms in Fairbanks and to a lesser extent in Missoula and Anchorage. Many people automatically assume that these complaints are directly related to emissions of MTBE itself because its distinctive odor makes it readily identifiable. However, there are a number of chemicals emitted from vehicles using oxygenated and nonoxygenated fuels, and the specific cause of the reported symptoms is not yet known.

A major uncertainty in assessing the Fairbanks situation is the potential impact of a subarctic climate on emissions. Most previous studies have centered on more temperate conditions, and no extensive subarctic testing of any gasoline components has been conducted. However, the experience of Colorado, where MTBE fuels have been used during winter months (with subzero winter temperatures) since 1988, may be useful, along with new studies now underway, in understanding the influence of low temperatures on emissions.

### 2.2.1 MTBE

#### *Odor Thresholds and Dermal Effects*

To many people, the odor associated with MTBE oxyfuels is distinctly different from that of gasoline not containing MTBE. Odor threshold studies indicate that MTBE can be detected at very low concentrations. Odor is a characteristic of numerous chemicals, but it alone does not indicate toxic effects. For example, some toxic chemicals have no odor. Although the strong smell of MTBE may lead one to think that there are very large concentrations of it in the air, this is not necessarily true. It is wise to limit exposure to all automobile fuels. Thus, an aversion to the peculiar odor of MTBE may serve to limit exposure to all types of gasoline fumes.

Direct exposure of the skin to MTBE causes skin irritation similar to that of conventional gasoline (U.S. Environmental Protection Agency, 1993). Prolonged or frequent contact with either conventional gasoline or MTBE oxyfuel may result in drying, chapping, or cracking of the skin. If both types of fuels come into contact with the eyes, eye irritation may result. Because each of these effects potentially linked with skin exposure to MTBE-blended gasoline is also linked to exposure to conventional gasoline, normal precautions should apply when handling any type of gasoline, regardless of type or oxygen content.

#### *Short-Term Exposure Effects*

The effects of short-term exposure to MTBE are difficult to evaluate at present because little information is available. Humans are also acutely exposed to MTBE as part of a medical treatment to dissolve cholesterol gallstones (Leuschner et al., 1991). Injection of the gall bladder with a high dose of MTBE can be associated with several types of health effects (e.g., nausea, vomiting, sleepiness). This type of treatment is obviously quite different from an inhalation exposure related to MTBE oxyfuels due to differences in exposure route and concentration. These differences prevent direct extrapolation of high-concentration injection effects to the low-concentration inhalation effects. Nevertheless, it is important to note that MTBE is being used therapeutically in humans at high acute doses.

In rats, when inhaled MTBE is absorbed into the body, 99% of it is eliminated in 4 h (Ferdinandi et al., 1990). Laboratory rats exposed for 6 h to high concentrations of MTBE (2,900, 14,400, or 28,800 mg/m<sup>3</sup>) experienced several types of effects (U.S.

Environmental Protection Agency, 1993). Activity levels in male rats were increased at 2,900 and 14,400 mg m<sup>3</sup> and decreased at 28,800 mg m<sup>3</sup> during the first hour following exposure; female rats showed similar but statistically insignificant effects. At the two highest levels tested, effects on the nervous system were observed and included increased lacrimation (tearing), decreased muscle tone, and staggered walking. Recovery occurred soon after exposure stopped. These studies indicate that short-term exposure to MTBE can cause reversible effects on the nervous system. However, the endpoints used in the rodent study would not detect the kind of symptoms reported by some Fairbanks, Anchorage, and Missoula residents. Additional research would be needed to clarify the effects of acute exposure to MTBE on the nervous system and whether sufficiently high exposures would occur to induce such effects.

In November and December of 1992, the Centers for Disease Control (CDC) undertook a field epidemiology study in Fairbanks (Moolenaar and Hefflin, 1992). Due to the time constraints of the study, there were inherent limitations to the extent of the health questionnaire and the number of people interviewed. Also, because all the gasoline in the area contained elevated MTBE, there was no group that could be considered a control having no exposure. Other potential confounders (e.g., bias due to odor, publicity about health complaints, negative attitudes about MTBE unrelated to health) cannot be ruled out. Initially, the CDC contacted 34 people who called the Fairbanks hotline with health complaints. They used information from these people to establish a "case" definition (i.e., the presence of symptoms such as headaches, cough, nose or throat burning, eye irritation, nausea, dizziness, etc.). The CDC then administered a symptom questionnaire by telephone to a random sample of 41 residents and found that 41% of the participants were cases (i.e., reported the presence of the case symptoms). The CDC reported that there was a statistically significant relationship between having health complaints and traveling in a vehicle or pumping gasoline.

Using questionnaires similar to those described above, the Alaska Department of Health and Social Services conducted further studies of three groups of people in Fairbanks presumed to have tiered levels of exposure: (1) taxi drivers, (2) health care workers who typically commute, and (3) university students with less time around vehicles (Beller and Middaugh, 1992). A similar study in Anchorage included three groups (taxi drivers, health

center employees, and hospital employees) (Chandler and Middaugh, 1992). Analysis of the Fairbanks data in Table 1 showed that there was a statistically significant difference between the number of cases among the taxi drivers and health care workers compared to students. The statistical analysis of the Anchorage data was not reported, but it was stated that the taxi drivers had a higher proportion of complaints. In both cities, headaches were the most common symptom reported. The headaches were generally of short duration. In Fairbanks, there was not a significant increase in hospital emergency room visits for headache, implying that the complaints were not severe and were not resulting in widespread serious morbidity. In both cities, there were more symptoms reported during traveling than during refueling. The CDC also took blood and air samples in Fairbanks for later chemical analysis, but all results are not yet available.

**TABLE 1. PERCENTAGE OF CASES IN FAIRBANKS AND ANCHORAGE**

| Interviewees          | Fairbanks       | Anchorage       |
|-----------------------|-----------------|-----------------|
| Taxi drivers          | 33% (4 of 12)   | 46% (12 of 25)  |
| Health care workers   | 29% (26 of 90)  |                 |
| Students              | 15% (15 of 101) |                 |
| Health center workers |                 | 25% (7 of 29)   |
| Hospital workers      |                 | 27% (29 of 108) |

Source: Beller and Middaugh (1992); Chandler and Middaugh (1992).

Because of the limitations of the epidemiology studies, the findings must be considered preliminary. The results do not provide definitive evidence that the use of MTBE oxyfuels caused the reported symptoms. However, the data from the two cities, the similarities of the findings, and the increases in complaints by individuals likely to have higher exposure suggest a potential for an impact on public health. If these symptoms are occurring, the data further suggest that they are generally acute, mild, and of short duration. It must be emphasized that further research would be required to determine whether there actually is an increase in symptoms and, if so, whether they are causally associated with oxyfuels with MTBE. Such information would also need to be compared and contrasted with potential risks

for CO to impact public health in order to more fully evaluate relative risks of acute exposure.

Insofar as EPA is aware, there are no other available acute epidemiology studies of MTBE oxyfuels. In Fairbanks, Missoula, and Denver, there are publicized hotlines that solicit comments, thereby facilitating communication about complaints. People in Fairbanks and, to a lesser degree, Missoula made their health complaints public through these hotlines. On the other hand, in Denver, where oxyfuels with 8% MTBE were introduced in 1988, there were a number of complaints about odor and health symptoms (28 out of a total of about 2,670 nonhealth complaints) initially (Live, 1993). However in the 1990-91 winter season, in which oxyfuels contained about 14% MTBE, there were almost no odor or health complaints made to a publicly advertised hotline. The presence of hotlines introduces confounding factors that make it difficult to interpret the meaning of complaints. Individuals in other areas having MTBE oxyfuels have not made mass health complaints, but all areas in the MTBE oxyfuels program do not have such hotlines.

### *Long-Term Exposure Effects*

Pursuant to a 1987 consent order under the Toxic Substances Control Act, EPA required that industry conduct extensive studies of the health effects of MTBE in laboratory animals to estimate potential effects in humans. The studies evaluated all major organ systems using routine types of methods and included tests for reproductive and developmental effects. In 1991, EPA evaluated the noncancer chronic effects of MTBE and developed a health metric called an inhalation reference concentration (RfC) (U.S. Environmental Protection Agency, 1993). This RfC is  $0.5 \text{ mg/m}^3$  MTBE. An RfC (for any chemical) is defined as an inhaled concentration, with an uncertainty spanning about an order of magnitude, that can be inhaled over a lifetime by people, including sensitive populations, that is thought not to pose any appreciable deleterious noncancer hazard. The current RfC is based on studies of rats exposed to 2,900, 14,400, or 28,800  $\text{mg/m}^3$  MTBE for 6 h/day, 5 days/week for 13 weeks. There were no noticeable effects on some of the parameters or organs studied, such as the lungs. However, the overall weight of evidence indicates that the 14,400- $\text{mg/m}^3$  level was moderately adverse to several organ systems in the rats, as indicated by decreased brain length; increased relative kidney, adrenal, and liver weights; and

decreased body weights. The no-observed-adverse-effect level in the rats was 2,900 mg/m<sup>3</sup>. In developing the RfC, this value was adjusted downward to account for uncertainties in the information available. Other studies were considered in the overall evaluation, including reproductive and developmental tests (U.S. Environmental Protection Agency, 1993). A two-generation reproductive study in rats found no effects at 1,400 mg/m<sup>3</sup>; at 10,800 mg/m<sup>3</sup>, the rat pups (in both generations) had reduced body weights and weight gains during postnatal development. High concentrations of MTBE did not cause birth defects in rats (11,900 mg/m<sup>3</sup>) or rabbits (28,900 mg/m<sup>3</sup>). Exposure of pregnant mice to 14,700 mg/m<sup>3</sup> MTBE caused developmental effects (skeletal changes and reduced body weight). This exposure was also maternally toxic, as indicated by reduced activity, staggered walking, reductions in body weight, etc. A lower concentration (3,700 mg/m<sup>3</sup>) did not cause birth defects.

Recently, results of two long-term laboratory exposure studies have been provided to EPA, and the summaries were reviewed for this report (Burleigh-Flayer et al., 1992; Chun et al., 1992). In two separate studies, rats and mice were exposed to 1,450, 10,800, or 28,800 mg/m<sup>3</sup> MTBE for 6 h/day, 5 days/week for 18 mo (mice) or 24 mo (rats). Both cancer and noncancer tests were performed. The noncancer effects were similar to those of the 13-week study; the brain, kidney, and liver were major target organs impacted (e.g., increase in relative weights), and effects observed at the lowest concentration tested were either considered unrelated to the MTBE exposure, were compensatory in nature, or were unique to the species tested. Therefore, the no-observed-adverse-effect level in the chronically exposed rodents was 1,450 mg/m<sup>3</sup>. When these newer data are incorporated into a reanalysis of the RfC, it is possible that the RfC will be increased because the original analysis incorporated extra caution in the absence of chronic data; with actual chronic data, uncertainty is reduced, and the RfC may change upwards. However, until the reevaluation is completed, the current RfC should be used.

The EPA is currently performing a full evaluation of the cancer tests in the chronic study mentioned above. For this report, the summaries of two chronic animal cancer bioassays of MTBE were evaluated (Burleigh-Flayer et al., 1992a; Chun et al., 1992a). Four groups of mice (males and females) were exposed 6 h/day, 5 days/week for 18 mo to either filtered air or MTBE at concentrations of 1,400, 10,800, or 28,800 mg/m<sup>3</sup>. Four

groups of male and female rats were exposed to the same conditions for 24 mo. except for the males of the 10,800- and 28,800-mg m<sup>3</sup> groups (which were autopsied early due to excessive mortality). The only evidence for carcinogenicity in mice was an increase in the incidence of adenomas in the livers of females exposed to 28,800 mg m<sup>3</sup>. Although lymphocytic leukemia was reported in both controls and low-dose male rats, the summary does not state whether the leukemia incidence was greater in the low-dose males than in controls. Increases in renal tubular cell tumors were seen in the intermediate- and high-dose male rats.

Based on the summaries, evidence for the carcinogenicity of MTBE appears to be marginal. No definitive conclusions as to the likelihood of any human cancer risk can be drawn from the summaries of these studies because of the limitations listed below. The full study results are under evaluation.

- Actual data were not presented in the summaries.
- The statistical significance of any reported effects was not provided in the summaries.
- The mouse study was slightly less than a lifetime. Although an 18-mo study is not considered to be inadequate, longer exposures may have resulted in greater tumor incidences.
- The authors claimed the high dose in mice exceeded the maximum tolerated concentration, thus invalidating the results at this dose. From the data presented, it is uncertain if the maximum tolerated concentration actually was exceeded.
- Finally, the authors claimed that the kidney tumors present in exposed male rats were due to the accumulation of a protein (alpha<sub>2μ</sub> globulin) in the tubule cells, an effect unique to male rats and thus not contributing to the weight-of-evidence for human carcinogenicity. In order for the EPA to accept this conclusion, the data must be evaluated to determine if MTBE meets a set of criteria listed in EPA/625/3-91-091F (EPA Risk Assessment Forum document on male rat urinary system tumors associated with alpha<sub>2μ</sub> globulin).

### 2.2.2 Formaldehyde, Benzene, and Butadiene

All gasoline-fueled automobiles will emit formaldehyde, benzene, and 1,3-butadiene. These pollutants are of interest because of their cancer potential. Benzene is classified as a

proven human carcinogen, and 1,3-butadiene and formaldehyde are classified as probable human carcinogens (Grindstaff et al., 1991; U.S. Environmental Protection Agency, 1985, 1989).<sup>1</sup> If concentrations of all these chemicals were equal, the estimated cancer risk of benzene and formaldehyde would be similar, but butadiene would have a higher estimated cancer risk.

As described in the scientific literature, acute exposure to formaldehyde can also cause noncancer effects (U.S. Environmental Protection Agency, 1987; Grindstaff et al., 1991). Irritation of the eyes, nose, and throat is the most common effect observed in humans from short-term exposure to formaldehyde and can be observed at exposure levels as low as 0.1 mg/m<sup>3</sup>. Short-term exposures to 3 or 4 mg/m<sup>3</sup> do not produce noticeable lung effects. Formaldehyde exposure has been linked with a number of behavioral and physiological effects such as thirst, dizziness, headache, and apathy. Residents of homes in which formaldehyde concentrations ranged from 0.06 to 0.6 mg/m<sup>3</sup> have reported these symptoms along with an inability to concentrate and sleep. Tolerance to low levels of formaldehyde can occur in individuals after 1 to 2 h of exposure, but symptoms can return if exposure is interrupted and then resumed. It should be noted that some of the symptoms of acute formaldehyde exposure described in the scientific literature are among those included in the "case definition" for the MTBE survey of complaints found in Fairbanks and Anchorage.

Benzene and 1,3-butadiene also can cause noncancer effects in laboratory animals after subchronic or chronic exposures, but carcinogenesis is the endpoint of concern after long-term exposure (U.S. Environmental Protection Agency, 1985, 1989). Only exposure to very high concentrations (relative to likely exposure levels) of these compounds can cause acute health effects in humans, and therefore acute effects are not relevant to the oxyfuels scenario.

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<sup>1</sup> Benzene has a cancer classification of A, a human carcinogen based on sufficient evidence from epidemiological studies; formaldehyde is classed as B1, a probable human carcinogen based on sufficient evidence from animal studies and limited evidence from human studies; 1,3-butadiene is classed as B2, a probable human carcinogen based on sufficient evidence from animal studies and inadequate data from epidemiological studies.

### 3. VEHICLE EMISSIONS, AIR QUALITY, AND EXPOSURES

#### 3.1 Vehicle Emissions

Several earlier studies performed by EPA, the Auto Oil Program, and others have shown that MTBE oxyfuels can reduce emissions of CO in vehicles operated at and above 40 °F. However, the question arose as to how the subarctic conditions of Alaska influence CO emissions and whether adding MTBE to fuels reduces CO emissions in comparison to other climates. The data base of EPA's Atmospheric Research and Exposure Assessment Laboratory (AREAL) on the effects of temperature and the use of MTBE on CO emissions only included data obtained at temperatures down to 40 °F. To expand the data base, emissions tests were performed at temperatures of 20 and 0 °F using fuels with and without MTBE (Atmospheric Research and Exposure Assessment Laboratory, 1993). A 1984 Buick Century equipped with a carburetor was tested at 75, 40, 20, and 0 °F with a blend of 14.4% MTBE in gasoline and the base gasoline of the blend. This vehicle had been tested at 75 and 40 °F with a blend of 1.5% MTBE and the base gasoline of this blend. All tests were run in the AREAL cold-cell dynamometer using the Federal Test Procedure driving schedule.

The CO emissions for the base fuel increased with a decrease in temperature down to 0 °F. The CO emissions also increased when MTBE fuel was used, but were always lower than observed with the base fuel. The emissions of MTBE from the MTBE fuel increase with a decrease of temperature. The small amount of MTBE tailpipe emissions from the vehicle using the base fuel showed no temperature effect. Most fuels, including the base fuel, now in use contain a small amount of MTBE (2 to 4%) added as an octane enhancer.

Benzene, 1,3-butadiene, and formaldehyde emissions were also measured in the temperature-variation studies. There was a trend towards an increase in emissions of benzene, 1,3-butadiene, and, to a lesser degree, formaldehyde as temperature decreased when the base fuel was used. Generally, the addition of MTBE to the fuel reduced the exhaust emissions of benzene and 1,3-butadiene and increased the emissions of formaldehyde. The exact impact of MTBE was dependent on the temperature, and the trends for specific toxic compounds were less clear. The temperature variation studies indicate that whether the fuel has MTBE or not, there is a tendency for lower temperatures to increase the total emissions of the three air toxics and alter the ratios of the specific compounds emitted.

Generally speaking, the use of MTBE in a 15% blend reduces evaporative emissions of benzene, primarily through the substitution of an oxygenate for benzene and other aromatics.

The Auto/Oil Air Quality Improvement Research Program also examined the impact of MTBE on motor vehicle toxic emissions (Reuter et al., 1992). This work showed that, at 75 °F, emissions of benzene decrease and emissions of formaldehyde increase; 1,3-butadiene is not altered when MTBE is added.

## **3.2 Air Quality and Exposures**

### **3.2.1 Air Samples**

On December 19-22, 1992, the State of Alaska collected 8-h air samples in Fairbanks, which were analyzed for concentrations of aldehydes, MTBE, and other compounds at AREAL. Because MTBE use has significantly declined, new air samples are being taken for comparison purposes. Until these are analyzed, it is not possible to determine whether MTBE use influenced local air levels of the key compounds. All of the data summarized below are from these samples (Atmospheric Research and Exposure Assessment Laboratory, 1993).

Of the 26 air samples analyzed for aldehydes, seven were of outdoor air. No formaldehyde was detected in the one "pristine" air sample. At a gas station, 0.010 mg/m<sup>3</sup> formaldehyde was found. At five locations outside buildings and at a street corner, formaldehyde levels ranged from 0.0054 to 0.0145 mg/m<sup>3</sup>. Indoor air concentrations ranged from 0.0001 to 0.036 mg/m<sup>3</sup> formaldehyde; the highest being in the sample taken inside the old post office.

Thirty-one December samples were analyzed for MTBE, total nonmethane organic carbon (TNMOC) (a standard approach to emissions characterization), and other specific compounds. In the analysis of TNMOC concentrations, no unusual compounds or concentrations were found. Toluene was the most abundant compound found in most of the ambient air samples. Overall levels of organics found in these samples are typical for urban areas.

Concentrations of MTBE indoors ranged from a trace level to 0.059 mg/m<sup>3</sup>. The highest outdoor concentration was at a service station (0.105 mg/m<sup>3</sup> MTBE). Other outdoor air levels ranged from 0.0048 to 0.078 mg/m<sup>3</sup>.

### 3.2.2 Air Concentrations Inside Automobiles

The Environmental and Occupational Health Sciences Institute, under an EPA cooperative agreement, recently completed a set of pilot field measurement experiments of MTBE concentrations inside automobiles in New Jersey for a simulated, 35-min suburban commute. These studies were undertaken to preliminarily examine the potential for human exposure to MTBE. The concentrations reported below serve only as an example of the potential for exposure and, at this point, are too limited to draw precise exposure estimates. A wider range of values is likely, depending on a number of variables, including the specific model and age of the automobile and the driving pattern. In New Jersey, service-station attendants fill up cars and pumps have vapor recovery systems. These factors, which do not occur in Fairbanks, Anchorage, or Missoula, may also influence concentrations of vapors within cars during and soon after refueling. Concentrations of MTBE are significantly higher close to a fill-up scenario at a gas station. The average concentrations of MTBE inside two different automobiles were 0.07 and 0.21 mg/m<sup>3</sup> during a commute; these levels increased to 0.36 and 1.4 mg/m<sup>3</sup> when a fill-up at a gas station was included in the commute. A few measurements were also conducted while at the gas station. One run showed MTBE concentrations inside one automobile to be approximately 0.11 mg/m<sup>3</sup> prior to the fill-up, 2.2 mg/m<sup>3</sup> at the gas station, and 1.2 mg/m<sup>3</sup> immediately after leaving the gas station. As more studies are conducted, these averages are likely to change.

Air samples collected in December over an 8-h period in Fairbanks by the State of Alaska included seven obtained inside vehicles. All concentrations were less than 0.03 mg/m<sup>3</sup> MTBE, with the exception of one (1.2 mg/m<sup>3</sup>) (Schweiss, 1993).

### 3.2.3 Exposure Estimates of MTBE

The data on air quality and microenvironments (e.g., during refueling, inside cars, in personal garages) are too limited for a quantitative estimate of exposure. At best, they can be used to estimate approximate, broad ranges of potential exposures. Because of the interest in MTBE, the present evaluation focuses on this compound, even though any potential health effects might result from complex pollutant mixtures of which MTBE is only one component.

There is a need to estimate both acute and chronic exposures to elucidate health risks. It can be assumed that a gasoline fill-up scenario, although brief, would result in the highest acute exposure concentrations. There is inadequate information to predict this exposure concentration for a person refueling his/her own vehicle. In the preliminary New Jersey studies, where attendants pump gas, the level inside a car at a gas station during refueling was approximately  $2.2 \text{ mg/m}^3$ .

In estimating annual exposures, the amount of time an individual spends in microenvironments having different concentrations of MTBE needs to be calculated, as well as the number of months over the year MTBE oxyfuels are in use. It is likely that a worst case exposure scenario occurs over a 5-min period during fill-up (in the range of  $2.2 \text{ mg/m}^3$ ). Longer mid-level exposures during commuting are likely and may be in the range of  $0.21 \text{ mg/m}^3$ . The remainder of the time would be at lower levels approximating  $0.08 \text{ mg/m}^3$ , again using worst-case available values. Because MTBE oxyfuels are only used at high levels during the winter months, very low, perhaps negligible levels would be present for most of the year. However, use of premium gasolines with MTBE would result in some residual exposures. If the available limited data are evaluated with worst-case assumptions (which also have flaws), an annual exposure might be somewhere around  $0.05 \text{ mg/m}^3$  (Atmospheric Research and Exposure Assessment Laboratory, 1993). It cannot be overemphasized that this value is no more than a very crude estimate that may increase or decrease as more information becomes available.

## **4. HEALTH RISK ESTIMATES**

### **4.1 Carbon Monoxide**

The CO NAAQS is set to protect sensitive subpopulations against adverse effects, with an adequate margin of safety. The NAAQS is not a perfect "bright line", immediately below which there is absolute safety and immediately above which there is major widespread health risk. Rather, different degrees of risk occur for different subpopulations both below and above the NAAQS. The risk level below the NAAQS is expected to be essentially negligible for all individuals, except possibly a few of the most health-compromised members of the most sensitive subpopulations. A preliminary analysis of the ambient air quality in the

oxygenated gasoline areas indicates that there have been many less violations of the CO standard from November 1992 through the end of January 1993 than in similar periods in previous years. Further analysis of this non-quality-assured data is necessary before any final conclusions can be drawn from it; however, these preliminary data are very encouraging. The State of Colorado reported that, last winter, the use of oxyfuels (75% with MTBE and 25% with ethanol) reduced CO emissions by 23% (Livo, 1992).

An evaluation of the potential impact of MTBE oxyfuels on CO nonattainment in Alaska cities was attempted. It should be understood that the NAAQS is a national standard, with attainment status primarily based on a finite number of fixed-site monitors. The actual health risk to a local population would be dependant on the *total* CO exposure of specific sensitive subpopulations. For example, two localities may have identical CO levels at fixed-site monitors on identical days, but one locality may have a greater number of susceptible individuals, with higher risk activity patterns (e.g., exercising during exposure), and with higher microenvironmental CO levels (e.g., in personal garages, during commuting in traffic). Thus, a scientifically based assessment of comparative local risk requires a major scientific analysis, which typically is not possible without intense local research. Therefore, the Office of Research and Development believes that there is an inadequate current scientific basis for anyone to make a sweeping judgment about local CO risks. However, it is possible to discuss the principles and trends of CO risk. Attainment of the CO NAAQS is a national legislative priority to protect the public health. As the limited data here have shown, (1) CO tailpipe emissions increased with a decrease in temperature under the conditions tested down to 0 °F, and (2) MTBE reduced the increase in CO tailpipe emissions at the lower temperatures. At present, there are no data on the influence of MTBE on CO emissions at subarctic temperatures, but until data to the contrary exist, it can be assumed that MTBE will be effective. Thus, the trend would be towards MTBE use reducing the potential for CO health risks.

## **4.2 Air Toxics**

### **4.2.1 MTBE**

A definitive assessment of the potential for MTBE oxyfuels to cause health effects cannot be fully developed at this time because the currently available exposure and health

data are too limited. The preliminary reports of limited epidemiology studies in Fairbanks and Anchorage and anecdotal reports from a few other areas suggest a potential for the use of MTBE oxyfuels to evoke symptoms, especially mild transient headaches during refueling and commuting. However, because of the odor associated with MTBE, publicity about potential effects, and the lack of controls, no clear conclusions can be drawn about the likelihood of the fuels to cause these symptoms. If the symptoms actually were pollutant-induced, the actual cause is unknown. There have been no published controlled human or animal studies on MTBE itself or MTBE oxyfuels that include tests for these symptoms. In taking a very broad view of toxicology, there are numerous chemicals that cause acute health effects that are not noticed by the affected people (i.e., they cause no symptoms). Thus, even if the symptoms reported by people are ruled out, there would still be a potential for acute MTBE effects. The available studies of laboratory animals exposed for 6 h to very high levels of MTBE (2,900 mg/m<sup>3</sup> and higher) showed some effects. At the 2,900-mg/m<sup>3</sup> level, motor activity was increased. The concentration having no such effect is unknown, and the battery of tests used had some limits. Thus, both the currently available epidemiological and animal toxicological studies do not permit scientifically substantiated conclusions about acute risks.

There is a stronger basis for drawing conclusions about chronic noncancer effects due to the test program performed by industry, as required by EPA. As discussed earlier, the current RfC is 0.5 mg/m<sup>3</sup> MTBE, and it may increase when newer laboratory animal toxicology data are included in the analysis. According to the definition of the RfC, sensitive subpopulations are not expected to suffer adverse effects if exposed continuously for 70 years to this concentration. If the RfC of 0.5 mg/m<sup>3</sup> is compared to the crude annual exposure estimate of 0.05 mg/m<sup>3</sup>, chronic noncancer effects from MTBE would not be expected.

As mentioned earlier, in a summary of a new study, chronic exposures of rats and mice to high levels of MTBE were reported to cause tumors. These recent data are now being carefully evaluated by EPA to develop a cancer risk assessment. Until such time as this is completed, it can only be stated that 28,800 mg/m<sup>3</sup> was the lowest level reported to cause tumors in female mice and 1,400 mg/m<sup>3</sup> was the lowest level reported to cause leukemia in rats. Lower levels were not tested in rats.

#### 4.2.2 Benzene, Formaldehyde, and Butadiene

As was discussed in Section 3.1, the use of MTBE oxyfuels is expected to decrease the net total emissions of benzene, 1,3-butadiene, and formaldehyde. The MTBE-induced changes in the individual chemicals are dependent on temperatures, but generally formaldehyde emissions increased and emissions of benzene and 1,3-butadiene decreased. However, these trends are from one vehicle and some of the data are still preliminary. In any case, with the available data, it is not possible to quantitatively relate emissions changes to exposure levels with sufficient precision to quantitate cancer risk changes. However, the trend is for a decrease in potential cancer risk (from the reduction in benzene and 1,3-butadiene emissions) that is expected to more than offset any potential cancer risks from increased formaldehyde emissions.

If the symptom complaints are related to the use of MTBE oxyfuels, the increased formaldehyde emissions may be one of several factors contributing to the complex of acute health complaints. However, without better knowledge of formaldehyde exposure changes, there are major uncertainties in such an association.

#### 4.2.3 Summary of Risk Estimates

Although the data base prevents quantitative risk characterization, the risk evaluation does lead to some qualitative conclusions.

- The use of MTBE oxyfuels can decrease CO emissions at temperatures as low as 0 °F, and perhaps lower. This decrease is expected to assist in attainment of the CO NAAQS. Such attainment is a public health benefit because the potential for adverse effects in susceptible subpopulations (e.g., people with chronic heart disease) is reduced.
- No definitive conclusions about the potential for acute exposure to MTBE oxyfuels (and/or related by-products) to cause health symptoms (e.g., headaches) can be made on the basis of current information. Preliminary reports of limited epidemiological studies in Fairbanks and Anchorage show that people likely to have higher exposures (e.g., taxi drivers) also have more complaints of health symptoms than others with lower exposures (e.g., university students). Anecdotal reports of similar symptoms from a few other areas (e.g., Missoula) are consistent with the epidemiological studies. Nevertheless, the epidemiological studies had no controls and may have been biased by local publicity about health complaints and/or other factors, making the studies suggestive but inconclusive.

- Based on several studies of laboratory animals exposed for long periods of time to MTBE and extremely limited exposure data, it does not appear that there is a significant risk for chronic noncancer effects of MTBE. However, the potential risk of MTBE as part of a complex mixture with gasoline is not known.
- A summary of the only study available reports that lifetime exposures of laboratory mice and rats to MTBE cause tumors of certain types at high doses. The lowest concentrations tested that caused tumors were very high (28,800 mg/m<sup>3</sup> in mice and 1,400 mg/m<sup>3</sup> in rats) relative to broad, very preliminary estimates of annual human exposure (around 0.05 mg/m<sup>3</sup>). The cancer risk assessment is now underway, and until it is completed, conclusions about cancer risks cannot be reached.
- The use of MTBE oxyfuels reduces the total emissions of 1,3-butadiene, benzene, and formaldehyde. Data from one car show that individually there are temperature-dependent trends towards decreases in benzene and 1,3-butadiene and increases in formaldehyde emissions. 1,3-Butadiene causes the greatest fuel-associated excess theoretical cancer risk. Although the trend towards a reduction in the total emissions is positive, the net decrease in total cancer risk (if any) is likely to be small.

## 5. RESEARCH NEEDS

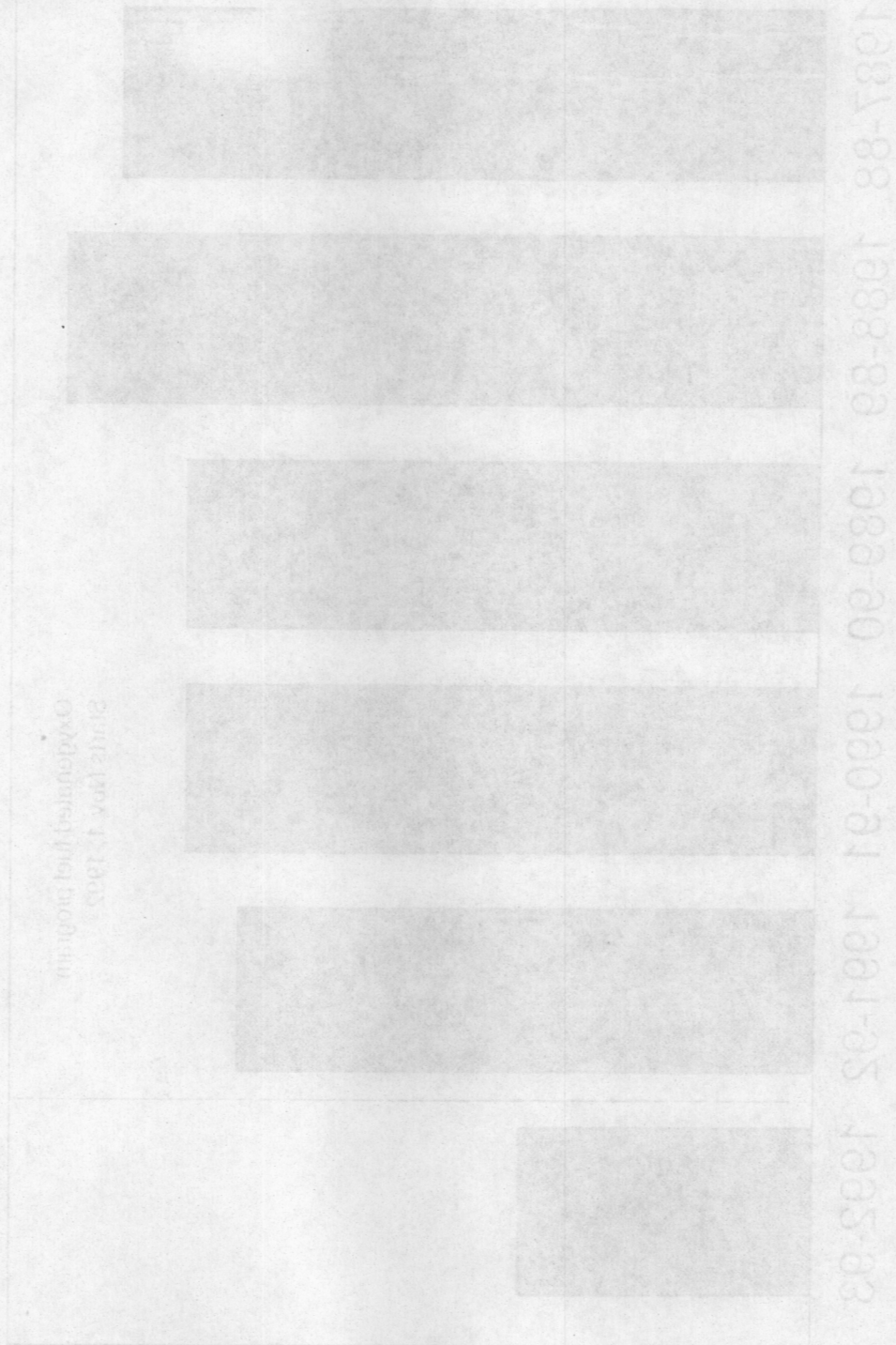
As is obvious from the foregoing discussion, there is a need for further research to evaluate (1) the influence of low temperatures on emissions from vehicles operated on MTBE oxyfuels and subsequent impacts on air quality and (2) the potential for health risks. This research has both short- and long-term components. In the near term, there is a need to obtain more information on emissions, exposures, and acute health effects by early summer 1993 to permit policy evaluations prior to the next MTBE season. Investigations of these topics are under way and are being supported by EPA, the State of Alaska, and industry (principally the American Petroleum Institute, the Auto/Oil Program, and the MTBE Task Force). When these new data are available, it will be possible to determine the need for (and design of) longer term studies.

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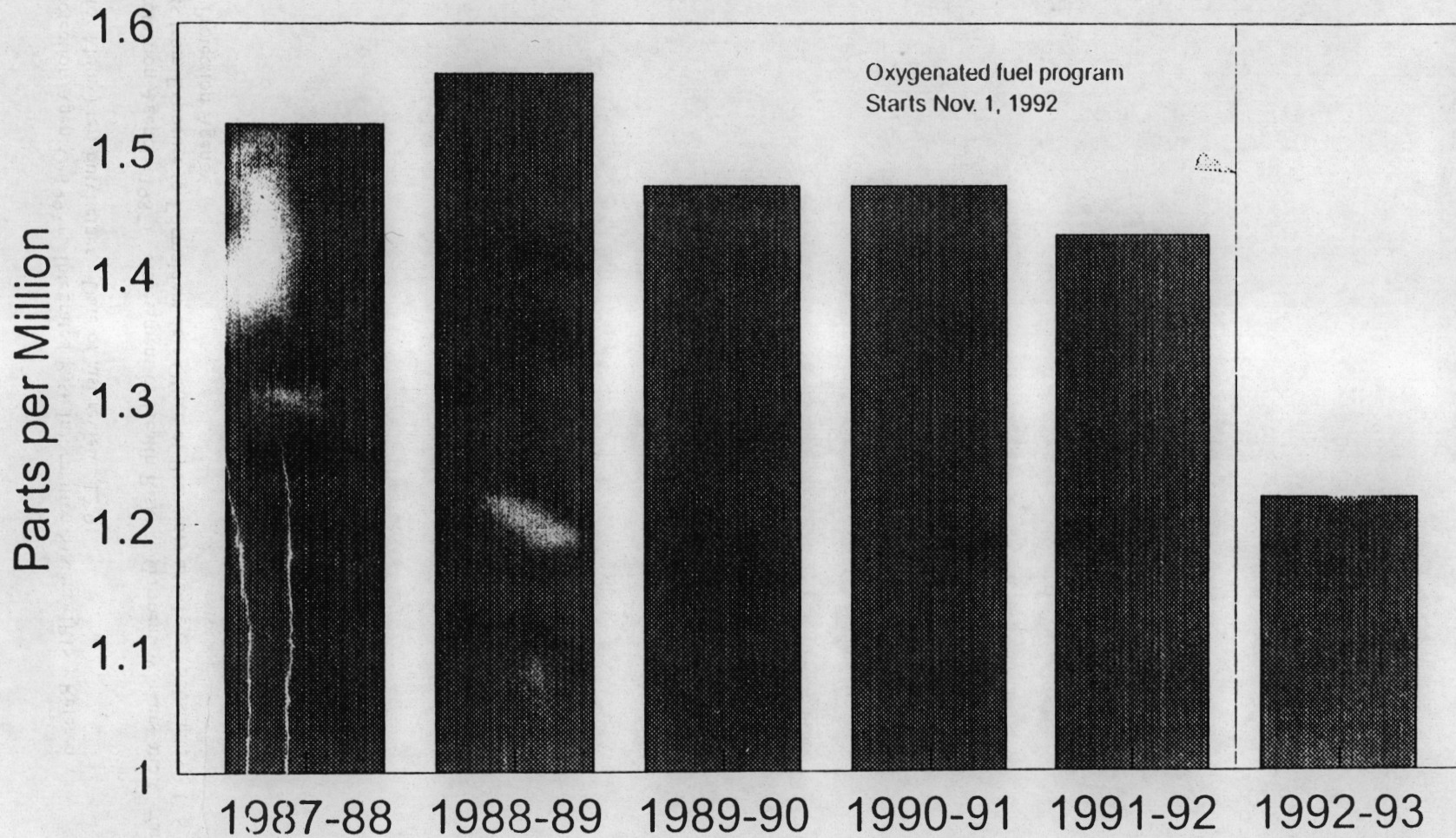


Fall Month Average CO Levels

November - February

# Four Month Average CO Levels

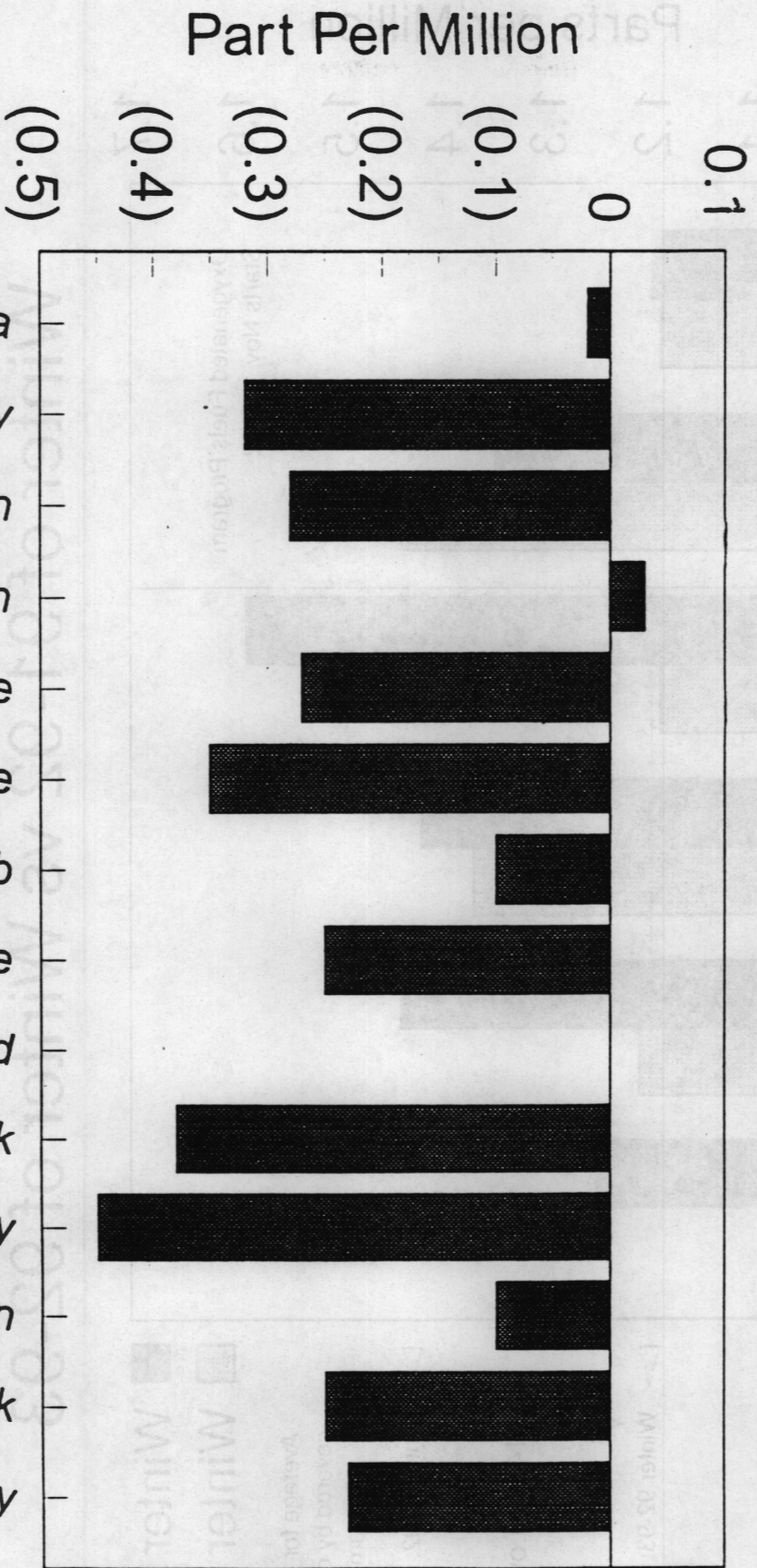
November - February



# Change In 4-Month Average CO Levels

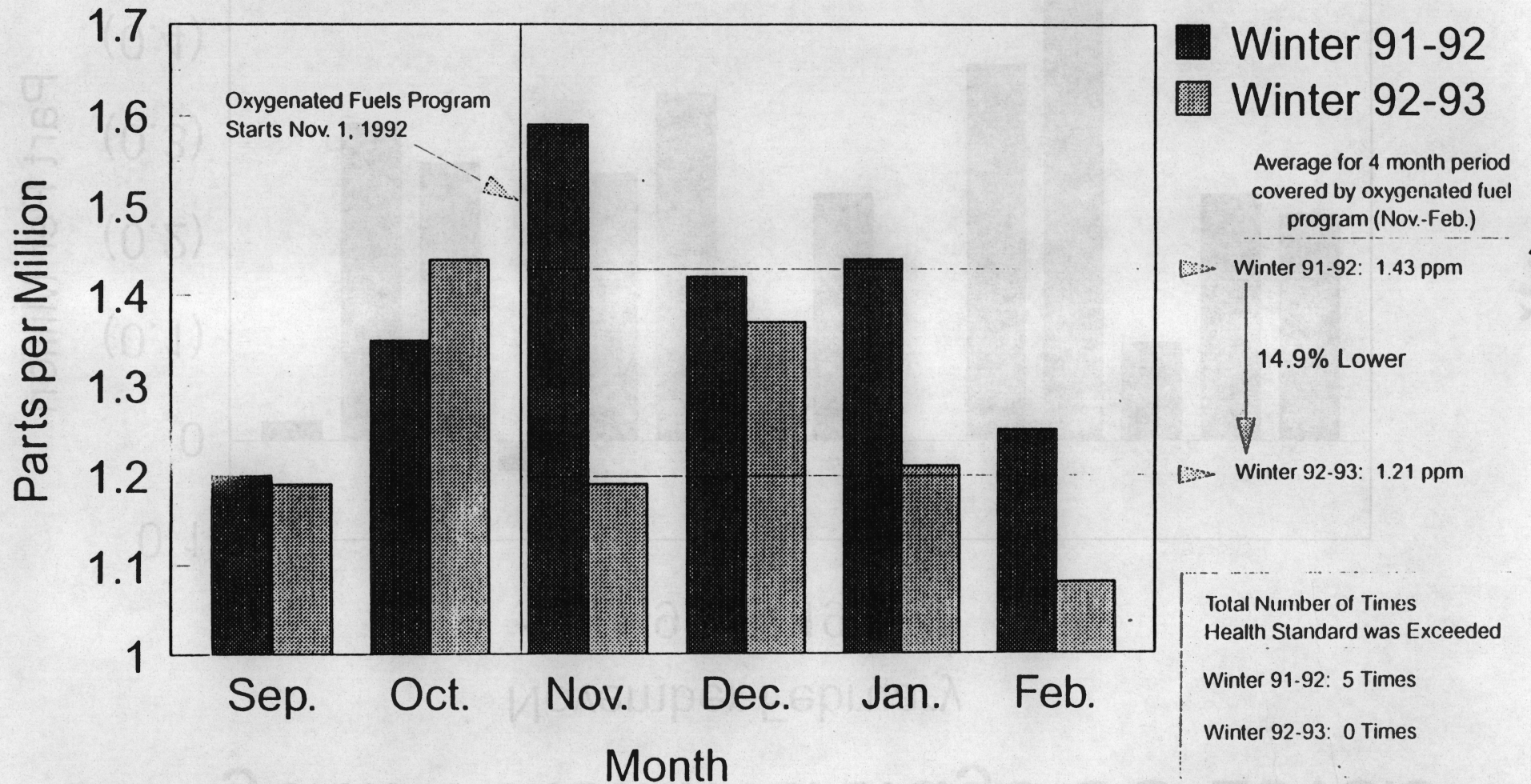
November-February

1991-92 vs 1992-3



# Winter Carbon Monoxide Levels

## Winter of 91-92 vs Winter of 92-93



(#) Indicates the number of times the health standard was exceeded

**National Center for Environmental Health Strategies**

1100 Rural Avenue  
Voorhees, New Jersey 08043  
(609)429-5358

April 26, 1993

**STATEMENT OF MARY LAMIELLE, PRESIDENT OF THE NATIONAL CENTER FOR ENVIRONMENTAL HEALTH STRATEGIES, BEFORE THE ASSEMBLY ENVIRONMENT COMMITTEE**

Dear Assemblywoman Ogden:

My name is Mary Lamielle. I am President of the National Center for Environmental Health Strategies (NCEHS), a national, non-profit, tax exempt organization fostering the development of creative solutions to environmental health problems.

Our Center is a major source of information, referrals, and government input on environmental illnesses including chemical sensitivity. We provide educational and advocacy services for those injured by chemical and environmental exposures in the home, at school, at work, and in the community. This includes special projects on indoor pollution; "sick" schools and buildings; carpet issues; pesticide-induced illnesses; access and accommodations in employment, housing and education; and discrimination against people disabled by environmental exposures.

The Center has recorded health complaints attributed to the use of oxygenated fuels for the last several years--initially from people in Denver and the Southwest--and this year from people in many areas of the country including Alaska, Montana, California, Colorado, Nevada, New Mexico, Arizona, Pennsylvania, Connecticut, New York, and, of course, New Jersey.

You should understand that the majority of people whom we were contacted by prior to this year--the 1992-1993 oxygenated fuel season--were people with chemical sensitivities. Many of these individuals found that oxyfuels--methyl tertiary butyl ether (MTBE), ethanol, or methanol--triggered mild to severe and debilitating symptoms. As the program became more widespread, health complaints came from people beyond our network including members of the public who claimed no sensitivity to chemicals and those in the industry--those who manufacture and deliver gasoline; service station owners and attendants; and auto mechanics.

In addition to health problems, we did receive complaints about poor auto performance; poor gasoline mileage; difficulty starting; and the increased price of gasoline. Two people in New Jersey who purchased new cars in the spring of 1992 experienced problems with difficulty starting the cars and poor performance, as well as personal health problems in November. Each was told by the respective auto dealer that the problems (auto and person) were due to the fuel additive MTBE. The make, model, and age of the car also impacted on the exposure and the intensity of symptoms.

As early as mid-November 1992 I described personal and public health problems to New Jersey Department of Health employees. I also reported these health problems to a senior official at the U.S. EPA Office of Pesticides and Toxic Substances at a February 25, 1993 meeting of the EPA Lawn Care Pesticides Advisory Committee of which I am a member. The complaints were dismissed. I was told that if there was a problem, EPA would have heard from industry representatives. We were later told that notices posted in canteens serving industry employees encouraging workers to record their health problems were torn down by management. It's obvious now that industry officials had chosen to ignore health problems: not to talk; not to take action.

Symptoms identified by those delivering gasoline to service stations and by service station attendants and mechanics have included: redness or flushed face; burning and cracked skin in the nostrils; nosebleeds; burning of the eyes, mouth and skin; sores on the hands and other areas of dermal contact; severe headaches; cognitive problems variously described as "grogginess," "spaciness," "dizziness," or an uncontrollable desire to go to sleep; nausea and vomiting; and coughing, bronchitis and/or asthma.

Public complaints typically included burning eyes, nose, and--less frequently--mouth and throat; severe headache; nausea; dizziness and disorientation; coughing, bronchitis and asthma; and cognitive problems similar to those described by people in the industry including difficulty thinking and difficulty staying awake and alert--not exactly good news for people operating motor vehicles. The primary symptom complex we did not hear from the public was burning on the skin and sores on the skin doubtless due to the absence of direct skin contact.

Of interest,

- \* Leather gloves damp with MTBE-gas brought into the cab of a tanker put the driver to sleep. A frightening prospect.
- \* Gas delivery workers and service station attendants surviving this past winter on bottles of "Advil" to moderate unbearable headaches.

- \* Sores on the hands and knuckles from skin contact. (An EPA official at Research Triangle Park contracting for research services was unaware of these dermatological problems.)
- \* A young man with several years' personal experience (and exposure) as a gas station attendant so disoriented that he wondered if he could continue to do his job.
- \* A salesman from Camden County who normally drives a couple hundred miles a day must stop each afternoon, since November, to nap cause he's too drowsy to drive.
- \* A mom waiting to pick up the kids at school gets "spacey" from the exhaust.
- \* A gentleman was overcome by fumes while pumping gas at a self-service station in North Carolina. He passed out in the men's room where he went to recover. The diagnosis, a seizure. While New Jersey does have vapor recovery and full service, even more immediate air and skin contact is likely in other states.

Gas with MTBE burns the skin and mucous membranes; acts as an anesthetic; makes people nauseated; causes nosebleeds, and bronchitis, and "spaciness," and on...

If you should doubt these reports, I suggest that you pick up your local phone book and call a few service stations in your area.

Health complaints attributed to the oxygenate MTBE have been numerous and compelling. While we appreciate the seriousness of ambient carbon monoxide levels, we don't want to trade one health problem for another. Furthermore, we don't want to see the program abandon one "guilty" oxygenate, MTBE, for another since all other choices have reportedly had less research and testing regarding exposures and health effects than MTBE.

Our goal is a clean bill of health for a public sickened and drugged by the oxyfuel MTBE. Halting the current program is the first step in that direction.

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(An EPA official at Research Triangle Park con-  
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A gentleman was overcome by fumes while pumping gas  
at a self-service station in North Carolina. He passed  
out in the men's room where he went to recover. The  
diagnosis, a seizure.  
While New Jersey does have vapor recovery and fuel  
services, even more immediate air and skin contact is  
likely in other states.

Gas with MTBE burns the skin and mucous membranes; acts as an anesthetic;  
makes people nauseated; causes nosebleeds, and bronchitis, and "space-  
ness," and so on.

If you should doubt these reports, I suggest that you pick up your local  
phone book and call a few service stations in your area.

Health complaints attributed to the oxygenate MTBE have been numerous  
and compelling. While we appreciate the effectiveness of reducing carbon  
monoxide levels, we don't want to trade one health problem for another.  
Furthermore, we don't want to see the program abandon one quality oxy-  
genate, MTBE, for another since all other choices have reportedly had  
less research and testing regarding exposures and health effects than  
MTBE.

Our goal is a clean bill of health for a public sickened and drugged  
by the oxygenate MTBE. Halting the current program is the first step in  
that direction.

**The National Center for Environmental Health Strategies**

1100 Rural Avenue  
Voorhees, New Jersey 08043  
(609)429-5358

Contact: Mary Lamielle, President

April 26, 1993

**P R E S S R E L E A S E**

**PUBLIC HEALTH GROUP CALLS FOR HALT TO OXYGENATED FUELS PROGRAM**

In comments before the New Jersey Assembly Environment Committee today, Mary Lamielle, President of the National Center for Environmental Health Strategies, called for a halt to the oxygenated fuels gasoline program in New Jersey and nationwide.

"Health complaints attributed to the oxygenate methyl tertiary butyl ether (MTBE) used in New Jersey have been numerous and compelling," Ms. Lamielle stated. "While we appreciate the seriousness of ambient carbon monoxide levels," she continued, "we don't want to trade off one health problem for another." "MTBE is the wrong solution to a bad problem."

The Center has recorded health complaints from the use of oxygenated fuels for the last several years--initially from people in Denver and the Southwest--and this year from people in many areas around the country including New Jersey. Those experiencing health problems have been frustrated by a system that did not solicit and was not responsive to their complaints.

Gasoline with MTBE burns the skin and mucous membranes; causes severe headaches; acts as an anesthetic; makes people nauseated; triggers nosebleeds; and provokes coughing, bronchitis, and asthma attacks. Here's a sampling of reported problems:

- \* Leather gloves damp with MTBE-gas brought into the cab of a tanker put the driver to sleep.
- \* Gas delivery workers and service station attendants "survived" this past winter on bottles of "Advil" to moderate unbearable headaches.
- \* Sores on the hands and knuckles from skin contact.
- \* A salesman from South Jersey who normally drives a couple hundred miles a day must stop each afternoon to nap because he's too drowsy to drive.
- \* Motorists report driving with the window down this past winter because they're too dizzy or too groggy.

- \* Several South Jersey motorists report driving to Delaware to purchase gasoline to avoid debilitating symptoms
  - \* A gentleman was overcome by fumes while pumping gas at a self-service station in North Carolina. He passed out in the pump room where he went to recover. The diagnosis, a seizure.
- While New Jersey does not have self-service and does have vapor recovery, both of which may minimize exposure, even more immediate air and skin contact is possible and likely in other states.

"Should you doubt the nature of these reports or the seriousness of the problem, particularly for gasoline retailers, I give you this challenge," said Ms. Lamielle. "Get out the local phone book and call a few service stations in your area."

"MTBE is not the answer. Furthermore, we don't want to see the program abandon one "guilty" oxygenate for another since all other choices have reportedly had less research and testing than MTBE. Hypersensitive individuals exposed to ethanol and methanol have had serious symptoms."

"Our goal," said Lamielle, "is a clean bill of health for a public sickened and drugged by the oxyfuel MTBE. Halting the current program is the first step in that direction."

# # #

The National Center for Environmental Health Strategies is a national non-profit, tax exempt organization fostering the development of creative solutions to environmental health problems. The Center is a major source of information, referrals and government input on environmental illnesses including chemical sensitivity. The Center provides educational and advocacy services for those injured by chemical and environmental exposures in the home, at school, at work, and in the community. This includes special projects on indoor pollution; "sick" schools and buildings; carpet issues; pesticides-induced illnesses; access and accommodations in employment, housing and education; and discrimination against people disabled by environmental exposures.

The Center has played a major role in the recognition of chemical sensitivity as a public health problem and in the creation of policies that address the needs of patient populations and the public. This includes testifying before Congress on indoor air legislation; effecting a policy with the U.S. Department of Housing and Urban Development that recognizes this disability; serving on EPA's Lawn Care Pesticides Advisory Committee; ensuring that regulations under the Americans with Disabilities Act acknowledge accessibility issues for this population; and initiating the award-winning New Jersey Department of Health Study **Chemical Sensitivity**. Ms. Lamielle recently secured the first Congressional funding for research in this area. She serves on the expert panel convened to prioritize research issues.

The Center publishes **The Delicate Balance**, a national newsletter.

# Responding to Chemical Sensitivity in the Workplace

**Mary Lamielle**

**President, National Center for Environmental  
Health Strategies (NCEHS)**

MCS may be a preventable disability. The key factors are recognition of chemically induced illness and a sensitivity on the part of management and coworkers toward the health imperatives of those affected by indoor pollutants.

People sick from workplace exposures want accommodation and remediation, not litigation. They want to remain productive. Those experiencing more severe symptoms require immediate removal from triggering exposures to minimize reactions and to avert permanent disability.

Many individuals can be accommodated with a little creativity and common sense at minimal expense. NCEHS has assisted management and affected individuals in such modifications. Recommendations include:

- An office with a window that opens;
- A well-ventilated work environment free of pollutants such as tobacco smoke, pesticides, toxic and fragrance-laden cleaning products, deodorizers, and exhaust fumes;
- Selection of least toxic/allergenic building furnishings and supplies;
- Prenotification of building events such as painting or pesticide applications with provisions for alternative work arrangements;
- Education of coworkers as to the nature of the disability to avert stigma and harassment;

- Schedule options so that people affected can work when fewer coworkers are present, when the ventilation is working at its peak, or where the surroundings are least problematic; and
- The option to work at home.

Affected individuals are frequently the best judge of what needs to be done. NCEHS encourages employers to seek input from employees in determining acceptable practices and policies. Corrective actions such as the elimination of synthetic pesticides, indoors and out (lawn care pesticides are pulled into buildings and circulated through the ventilation system), or the selection of least-toxic cleaning products, need not be based on sophisticated scientific evaluations, but on intuitive, practical solutions.

Building managers should be wary of the "quick fix" to indoor air problems. The use of fragrances and deodorizing agents to mask odors or to cover poor air quality is a misguided effort that intensifies indoor contaminant levels. These products are complex and dangerous volatile compounds. The pesticide paradichlorobenzene is the primary chemical emitted by room air fresheners and deodorizers.

Personal fragrance products, such as perfumes and colognes, can also be a serious problem. Some perfume wearers get incensed that such minute quantities of seemingly "harmless" aromas could cause reactions. But these synthetic compounds include neurotoxic and allergenic substances. Exposure to these chemicals can totally incapacitate an individual with chemical sensitivities.

Public education and sensitivity to the issue can go a long way toward environmental improvement. And remember -- efforts to improve air quality for the hypersensitive improve air quality for all employees.

#### For More Information:

Mary Lamielle, NCEHS, 1100 Rural Ave., Voorhees, NJ 08043 • (609) 429-5358. NCEHS publishes a newsletter entitled *The Delicate Balance* and offers a free information package for first-time contacts.

A thorough and balanced article summarizing the issues of MCS appeared in the July 22 issues of *Chemical and Engineering News*. Copies are available from NCEHS as an enclosure to *The Delicate Balance*, Vol. IV, Nos. 3-4, 1991, for \$6.

**The National Center for Environmental Health Strategies**

1100 Rural Avenue  
Voorhees, New Jersey 08043  
(609)429-5358

Contact: Mary Lamielle, President

March 31, 1993

**P R E S S   R E L E A S E**

**PUBLIC HEALTH GROUP CALLS FOR HALT TO OXYFUELS PROGRAM**

The National Center for Environmental Health Strategies recommends a halt to the oxygenated fuels gasoline program in New Jersey and nationally.

The Center has recorded health complaints from the use of oxygenated fuels for the last several years--initially from people in Denver and the Southwest--and this year from people in many areas around the country including New Jersey. Those experiencing health problems have been frustrated by a system that did not solicit and was not responsive to their complaints.

Health problems in New Jersey were reported by workers in the industry and by the public. Symptoms identified by those delivering gasoline to service stations and by service station attendants and mechanics have included: redness or flushed face; burning and cracked skin in the nostrils; nosebleeds; burning of the skin and sores from dermal contact; severe headaches; cognitive problems variously described as "grogginess," "spaciness," "dizziness," or an uncontrollable need to go to sleep; nausea and vomiting; and coughing, bronchitis and/or asthma.

Public complaints typically included burning eyes, nose, and--less frequently--mouth and throat; severe headache; nausea; dizziness and disorientation; coughing, bronchitis and asthma; and cognitive problems similar to those described by people in the industry including difficulty thinking and difficulty staying awake and alert--not exactly good news for people operating motor vehicles. The primary symptom complex we did not hear from the public was burning on the skin and sores on the skin doubtless due to the absence of direct skin contact.

Some people with chemical sensitivities have reported very severe and debilitating symptoms from exposure to oxyfuels including the additive MTBE, methyl tertiary butyl ether. While those with environmental illnesses made up a significant segment of the individuals who initially contacted us, this year we received an at least equal number of health complaints from individuals claiming no previous sensitivity. In many instances these people expressed frustration over the lack of an organized governmental effort to record their health problems.

"Health complaints attributed to the oxygenate MTBE have been numerous and compelling," stated Mary Lamielle, President of the National Center for Environmental Health Strategies. "While we appreciate the seriousness of ambient carbon monoxide levels," she continued, "we don't want to trade off one health problem for another." "Furthermore, we don't want to see the program abandon one "guilty" oxygenate, MTBE, for another since all other choices have reportedly had less research and testing regarding exposures and health effects than MTBE."

"Our goal," said Lamielle, "is a clean bill of health for a public sickened and drugged by the oxyfuel MTBE. Halting the current program is the first step in that direction."

# # #

The National Center for Environmental Health Strategies is a national non-profit, tax-exempt organization fostering the development of creative solutions to environmental health problems. The Center is a major source of information, referrals and government input on environmental illnesses including chemical sensitivity. The Center has special projects on indoor pollution and "sick" buildings, pesticide exposures, medical research, and on discrimination against people disabled by environmental exposures.

The Center has played a major role in the recognition of chemical sensitivity as a public health problem and in the creation of policies that address the needs of patient populations and the public. This includes testifying before Congress on indoor air legislation; effecting a policy with the U.S. Department of Housing and Urban Development that recognizes chemical sensitivity as a disability; serving on EPA's Lawn Care Pesticides Advisory Committee; ensuring that regulations under the Americans with Disabilities Act acknowledge accessibility issues for this population, and initiating the award-winning New Jersey Department of Health Study, **Chemical Sensitivity**.

The Center publishes **The Delicate Balance**, a national newsletter that chronicles the latest on indoor pollution, chemical sensitivity and related topic areas.

THE NATIONAL CENTER FOR ENVIRONMENTAL HEALTH STRATEGIES

1100 Rural Avenue  
Voorhees, New Jersey 08043  
(609)429-5358

Contact: Mary Lamielle, President

September 30, 1992

P R E S S R E L E A S E

**CENTER CALLS FOR CONSUMER WARNINGS TO AVERT CARPET-INDUCED ILLNESSES  
AND RESEARCH TO EVALUATE CARPET'S ROLE IN CAUSING MULTIPLE CHEMICAL  
SENSITIVITIES (MCS)**

"New carpeting is killing mice in laboratories and severely disabling people in their homes and workplaces," according to Mary Lamielle, President of the National Center for Environmental Health Strategies (NCEHS).

In a statement for the Ad Hoc Subcommittee on Consumer and Environmental Affairs meeting on carpet safety, chaired by Senator Joseph Lieberman, Lamielle called new carpeting "a pandora's box of toxic chemicals." Carpeting and carpet installation materials can contain up to 120 chemicals, many of them toxic and carcinogenic. These include benzene, toluene, xylene, and styrene, as well as solvent-based dyes, pesticides --mildewcides and antimicrobials--, and stain-resistance treatments using solvents and plasticizers.

"It's time to stop debating over whether carpet problems result from the total chemical burden, or from one or more 'bad' players, which is the on-going debate between the Environmental Protection Agency (EPA) and the Consumer Product Safety Commission (CPSC)." Both agencies have the responsibility to safe-guard public health. Lamielle further stated that "Carpet is clearly a culprit in causing multiple chemical sensitivities (MCS). It has made thousands of people chronically ill, destroyed their lives and livelihoods."

The Center, which provides clearinghouse, educational, research, and advocacy services for the public and those damaged by chemical and environmental exposures, called for immediate action to protect consumers and avert further incidence of carpet-induced illnesses. NCEHS supports the petition from the New York State Attorney General's Office to the Consumer Product Safety Commission to require health warnings at stores where carpet and carpet installation materials (padding, adhesives, etc.) are sold. These warnings should be clearly visible in the stores and on the carpet and installation materials. The warnings must indicate the potential health hazards of new carpeting. They should alert consumers to symptoms experienced by those sick from carpeting, including a discussion of susceptible populations due to pre-existing medical conditions and sensitivities.

New Jersey State Library

The Center called the Green Seal program initiated by industry "a feeble attempt to down-play carpet-related illnesses and to sweep this serious health problem under the proverbial carpet." If we don't know what's causing a problem, it's impossible to say all is safe. NCEHS would call on industry to support major research to determine why people are developing MCS following carpet installation and how they've been damaged in order to further understand the issue of problem carpets.

Congress must mandate research on multiple chemical sensitivity, the illness caused by exposure to toxic carpeting. Furthermore, Congress must request a General Accounting Office review of this illness and its implications, together with an examination of interagency responsibilities and responses to this health crisis.

Congress, federal and state agencies, and the media have focused on multiple chemical sensitivities in a fragmented fashion by looking at and highlighting exposures that induce illness, rarely looking at the illness itself.

People in as diverse circumstances as schools in Vermont, North Dakota, or New Jersey (carpet installation); aircraft manufacturers in the northwest (solvents from adhesives); railroad spills along the Sacramento River (pesticides) or in the upper peninsula of Michigan (benzene) ; consumers in new or remodeled homes (VOCs; formaldehyde); casino workers in Lake Tahoe (pesticides); Desert Storm Veterans (diesel fuels, fires, pesticides, and inoculations) and many others have remarkable commonality in their symptomology. Refusal to look at the larger issue makes it impossible to understand the parts.

"Federal agencies have been alert to MCS for well over a decade. And, the National Academy of Sciences has called for research on this health problem," stated Lamielle. "It's time to halt the intentional fragmentation. It's time to act on this health crisis by focusing on those who are sick from carpeting and from other MCS-inducing exposures. They hold the key to the process, the problem, and the solution."

# # #

Dear

Pursuant to the Americans with Disabilities Act (ADA) I recommend that you adopt a policy to accommodate employees and members of the public disabled by chemical barriers.

Such a policy would address the needs of those with chemically induced or exacerbated illnesses including but not limited to people with chemical sensitivity disorders, sick building syndrome and multiple chemical sensitivity; those with breathing and lung disorders, asthma, and neurological impairments.

I recommend that you embrace these disabled populations by eliminating the chemical and environmental barriers that impede access to the buildings, facilities, and properties owned, maintained, or operated by you.

A policy to accommodate those disabled by chemical barriers should, at minimum, include the items listed below. Such a policy would enhance the health and productivity of all building occupants. Many of these recommendations can be accomplished at minimal expense to the building owner. Therefore, most or all recommendations are likely to meet the test of reasonableness under ADA.

- \* Provide adequate ventilation by implementing building ventilation in accordance with current recommendations of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE 62-1989) as a minimum standard; by providing adequate localized exhaust for significant indoor pollutants such as office copy machines; and by maintaining the HVAC system to prevent the accumulation of dirt and moisture that promotes mold growth. (Note that variable air volume systems have not been demonstrated to provide as much fresh air as claimed.)

- \* Ensure that there are no pollution sources (such as idling trucks, buses, or other vehicles; exhaust from parking garages; stagnant water from air conditioner cooling towers; pesticides or other chemical or biological contaminants) in the vicinity of fresh air intakes.

- \* Eliminate the use of air fresheners, deodorizers, potpourri, or disinfectants, including the use and dispersion of these or similar products such as fragrances through the building's ventilation system, or through dispersion by individual automatic dispensers. (U.S. EPA indoor air research has found that rooms with air fresheners are contaminated with paradichlorobenzene, one of the top six indoor air pollutants and the active pesticide ingredient in mothballs. Disinfectants are also pesticides that pollute indoor air. They should not be a substitute for good construction or maintenance practices.)

- \* Halt the use of pesticides prophylactically in buildings and facilities owned, operated, or maintained by you. Adopt an integrated pest management policy that encourages the use of least toxic chemicals. Require employee and public prenotification and posting at building entrances and at designated areas within the building or facility in the event that pesticides are used in an emergency situation.

- \* Halt the use of synthetic lawn care pesticides on lawns, parks, rights of way, and other areas owned, maintained, or operated by you. In the event that any pesticide product is used in an emergency situation, require the choice of the least

toxic treatment with prenotification and posting for employees, the public, neighboring property owners, and the community.

- \* Prohibit smoking in buildings and facilities and at building entrances.
- \* Encourage elimination or minimization in the use of fragrances/fragranced products by employees and other building occupants to promote the health of coworkers and to ensure public access to those disabled by chemical barriers. A similar policy should be established for public meetings.
- \* Institute a full review of product selection criteria. Require the selection and use of least toxic/allergenic, nonfragranced cleaning products.
- \* Institute a full review of building materials, office furnishings, equipment, and supplies with particular attention to product content and emissions levels. Require the purchase of the least toxic/allergenic products in these categories.
- \* Require employee prenotification through a registry available to all building occupants and building posting at the entrance(s) for construction and remodeling activities and toxic cleaning activities such as the use of paints, adhesives, and solvents; carpet shampoos and floor waxes.
- \* Permit the use of windows as needed in existing buildings. Where feasible, repair or retrofit existing windows so that they can open. Plan for windows that open in new construction.
- \* Educate employees and the public to the reality of chemical barriers through notices and any applicable newsletters and other publications. Educational efforts will help avert stigma, harassment, and discrimination toward disabled coworkers and the public. Setting a positive example is the best way to educate employees.
- \* Adopt an alternative workspace policy for employees disabled by indoor contaminants on a temporary or permanent basis. Such a policy should include the option to work in a different area, or work at times when fewer coworkers are present, or during hours when ventilation is at its peak, for example. It should include the option to work at home. (The U.S. EPA headquarters in Washington, DC has an alternative workspace [AWS] policy.)

These recommendations are endorsed by the National Center for Environmental Health Strategies (NCEHS), a national non-profit, tax-exempt organization that focuses on creative solutions to public health problems. The Center is a clearinghouse on chemical sensitivity disorders and related illnesses, and has acted as a source of information and comments on federal indoor air policies and regulations implementing the Americans with Disabilities Act. You may, of course, contact the Center by writing *NCEHS, 1100 Rural Avenue, Voorhees, New Jersey 08043*, or call (609) 429-5358.

If you would like more information or clarification of the recommendations, please contact the undersigned.

I will await your review and reply.

Sincerely,

# Chemical Sensitivity -- The Epidemic of the 90's

The following passage is taken from Chemical & Engineering News:

*Research to determine precise mechanisms and effective treatment for MCS may require many years. For example, it has taken 50 years to begin to understand the subtle effects lead has on the human body. Research on the effects of multiple chemicals, if any, could take even longer. In the meantime, what can be done?*

*Not even the most outspoken patient advocates recommend cutting back chemical exposures for everyone so drastically that none of the current MCS patients are affected by exposure to such common substances as automobile emissions. Such a change would probably be technologically infeasible, economically disastrous [sic], and would require revolutionary changes by all of society.*

*Patient advocates, however, do recommend some fairly simple changes they believe would make life easier for patients, help prevent further cases, and help protect everyone's health. Mary Lamielle, founder and president of the patient advocacy group, the National Center for Environmental Health Strategies (NCEHS), calls for making the current ventilation recommendations of the American Society of Heating, Refrigeration & Air-Conditioning Engineers (ASHRAE) a minimum national mandatory standard for all public and commercial buildings. She would also prohibit smoking in all public buildings.*

*Lamielle's center would also prohibit a number of products now used quite widely in public buildings: deodorizers that cause toxic or allergenic reactions in some people, olfactory nerve anesthetics, scents or perfumes that are used to affect the behavior or mood of occupants, and products other than pesticides containing p-dichlorobenzene. "Many people with chemical sensitivity experience debilitating symptoms from deodorizing agents being pumped through building ventilation systems or sprayed into rooms," Lamielle says. To avoid spraying of insecticides in public buildings, NCEHS calls for other pest control methods when feasible.*

*The center also would like EPA to develop product labeling for consumer products like new carpets that emit volatile organic compounds. Labels should provide meaningful information on individual ingredients as well as the total content of volatile organic compounds. In addition, listing of toxic, sensitizing, or allergenic substances on the labels for all consumer products would be mandatory.*

*Moreover, NCEHS wants Congress to appropriate funds for research and education on MCS and for emergency assistance to MCS victims who are homeless or threatened with loss of their homes. It requests that EPA prepare a report to Congress on chemical sensitivity, including MCS, and that a nationwide registry of chemical sensitivity complaints be developed. "What we are really after is not lawsuits, but protection of people's basic human rights to a healthy environment and some medical assistance," says Davis, adviser to NCEHS.*

Excerpt from "Multiple Chemical Sensitivity" by Bette Hileman. The 17-page article appeared in Chemical & Engineering News, July 22, 1991, 69 (29) pp. 26-42.

Copies of this article are available from the National Center for Environmental Health Strategies (NCEHS) as an enclosure to *The Delicate Balance*, Vol. IV, Nos. 3-4, 1991. Send \$6 to NCEHS, Attn: Special Issue, 1100 Rural Avenue, Voorhees, NJ 08043 • (609) 429-5358.

**The National Center for Environmental Health Strategies**

1100 Rural Avenue  
Voorhees, New Jersey 08043  
(609)429-5358

March 21, 1993

Office of the General Counsel  
U.S. Architectural and Transportation  
Barriers Compliance Board  
1331 F Street, N.W., Suite 1000  
Washington, D.C. 20004-1111

Dear Chairman Parker:

Thank you for the opportunity to comment on the Notice of Proposed Rulemaking to supplement the Americans with Disabilities Act Accessibility Guidelines (ADAAG) to include certain facilities owned or operated by State and local governments.

We hereby recommend that the Architectural and Transportation Barriers Compliance Board (1) **adopt regulations that specifically address the access needs of those with environmental disabilities.**

Enclosure 1 includes a summary of chemical and environmental barriers that impede or prevent access to buildings, facilities and properties owned, maintained or operated by State and local governments. You will note that those changes or modifications necessary to assist the environmentally disabled will benefit the health and well-being of all building occupants and all those who make use of government owned or operated facilities and properties.

We also recommend that the Access Board (2) **develop and promulgate appropriate signage to convey information on environmental access for the environmentally disabled.** This would include an international symbol of accessibility. Signage should also address temporary accessibility problems such as remodeling, pesticide applications or cleaning activities.

We have previously urged the Access Board to expand the concept of disabled to include those excluded from full participation in society by chemical and environmental barriers. Your proposed guidelines have again failed to address the barriers faced by people with environmental disabilities. This population includes those with chemically induced

or exacerbated illnesses including but not limited to people with chemical sensitivities, including sick building syndrome and multiple chemical sensitivity; those with breathing and lung disorders; asthma; and neurological impairments.

As we have previously indicated to the Board in both written and oral comments, these populations are disabled by a variety of chemical and environmental barriers. Barriers to access include:

- \* ventilation systems which provide inadequate or contaminated air, or which are poorly designed to accomplish the designated task;
- \* inadequate localized exhaust to remove indoor pollutants;
- \* designs which place fresh air intakes in the vicinity of significant pollution sources such as loading docks or parking garages;
- \* the use of building materials which generate major levels of indoor pollution including particle board, adhesives, and carpeting;
- \* design and construction flaws which encourage pest infestations; and
- \* the installation of mechanical dispensers for deodorizers, disinfectants and scents which release a variety of toxic chemicals through a building's ventilation system or in a specific area of a structure, most frequently the bathroom(s).

These and similar barriers deny access to those disabled by chemical barriers.

The failure to address these systemic barriers in the proposed rulemaking process and the failure to designate signage to indicate areas which are accessible means that these disabled individuals are denied full participation in society.

The following comments specifically address the four new sections discussed in the proposed regulation.

#### **JUDICIAL, LEGISLATIVE, AND REGULATORY FACILITIES.**

This critical access issue best exemplifies the systematic discrimination that deprives many individuals with chemical sensitivities from virtually all basic rights. Most people with severe sensitivities are unable to participate in the public process including the public forum necessary to advance this access issue. Certainly your board is aware of these limitations. You have accommodated people with chemical sensitivities

by providing the opportunity to be represented at hearings held by the Access Board by conference call.

People who must petition the government at the federal, state, or local level to protect their rights or to testify at public hearings are frequently unable to participate in that same process. Impediments to access are most flagrant when they prohibit participation or testimony at regulatory meetings oriented toward developing policies to protect those with environmental disabilities.

Those with legal cases are sometimes unable to participate in the legal process. Or, if they do, they do so at significant risk to health and well-being. Some individuals have been ordered to appear in new or remodeled courtrooms with disregard for their disabilities.

We would reiterate the imperative to remove access barriers for those with environmental sensitivities.

#### **Detention and Correction Facilities.**

Environmental access problems in correctional facilities and detention centers present similar violations of the rights of environmentally disabled persons.

#### **Residential Housing.**

Many people with environmental sensitivities live in apartments or public housing at the mercy of exposures from maintenance activities (pesticide applications, remodeling activities, or cleaning procedures) and from the daily activities of other tenants (smoking, detergents, fragrances and other personal products).

In response to the needs of those disabled by chemical barriers, the U.S. Department of Housing and Urban Development recognized chemical sensitivity as a physical disability in October 1990. A subsequent technical guidance memo was issued by the federal agency to regional offices to address specific accommodations issues for those with chemical sensitivities including pesticides, carpeting, and remodeling. HUD issued a comprehensive legal opinion, "Multiple Chemical Sensitivity Disorder and Environmental Illness as Handicaps," April 14, 1992. (These three documents are attached as Enclosures 2-4. See also *The Delicate Balance*, Volume V, Numbers 1-2, 1992, pages 26-27, enclosure 5.)

HUD has also provided funding toward a housing project in California for people with environmental disabilities. These homes will be accessible for those with environmental and mobility impairments.

With regard to Question 52, military housing should be environmentally accessible for those soldiers who are hypersensitive and for the health of all others.

**Public Rights-of-Way.**

Sidewalks and vehicular rights-of-way: People with environmental sensitivities can experience disabling reactions from pesticide exposures along public rights-of-way. There is a need to guarantee access to rights-of-way by eliminating pesticide applications in these areas. In the event of an emergency application, there must be advance notification including signage to allow sensitive individuals to avoid exposure. (See Enclosure 6, Comments of Mary Lamielle, President, National Center for Environmental Health Strategies, February 15, 1993, on the U.S. EPA Lawn Care Pesticides Advisory Committee White Paper.)

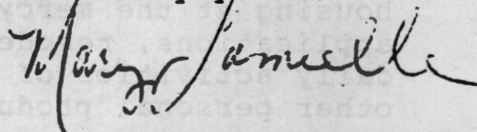
Restrooms: Mechanical dispensers for deodorizers, disinfectants, or scents in restrooms are barriers to access for those with environmental disabilities. Signage should be used to indicate accessibility as well as temporary inaccessibility due to recent remodeling, pesticide applications, or cleaning.

We urge you to act on these recommendations. We urge you to begin addressing the discrimination that deprives the environmentally disabled of virtually all basic rights.

Please let me know if we can provide further information or clarification of these or previous comments. You can contact me at (609)429-5358.

We will await a declaration of the Access Board's action on these issues.

Sincerely yours,



Mary Lamielle, President  
National Center for  
Environmental Health  
Strategies

**THE NATIONAL CENTER FOR ENVIRONMENTAL HEALTH STRATEGIES**

**1100 Rural Avenue  
Voorhees, New Jersey 08043  
(609)429-5358**

**Contact: Mary Lamielle, President**

**October 26, 1992**

**P R E S S     R E L E A S E**

**SCHOOL DISTRICTS PAY A HIGH PRICE FOR CARPETING**

The National Center for Environmental Health Strategies released the results of an astounding study on the costs of school floor coverings.

Mary Oetzel, indoor air quality consultant and President of Environmental Education and Health Services, Inc., presented her study at a medical conference in Chicago this past weekend. The study compares the cost of vinyl composition tile to carpeting. The statistics quoted were obtained from facilities managers of five major city school systems in five states, representing 458 schools with a total student enrollment of 282,600.

The cost of carpeting was found to be significantly greater. One reason is that carpeting must be replaced four times as often as vinyl. Second and more startling is that all facilities managers report that they are spending nearly twice as much time maintaining carpeted floors as they do maintaining floors with vinyl composition tile.

Taking into consideration installation, replacement and maintenance costs, a 50,000 square foot school (approximately 250-300 children) that is completely carpeted will spend \$5,476,413.00 more over forty years than a similar school with vinyl flooring. This represents a savings of \$136,910.00 per year for the school electing to use a hard surface floor.

One example given was the Tucson, Arizona School System which currently has 1,056,261 square feet of carpeting. If, after eight years, which is the average life of carpeting, they were to convert all schools to hard surface floors, based upon this study, they would save a total of \$115,661,843.00 over 40 years or enjoy an annualized savings of \$2,891,546.00.

In addition, all facilities managers stated that they preferred the vinyl composition tile flooring. Reasons given included the ease of maintenance and a confident feeling that the floor was cleaner and more hygienic.

"The results of this study may be good news for each student's health and each parent's pocketbook," according to Mary Lamielle, President of the National Center for Environmental Health Strategies. "Carpeting has been identified as a significant source of indoor pollution," she continued. "New carpeting emits toxic chemicals. Once installed, it acts as a 'sink' for particulate such as pesticides and asbestos, and as a breeding ground for molds and dust mites." "The fact that non-carpeted floor surfaces are cost-effective may be just what school boards need to know to select the less expensive, more healthful option."

Ms. Lamielle concluded that this study and its recommendations "deserve our serious attention."

# # #

For further information, contact: Mary Oetzel, Environmental Education and Health Services, Inc., 3202 W. Anderson Lane, #208-249, Austin, Texas 78757. Phone (512)288-2406.

The National Center for Environmental Health Strategies is a national non-profit organization fostering the development of creative solutions to environmental health problems. The Center is a major source of information, referrals, and government input in the area of chemical sensitivity. The Center has special projects on indoor pollution sources; classroom and workplace health hazards; pesticide exposures; and on discrimination against people with this type of disability. The Center publishes **The Delicate Balance**, a national newsletter that chronicles the latest on indoor pollution issues, chemical sensitivity, and related topic areas.

**COMPARATIVE COST OF SCHOOL FLOOR COVERINGS**  
 (Current Prices)  
**Vinyl Composition Tile (VCT) vs Carpeting**

| <u>School Dist. Contacted</u> | <u>No. of Schools</u> | <u>Student Population</u> |
|-------------------------------|-----------------------|---------------------------|
| Albuquerque, NM               | 121                   | 87,000                    |
| Austin, TX                    | 90                    | 70,076                    |
| Des Moines, IA                | 61                    | 31,524                    |
| Kansas City, MO               | 76                    | 36,000                    |
| Tucson, AZ                    | <u>110</u>            | <u>58,000</u>             |
| <b>Total</b>                  | <b>458</b>            | <b>282,600</b>            |

**STUDY BASED ON A 50,000 SQ. FT. SCHOOL**

**Frequency of Replacement and Initial Flooring Cost**

| <u>Floor Covering</u> | <u>Replaced</u> | <u>Current Costs/sq ft</u> | <u>Materials &amp; Labor Costs/50,000 sq ft</u> |
|-----------------------|-----------------|----------------------------|---|
| VCT                   | 33 yrs.         | \$1.32                     | \$ 65,800.00                                    |
| Carpeting             | 8 yrs.          | \$1.83                     | \$ 91,300.00                                    |
| Terrazzo              | Never           | \$6.00                     | \$300,000.00                                    |

**MAINTENANCE COSTS/50,000 SQ. FT.**

**Day-to-Day Cleaning--School Year of 36 Weeks**

| <u>Floor Covering</u> | <u>Per Year</u> | <u>20 Years</u> | <u>40 Years</u> |
|-----------------------|-----------------|-----------------|-----------------|
| VCT                   | \$113,249.00    | \$2,264,980.00  | \$4,529,960.00  |
| Carpeting             | \$204,394.00    | \$4,087,880.00  | \$8,175,760.00  |
| Terrazzo              | \$113,249.00    | \$2,264,980.00  | \$4,529,960.00  |

**AVERAGE REPLACEMENT COSTS**

| <u>Floor Covering</u> | <u>40 Years</u> |
|-----------------------|-----------------|
| VCT                   | \$ 49,315.80    |
| Carpeting             | \$ 389,938.40   |
| Terrazzo              | none            |

**TOTAL COST OF SCHOOL FLOOR COVERINGS**

**Materials--Installation--Maintenance**

| <u>Floor Covering</u> | <u>20 Years</u> | <u>40 Years</u> |
|-----------------------|-----------------|-----------------|
| VCT                   | \$2,655,091.00  | \$ 5,105,539.00 |
| Carpeting             | \$5,290,976.00  | \$10,581,952.00 |
| Savings w/VCT         | \$2,635,885.00  | \$ 5,476,413.00 |
| Terrazzo              | \$2,564,980.00  | \$ 4,829,960.00 |
| Savings w/Terrazzo    | \$2,725,996.00  | \$ 5,751,922.00 |

**EXAMPLE BASED ON STUDY AVERAGES**

Tucson, AZ Schools--Carpeting---1,056,261 sq. ft.

Converted to VCT

20 Yr. Savings--21.12 X \$2,635,885.00 = \$ 55,669,891.00

40 Yr. Savings--21.12 X \$5,476,413.00 = \$115,661,843.00

**40 Yr. Annualized Savings = \$ 2,891,546.00**

All Terrazzo

20 yr. Savings--21.12 X \$2,725,996.00 = \$ 57,573,036.00

40 yr. Savings--21.12 X \$5,751,992.00 = \$121,482,071.00

**40 Yr. Annualized Savings = \$ 3,037,052.00**

Prepared by: Mary Oetzel  
Educator and Consultant

Thank you for the opportunity to provide additional observations and recommendations regarding the Lawn Care Pesticides White Paper.

Given the fact that lawn care pesticides are being used across the country, the National Center for Environmental Health Strategies (NCEHS) supports minimum, national standards for prenotification, notification, and posting for lawn care pesticide applications which would not preempt state or local rights. This includes support for:

- \* Registries open to all who choose to receive prenotification for as many addresses as needed;
- \* Registries that do not require identification of those sick from or susceptible to pesticides independent of other registered individuals;
- \* Registries that require no medical certification; and
- \* A requirement for prenotification and posting for all professional and homeowner applications regardless of the size of the area applied.

We also support pollution prevention programs that alert the public to the dangers of pesticides and educate the public on lawn care practices that eliminate a perceived need for synthetic pesticide applications.

However, neither notification systems nor pollution prevention programs as presented address the serious health consequences of lawn care pesticide applications. For those sick from pesticides, registries don't begin to meet these health needs. Advance notice frequently becomes an early warning of debilitating reactions to come.

We believe that the White Paper should have directly addressed public health issues, particularly with regard to those experiencing hypersensitive reactions from pesticide exposures. It should have provided recommendations for protective policies based on existing disability rights laws.

The NCEHS believes that it is critical that the EPA acknowledge that the primary reason that lawn care pesticides have become a pressing issue demanding local, state, and federal action is that people are getting sick, frequently seriously ill, from exposure to these chemicals. EPA must address the rights of those vulnerable/injured/poisoned by pesticides to permit integration of these health issues into all agency policies, programs, and publications.

Pesticides play a major role in both the induction of chemical sensitivity and in the subsequent triggering of symptoms. Pesticide induced or exacerbated illnesses, as well as reactions triggered by the poisons and inerts for chemically sensitive individuals and other susceptible populations, are injuring and disabling an ever-increasing segment of the population. Reactions triggered by pesticides, particularly by organophosphates, are frequently immediate and devastating.

Many of these disabled individuals are being deprived of their constitutional rights. They are made ill in their communities; in their homes. Some spend nearly half the year sick from residential and commercial pesticide applications. Others must abandon their homes to minimize exposures.

EPA must halt these discriminatory practices in part by coming to terms with these issues, with a new paradigm. Business as usual concepts such as "risk assessment" are inadequate, irrelevant, meaningless. This threat is not the risk of cancer or birth defects from long-term exposure levels common to outdoor and indoor environments.

The costs to those damaged by pesticides can be measured in the significant loss of health and productivity, frequently for days or more following such exposures; in medical costs, including visits to physicians and emergency rooms, medications, oxygen, filters, and other measures; and in the social upheaval and isolation that such reactions bring. Some people damaged/poisoned by pesticides are forced to stay in their homes in an attempt to avoid exposures to pesticides applied in their neighborhood. These same people are often unable to travel within the community due to such applications. Others are homeless due to an inability to live safely within the community. It

is critical that EPA evaluate the impact of lawn care pesticides on the health, livelihood, family, housing, etc. for affected populations. No Americans should have to face the choice of constant illness or homelessness because of the outdoor use of pesticides.

People disabled by chemical sensitivity have rights within the community. The disability is covered under the Americans with Disabilities Act, the Rehabilitation Act of 1973, the Fair Housing Act, and most or all of the State and local disability protection laws.

The U.S. Department of Housing and Urban Development officially recognized chemical sensitivity as a disability in October 1990. A legal opinion issued by the agency to all HUD Regional Counsel dated 14 April 1992 indicates that chemical sensitivity is recognized as a handicap by a number of additional federal agencies including the Social Security Administration, the Department of Education, and the Civil Rights Division of the Department of Justice.

EPA's mission is to protect public health. As such, the agency has a legal responsibility to develop and promulgate policies that protect those disabled by pesticides consistent with existing laws addressing those disabled with chemical sensitivity. NCEHS urges the EPA to assess the numbers damaged by pesticides and to take action with regard to pesticides causing some of the worst health problems including but not limited to chlorpyrifos, diazinon, 2,4-D, and malathion. We urge EPA to establish protective policies that will provide a margin of safety for those currently sick from pesticides, to prevent further induction of chemical sensitivities in the general population, and to allow persons with environmental disabilities to enjoy participation in society to the fullest extent possible.

Mary Lamielle 2/15/92

Mary Lamielle, President

National Center for  
Environmental Health  
Strategies



# LAWN CARE PESTICIDE PROJECT

## REQUEST FOR ACCOUNTS OF ILLNESSES CAUSED BY

### LAWN CARE CHEMICALS

Send letters to: National Center for Environmental  
Health Strategies (NCEHS)  
ATTN: Lawn Care Pesticide Project  
1100 Rural Avenue  
Voorhees, New Jersey 08043  
(609) 429-5358

---

November 1992

Dear Friend:

The National Center for Environmental Health Strategies (NCEHS) is requesting letters detailing health effects from **lawn care pesticides**: insecticides, herbicides, fungicides, etc., for a project with government agencies and the media. Letters should be forwarded to: **NCEHS, Attn: Lawn Care Pesticide Project, 1100 Rural Avenue, Voorhees, New Jersey 08043.**

Your letter need not be long and may be handwritten. It can be personal, or, if from a physician or advocacy organization, can give case studies of a number of individuals. If you have previously prepared a similar letter for another organization, please feel free to forward it. **Newspaper clippings would be very helpful.** These accounts can also include pets which have been injured.

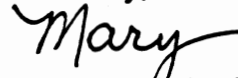
Your letter should explain the type and severity of your symptoms; the specific name of the pesticide product(s) and active ingredient(s), if known; how long you have experienced these problems; and what you need to do to avoid exposures and/or to recover when you become ill.

Please describe any medical assistance you sought including diagnosis and laboratory findings. If you are hypersensitive, did this exposure or another pesticide exposure, outdoor or indoor, cause your hypersensitivity? If not, did it intensify your illness? Identify any permanent health problems caused by this exposure. Make sure you note the current status of any complaints filed, legal action, etc. Did the application involve a misuse of pesticides?

Please state what type of notification you are able to obtain, if any, and if this notification is adequate. If there are problems with the notification system, specifying such problems would also be useful. Please include your name, address, and phone number. If you are willing to be contacted by a government agency in the event that a more in-depth review is undertaken, please indicate so.

Your assistance is essential to increased recognition of the dangers of lawn chemicals, their connection to chemical sensitivity and other medical conditions, and to action on this issue.

Sincerely,



Mary Lantelle, President  
NCEHS

**See Reverse Side For:  
Pesticide Exposure Project**

# PESTICIDE EXPOSURE PROJECT

NEW!

NEW!

## REQUEST FOR ACCOUNTS OF ILLNESSES CAUSED BY PESTICIDE EXPOSURES

Send letters to: National Center for Environmental  
Health Strategies (NCEHS)  
ATTN: Pesticide Exposure Project  
1100 Rural Avenue  
Voorhees, New Jersey 08043  
(609) 429-5358

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November 1991

Dear Friend:

The National Center for Environmental Health Strategies (NCEHS) has instituted a "Pesticide Exposure Project" to collect information on illnesses caused by pesticide exposures. Give us the details of your pesticide exposures at home, school, in the workplace, and from community-wide and agricultural applications. Letters detailing your pesticide incident(s) should be forwarded to: NCEHS, Attn: Pesticide Exposure Project, 1100 Rural Avenue, Voorhees, New Jersey 08043.

Your letter need not be long and may be handwritten. It can be personal, or, if from a physician or advocacy organization, can give case studies of a number of individuals. If you have previously prepared a similar letter for another organization, please feel free to forward it. Newspaper clippings would be very helpful. These accounts can also include pets which have been injured.

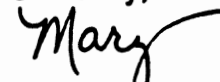
Your letter should provide the date, location, and type of exposure; the type and severity of your symptoms; the specific name of the pesticide product(s) and active ingredient(s), if known; how long you have experienced these problems; and what you need to do to avoid exposures and/or to recover when you become ill.

Please describe any medical assistance you sought including diagnosis and laboratory findings. If you are hypersensitive, did this exposure or another pesticide exposure, outdoor or indoor, cause your hypersensitivity? If not, did it intensify your illness? Identify any permanent health problems caused by this exposure. Make sure you note the current status of any complaints filed, legal action, etc. Did the application involve a misuse of pesticides?

Please include your name, address, and phone number in your response. If you are willing to be contacted by a government agency in the event that a more in-depth review is undertaken, please indicate so.

Your assistance is essential to increased recognition of the dangers of pesticides, their connection to chemical sensitivity and other medical conditions, and to action on this issue.

Sincerely,



Mary Lamielle, President  
NCEHS

See Reverse Side For:  
Lawn Care Pesticide Project

52X

# NATIONAL CENTER FOR ENVIRONMENTAL HEALTH STRATEGIES

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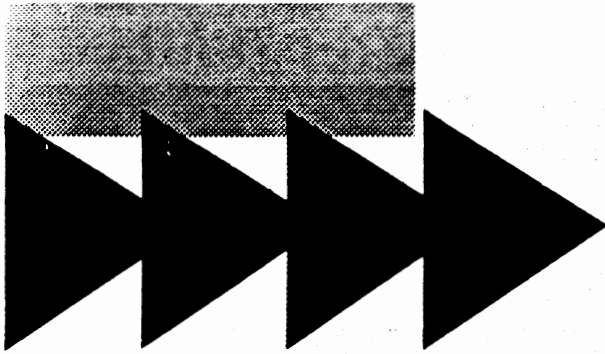
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| <b>Multiple Chemical Sensitivities</b><br>National Academy Press, 195 pp., Paperback, 1992.<br>Proceedings from NAS/EPA conference. Includes "Chapter 9" (see below).  | _____ | \$25.00  | \$27.00  | _____ |
| <b>Chapter 9, "Use of Biologic Markers in Controversial Areas of Environmental Health"</b><br>From <i>Biologic Markers in Immunotoxicology</i> , National Academy Press, 1992.   | _____ | \$2.00   | \$2.00   | _____ |
| <b>Info Package on Federal and State Housing Policies</b><br>Includes HUD policy statements, PA human relations decision, and media coverage.  | _____ | \$5.00   | \$8.00   | _____ |
| <b>Chemical Exposures: Low Levels and High Stakes</b><br>Prof. Nicholas Ashford, MIT & Dr. Claudia Miller, Univ. of Texas Health Science Center, Van Nostrand Reinhold, 214 pp., Hardcover, 1990.<br>Expanded version of the NJ Dept. of Health Report that won the World Health Organization Macedo Award | _____ | \$ 16.00 | \$ 18.00 | _____ |
| <b>Pest Control You Can Live With</b><br>Debra Graff, Earth Stewardship Press, 80 pp., Paperback, 1990.  | _____ | \$ 6.00  | \$ 7.00  | _____ |
| <b>Perfume Pollutes</b> (A 1-1/2-inch button; Bulk pricing available)  | _____ | \$ 0.50  | \$ 1.00  | _____ |
| <b>"Patients Held Hostage":</b><br>Info package on the medical controversy over chemical sensitivity   | _____ | \$ 7.00  | \$ 10.00 | _____ |
| <b>Info Package on Disability Issues &amp; Workplace Options</b>   | _____ | \$ 5.00  | \$ 8.00  | _____ |
| <b>No Place to Hide</b> (1/2-hour audio cassette)<br>Documentary from Pacifica Radio on indoor air quality and MCS   | _____ | \$ 11.00 | \$ 13.00 | _____ |
| <b>Chemical Sensitivity:</b><br>A Report to the New Jersey State Department of Health<br>Ashford & Miller, 162 pp., coil-bound, 1989.  | _____ | \$ 16.00 | \$ 18.00 | _____ |
| <b>Chemical Hypersensitivity Syndrome Study</b><br>Bascom, 1989. (The Maryland Study of Chemical Sensitivity)  | _____ | \$ 15.00 | \$ 17.00 | _____ |
| <b>Complete set of reviewers' comments for the Maryland Study</b><br>The critical views of nearly two dozen professionals.   | _____ | \$ 12.00 | \$ 15.00 | _____ |
| <b>The Delicate Balance</b> (Complete set of back issues, Volumes I-IV)  | _____ | \$ 50.00 | \$ 75.00 | _____ |
| <b>NCEHS Testimony on the Indoor Air Quality Act</b> (Complete set)  | _____ | \$ 4.00  | \$ 6.00  | _____ |
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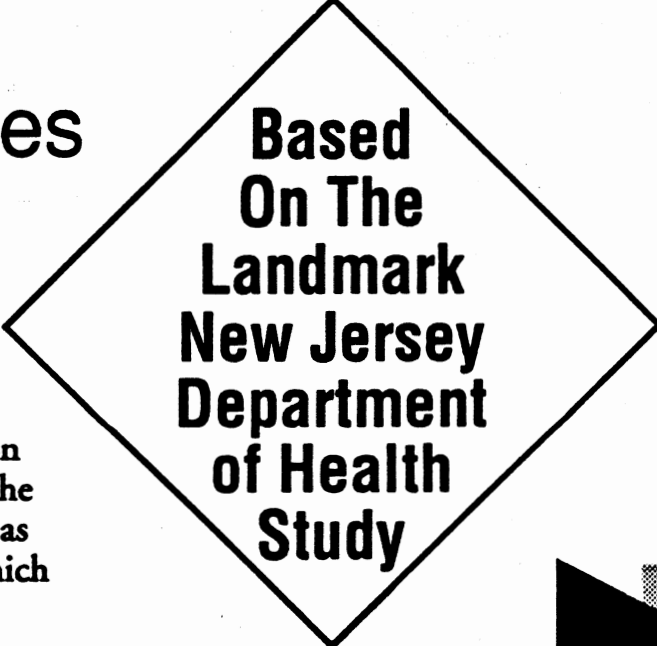
# Chemical Exposures

## Low Levels and High Stakes

Nicholas A. Ashford

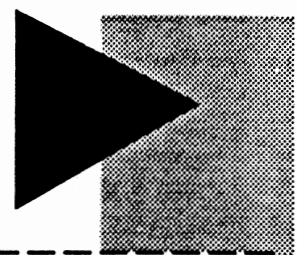
Claudia S. Miller

214 pp., Hardcover, \$19.95 List  
Van Nostrand Reinhold, New York



"*Chemical Exposures* is the most comprehensive resource available on the topic. It marks a milestone in the recognition of chemical sensitivity as a serious public health problem which demands our attention."

-Mary Lamielle  
National Center for  
Environmental Health Strategies



Order **Chemical Exposures** Today at the NCEHS Special Member's Discount Price of \$16.00. If you are not yet an NCEHS Member, Join Now to Qualify:

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Dear

Pursuant to the Americans with Disabilities Act (ADA) I recommend that you adopt a policy to accommodate employees and members of the public disabled by chemical barriers.

Such a policy would address the needs of those with chemically induced or exacerbated illnesses including but not limited to people with chemical sensitivity disorders, sick building syndrome and multiple chemical sensitivity; those with breathing and lung disorders, asthma, and neurological impairments.

I recommend that you embrace these disabled populations by eliminating the chemical and environmental barriers that impede access to the buildings, facilities, and properties owned, maintained, or operated by you.

A policy to accommodate those disabled by chemical barriers should, at minimum, include the items listed below. Such a policy would enhance the health and productivity of all building occupants. Many of these recommendations can be accomplished at minimal expense to the building owner. Therefore, most or all recommendations are likely to meet the test of reasonableness under ADA.

- \* Provide adequate ventilation by implementing building ventilation in accordance with current recommendations of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE 62-1989) as a minimum standard; by providing adequate localized exhaust for significant indoor pollutants such as office copy machines; and by maintaining the HVAC system to prevent the accumulation of dirt and moisture that promotes mold growth. (Note that variable air volume systems have not been demonstrated to provide as much fresh air as claimed.)

- \* Ensure that there are no pollution sources (such as idling trucks, buses, or other vehicles; exhaust from parking garages; stagnant water from air conditioner cooling towers; pesticides or other chemical or biological contaminants) in the vicinity of fresh air intakes.

- \* Eliminate the use of air fresheners, deodorizers, potpourri, or disinfectants, including the use and dispersion of these or similar products such as fragrances through the building's ventilation system, or through dispersion by individual automatic dispensers. (U.S. EPA indoor air research has found that rooms with air fresheners are contaminated with paradichlorobenzene, one of the top six indoor air pollutants and the active pesticide ingredient in mothballs. Disinfectants are also pesticides that pollute indoor air. They should not be a substitute for good construction or maintenance practices.)

- \* Halt the use of pesticides prophylactically in buildings and facilities owned, operated, or maintained by you. Adopt an integrated pest management policy that encourages the use of least toxic chemicals. Require employee and public prenotification and posting at building entrances and at designated areas within the building or facility in the event that pesticides are used in an emergency situation.

- \* Halt the use of synthetic lawn care pesticides on lawns, parks, rights of way, and other areas owned, maintained, or operated by you. In the event that any pesticide product is used in an emergency situation, require the choice of the least

toxic treatment with prenotification and posting for employees, the public, neighboring property owners, and the community.

- \* Prohibit smoking in buildings and facilities and at building entrances.
- \* Encourage elimination or minimization in the use of fragrances/fragranced products by employees and other building occupants to promote the health of coworkers and to ensure public access to those disabled by chemical barriers. A similar policy should be established for public meetings.
- \* Institute a full review of product selection criteria. Require the selection and use of least toxic/allergenic, nonfragranced cleaning products.
- \* Institute a full review of building materials, office furnishings, equipment, and supplies with particular attention to product content and emissions levels. Require the purchase of the least toxic/allergenic products in these categories.
- \* Require employee prenotification through a registry available to all building occupants and building posting at the entrance(s) for construction and remodeling activities and toxic cleaning activities such as the use of paints, adhesives, and solvents; carpet shampoos and floor waxes.
- \* Permit the use of windows as needed in existing buildings. Where feasible, repair or retrofit existing windows so that they can open. Plan for windows that open in new construction.
- \* Educate employees and the public to the reality of chemical barriers through notices and any applicable newsletters and other publications. Educational efforts will help avert stigma, harassment, and discrimination toward disabled coworkers and the public. Setting a positive example is the best way to educate employees.
- \* Adopt an alternative workspace policy for employees disabled by indoor contaminants on a temporary or permanent basis. Such a policy should include the option to work in a different area, or work at times when fewer coworkers are present, or during hours when ventilation is at its peak, for example. It should include the option to work at home. (The U.S. EPA headquarters in Washington, DC has an alternative workspace [AWS] policy.)

These recommendations are endorsed by the National Center for Environmental Health Strategies (NCEHS), a national non-profit, tax-exempt organization that focuses on creative solutions to public health problems. The Center is a clearinghouse on chemical sensitivity disorders and related illnesses, and has acted as a source of information and comments on federal indoor air policies and regulations implementing the Americans with Disabilities Act. You may, of course, contact the Center by writing *NCEHS, 1100 Rural Avenue, Voorhees, New Jersey 08043*, or call (609) 429-5358.

If you would like more information or clarification of the recommendations, please contact the undersigned.

I will await your review and reply.

Sincerely,

86X

**Pesticide Issues:**

*Eliminating Pesticide Barriers*

**STATE FINDS EVIDENCE OF  
DISCRIMINATION IN COMMUNITY  
HERBICIDE SPRAYING**

On May 19, 1992, the Illinois Department of Human Rights issued a "Notice of Substantial Evidence" in three discrimination cases filed by chemically sensitive residents of Hinsdale, Illinois, a Chicago suburb. The residents claim that the Village's use of herbicides deprived them of access to community parks and most of the Village. At least one resident has had to leave the Village when spraying programs cause toxic chemicals to permeate the area. Two of the residents claim to have suffered physical harm due to the Village's refusal to accommodate their handicapping condition.

The original discrimination complaint, filed under the Illinois Human Rights Act, charged that the Village failed to fully investigate alternatives to the toxic spraying programs and to provide individual notification of spraying even after presented with medical documentation of their handicapping condition.

Earon S. Davis, the Evanston, Illinois attorney for the complainants, stated, "I hope this finding will lead to serious dialogue between the two sides. Chemical sensitivity is widely recognized as a handicapping condition, but like other disabilities, it is too often not taken seriously. To individuals disabled by chemical sensitivities, toxic pesticides present a barrier to participation in society. In the case of lawn care chemicals, these substances also pose health risks to the general public, especially children and people who apply them."

The Hinsdale case is the first in the nation where a municipal spraying program has been successfully challenged on the basis of depriving people of access to parks and other public areas. Mary Lamielle, President of the National Center for Environmental Health Strategies, and member of the U.S. EPA's Lawn Care Pesticide Advisory Committee, stated that "this case, even at this initial stage, is a victory for people with chemical sensitivity as well as all who are concerned about the long term effects of pesticide use."

According to the Illinois Department of Human Rights, the parties had 60 days to arrive at an agreement. Since there has been no settlement, the State of Illinois will file its own action against the Village of Hinsdale.

**Employment Issues:**

*Precedent-Setting IAQ Case*

**STATE ORDERS REHIRING DISABLED  
EMPLOYEE**

The North Dakota State Personnel Board ordered the state's Department of Human Services to reinstate NCEHS member Sandy Eiseman who was fired after she said indoor air problems left her unable to work. Board members indicated that not enough was done to accommodate Eiseman's hypersensitivities. The agency has appealed the ruling, which will be heard in a state court, but no hearing date has been set.

Eiseman worked for the Southeast Human Services Center in Fargo, North Dakota for over 16 years. She first experienced work-related health problems in 1983. The employers had the building tested, but no measurable chemicals were found.

While the agency claimed nothing wrong with the leased building, others were also sick. According to John Schneider, Eiseman's attorney, the director of the Human Services Center once wrote the landlord, Red River Human Services, and complained about indoor air problems, and the landlord "wrote back and called the employees a bunch of hypochondriacs."

Environmental health consultant Earon Davis called Eiseman's case one of "national significance because it recognizes, for the first time, that an employer that disables workers due to a sick building environment cannot just turn its back on these people. It must provide reasonable accommodations to allow them to continue to work."

**NEW YORK STATE TASKFORCE ISSUES  
MCS BOOKLET**

*"Multiple Chemical Sensitivity: A Disorder Triggered by Exposures to Chemicals in the Environment"* is a new booklet from the **Multiple Chemical Sensitivity In The Workplace Taskforce**, coordinated by Tracy Frisch, New York Coalition for Alternatives to Pesticides (NYCAP). The 16-page publication has the basics on MCS, exposures, disability status, accommodations, and resources at the national and the New York state level. Mary Lamielle from NCEHS serves on the taskforce, and the Center is included in the resource listings.

The project was funded in part by a grant from the New York State Department of Labor, Occupational Safety and Health Training and Education Program.

NYCAP can be contacted at 33 Central Avenue, Albany, NY 12210, (518) 426-8246.

Copies of the booklet are also available to NCEHS members for a self-addressed, business size envelope with 29¢ postage. Non-member cost \$1.00. WRITE: NCEHS, "MCS Booklet," 1100 Rural Avenue, Voorhees, New Jersey 08043.

**GAO REVIEWS EPA'S AWS POLICY**

The GAO recommended tightened managerial controls on EPA's alternative workspace (AWS) policy that allows employees -- roughly 43 EPA headquarters workers with MCS and related problems -- to work at alternative workspaces including their homes. The report did not, however, challenge the AWS policy itself.

The EPA developed the AWS program in November 1988 in response to severe employee health problems from indoor contaminants at the Waterside Mall complex in Washington, DC. Thirty-four employees were granted AWS status by the agency. Eighteen of these individuals worked at home at some point. Another 9 employees were granted AWS status by their supervisor without medical evaluation.

The GAO criticisms were aimed at the failure of the agency to have a handle on the number of people on AWS, specific workplaces, etc. The GAO recommended that EPA appoint a single official responsible for development and implementation of the policy. The GAO also recommended that current and future AWS employees undergo periodic medical evaluations by the EPA Environmental Health Unit physician or another appropriate medical authority. This recommendation can cause major complications for someone with MCS given the nature of the illness and the lack of a single test to diagnose MCS.

EPA's comments on the GAO report were encouraging. One official recommended that the EPA AWS policy be developed and maintained within the larger context of the "employment of handicapped persons" within the agency. Another EPA official reportedly recommended that the AWS policy currently applicable at EPA headquarters be expanded to cover EPA employees agencywide.

**GAO/GGD-92-53 WORKPLACE ACCOMMODATION: EPA'S ALTERNATIVE WORKSPACE PROCESS REQUIRES GREATER MANAGERIAL OVERSIGHT** is available FREE from the U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877, or call (202) 275-6241.

**Transportation News:**

*CA Lawsuits May Make Skies Friendlier*

**ACCESS TO OXYGEN IN FLIGHT**

Two lawsuits filed in California charging discrimination by major airlines may help define access to supplemental oxygen in flight for the chemically sensitive.

A policy proposed by United Airlines and currently under review by plaintiffs in the lawsuits, includes the following provisions:

1. United would supply supplemental oxygen to a passenger upon presentation of a medical certificate at least 48 hours prior to departure, signed by a licensed physician, which specifies that approximate flow rate needed for the anticipated cabin pressure.
2. United's Medical Department may contact the passenger's personal physician to discuss the provision of oxygen, but would not countermand the personal physician's instructions (unless such instruction violates a specific federal regulation) or deny oxygen on the basis that United was unable to contact the physician.
3. United would not impose other non-mandatory conditions or services upon disabled passengers (including respiratory masks) not requested by the passenger or required by the passenger's physician.
4. If United has a reasonable doubt that a disabled passenger can complete the flight without extraordinary medical assistance, it may require a medical certificate from the passenger's private physician assuring that no such assistance will be necessary, but upon receipt of such a certificate, United would not deny passage.
5. The passenger requesting therapeutic oxygen should arrive at the terminal for check-in one hour prior to departure.

We will keep you posted on the final settlement. If you'd like further information, contact *Susan Molloy, #2 Park Circle, Apt. 202, Marin City, CA 94965*. Special thanks to Susan and friends for helping make the skies a little friendlier.

\* \* \* \*

**RIGHTS OF THE DISABLED AIR TRAVELER:** The U.S. Department of Transportation has published a booklet designed to inform air travelers with disabilities of their rights and to help them plan trips. The publication discusses federal policies on oxygen use. Carriers are not required to provide oxygen but may do so should they choose. A medical certificate is required. The free booklet, called "New Horizons for the Air Traveler with a Disability," may be ordered from the *Consumer Information Center, Department 608-Y, Pueblo, CO 81009*. An audiocassette version is available from *DOT's Office of Regulatory Affairs, P-10, Room 9222, 400 7th Street SW, Washington, DC 20590*. Or, call (202) 366-4220.

**BUILDING BRIDGES: ACCESS TO AMERICA'S HOT NEW MARKET** is a new brochure produced by the National Easter Seal Society and Safeway, Inc. that explains to businesses that making facilities accessible is good business and, "it's the law." The brochure reviews the key terms under ADA. It gives examples of eliminating barriers with a focus on the mobility-impaired. The brochure is funded by the grocery chain and available from the *National Easter Seal Society, 70 E. Lake Street, Chicago, IL 60601*, or call (312) 726-6200.

\*\*\*

**THE DISABILITY RIGHTS EDUCATION AND DEFENSE FUND (DREDF)** in Berkeley, California has been funded by the U.S. Department of Justice to answer questions on the Americans with Disabilities Act (ADA) and public accommodations issues. Call (800) 466-4ADA; Monday-Friday, 9:00 A.M. - 4:30 P.M., Pacific Time.

**NCEHS WISH LIST**

NCEHS has made great strides. However, we still lack many of the tools to perform the important work we do. We need your help!

The Center responded to nearly 6,000 requests for information during the first half of this year. We take dozens of calls and many more letters each day. Our newsletter distribution is in excess of 3,000.

We still have **no computer**. This makes our day-to-day activity painfully laborious for our all-volunteer staff. It limits our contact and connection with you.

NCEHS needs your help! Your support and contributions are essential to make sure we'll be here for you. 100% of your contribution goes toward our work.

In addition to membership and cash contributions, we need and welcome your tax-deductible donation of the following items, as well as any standard business supplies:

- |                   |                    |
|-------------------|--------------------|
| Computer          | Plain Paper Fax    |
| Printer           | Electric Stapler   |
| File Cabinets     | Heavy Duty Stapler |
| Answering Machine | 3-Hole Punch       |
| Touch Tone Phone  | Tape Dispenser     |
| Speaker Phone     |                    |

Thanks for your continued support!

— **Happy Holidays!** —

**The Smell Of Things To Come**

First, it was "No shirt, no shoes, no service." Then it was "No smoking." The latest no-no? Perfume.

"Because many people are hypersensitive to fragrances, or even get sick from them, there's a growing trend among public meeting places and restaurants to ban people from wearing perfumed products," says Mary Lamielle, president of Voorhees, New Jersey-based National Center for Environmental Health Strategies (NCEHS), a non-profit organization formed to educate people about public health issues.

One of the first restaurants to ban perfume and cologne in the United States, says Lamielle, was Jimmy's Place. Owner Jimmy Rohr began prohibiting fragrances in the Chicago restaurant in 1991 due to his severe allergic reaction to ingredients in perfumes. Other businesses and organizations have taken a similar stand. When the New Jersey Environmental Federation in New Brunswick planned its recent annual meeting, for example, the group requested participants be fragrance-free.

Although a growing number of businesses and organizations are banning perfume, no laws have been passed to enforce the ban. The NCEHS, however, along with the Environmental Protection Agency (EPA), is working toward freeing the air of indoor pollutants and irritants—namely, paradichlorobenzene, the pesticide used in mothballs. "Many people don't realize this ingredient is also contained in air and room fresheners, since there's no law requiring a warning label on these products," says Lamielle. Until the EPA makes headway with the warning labels, sensitive business owners may benefit—and save their staff from sneezing—by checking the products they're using to freshen the air.

**New Jersey State Library**

# NATIONAL CENTER FOR ENVIRONMENTAL HEALTH STRATEGIES

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### MATERIALS AVAILABLE FROM NCEHS

NEW  
NEW  
NEW

|  | Qty. | Member  | Non-Mbr. | Total |
|--|------|---------|----------|-------|
| <b>Multiple Chemical Sensitivities</b><br>National Academy Press, 195 pp., Paperback, 1992.<br>Proceedings from NASEPA conference. Includes "Chapter 9" (see below).   | —    | \$25.00 | \$27.00  | —     |
| <b>Chapter 9, "Use of Biologic Markers in Controversial Areas of Environmental Health"</b><br>From <i>Biologic Markers in Immunotoxicology</i> , National Academy Press, 1992.   | —    | \$2.00  | \$2.00   | —     |
| <b>Info Package on Federal and State Housing Policies</b><br>Includes HUD policy statements, PA human relations decision, and media coverage.  | —    | \$5.00  | \$8.00   | —     |
| <b>Chemical Exposures: Low Levels and High Stakes</b><br>Prof. Nicholas Ashford, MIT & Dr. Claudia Miller, Univ. of Texas Health Science Center, Van Nostrand Reinhold, 214 pp., Hardcover, 1990.<br>Expanded version of the NJ Dept. of Health Report that won the World Health Organization Macedo Award | —    | \$16.00 | \$18.00  | —     |
| <b>Pest Control You Can Live With</b><br>Debra Graft, Earth Stewardship Press, 80 pp., Paperback, 1990.  | —    | \$6.00  | \$7.00   | —     |
| <b>Perfume Pollutes</b> (A 1-1/2-inch button; Bulk pricing available)  | —    | \$0.50  | \$1.00   | —     |
| <b>"Patients Held Hostage":</b><br>Info package on the medical controversy over chemical sensitivity   | —    | \$7.00  | \$10.00  | —     |
| <b>Info Package on Disability Issues &amp; Workplace Options</b>   | —    | \$5.00  | \$8.00   | —     |
| <b>No Place to Hide</b> (1/2-hour audio cassette)<br>Documentary from Pacifica Radio on indoor air quality and MCS   | —    | \$11.00 | \$13.00  | —     |
| <b>Chemical Sensitivity:</b><br>A Report to the New Jersey State Department of Health<br>Ashford & Miller, 162 pp., coil-bound, 1989.  | —    | \$16.00 | \$18.00  | —     |
| <b>Chemical Hypersensitivity Syndrome Study</b><br>Bascom, 1989. (The Maryland Study of Chemical Sensitivity)  | —    | \$15.00 | \$17.00  | —     |
| <b>Complete set of reviewers' comments for the Maryland Study</b><br>The critical views of nearly two dozen professionals.   | —    | \$12.00 | \$15.00  | —     |
| <b>The Delicate Balance</b> (Complete set of back issues, Volumes I-IV)  | —    | \$50.00 | \$75.00  | —     |
| <b>NCEHS Testimony on the Indoor Air Quality Act</b> (Complete set)  | —    | \$4.00  | \$6.00   | —     |
| <b>General Info Package:</b><br>Includes current issue of <i>The Delicate Balance</i> and related materials.   | —    | \$6.00  | \$10.00  | —     |

**Make Check or Money Order to NCEHS.**  
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 Voorhees, NJ 08043  
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**Additional Contribution** \_\_\_\_\_  
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MTBE HEALTH RELATED STUDIES

Conducted by Industry and Others  
Chronological Listing

1. Report to Sun Oil Company, Acute Toxicity Studies, on Z-801-23, IBT No. A6807, February 3, 1969.
2. Report to Sun Oil Company, Acute Toxicity Studies on X-801-24, IBT No. A6808, February 2, 1969.
3. Report to Sun Oil Company, Acute Toxicity Studies on X-801-25, IBT No. A6809, February 3, 1969.
4. Report to Sun Oil Company, Acute Toxicity Studies on X-801-22, IBT No. A6806, February 3, 1969.
5. Report to Sun Oil Company, Anesthetic evaluation of Vapors of Motor Fuel Samples in White Mice, IBT No. N8969, October 14, 1970.
6. Report to Sun Oil Company, Five-Day Inhalation Toxicity Study with 7-70A in Rhesus Monkeys, IBT No. N8971, October 16, 1970.
7. Report to Sun Oil Company, Two Week Subacute Vapor Inhalation Toxicity Study with 7-70A in Albino Rhesus Monkeys, IBT No. N8970, December 11, 1970.
8. Report to Sun Oil Company, Two Week Subacute Vapor Inhalation Toxicity Study with 7-70B in Albino Rats, IBT No. N8970, December 11, 1970.
9. Report to Sun Oil Company, Two Week Subacute Vapor Inhalation Toxicity Study with 7-70A in Rhesus Monkeys, IBT No. N8971, December 11, 1970.
10. Addendum Report to Sun Oil Company, Two Week Subacute Vapor Inhalation Toxicity Study with 7-70B in Albino Rats, IBT No. N8970, January 15, 1971.
11. Professor Fischetti, Istitutedi Faracologia della Facolta di Medicina @ Chirogia dell "Universita Cattolizza del Sacro Cuore di Roma (1972). Tolerance to Daily Treatment for 15 Days, in Rats. Report to ANIC S.p.A.
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19. BIO/Dynamics, Inc. A Nine Day Inhalation Toxicity Study of MTBE in the Rat Project No. 80-7452 submitted to API dated June 30, 1981.
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21. Eastman Kodak. "Unpublished toxicity and health hazard summary on MTBE" submitted by R. L. Raleigh, Eastman Kodak Company, on June 4, 1984.
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32. MTBE Repeated Exposure Vapor Inhalation Study in Rats: In-vivo Cytogenetic Evaluation, Bushy Run Research Center, (for MTBE Committee), 1989.
33. MTBE Single Exposure Vapor Inhalation Neurotoxicity Study in Rats, Bushy Run Research Center, (for MTBE Committee), 1989.
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39. Pharmacokinetics of Methyl tert-Butyl Ether (MTBE) and tert-Butyl Alcohol (TBA) in Male and Female Fischer-344 Rats after Single and Repeat Inhalation Nose-Only Exposures to MTBE, BioResearch Laboratories, Inc., (for MTBE Committee), 1990.
40. Disposition of Radioactivity and Metabolism of Methyl tert-Butyl Ether (MTBE) in Male and Female Fischer-344 Rats After Nose-Only Inhalation Exposure to <sup>14</sup>C-MTBE, BioResearch Laboratories, Inc., (for MTBE Committee), 1990.
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42. Two Generation Reproduction Study of Inhaled Methyl Tertiary Butyl Ether in CD<sup>R</sup> (Sprague-Dawley) Rats, Bushy Run Research Center, (for MTBE Committee), 1991.
43. MTBE Vapor Inhalation Oncogenicity Study in Fischer 344 Rats, Bushy Run Research Center, (for MTBE Committee), 1992.
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## MTBE BLENDS HAVE LITTLE EFFECT ON VEHICLE FUEL ECONOMY ( MPG )

| FLEET STUDIES                | YEAR  | NO. OF CARS | % MTBE | % CHANGE<br>IN MPG | CODE |
|------------------------------|-------|-------------|--------|--------------------|------|
| ARCO / NPRA                  | 1979  | 6           | 3      | 3                  | A    |
| ARCO / NPRA                  | 1979  | 13          | 7      | (0.1)              | B    |
| NIPPON / MIYAWAKI            | 1980  | 5           | 7.5    | (0.8)              | C    |
| SUN OIL / REYNOLDS           | 1975  | 11          | 15     | (1.5)              | D    |
| SNAM / GARIBALDA             | 1977  | 2           | 15     | (0.4)              | E    |
| ESSO / CANADA                | 1985  | 5           | 10     | (0.8)              | F    |
| ARCO CHEM (UNPUBLISHED)      | 1986  | 10          | 11     | (2.5)              | G    |
| ARCO CHEM (UNPUBLISHED)      | 1986  | 10          | 16     | (1.3)              | H    |
| COLORADO DEPT. OF HEALTH     | 1986  | 8           | 11     | (2.0)              | I    |
| SUN OIL / 15% MTBE WAIVER    | 1988  | 5           | 15     | 0.3                | J    |
| NESTE / SAE922329 (NO-CAT)   | 1992  | 10          | 11     | (1.3)              | K    |
| NESTE / SAE922329 (CATALYST) | 1992  | 10          | 11     | 0.0                | L    |
|                              |       | -----       | -----  | -----              |      |
|                              | TOTAL | 95          | AVG 11 | (0.8)              |      |

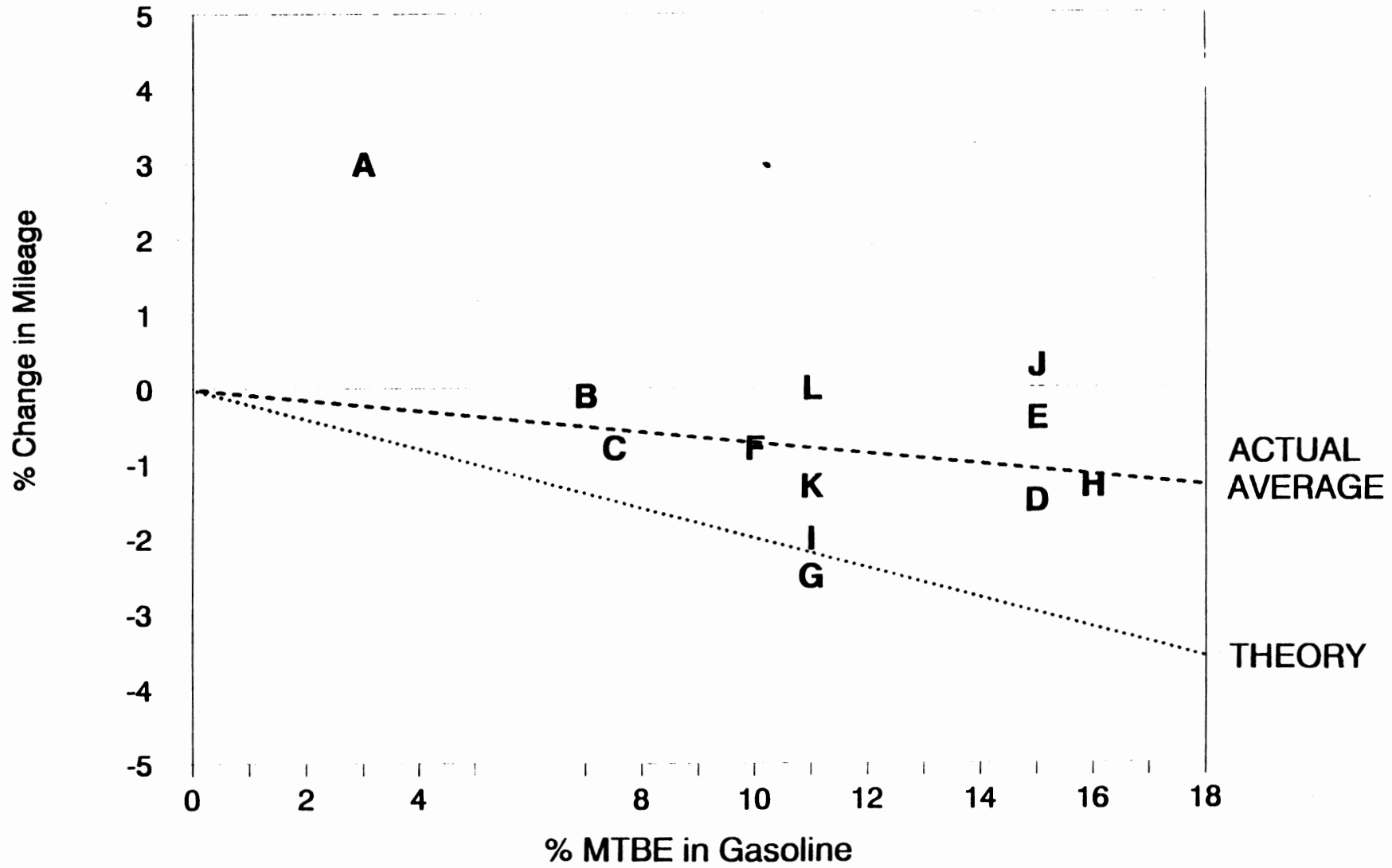
o 15 % MTBE BLEND HAS 3 % LOWER ENERGY DENSITY

o IMPROVED COMBUSTION EFFICIENCY OFFSETS MUCH OF REDUCTION IN ENERGY DENSITY

X4b

# Fuel Economy Vs. % MTBE

Averages From Various Studies

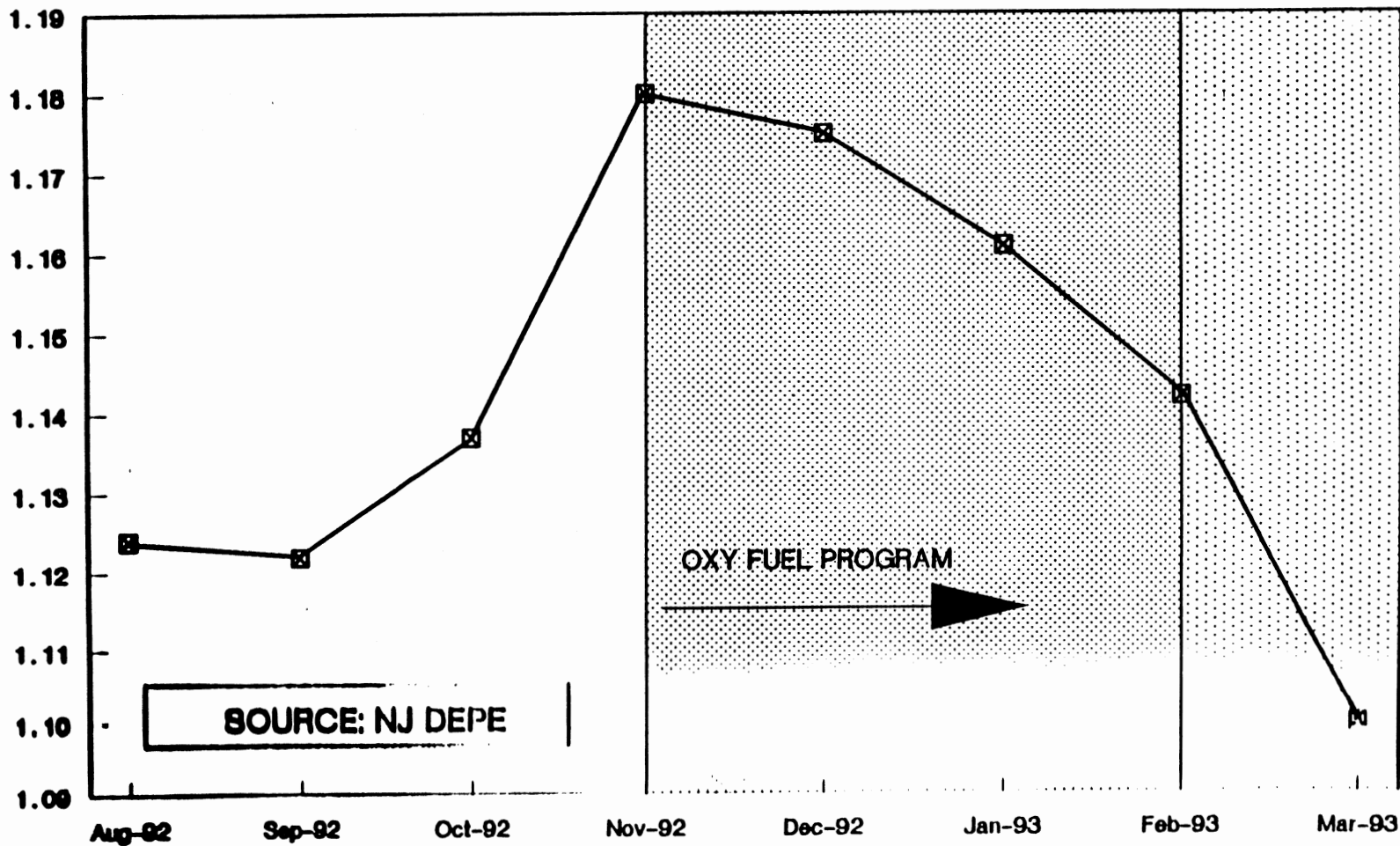


956

# RETAIL GASOLINE PRICE

## REGULAR UNLEADED - NJ STATEWIDE AVERAGE

\$ / GAL



x%

SOURCE: NJ DEPE

**OXYGENATED GASOLINE FUELS**

**APRIL 26, 1993 HEARING**

**State of New Jersey**

**Legislative Committee on the Environment**

***WELSH TECHNOLOGIES***

---

**P.O. Box 4214, River Edge, NJ 07661**

**(201) 489-3465**

**Jonathan W. Welsh, President**

**FAX (201) 489-3110**

Assemblywoman Ogden and the members of the Legislature Environmental Committee I thank you for the opportunity of addressing this committee. As the founder and president of Welsh Technologies, A New Jersey based manufacturer of clean burning alternate fuel systems for existing gasoline and diesel powered vehicles, we have come to know first hand the sacrifices that the people and business of this state have made over the past six months in the hope of helping our contaminated environment.

Under the provisions of the Clean Air Act of 1990, Executive Order, and the endorsement and enforcement of the Department of Environmental Protection and Energy (DEPE) the people and businesses of this state were forced on November 1, 1992 to fuel their previously gasoline powered vehicles with a reformulated oxygenated blend. The attended purpose of this fuel was to reduce the output of carbon monoxide and emission particulates by vehicles. This was to be achieved by the "leaned-out" combustion of the oxygenated fuel in the engine; unfortunately this can only occur on vehicles that do not have functional oxygen sensors and electronic diagnostic equipment, that has been required on automobiles since 1984 by the requirements of the Clean Air Act of 1977. These vehicles already operating on straight gasoline achieve the optimal fuel-to-air ratio. The DEPE at last year's April 9, 1992 Joint Legislative Hearing regarding the adoption of the California Clean Air Standards sited Denver, Colorado's improvement in air quality as proof that there outlined program including the oxygenated fuel mandated use would improve results here in New Jersey. Unfortunately Denver's temporary

improvement in air quality has now been attributable to natural forces and even the use of oxygenated fuels has not been able to stop the return of the "Brown Cloud" to Denver. ( Refer to Wall Street Journal, February 10, 1993 and Investor's Business Daily, November 17, 1992 articles ). The question that the DEPE and EPA must now address is if any measurable improvement to New Jersey air quality has incurred?

The second question that have is directed to the legislature, is the cost and health risks of this oxygenated fuel worth the fuel's questionable results? Are we not trading off the know pollutants of straight gasoline use for the unknown human and environmental contamination of this fuel? Due to the reformulated blend of oxygenated gasoline with 15% Methyl Tertiary Butyl Ether (MTBE) a natural gas derivative or ethanol ( possible toxins ) their consumption in the internal combustion engine produces formaldehyde emissions that are not observable on the state's vehicle emission testing equipment. The possible future health risks to the state's population are unknown. Due to observed levels of MTBE in the blood system of Fairbanks, Alaska residents, Alaska Governor Walter Hickel outlawed the sale of the fuel in that state. ( Refer to Wall Street Journal, March 5, 1993 article ). Can you possible imagine the dangerous levels that we face here in New Jersey? In addition reports of the public becoming "sick" to inhaling the vaporized fumes of this fuel are just beginning to surface. ( Refer to Star Ledger, December 3, 1993 article ).

Unfortunately for the residents of this state the DEPE has failed to perform even the simplest of tests to see if any hazards existed to the people prior to the mandated use of the fuel. The DEPE states that there 4,000 plus organization is not capable of performing vehicle tests. The tests that I suggest, that would have early on shone the reality of oxygenated fuel, smelling the difference in the fuel and performing State of New Jersey licensed emission testing of similar vehicles operating on gasoline and oxygenated gasoline. Estimated costs of testing, excluding salaries, at private inspection stations would have been under a \$ 100.00 and performed in matter of minutes.

In addition to the potential health risks, the economic's of this fuel use has caused the people of this state an economic burden.

1. The cost of the oxygenated additives has increased the purchase price by a minimum of \$ .05 per gallon.
2. Due to the reduced BTU energy content of the oxygenated fuel versus straight gasoline there is a reduction in MPG of the vehicle of 10% to 30%. This results in a higher costs per mile driven and raises question if the emission output of a vehicle is not higher since more gallons of oxygenated fuel is required to be burned to drive the same miles. Please note that EPA and CARB testing procedures do not seeking to evaluate vehicle emissions in this manner.

3. Due to the oxygenated nature of the additives of this fuel, oxygen is absorbed into the fuel, hence the name. But like the experiences of "Gasohol", a 10% oxygenated blend, over a decade ago these oxygenated additives cause corrosion to the vehicle's fuel tank, fuel lines, and exhaust system. A decade ago the corrosive action took about a year or more to turn up before people had to replace these components on their vehicles. The people of this state have will have a economic burden to look forward to, although it may help the state's economy by creating more jobs. As a side note Ethanol and Methanol powered vehicles that use a 85% blend require extensive modification into a "flex-fuel vehicle". The main cost of the conversion is replacing the above mention components with components constructed of non-corrosive materials such as stainless steel.
  
4. Due to the alcohol nature of the oxygenated fuel additives and the consumption inefficiency of the internal combustion engine, vaporized alcohol fumes leave the vehicle as exhaust. I would like to recommended that the state review the possibility of intoxication by driving within this state. This might present a concern for safe vehicle operation.

The question should not be if oxygenated fuel should be mandated for use this coming winter, it should not, but how is the state going to reduce the exhaust emissions of vehicles and comply with the standards of the Clean Air Act of 1990. The DEPE and others will state that this is the federal requirement and we the state has no

chose but to use oxygenated fuel. But nowhere in this nation is the need more pressing than here in New Jersey than to correctly deal with the environment. The costly and misdirected programs of the DEPE will not only increase our environment nightmare but bankrupt us. The enthusiasm to help our environment must be based on practical economical means that encourage and foster the citizens and businesses of this state to embrace them. By giving the people a economic reason to reduce vehicle emissions this state can reduced the problem of its air quality and become a true leader. An example of this foresight is Assemblyman Rick Bagger's proposed legislation to eliminate the state road tax on the alternate fuels of propane and natural gas and offer tax credits to fleets to encourage conversion to clean-burning vehicles. Thru the reduced cost of alternate fuels versus gasoline, the public will switch to the most economical means and vehicle emissions will be reduced. I believe that our state should foster additional economic incentives for the public to embrace and use alternate fuels; to implement emission standards on some of the most polluting vehicles in our state, diesel buses, trucks, and trains; encouragement for existing vehicle maintenance; and the increased use and accessibility of mass transit.

Our future, our virtual existence is at hand we must make the right decisions. The state should foster and encourage the private sector to develop solutions out of our environmental problem. The Welsh Technologies Multi-Fuel System that utilizes a measure amount of alternate fuel, propane, natural gas, or the recently announced use of sewer gas, a stationary source of air pollutants, to increase the

combustion efficiency of the existing use of gasoline or diesel to reduce vehicle emissions to near-zero levels is an example of a New Jersey company that has developed solutions to aid the state. Unfortunately our state, the DEPE, to date has had a closed door attitude and turns its back to economically practical solutions of encouraging and developing programs that would meet the requirements of not only the Clean Air Act but the California standards and instead seeks to mandate solutions that involve major sacrifices of the people and businesses of this state with questionable results.

Jonathan W. Welsh

President

Welsh Technologies, Inc.



## **National Motorists Association**

### **New Jersey State Chapter**

35 Sycamore Ave., Berkeley Heights, NJ 07922 - *Stephen G. Carrellas, State Chapter Coordinator*

National Offices: 6678 Pertzborn Road, Dane, Wisconsin 53529 - *James J. Baxter, President*

**FOR IMMEDIATE RELEASE**

For more information  
contact Steve Carrellas  
(day) 908-949-1980  
(eve) 908-464-7943

**Statement by  
Stephen G. Carrellas, P.E.  
New Jersey Chapter Coordinator  
National Motorists Association  
in Support of  
Repeal of Oxygenated Fuel Program**

The use of oxygenated fuels in New Jersey is a misguided policy that causes more fuel to be used at a greater cost while putting more overall pollutants into the air to deal with two exceedances a year of carbon monoxide. And, people are literally getting sick from it.

The work by the state Legislature to stop this unnecessary federal mandate comes at an opportune time as other states are also questioning the appropriateness of their "clean air" mandates. New Jersey and other states must boldly stand up to regain more flexibility for solving their own unique mix of air quality problems.

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**Sun Company, Inc.**  
Ten Penn. Center  
1801 Market Street  
Philadelphia PA 19103-1699

May 13, 1993

Mr. Jeffrey Climpson  
Committee Aide  
Assembly Environment Committee

Dear Mr. Climpson:

Sun Company, Incorporated (Sun) respectfully requests the attached comments be submitted to the hearing record of the Assembly Environment Committee's hearing on the oxygenated fuels program convened on April 26, 1993. Please contact either the undersigned at 215-977-3175 or Edward Hazzouri at 215-977-3924 with any questions or comments regarding the submission.

Sincerely,

A handwritten signature in cursive script that reads "Anthony Ippolito".

Anthony Ippolito  
Manager, Public Policy

AI/kmm  
Attachments

**Assembly Environment Committee  
Public Hearing on the Oxygenated Fuels Program  
April 26, 1993**

Sun Company, Incorporated (Sun) appreciates the opportunity to submit comments for the record on the issues of concern surfaced as a result of the federally-required oxygenated fuels program. Sun recognizes and applauds the efforts of the Department of Environmental Protection and Energy (DEPE) in effectively working with the regulated community to efficiently implement this program in a relatively narrow time frame. There has not been a regulatory program as complex and as far-reaching as the oxygenated fuels program to model for implementation. It is an example of what can be accomplished when government and industry work cooperatively to achieve common goals.

Sun markets petroleum products through nearly 400 Sunoco service stations in New Jersey, including the service plazas located on the New Jersey Turnpike. The general business philosophy by which Sun has positioned itself is as a manufacturer of quality products and, in particular, of a differentiated high-octane premium gasoline traded as Ultra<sup>SM</sup>.

Ultra<sup>SM</sup> was introduced in 1984 as the highest octane gasoline available from a major brand supplier. To economically achieve the octane level for the anticipated demand of Ultra<sup>SM</sup>, Methyl Tertiary Butyl Ether (MTBE) was assessed to be the most cost-effective high-octane component compared to all other octane components traditionally added to gasoline.

As a prelude to this introduction, Arco, a primary MTBE supplier, and Sun entered into a series of independent testing programs to ascertain the behavior of MTBE in gasoline relative to health risks from exposure to varying concentrations found in different media, i.e., air, soil, water.

Attached for your information is a chronological list of MTBE health related studies conducted by industries and others. You'll notice that the first 12 of 13 studies conducted were either for or by Sun. The number of studies compiled total 44.

Based on the positive results of these studies, Arco successfully sought a waiver from the U.S. Environmental Protection Agency (USEPA) allowing the addition of 2 weight % oxygen (11 volume % oxygen) in gasoline. Subsequently, Sun contracted with ARCO to purchase MTBE as an octane component of Ultra<sup>™</sup> gasoline as noted earlier. During the initial phase of the 1984 rollout period, several employees complained of nausea and headaches. (These employees were exposed to different concentrations over longer periods than would self-serve consumers). These complaints, however, did not persist following modifications to barge loading and sampling procedures. Additional optional safety equipment was also provided.

In 1988, Sun sought its own waiver from EPA to increase the permissible concentration of MTBE in gasoline to 2.7 weight % (15 volume %) which was granted after presenting significant

documentation on the effects of MTBE at this level. In anticipation of this, Sun built an MTBE plant in its Marcus Hook, Pennsylvania refinery to augment Sun's purchased MTBE supply. No complaints were recorded following the start-up of the MTBE processing plant.

Finally in 1990, two complaints were filed by employees after exposure to high levels of neat MTBE (neat concentrations exceed 95% MTBE concentration not found in commercial fuels). All the complaints cited were investigated and, where appropriate, additional exposure monitoring was conducted. The result was that none were classified as reportable under EPA's Toxic Substance Control Act (TSCA).

More recently, the Clean Air Act of 1990 required the addition of oxygenates in gasoline during the carbon monoxide (CO) non-attainment control period, essentially the winter season. Concentrations of either 15 volume % MTBE or 10 volume % ethanol were added to gasoline by choice to meet the CO emissions requirement. Consequently, the introduction of MTBE at these concentrations in all grades of gasoline raised some alleged health effects issues, particularly in the sub-freezing climate of Fairbanks, Alaska. Other non-attainment areas received consumer complaints as well.

In August of 1992, Sun received one customer complaint who, after purchasing Ultra<sup>SM</sup>, experienced symptoms typically associated with hydrocarbon poisoning (nausea, dizziness). However, it should be noted that the complaint was filed before the full implementation of the oxygenated fuels program. This purchase was a self-serve purchase of Ultra<sup>SM</sup> which may contain MTBE concentrations as high as 15 volume %. Sun investigated the complaint with the consumer and concluded there was no causal relationship between Ultra<sup>SM</sup> and the resultant symptoms. Other long-term medical conditions and medication to control these conditions more likely caused the described reaction. (The consumer in question has been a longstanding user of Sunoco gasolines including Ultra<sup>SM</sup>.)

To put this in perspective, that's one consumer complaint in all of the markets in which Sun supplied MTBE blended gasoline. The CO non-attainment area included all of New Jersey and parts of the states of Maryland, New York, Connecticut and Pennsylvania. This complaint, although not emanating from the defined non-attainment area, prompted further surveillance involving the field marketing personnel who were to communicate any complaints received regarding the effects of MTBE gasoline to corporate even if only anecdotal. This effort did not surface any additional subsequent complaints.

To complete the research cycle on the effects of MTBE, Sun has provided a test location for an industry-sponsored evaluation of MTBE in cooperation with USEPA and the Centers for Disease Control (CDC). Sun is also participating with API member companies on exposure assessments at gas pumps and odor assessments conducted under the EPA TSCA requirements.

The current literature provides scientific evidence that MTBE can be safely blended into gasoline at the concentrations permitted by EPA. The new data, when compiled, will be available for public review and technical scrutiny.

Fuel economy effects are extremely difficult to correlate with a component of gasoline or to gasoline composition generally because fuel economy can be impacted by a variety of factors independent of the composition of in-use fuel.

One very significant parameter that can affect individual fuel economy is the maintenance condition of the car. Factors such as the state of tune of the engine, the tire pressure, degree of tire wear, quality and age of the crankcase or engine oil, and condition of the air and fuel filters may impact fuel economy. Other factors which may be less obvious are adjusting tire pressures seasonally to accommodate changes in ambient temperatures and tire-road friction relationships which are not constant year around.

Additionally, there are seasonal effects which probably have not been, but certainly should be accounted for. Gasoline sales volume data suggest more driving occurs during the warmer months. Trips tend to be longer and fuel economy better as compared to fuel economy measured during the winter months when trips may be significantly shorter. The stop and go of the latter is generally less efficient than over-the-road interstate driving.

Vehicles, too, respond to changes in ambient temperatures. In the summertime, the engine warms up quickly to reach optimum operating conditions. In winter, it takes some additional time for the engine, passenger compartment, tires, and fluids to warm up. This leads to lower efficiency.

While there are various "mechanical" and environmental factors that impact fuel economy, there are fuel factors that also affect fuel energy levels. Fuel energy content varies somewhat with grade and season because of the different constituents used when blending regular or premium grades of gasoline for summer or winter time use.

The attached Table 1 contains estimates of the magnitude of the variations in energy content expressed in BTUs per gallon (net heat of combustion). For example, a reduction of about 2% energy content in winter gasoline may occur when compared to gasoline produced for summer use.

The addition of oxygenates, either by choice or mandated, does cause some changes in fuel characteristics when compared to all-hydrocarbon fuels. One example of this change is a reduction of the energy content of the blended fuel because of the lower energy content of the oxygen component. In addition, the blending of the oxygenate raises the octane level of the mixture. Table 2 (attached) illustrates the effects of adding 15 volume % MTBE to each of the four fuels listed in Table 1. Generally, the decrease in energy content (estimated, not measured) is approximately 3 percent.

To offer the consumer a consistent octane level, the refiner must alter the fuel recipe when oxygenates are added. Once again, the result of the recipe alteration is a decrease of energy content ranging from slightly more than 2% to 4% for unleaded regular. Unleaded premium recipe revisions result in a larger effect ranging from 3% to as much as 10%.

There is no standard way to relate these changes in the energy content of the gasoline to changes in the fuel economy the customer might experience. Changes in fuel composition can affect the efficiency of combustion. These combustion efficiency changes can be vastly different from one car model to the next. As an example, an engine that is severely out of tune and running very fuel rich might actually experience an improvement in fuel economy when switched to an oxygenate-containing fuel, because the leaning-out effect will improve overall combustion, as well as reduce emissions.

The explanation for fuel economy reduction, as observed by the driver, is not easily determined as simply correlating the reduction with a fuel component. It is fair to say, however, that the addition of an oxygenate does result in a loss of energy content. The magnitude of fuel economy loss into which that translates, as observed by the driver, cannot be determined with any degree of precision because of the numerous variables that ultimately affect fuel economy.

TABLE 1

COMPARISON OF NET HEATS OF COMBUSTION BY SEASON AND GRADE  
(Btu/gal.)

|                               | <u>Summer</u>     | <u>Winter</u>     | <u>% Reduction<sup>1</sup></u> |
|-------------------------------|-------------------|-------------------|--------------------------------|
| ULR<br>(Gravity) <sup>2</sup> | 117,500<br>(58.0) | 115,400<br>(62.0) | 1.8                            |
| ULP<br>(Gravity) <sup>3</sup> | 119,500<br>(54.0) | 116,900<br>(59.0) | 2.2                            |
| % Reduction <sup>4</sup>      | 1.7               | 1.3               |                                |

- 1 Percent reduction of winter blend compared to summer blend.
- 2 Average API gravity for non-oxygenated ULR in Balt., Phila., and NYC (Jan and July 1992 SWRI Survey).
- 3 Average API gravity for non-oxygenated ULP in Balt., Phila., and NYC (Jan and July 1992 SWRI Survey).
- 4 Percent reduction of ULR compared to ULP.



TABLE 2

COMPARISON OF NET HEATS OF COMBUSTION BY SEASON AND GRADE  
AFTER SPLASH BLENDING 15% MTBE WITH NO OCTANE ADJUSTMENT  
(Btu/gal)

|     | <u>Summer</u> | <u>% Reduction<sup>1</sup></u> | <u>Winter</u> | <u>% Reduction<sup>1</sup></u> |
|-----|---------------|--------------------------------|---------------|--------------------------------|
| ULR | 113,975       | 3.0                            | 112,190       | 2.8                            |
| ULP | 115,675       | 3.2                            | 113,465       | 2.9                            |

<sup>1</sup> Percent reduction compared to all-hydrocarbon blend.

RANGE OF REDUCTIONS IN NET HEAT OF COMBUSTION COMPARED TO  
ALL-HYDROCARBON GASOLINE AFTER ADDITION OF 15% MTBE  
AND OCTANE ADJUSTMENT<sup>1</sup>  
(Btu/gal)

|     | <u>Summer</u> | <u>Winter</u> |
|-----|---------------|---------------|
| ULR | 2.8-4.1       | 2.3-3.6       |
| ULP | 3.1-8.1       | 2.9-10.2      |

<sup>1</sup> Ranges represent two different octane adjustment scenarios for each grade. For ULR, octane was adjusted with raffinate or naphtha. For ULP, octane was adjusted by backing out reformat or alkylate.

