TRANSCRIPTS OF THE
CALIFORNIA ENVIRONMENTAL POLICY COUNCIL
PUBLIC HEARING

MEETING TO CONSIDER STAFF REPORTS ON THE ENVIRONMENTAL FATE AND TRANSPORT AND POTENTIAL HEALTH EFFECTS OF USING ETHANOL IN CALIFORNIA REFORMULATED GASOLINE

HELD AT:

FIRST FLOOR AUDITORIUM CALIFORNIA RESOURCES AGENCY
1416 NINTH STREET
SACRAMENTO, CALIFORNIA
TUESDAY, JANUARY 18, 2000 9:00 A.M.

REPORTED BY: SAHAR DEMOS SHORTHAND REPORTER

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INDEX OF SPEAKERS

Rebecca Barrantes
The Sierra Group

Brenda Marsh-Mitchell
Brotherhood Crusade

Black United Fund, Inc.
Gloria Zurveen

PACE News

Gene Fisher
Watts Learning Center

Bruce Heine
Williams Energy Services Company

Scott Wetch
State Building and Construction Trades of California

Father Richard Estrada
Our Lady of Soledad Church

Jovenes, Inc.

Jane Lowenthal
Lowenthal Group

Joe Diaz
Conservation Corps

Brian Johnson
City of Santa Monica Environmental Programs

Neil Koehler
Parallel Products

Mark Radosevich
Standard Alcohol Company of America

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Paradise Valley Hospital

Dr. Franco Reyna
Multi-Area Health Education Center

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California Environmental Protection Agency

AGENDA

1. Introduction of Councilmembers and opening comments (Secretary Hickox)

2. Presentation of summary and findings of the report of the Air Resources Board followed by questions from the Council

3. Presentation of summary and findings of the report of the State Water Resources Control Board followed by questions from the Council

4. Presentation of summary and findings of the report of the Office of Environmental Health Hazard Assessment followed by questions from the Council

5. Public Comments

6. Overview of changes in motor vehicle fuel resulting from the proposed California Reformulated Gasoline Phase 3 (CaRFG3) Regulations followed by questions from the Council

7. Public Comments None

8. Council Deliberations, Recommendations, Determinations

9. Adjourn

SACRAMENTO, CALIFORNIA
TUESDAY, JANUARY 18, 2000

CHAIRMAN HICKOX: Good morning, everyone. I am Winston Hickox, the Secretary of the California Environmental Protection Agency. And I am designated as the Chairman for the Environmental Policy Council. Welcome to this meeting regarding California's Reformulated Gasoline Program. While I, of course, work on a regular basis with my colleagues at this table, the Environmental Policy Council, as a distinct body, has only two very limited statutory and administrative functions. First, the Council was established by the Environmental Protection Permit Reform Act of 1993 to designate a consolidated permit agency for applicants for environmental permits from multiple environmental agencies. Second, last year's Senate Bill 529, authored by Senator Bowen, set up a mechanism under which the Council is to review multimedia environmental evaluations of new motor vehicle fuels, specifications being considered by the Air Resources Board. And as I will discuss further, Governor Davis has asked the Council to consider the potential environmental impacts of ethanol in the State's gasoline supply. As defined in Section 71017(B) of the Public Resources Code, the Council consists of the following additional members -- and I'm not going to introduce them in the order in which they're seated, but as I mention your name, would you mind identifying yourself? First, The Director of the Department of Pesticide Regulations, Mr. Paul Hellicker; the Director of Toxic Substances Control Department, Mr. Ed Lowry; the Chairperson of the State Air Resources Board, Dr. Alan Lloyd.

DR. LLOYD: Good morning.

CHAIRMAN HICKOX: The Chairperson of the State Water Resources Control Board, Mr. Jim Stubchaer.

MR. STUBCHAER: Good morning.

CHAIRMAN HICKOX: The Director of the Office of Environmental Health Hazard Assessment, or otherwise known as (OEHHA), Dr. Joan Denton; and the Chairman of the California Integrated Waste Management Board, Mr. Dan Eaton.

MR. EATON: Good morning.

CHAIRMAN HICKOX: In addition, since this action directly affects at least two other State agencies, I have invited Mr. Bill Keese, the Chairman of the California Energy Commission. Bill? (Nodding toward Mr. Keese.)

CHAIRMAN HICKOX: And Dr. David Spath, Chief of the Division of Drinking Water & Environmental Management of the Department of Health Services, to participate as ex-officio members of the Council during the course of the meeting. As I'm sure everyone knows, on March 25th of 1999, Governor Davis issued an Executive Order calling for the removal of methyl tertiary-butyl ether (MTBE) from gasoline no later than December 31st, 2002. In the Executive Order, the Governor determined that, on balance, there is a

significant risk to California's environment associated with the continued use of MTBE in gasoline. This finding was made in accordance with the 1997's SB 521. It was based on the University of California's study on the "Health and Environmental Assessment of MTBE" and peer review comments -- with peer review comments of that study by the U.S. Geological Survey and the Agency for Toxic Substances and Disease Registry, and the testimony heard at three days of public hearings that I chaired. The primary concern was the threat of MTBE contamination of groundwater and drinking water supplies resulting from leaking underground storage tanks. MTBE is highly soluble in water and will transfer to groundwater faster and move further and more easily than other gasoline constituents, including benzene. MTBE and ethanol are the two oxygenate compounds most commonly used to add oxygen to gasoline. It is possible that there will be a continuing federal requirement for oxygenated gasoline in ozone nonattainment areas after 2002, and oxygenated gasoline will continue to be required in the wintertime in greater Los Angeles. With the phase-out of MTBE, ethanol is the likely substitute oxygenate that refiners will choose to meet this requirement. The Governor's Executive Order directed the ARB and the State Water Resources Control Board to construct an Environmental Fate and Transport Analysis of ethanol in air, surface water, and groundwater. OEHHA was directed to conduct a health risk analysis of ethanol in gasoline. The Air Resources Board and State Water Resources Control Board staff have worked closely with OEHHA throughout the process and has provided the results of their air quality analysis to support OEHHA's Health Risk Assessment. In addition to the Governor's Executive Order, the Air Resources Board is directed by last year's SB 989, authored by Senator Sher, to adopt California Phase 3 Reformulated Gasoline egulations that "maintain or improve upon emissions and air quality benefits achieved by California Phase 2 reformulated gasoline in California". At a December 9th, 1999 hearing, the Air Resources Board approved amendments to the California RFG regulations. The amendments include the establishment of Phase 3 RFG standards, a prohibition of the use of MTBE in gasoline starting December 31, 2002, and a Phase 3 predictive model. Senator Bowen's bill, 529, establishes a streamlined mechanism for multimedia environmental assessments of amendments to ARB's Motor Vehicle Fuels Specifications that are proposed prior to January 1, 2000 and adopted prior to July 1, 2000. The streamlined requirements are satisfied if the Council reviews the environmental assessment and makes a determination specified in the Bill "that there will be no significant adverse impact -- effect on public health and the environment, including any impact on the air, water, or soil that is likely to result from the change in motor vehicle fuel that is expected to be implemented to meet the ARB's amendments".

This morning, the Council will hear presentations by the ARB, the State Water Board, and OEHHA on the reports prepared in response to the Governor's Executive Order. Each of the presentations will be followed by questions from the Council. Following these presentations, we will hear any public comments on these items. The Council will then decide whether or not to approve these reports. Scheduled for this afternoon, the Council will hear testimony on the expected changes to motor vehicle gasoline resulting from the proposed Phase 3 Gasoline Regulations. The ARB staff will present an overview of the recently approved Phase 3 Reformulated Gasoline Regulations followed by questions from the Council and a public comment period. Based on all of the reports presented, any

other environmental assessments prepared in connection with the ARB's rulemaking, and public Council -- and public comments -- excuse me -- the Council will decide whether to make the determination specified in SB 529. I'd like to move ahead to the first item, which deals with the Fate and Transport of ethanol and its combustion byproducts in air. I think we will look at the ARB staff -- look to the ARB staff to commence that presentation. Bart, are you ready to begin?

MR. CROES: Yes.

CHAIRMAN HICKOX: Any other opening comments or thoughts by any of the members of the Council? Not seeing any, let's proceed.

MR. CROES: Thank you, Secretary Hickox. Good morning. I've divided my presentation into the parts shown here. (Referring to slide presentation.) First, I'll introduce the general approach and scope of our analysis. Then I'll describe our findings from a review of prior studies, followed by our own predictions of emissions in air quality. Next, I'll discuss the uncertainties in our analysis and how they have been resolved. I'll end my presentation with our main conclusions.

We conducted four analyses. First, we reviewed several recent, comprehensive assessments of the impact of oxygenated gasoline on the environment. Second, was a literature review of studies that measured the direct impact of the use of ethanol in gasoline. The third component was to predict emission and air quality impacts from MTBE-free fuels in comparison to MTBE containing fuel. Our last component is to close data gaps as part of this study and ongoing efforts. Based on our understanding of atmospheric chemistry, the main concern is the reaction of ethanol to form acetaldehyde and peroxyacetalnitrate, or PAN, as it is commonly called. Acetaldehyde is an air toxic that is both directly emitted and formed in atmospheric reactions. PAN is an eye irritant and causes plant damage. We compared these impacts to the reaction of MTBE to form formaldehyde, another toxic gas. The Energy Commission determined that alkylates will be used in nonoxygenated gasoline and some ethanol-containing fuels in California to replace the volume in octane normally provided by MTBE. So, we also investigated these compounds. Alkylates form aldehydes in PAN. The atmospheric reactions for MTBE, ethanol, and alkylates are relatively slow, so they will not necessarily lead to substantially more toxics and PAN. The Office of Environmental Health Hazard Assessment also requested information on a number of proven and suspected air toxics in all criteria air pollutants. Our public review process included individual stakeholder meetings and three public workshops. Our Board approved the report at a hearing last month. We posted intermediate reports on our web page at least a week before each event. The report before you lists and responds to all the written comments we received. We hired experts in two critical areas: Professor Robert Harley, of the University of California at Berkeley, performed some emission calculations and reviewed our overall approach. Dr. Daniel Verjone is a recognized role authority on PAN, and assessed all observations in California of this difficult to measure compound. We also had the report undergo a scientific peer review by the University of California. The UC Office of the President approved four peer reviewers with complementary areas of expertise. These individuals

are eminently qualified and at the top of their respective fields. Professors Atkinson and Finlayson-Pitts have published extensively on atmospheric chemistry, and are Fellows in the American Association for the Advancement of Science. Dr. Lucas is a co-author of the Emissions section of the UC MTBE report that formed the basis for the Governor's Executive Order. And Professor Seinfeld is a member of the National Academy of Engineering, and the leading authority on air quality modeling. These reviewers agreed with our basic findings on ethanol and alkylates, but they noted the need for a number of corrections, clarifications, and caveats that have been incorporated into the report before you today. We conducted an extensive review of prior studies. We reviewed eight major assessments of the impact of oxygenated gasoline on the environment. The studies identified several issues of concern that we addressed in our analysis. However, they lacked a comprehensive review of air quality studies in areas that have already introduced ethanol into their fuel supply. And they identified a need for a modeling analysis of ethanol and other MTBE alternatives. We addressed these two gaps in our study. A number of issues related to emissions from vehicles operated on MTBE-free gasolines emerged from our review of prior assessments and comments from the public. Commingling the methanol-blended and nonethanol fuels in gas tanks increases evaporative emissions, as even small amounts of ethanol cause a revapor pressure increase of about one pound per square inch when it is added to an ethanol-free-based gasoline. Current estimates of the overall effect of commingling range from less than .1 to as much as .4 pounds per square inch, depending on assumptions with the marketshare of ethanol containing gasolines, consumers' brand and grade loyalty, and fuel tank levels before refueling. ARB staff believes that the impact is most likely to be on the lower side of this range. The California Phase 3 Reformulated Gasoline Regulations require a .1 pound per square inch decrease in RVP to help mitigate the effect of commingling. And the Air Resources Board has directed Staff to perform additional research to further quantify commingling impacts. The Board has made the commitment to further mitigate commingling if this research shows that it is not adequately addressed in the Phase 3 Regulations. Additional evaporative emissions may also result from both increased permeation of ethanol through rubber and plastic hoses and reduced working capacity of the charcoal canisters used to control evaporative emissions on board motor vehicles. This issue has been addressed in the U.S. EPA's recently adopted Tier 2 Emissions Standards, but further research is needed to compare the effects of ethanol, MTBE, which also reduces the working capacity of charcoal canisters, and alkylates on evaporative emissions from the existing tanker fleet. The bulk of the ethanol used in California will likely be transported by rail from the Midwest to two central distribution locations, trucked to 64 fuel storage terminals, and then splash-blended with gasoline. The increase in heavy duty truck emissions will be about .06 percent of the statewide total, using estimates of truck traffic provided by the Energy Commission. Increased truck traffic will be addressed locally in the context of permits to operate specific facilities under the California Environmental Quality Act. We reviewed 16 journal articles and reports that describe measurements of the air quality impacts of ethanol. The most comprehensive studies were in Denver, Albuquerque, and Brazil. Denver has used ethanol since 1988 and Albuquerque since 1994 to control their wintertime carbon monoxide program. Brazil is the only country in the world where a national large-scale ethanol fuel program has been implemented. Ethanol was first introduced in 1979. And by 1997,

approximately 9 million cars ran on gasoline blended with 22 percent ethanol by volume, more than twice the maximum content proposed for California. And another 4 million cars use pure ethanol. The impact on acetaldehyde levels is substantial only in Brazil, which lacks the RVP limits that will constrain evaporative emissions in California. Even in Brazil, the observed PAN levels are a factor of ten below historical levels in Southern California, although the Brazilian measurements are not in the area likely to have the highest PAN levels. The main component of our analysis was the prediction of emissions in air quality in 2003 in order to compare MTBE-free fuels to MTBE-based gasoline. Our focus was on the South Coast Air Basin, because it has the most air quality observations necessary for our analysis, but also because it has the worst -- it is a worst-case situation for California. The South Coast Air Basin has the highest air quality levels, the most gasoline-related emission sources, and the conditions most conducive to acetaldehyde and an ozone formation. We used the best available information on the emission characteristics of fuels that will be available in 2003, and applied an airshed model with state-of-the science chemistry to a three-day ozone and PAN-forming episode for both 1997 and 2003. We used the modeling results to scale measured air quality in the 1997 timeframe to the entire 2003 calendar year. Our report presents a range of air quality predictions that reflect different scaling assumptions. I'll describe our treatment of emission and modeling uncertainties later in the presentation. We analyzed four fuels that were assumed to fully comply with the Phase 2 Reformulated Gasoline Regulations. The current MTBE base fuel allows us a scale between 1997 and 2003. And we analyzed two ethanol blends and an oxygen-free gasoline for comparison to MTBE. In the next three slides, the air quality predictions for various plumes are displayed relative to 1997 levels. The 1997 MTBE case, shown as the blue bar at the left of each series (referring to slide presentation) is defined as 100 percent. The next four bars in each series are the predictions of air quality in 2003 from MTBE, the orange bar; ethanol-blended fuel at 2 percent oxygen by weight, the yellow bar; ethanol at 3 and one-half percent oxygen, the pale green bar; and nonoxygenated gasoline, the purple bar. What you will see in the three slides is that all pollutants decrease from the 1997 MTBE baseline to the 2003 MTBE new case due to reductions and overall emissions in the South Coast Air Basin. The predicted decreases are especially pronounced for the toxic air contaminants, ranging from 44 percent for 1,3 butadiene, 33 percent for benzene, to 11 percent for formaldehyde and acetaldehyde. These toxics are listed in decreasing order of their cancer potency. For all but acetaldehyde, the last series of bars, there is very little variation among the 2003 fuels for individual toxics. Acetaldehyde is predicted to increase to 1997 levels with the ethanol-blended gasoline, at 3 and a half percent oxygen content. OEHHA determined that this is an insignificant increase because of small reductions in other more potent toxics. Since fuel-related activities are the only inventoried source of MTBE, air quality levels decrease to zero, as shown in the first series of bars. In the next series, ethanol levels are predicted to increase by only 40 percent and 63 percent for the two ethanol-blended fuels, as there are many pre-existing sources of ethanol, primarily consumer products. OEHHA's assessment identified no health concerns for ethanol at these levels. Despite the acetaldehyde increase we saw earlier for the high ethanol content fuel, levels of PAN and its cousin, PPN, are not predicted to vary among the four fuels in 2003. Due to the constraints of the predictive model for Phase 2 Reformulated Gasoline, we did not predict any variation among the

four 2003 fuels for chemical formation of ozone, nitrogen dioxide, and particulate matter. For carbon monoxide, the second series of bars, a high ethanol content fuel results in lower predictive values, and the nonoxygenated gasoline results in higher predictions. However, this apparent increase for nonoxygenated gasoline is a function of the emission assumptions. Due to the wintertime oxygenate requirement for the South Coast Air Basin, nonoxygenated gasoline cannot be sold during the time of carbon monoxide air quality standard violations. All these results were provided to OEHHA to determine health risks. OEHHA determined that there is no indication of a toxicological problem with any of the alkylates, primarily due to lack of data. The maximum values we estimated for n-heptane, n-hexane, isobutene, toluene, and xylenes are a factor of ten or more below any level of concern. We were initially surprised by the lack of sensitivity of PAN formations, both the ethanol content of the gasoline, and acetaldehyde levels. To understand the causes of this finding, we investigated ten historical episodes of high PAN levels spanning the past three decades in Southern California and two cases in Brazil with widespread use of ethanol. Because of the lack of detailed measurements of winds and other variables, we used a model with simple physics, but the same, state-of-the-science chemistry as the airshed models. We found that other components of gasoline and other emission sources are primarily responsible for PAN. Even in Brazil, where ethanol and acetaldehyde levels are very high, these compounds are not the major contributors to PAN formation. The long-term trend in PAN levels in the South Coast Air Basin also supports this finding. PAN has dropped by a factor of ten over the past three decades, apparently due to reductions of all hydrocarbons under California's Ozone Control Program. We investigated but weren't able to resolve uncertainties in the emissions and air quality predictions. A new motor vehicle emission model under development called EMFAC2000 has much higher emissions of hydrocarbons and carbon monoxide, pollutants that can speed up the formation of acetaldehyde and PAN from ethanol. We were able to bracket the effect of EMFAC2000 in our analysis. Airshed modeling still has significant uncertainties, and there are many ongoing efforts to improve model inputs and the models themselves. However, the atmospheric chemistry of ethanol, MTBE, and alkylates appear to be well known. And we were able to include chlorine chemistry for ethanol emitted in coastal environments, as suggested by one of the peer reviewers. The use of the airshed model in a relative sense should bypass the effects of other uncertainties. In response to peer review comments, we redid our entire analysis with upper-bound assumptions to bracket the effect of EMFAC2000 and chlorine chemistry. At the same time, we made several minor corrections to other model inputs, as suggested by the peer reviewers. Results are displayed here for key pollutants. (Referring to slide presentation.) While there are large increases in absolute levels of these pollutants for all fuels relative to the MTBE-based fuel, we predict only slight increases in acetaldehyde and PAN for the high-ethanol-content fuel. These impacts represent an upper limit, because our increase in hydrocarbons is larger than that expected from EMFAC2000 when it becomes final, and the ozone episode model here is an extreme event. We are confident in our conclusion that there are no significant air quality concerns with ethanol and alkylates that are not being addressed as part of the Phase 3 Regulations. But we plan to revisit this analysis if important new information emerges in the future. Our analysis of air quality impacts should be confirmed with field measurements that take place before and after the phase out of MTBE. These types of studies were successfully conducted in

California during the implementation of Phase 2 Reformulated Gasoline in 1996. California's existing ambient air quality network should be sufficient for all the criteria pollutants, toxic air contaminants, MTBE and alkylates. However, ethanol and PAN are not part of any routine air monitoring program. Last November, we began a PAN-monitoring program at two sites in the South Coast Air Basin and hope to expand to the Central Valley this year. We will investigate the possibility of adding ethanol measurements to our program in the future. Our two main conclusions are the following: So long as the Phase 3 Regulations address the potential for ethanol to increase evaporative emissions and to cause more rail and truck traffic, the substitution of ethanol and alkylates for MTBE in California's fuel supply will not have any significant air quality impacts. This finding is supported by model calculations in the South Coast Air Basin using state-of-the-science tools, an analysis of the impact of uncertainties, air quality measurements in areas that have already introduced ethanol into their fuel supply, and an independent scientific peer review by the University of California. The results of our study do not necessarily extend to other states. California does not have an RVP exemption for ethanol-containing gasolines. In the California Phase 3 predictive model constraints, emissions of cancer potency weighted toxic air contaminants, (inaudible), and hydrocarbons. States without these safeguards may have significant air quality impacts for replacement of MTBE with ethanol or aromatic compounds. A previous analysis presented to our Board in December 1998 showed a significant detriment to emissions in air quality from a high RVP ethanol/gasoline blend in comparison to a fully compliant gasoline. Thank you for your attention. I'll be glad to answer any questions.

CHAIRMAN HICKOX: All right. Thank you. At this time, I would like to invite the Councilmembers to ask any questions.

MR. HELLICKER: I don't have a microphone here close by, so maybe you can hear me. The four different alternative fuels that you're looking at, if it's -- if the end result of our request for a waiver from oxygenated fuel requirements is approved by EPA, which of these fuels do you expect would likely be used in California?

MR. CROES: In our analysis, it really doesn't matter which fuel will be most likely used. By looking at all three fuels and assuming that the fuel supply is completely turned over to that fuel, we're able to bracket the range of conditions. Maybe Dean Simeroth can speak to what he suspects is a likely scenario.

MR. HELLICKER: Well, the reason that I'm asking is, if you do identify some potential additional impacts associated with the transport of ethanol, if the least costly alternative is to produce the fuel with alkylates, and if those alkylates can be produced here in California and transported via pipeline, then that potential impact would be reduced, even eliminated.

MR. SIMEROTH: If it was -- my name is Dean Simeroth. I'm with the Air Resources Board. If it was only that simple. We would probably end up putting in some of the alkylates -- we would need to have -- if we want totally nonoxygenated gasoline. Our best guess is, if we do not get a waiver from the Federal Oxygen Requirement, most of the

gasoline in this state will have to have ethanol, upwards of 80 percent. If we do get a waiver, we will still use substantial amounts of ethanol in gasoline. Then it comes down to a decision by the individual oil companies. And there's also a mandate for oxygen in gasoline in the wintertime in the South Coast Air Basin and Imperial County for the four winter months where there's still carbon monoxide exceedences of the ambient air quality standard for carbon monoxide. So it looks like there's going to be a fair amount of ethanol used, regardless of what happens. But there are still some unknowns because of the Federal Waiver Requirement.

CHAIRMAN HICKOX: Any other questions? Joan? I think it's probably --

DR. DENTON: Dean or Bart, I was curious about the alkylates. As I understand it, alkylates would be used, some proportion of alkylates would be used. And my question is, how much -- I guess, how much alkylates would be used? Are we talking about percentages of gasoline being alkylates or tenths of percentages? Just the relative volume.

MR. CROES: Well, let me start, and Dean will finish up. Alkylates are pre-existing components of gasoline in fairly high percentages, 60 percent or more -- or, 16 percent or more. And I think we're talking about increases on the order for the ethanol -- the lower ethanol-content fuel, maybe 50 percent increase or less. For the higher ethanol-content fuel, I don't think we'd see any increase in alkylates.

CHAIRMAN HICKOX: All right. Any other questions? Seeing none, the next item on the agenda is the Environmental Fate and Transport Analysis of ethanol in groundwater and surface water. David?

MR. RICE: Thank you, Secretary Hickox. I'm David Rice, with the Lawrence Livermore National Laboratory. And I'm under contract with the State Water Resources Control Board to coordinate the evaluation of potential ground and surface water impacts associated with the use of ethanol as a fuel oxygenate. Our report to the Environmental Policy Council comprised basically ten chapters. And I'm not going to go over all ten chapters today. What I'd like to do in the time that I have today is focus on some of the key issues associated with potential impacts to ground and surface water. These are the summaries of the activities that this team of scientists engaged in (referring to slide presentation). We initiated the development of a comprehensive lifecycle model. We performed literature reviews of the fate and transport of ethanol and benzene in the presence of ethanol. We used a series of screening models to evaluate ground and surface water impacts. We evaluated the chemical analysis techniques that are used to measure ethanol in the environment, and we examined the environmental properties of alkylates. And finally, we submitted our findings to peer review. Before I get too much further into this talk, I'd like to call attention to the people who participated in the development of this study. There were a number of institutions involved and the researchers associated with the institutions, including the University of California, Davis; the University of Iowa, where there's been a lot of use of ethanol, a lot of studies been performed, particularly on the biodegradation of ethanol and BTEX or gasoline components, particularly BTEX compounds in the presence of ethanol. We engaged the help from Clarkson University;

Dr. Susan Powers, who is an expert on the fate and transport of gasoline components in the presence of ethanol. And then we drew upon the skills from a number of scientists at Lawrence Livermore National Laboratory on a variety of disciplines. And I was the overall project director for this effort. We submitted our findings to three peer reviewers who are associated with the California University system. Patricia Holden, from the Bren School of Environmental Science and Management, has a strong expertise in microbial processes in the subsurface. Michael Stenstrom has a good background in civil engineering, particularly in regards to environmental processes and modeling. Same with Dr. Michael Hoffman, from the California Institute of Technology. Now, the peer reviewers really had no substantive comments on our methodologies. Their comments primarily were focused on clarifying communication of our reports. And we addressed a majority of these comments in the time that we had. As I mentioned earlier, we had started a lifecycle analysis approach. And as part of this lifecycle analysis, we developed several release scenarios. We tried to examine all the release scenarios that may be associated with the use of ethanol. Now, in the time allowed, we didn't have a chance to examine every one of these release scenarios, but we did take a look at the ones that looked like they would be most likely to have impact. And these were the leaky underground fuel tank releases and releases from a rail tanker car to a river. Now, since initially a lot of the ethanol that may by used in California will be imported into California by rail from the Midwest, the railcar scenario was one that we wanted to examine. We know that leaky underground fuel tank releases will continue into the future. There has been an effort to upgrade the tanks, and that will certainly reduce the impacts, but it will not eliminate them entirely. One of the issues early in our evaluation that came to light was the possibility that since ethanol dissolves very easily into water -- it loves water, it wants to get into water -- it's possible that you could have high concentrations of ethanol in the groundwater that might be in contact with BTEX solutions, BTEX compounds. And the ethanol would promote the dissolution of BTEX compounds into groundwater. And that was one of the reasons we engaged Dr. Susan Powers, from Clarkson University. And one of the thrusts of our modeling was to examine that possibility in detail. And we refer to that as the co-solubility effect. The results of that modeling was that the co-solubility effect is going to be very negligible for gasolines that have approximately 10 percent ethanol by volume. If there's going to be any co-solubility effect, it will probably be within no more than a centimeter below the free product source area. So that's going to be almost impossible to observe. The other thing that we discovered or was brought to light regarding the ethanol transport and fate was that ethanol is one of the most biodegradable substances in nature. The microbes love it. And it will degrade very rapidly in soils and water. The degradation half-life in groundwater ranges between one and seven days, depending on what the microbes are using as a nutrient. In order for the microbes to degrade ethanol, they need several things: They need water, they need the substrate, the food, ethanol, and they need some nutrients, which could be oxygen or nitrate or sulfate. And if those things are missing, then they are not going to be degrading the ethanol or degrading BTEX compounds, for that matter. The degradation half-life in surface waters is about 3 and a half hours after about a 10-hour lag time. This preferential degradation of ethanol in groundwater may result in some longer benzene plumes. And I wanted to go into that in a little more detail, because this is one of the key issues associated with the potential impact that ethanol may

have to gasoline components. So another of our thrusts in our modeling, screening modeling effort, was to evaluate how long may the benzene plumes increase if ethanol were to be used. Now, we performed our screening analysis at the same time there were a number of industry stakeholders who were also performing their screening analysis. Interestingly enough, the three independent modeling assessments indicated that the average benzene plumes may increase possibly between 24 and 30 percent in the presence of ethanol. This is an amazing agreement through three separate modeling approaches. One possible explanation for that is underlying these models are two very important simplifying and conservative assumptions, which I'd like to go over with you in a little more detail so you understand what's going on. Benzene -- one assumption is that benzene is not degraded in the zone where ethanol is being rapidly biodegraded. In other words, right below -- I'll go show you a diagram in a moment. The other simplifying assumption is that the biodegradation rate for benzene is uniform over the length of the benzene plume. And I'll go into that in a little more detail as well. It's important to note that these assumptions are not representative of what is actually occurring. The benzene plume lengths may be shorter than what is estimated by these screening models. To explain these assumptions, let me go over a conceptual model of, a very simple model of a plume. We have a leaky underground fuel tank, which leaks some gasoline with ethanol and has formed a pool of free product on the surface of the groundwater. Now, it's assumed that the ethanol is then dissolved into the groundwater along with some BTEX components. And then as the groundwater flows, then these materials are carried down gradient. Now I'd like to take a -- show you a cross section right through this plume on the next slide. Now, if you look at the constant change in concentration over distance where ethanol is absent, it takes a profile something like this (referring to slide), where the concentrations near the source area -- say the source area is right in this area -- the concentrations decline in a logarithmic fashion so that there's some low concentrations out near the tail of the plume. Now, in the case where you have ethanol present, the microbes will assume to digest the ethanol preferentially. In other words, they're going to go for the ethanol first and not begin digesting the BTEX components. So that's the first conservative assumption, that there's no BTEX degradation going on in this zone where the ethanol is being degraded. And that causes the plume to be shifted downward some distance. The other conservative assumption is that there is a single degradation rate over the length of this plume, and that this degradation rate in fact may be lower, because as the microbes degraded the ethanol, they've depleted the nutrients in the groundwater that they need to degrade the benzene. So that the degradation rate may be slower over the length of this plume. And again, you get a longer plume. So those are the two conservative assumptions that yield estimates of longer plume lengths. The -- if there is in fact degradation going on of BTEX within this zone where ethanol is being digested, and if there are, in fact, higher degradation rates in the tails of the plume, then that's going to result in shorter plume lengths overall, compared to our screening model. We tried to evaluate what the possible impacts of these longer plume lengths may be. We took it as a given that these modeling assumptions were representative as an upper-bound conservative assumption. To make this evaluation, we prepared a baseline set of plumes for benzene where ethanol was absent. And we used that as a basis for comparing the impacts of MTBE plumes as well as benzene plumes in the presence of ethanol. So we went through a series of steps as we performed this

evaluation. This baseline population of benzene-only plumes that we modeled was compared to a population of 500 historical case plumes, where we actually had the benzene plume lengths. So we had some way of seeing whether the model was somewhat representative. And it looked like it compared very well. We then used that model to forecast benzene-only plume lengths over a 100-year period. And as we did that, we took 5-year time intervals, which gave us about 21 different time intervals. And we did 4,000 simulations of each of those 21 time intervals. That formed the baseline population for which we then compared some information about the relative location of public drinking water wells and all active leaking underground fuel tanks in California. We know where all the drinking water well locations are. And we have, in our database, the locations of all the leaking and underground fuel tanks that are currently active. For every LUFT site in California, the distance between every known drinking water well within 30,000 feet of the LUFT site was calculated. In other words, we measured the distance. Now, this was done irregardless of the groundwater flow velocity or particular hydrogeologic setting. This is a very conservative assumption. It was as though we took each LUFT site and drew a circle around it and evaluated the drinking water wells that may be impacted at each of those 5-year time intervals out for a hundred years. Now, based on our baseline benzene model plume lengths, the probability of a benzene plume reaching a drinking water well for each of these LUFT sites was then calculated. We went back and repeated these two steps for MTBE plumes and benzene plumes in the presence of ethanol and prepared a series of relative curves. Now, let me explain these curves to you. Here (referring to slide) we have time out -- I didn't show on this full graph the full hundred years, because the curves are flattening out. And this is the relative change in probability. Let's look at our baseline case. You see that for benzene only -- this is our base case -- that the impacts rise to about a point somewhere around 10 years, and then the impacts decline. This is a very simple model, remember. The assumptions are that the releases occur at a certain time, and then there's no further releases. And we just follow that release over the hundred-year period. So we can't apply this to any real-world situation. The idea is that you are comparing benzene alone to benzene with ethanol to MTBE, just so we can have some relative feel of comparison and impacts. This curve (referring to slide) follows the impact for benzene in the presence of ethanol. And then this curve follows the impact of MTBE. And what we see is that about -- say we go out about 10 years -- that the difference between the baseline for benzene with ethanol is about 20 percent increase in impact. But thereafter, it declines. And it declines because of the biodegradability of benzene components as well as ethanol. On the other hand, you'll see that the impacts at about 10 years down the road for MTBE is about 40 percent over the baseline. And those impacts increase out with time. And again, the primary driver for that is the nonbiodegradability of MTBE. We also looked at potential -- excuse me. I wanted to also point out that to put this result in perspective, what is the current measured benzene impact rates to all public drinking water sources? And right now, the average annual impact measured over the last 15 years since about 1984 is that about -- the average annual detection of benzene in public drinking water sources, which includes LUFTS -- this is all sources including LUFTS, so this again is a conservative number -- is about .0 -- try again -- .35 percent, and for MTBE, it's about 1.17 percent. I also want to make sure that everybody understands that this comparative analysis is not intended to be predictive in any regard. It's a screening analysis to allow us to compare benzene, to

benzene with ethanol or with MTBE. And it should not be used to say, "Okay. Down the road, in ten years, we expect this many public drinking water well impacts". That is absolutely how this model should not be used. Okay. We also looked at surface water impacts. It's important to point out that the lost mechanisms of MTBE and ethanol from surface waters is different. Ethanol is removed through biodegradation, primarily. It's a very, very biodegradable substance, while MTBE is removed through volatization of the water surface. So MTBE in deeper lake waters is not going to be removed as rapidly, since it's a surface phenomena. On the other hand, MTBE, in a roiling stream, where there is a lot of air contact, it's going to be removed more rapidly. The toxicity of ethanol is about 2000 times less than MTBE. So if there are spills of equal mass with MTBE you will have a much greater impact. The washout or rainout of ethanol from the atmosphere will be about 40 times greater than MTBE, because ethanol prefers to get into the water very strongly. Concentrations of ethanol in the rain could be as high as 40 to 60 parts per billion. But these concentrations will be rapidly reduced through the biodegradation. At the same time, I should point out that MTBE in rainfall is predicted and has been measured somewhere near 8 to 10 parts per billion. We also evaluated the use of alkylates. Alkylates are complex mixtures of branched hydrocarbons where the octane rating is close to 100. I think it's been pointed out already that there are significant quantities of alkylates already present in the gasoline. And I think there's already been a little bit of discussion pointing out that there may be an octane deficit, and that increased use of alkylates may be required if there is ethanol used in the gasoline. Next slide, please. Some of the properties of alkylates: They are very insoluble in water, they are lighter than water, they're floaters, they have fairly high volatility, and they're rather immobile. They're not going to migrate very far away from a release site in the subsurface. They're sticky. Properties like biodegradability or toxicity are not easily extrapolated to all the range of alkylate compounds. They have not been widely studied for cancer risk, reproductive and developmental effects. The conclusion of our study was that the water resource impacts associated with the use of ethanol would be significantly less and more manageable than those associated with the continued use of MTBE. And the important point is the biodegradability of ethanol in comparison to MTBE. I would like to make one other comment as you deliberate on the decision to use ethanol or not. In my 24 years of dealing with environmental issues, it's become apparent that we never have all the data that we would like to have in order to make a decision. We always make a decision under some condition of uncertainty. A key question I try to ask myself under those conditions is if additional information changes the decision to use ethanol or not. Have those things been weighed? And we believe at this point that there is sufficient information to make that decision. If there is a decision made to use ethanol as a fuel oxygenate, there are some additional analysis and experiments that should be performed that will help manage its use as we go forward. A complete lifecycle analysis should be performed. There should be some more experiments performed to evaluate the degradation of ethanol by -- excuse me -- the degradation of benzene by ethanol-degrading populations. That deals with the assumption, one of those key, conservative assumptions that went into the modeling that I mentioned. There should be field and laboratory studies to evaluate changes in the benzene degradation rates over the length of the benzene plume. In other words, how does the benzene degradation rate change with spatially downgrading it. A series of field sites should be identified and studied to support

modeling assumptions that go forward. Chemical analysis techniques used to measure ethanol in field samples in the environment should be refined to give lower detection limits. Additional case analysis should be collected and analyzed. There are some places where ethanol has been used and releases have occurred. That data needs to be dug up and examined more completely to see if there are any historical case data that can be used to support modeling efforts as well. Thank you very much. If you have any questions, I'll be happy to answer those.

CHAIRMAN HICKOX: Thank you, David. Are there any questions or comments? Yes, Alan?

DR. LLOYD: Yes. I'd like to compliment Mr. Rice for the way, among your many achievements, that you can get a bunch of researchers to say they don't need money for more research. I have a question. I wonder if you've looked at the relative merits of looking at gasoline and benzene migration with the presence of ethanol or MTBE. Did you recognize that the Phase 3 Regulations are likely to decrease benzene?

MR. RICE: No, we didn't look at that. The assumptions were conservative. In other words, we assumed that the benzene concentrations would be as before.

DR. LLOYD: So if, in fact, you took that 20 percent reduction in your base benzene, and now you put that into your model, roughly what would you expect? Because I think we were seeing about a 20 percent, or so, decrease of benzene in ethanol blends.

MR. RICE: I would imagine that the relative difference between benzene with and without ethanol is probably going to remain about the same.

DR. LLOYD: But the absolute concentrations --

MR. RICE: The absolute concentrations will probably decrease.

CHAIRMAN HICKOX: David?

DR. SPATH: Assuming that ethanol is going to be the product in terms of choice, do you expect the alkylates to then follow a similar pattern as with benzene?

MR. RICE: Alkylates are fairly immobile. What would seem to me -- if alkylates were going to have a problem with the use of ethanol, it would be issues of co-solubility. In other words, you're going to see if the alkylates are more soluble in the water than they may be. I think what the modeling is showing is that the co-solubility effects are not going to be significant, although there will be some minor co-solubility effects for the compounds such as alkylates, which may be less soluble than benzene. In other words, the increased ethanol concentrations in the groundwater are not going to have a significant impact on those compounds which are already fairly soluble, such as benzene. But some of the compounds, such as alkylates, which are right now relatively insoluble, you will see a little bit more solubility with those.

DR. SPATH: Thank you.

MR. HELLICKER: But your chart reads, and your estimates of the increase of 24 to 33 percent of the benzene plume length is for the probability, I suppose?

MR. RICE: Probability, yes.

MR. HELLICKER: That's based upon an assumption of, what, 10 percent volume?

MR. RICE: Yes, 10 percent by volume.

MR. HELLICKER: So anything less than that would reduce those numbers?

MR. RICE: If I were to guess, yes. We tried to set an upper-screening bound. So we're kind of going back to my comments about uncertainty. So if you have uncertainty associated with the potential impacts, we try to set an upper bound so that the likelihood that reality falls somewhere below that is high.

MR. HELLICKER: One more question?

CHAIRMAN HICKOX: Okay.

MR. HELLICKER: And the chart that you showed, or the graph that you showed about the relative change in probability, that's the probability of any groundwater well being affected by benzene?

MR. RICE: Yes. And again, remember, there is no consideration of gradient. It's assumed that any well that fell within that circle of impact, if you will, had an impact, even though that's intuitively not possible. But again, it's a conservative assumption. We're trying to set an upper boundary.

CHAIRMAN HICKOX: Dan, you had a question?

MR. EATON: Doctor, I'd also like to thank you for a very concise presentation, given today's charge. I'd like to take you back now to the early part of your presentation where you talked about release scenarios, and given the time and constraints allowed that you were only able to get to two. Approximately how many other scenarios would you liked to have considered? Let me kind of preface my question. What I'm trying to lead to is, eventually, what did you get to, and what might we as a group kind of look forward to as a priority list, should available funding come together in the future for future modeling? That's where I would eventually want to get to. There may have been other scenarios that you would have liked to have gotten to.

MR. RICE: Well, I think we'd like to do it all.

MR. EATON: We have a consensus on that as well.

MR. RICE: I know. But in terms of priorities, there are some scenarios -- this is just -- I'm speaking kind of somewhat off the top of my head, here -- there has been some modeling already done by the folks at Waterloo dealing with potential bulk ethanol releases where fuelhead carbons are already present, such as at a distribution terminal. Sometimes, petroleum hydrocarbon distribution terminals, there's a lot of slow contamination. There might even be large quantities of free product present. And if during blending or bulk storage operations there is a large release of pure ethanol, fuel-grade ethanol into this large mass of petroleum hydrocarbons, then there's a potential for actually flushing of these materials into the groundwater. In fact, there are cleanup procedures where actually, people will actually use ethanol or similar types of alcohols to flush sediments so you can improve the extraction efficiency during cleanup. So it's known that there's lots of increased mobilization. That would be one area that probably deserves some more attention. Once we start using -- California starts using ethanol in large quantities, then there's going to be a shift away from rail traffic as the predominant means. The ethanol will now probably go by barge down the Mississippi, to be loaded onto a large tanker through the Panama, and come into two ports primarily in California; Long Beach and San Francisco Bay. So now we'll have bulkhead tankers coming into the bay or into marine terminals. What would happen if a tanker goes aground somewhere? Now that might be worth looking at a little bit, too. It would also, in my mind, be worth considering that there will be bulk ethanol distribution to blending locations over surface streets; in other words, there will be tanker trucks going through urban areas, suburban areas. If there is a release from a tanker truck into storm drains or on surface streets, there would be rapid volatization. I think that's probably worth thinking about and looking at. When we did our modeling, we looked at -- the worst case scenario for a leaking underground storge tank is the dripper, where you have a steady unknown release, about three gallons per day, which can accumulate in large quantities with time. And that would cause that ethanol biodegradation zone in the plume modeling that we were doing to be a static phenomenon. It's also possible to have a catastrophic release from an underground fuel tank, where a tank fails, and within the course of weeks, or a month or so, you lose 20,000 gallons of fuel. That's a different situation. That probably is worth examining a little bit more as well.

MR. EATON: Thank you.

CHAIRMAN HICKOX: Any other comments or questions? Yes?

MR. LOWRY: Mr. Secretary, I have three questions. The first is prompted by Mr. Hellicker's question on the graph that you had in your twelfth slide relative to the probability that you said was a probability of an additional groundwater source being impacted in a particular area.

MR. RICE: Yes.

MR. LOWRY: Is that primarily a function of a greater radius from the source and finding

additional wells within that radius?

MR. RICE: That's right. The reason the impacts on these curves increase with time is that we modeled our benzene plumes at different time intervals. The plumes -- this follows the lifecycle of the plume (referring to slide). The plumes grow and then degrade, in the case of benzene plumes, or in this relevant case, MTBE plumes, in each of these time intervals, if you will, the radius of impact is going to be different because the plume lengths are going to be different.

MR. LOWRY: The next slide that you had listing average annual percentages of public drinking water sources being affected from all sources. You then said that one could not extrapolate from that that over ten years you would have, say, three percent of your drinking water sources would be affected by benzene. I wonder if you could elaborate on why that was true.

MR. RICE: Because the assumptions we made were so conservative, and I would say the fact that we assumed that there was no gradient, that any well falling within that radius was regarded as having impact, doesn't allow you to then hook our impacts up to some current impact rate. The other point that I'd like to make is that there is some doubt about the location of drinking water wells to some degree. It just would mean that we're pushing that result beyond the scope of the modeling, the assumptions that go into the modeling. I just would not be very comfortable doing that.

MR. LOWRY: All right. I'd like to follow up, I suppose, a little bit. You mentioned several things that you think would be useful to do with respect to this problem, and yet you say that you now have enough information to make that decision. I'd like to ask you, what it is that allows you to make that decision?

MR. RICE: That kind of goes back, that's kind of what I commented on in the slide before. Does additional information change the decision at this point? Basically in the view of the scientists that worked on this project, the key element is the biodegradability of ethanol compared to MTBE. We're now introducing into the fuel supply a -- replaces a component which has been a mobile recalcitrant with something which is very, very highly biodegradable. And that's the key thing. So at that point, it allows you -- there's always going be more information that you need to -- it helps you manage a problem, but that may not stop you from making a decision.

CHAIRMAN HICKOX: I'd like to briefly follow up on your response to Ed's question regarding, I believe, it's slide 13, this question about why you would not be able to extrapolate to 3 and a half percent at ten years, or .35 percent of benzene. Let me make sure that I understand this correctly: Is it true that the way in which you built this model, you did not take into account the depth of the drinking water wells or the relative permeability of the soils above the drinking water source.

MR. RICE: That was not considered.

CHAIRMAN HICKOX: That would also reflect upon the relative conservative nature of the model in the way it was structured.

MR. RICE: Absolutely.

CHAIRMAN HICKOX: Okay. Thank you. Bill?

MR. KEESE: Let me clarify: How many LUFT sites did you consider?

MR. RICE: Oh, approximately 15,000 or a little bit more. I'd have to go back and check the exact number.

MR. KEESE: Generally service stations?

MR. RICE: Generally service stations. Right.

MR. KEESE: And your assumption was a one-time release, not continuous release?

MR. RICE: That's right. This is a very simple -- in order to do the comparative modeling, it's as though there was a release on day zero and then no further releases. And then we followed the plume with time so that we can make that comparative analysis.

MR. KEESE: Which -- the number of LUFT sites compared to the potential number of LUFT sites is very small.

MR. RICE: I think --

MR. KEESE: Let's say tankage in California.

MR. RICE: I think there's 30,000 fuel tanks in California.

MR. KEESE: Sites, total?

MR. RICE: Total sites. Yeah.

MR. KEESE: Service station sites?

MR. RICE: Yeah.

MR. KEESE: And 300,000 agricultural sites? (Mr. Giannopoulos approaching the podium.)

CHAIRMAN HICKOX: While you're walking up, can I reiterate the request that you speak into the microphone. It will make it a little easier for the court reporter.

MR. GIANNOPOULOS: James Giannopoulos, with the State Water Board. We actually don't have information on ag sites. And ag sites were not considered in this study. So we only looked at leaking underground storage tank sites. There have been 34,000 total sites, of which half have been cleaned up and closed. And Dave pointed out that he checked his modeling assumptions with information from 500 historical cases that we've had. Those 500 represented cases with probably the best information we had. It was rich in information, with the most monitoring wells. We did extensive analysis on those plumes. When Dave indicated that they compared well with that information, that's a pretty good correlation.

MR. KEESE: Thank you.

CHAIRMAN HICKOX: Joan?

DR. DENTON: Hi Dave. Either you or James: I remember one of the issues with MTBE was that there were claims which were never substantiated, but MTBE somehow enhanced the leaking of underground storage tanks. With ethanol being fairly reactive, I didn't see whether you had a discussion of that or not in the report. I thought it would be useful. So if you did, I'd appreciate you telling me where it is so I would know. Also, just for the record, what is your conclusion as far as the potential for ethanol contributing to or not contributing to, you know, the leaking of an underground storage tank?

MR. GIANNOPOULOS: Dr. Denton, we did not look at the issue of fuel compatibility with underground storage tanks as a part of the work that Lawrence Livermore did. We are looking at that separately. We have looked at that. We haven't found issues associated with compatibility between underground storage tank components and MTBE. In other words, we don't see that MTBE produces a greater likelihood of releases from underground storage tanks, although there are many points of release. With respect to the ethanol addition in fuel, the only one that I'm aware of is a problem with compatibility with some resins associated with Fiberglas tanks manufactured in the early 80's, 1982 or '83. We have a concern about that, and we are in the process of preparing an advisory to underground storage tank owners and local agencies that owners of those tanks should review compatibility, should talk to the manufacturer about warrantees. If there is a problem, then those tanks might have to be removed. I can't tell you what the population of those tanks is. I'm presuming it's relatively small, and I think it was confined to one manufacturer. That's the best information we have.

MR. RICE: There's also a brief discussion of some of the materials and compatibility in Chapter 1 of Volume 4.

DR. LLOYD: I might suggest, Mr. Secretary, I might suggest that in the spirit of this Policy Council here, that there should be some, maybe, integration of what you're doing, at least a consultation with an ongoing study at the ARB to in fact, with the stakeholders, to look at this issue of compatibility with materials.

MR. GIANNOPOULOS: And we have been working with your staff, Dr. Lloyd.

DR. LLOYD: Great.

CHAIRMAN HICKOX: Is that it? Any other comments or questions?

DR. SPATH: One other question. (Inaudible). Do you see an increasing or a decreasing percentage?

MR. RICE: I'd have to -- I believe that benzene is decreasing, but MTBE is increasing. And those tables with all those results are in part of Chapter 8.

CHAIRMAN HICKOX: Yes, Jim?

MR. STUBCHAER: Mr. Rice, before we leave this subject, you described -- this is slide 13 -- you mentioned that you're looking for the upper bound, the worst case. And in the circle of influence, it seems to me you could logically say the water is moving one way so the upgrading levels won't be affected, so you cut these numbers in half. So it seems to me that we should not attach too much importance to the actual numbers here, but the relevant results remain the same.

MR. RICE: Exactly. Yes.

CHAIRMAN HICKOX: Okay. All right. Thank you very much, David. Next, we will hear the results of the report on the Health Risk Analysis by the Office of Environmental Health Hazard Assessment. Dr. Marty?

DR. MARTY: Mr. Valdez is giving the Policy Council a handout, so I'd like to go over what those are. The first one is just --

THE COURT REPORTER: Could you please identify yourself for the record.

DR. MARTY: I'm sorry. I'm Melanie Marty, from the Office of Environmental Health Hazard Assessment. The first set of handouts you got is just a copy of the slides with room to write on the right. The second handout you got, which looks like this is just two additional slides, which I'll cover. And then the third handout represents an addendum to the document. The Health Risk Analysis depended upon the information that came from the Air Resources Board modeling effort and the Water Resources Control Board modeling efforts. Since they continued to refine their model after their peer review, the latest results were not obtained by us until after our report was finalized. Hence, the addendum. I can say, at the outset, that the revisions that the ARB did did not materially affect our final conclusions. The document was peer reviewed. We had three pier reviewers: Dr. Catherine Van de Vert, from UC Davis, who is a toxicologist specializing in reproductive toxicity; Dr. Alvin Greenberg, another toxicologist, who specializes in risk assessment issues and has done a significant amount of looking at hazardous waste sites and areas where you have soil contamination with leaching into groundwater; and Dr. Joe Landolph, from the University of Southern California, who's a toxicologist

specializing in the assessment of carcinogenicity. Their comments and our responses are a part of the reports. You've already had those. And most of their comments were supportive of what we had done. As you're well aware, the Governor's Executive Order required OEHHA to prepare an analysis of the health risks of ethanol in gasoline as an oxygenate, including the evaporative emissions, tailpipe emissions, secondary transformation products, and compounds potentially present in drinking water. In order to give the analysis a frame of reference, ethanol-containing gasolines were compared to existing MTBE gasolines and to a nonoxygenated fuel. And as you have already heard, the Air Resources Board model forms the basis of our risk assessment. They've modeled ambient air concentrations of a number of chemicals using ethanol-based fuels at 2 percent oxygen, 3 and a half percent oxygen, the nonoxygenated fully-complying fuel, and an MTBE-based fuel. The CARB model produced estimates of the total concentrations of specific pollutants from all sources. This includes stationary, mobile, evaporative, and so on. The analysis focuses on the differences occurring from the use of one fuel to another. It's not really designed to be a full-blown health assessment of using fuel. They have the original model -- the health analysis based on the original model is what you have in the report that was bound, that was given to you. They also, as I mentioned, conducted a revised model following peer review. That is what is in the addendum that you just received. The analysis focused on key chemicals of concern. Fuel, as you probably are well aware, contains a large number of compounds. Not all of this would be expected to drive a risk estimate. In discussions with ARB, we looked at existing information on concentrations of a variety of chemicals associated with fuel use in the air to determine which ones we really need to focus on. We also looked at the toxicology of those compounds to ascertain whether it was reasonable to expect any health impacts from those compounds. Essentially, we looked at the oxygenates MTBE and ethanol. We looked at the combustion products, butadiene, formaldehyde, acetaldehyde, carbon monoxide. We looked at the evaporative emissions of benzene, hexane, toluene, isobuteine, and heptane, also. And we looked at atmospheric transformation products, primarily peroxyacetone nitrate, which is PAN, ozone, and PM10. Given the short timeframe for this whole analysis, we utilized existing information on the toxicity of key chemicals and existing characterizations of the dose response relationship for those chemicals. So the health assessment values used were available either from Cal/EPA programs or from the U.S. EPA. Where those were not readily available, we used proposed numbers developed under other California regulatory programs which are currently undergoing scientific peer review. And when those weren't available, we developed draft health protective concentrations using existing health assessment methodologies. This table presents concentrations at which no adverse noncancer health impacts would be expected for key chemicals. Acute reference exposure levels, and that is a concentration at which you would not expect adverse health effects, were available for benzene and formaldehyde. For all of the other chemicals listed, we developed draft health protective concentrations. The middle column, which is titled, "1 Hour", represents the concentrations that we would use as a comparison point for peak one-hour exposures. The right-hand column, which is labeled "Annual Average", is really equivalent to concentrations that we would not anticipate adverse health effects over long-term exposure. This slide presents the unit risk factors, which essentially describe the slope of the dose response curve for carcinogens at low doses. Most of the unit risk

factors, which here are expressed as units of inverse parts per billion, were available from our Toxicant Contaminant Program. The right-hand column represents an air concentration which would correspond to a one per million, or 10 to the minus 6 lifetime cancer risk. For ethanol and PAN, we had no evidence of carcinogenicity by the inhalation route. In the case of PAN, there's essentially inadequate data to evaluate. For looking at noncancer health effects from the criteria air pollutants, we used available ambient air quality standards, which, as you are aware, are available for certain averaging times. For the acute exposures, we're looking at one hour for carbon monoxide, nitrogen oxide, and ozone. For PM, we have values for 24-hour and annual average. I just wanted to go over briefly how we do risk assessments so that you can understand how we use the numbers. The health assessment of exposure to carcinogens is different than that for noncancer health endpoints. Essentially, carcinogenicity is treated as a nonthreshold phenomenon, such that there is some finite risk to any dose, even though that risk may be extremely small and indistinguishable from zero at very low doses. We also assume additivity of risk; that is, if you're exposed to multiple carcinogens, the risk estimate is added for each of those carcinogens to come up with a total cancer risk. That may or may not be what really happens in reality, particularly at lower exposure concentrations. There are examples of synergism, where two carcinogens together are actually more than an additive. And there are also examples in the literature of antagonism. And those issues are part of the uncertainty of doing a cancer risk assessment. To estimate cancer risk, we simply multiplied the modeled concentration of the chemical in the air, that's at ground level, by the unit risk factor to give a unit risk probability of cancer. The unit risk factor, or URF, is a health assessment value that provides an estimate of the slope of the dose response curve at low exposures. This usually involves extrapolation, sometimes from animal data to humans, although benzene is an example here which is based on human studies. And there's also significant human study information that went into the formaldehyde unit risk factor. It also generally involves extrapolation from high exposures, which we're seeing either in occupational studies or in animal experiments to lower-level environmental exposures. Hence, there is a degree of uncertainty in these values. In contrast, when evaluating potential health impacts for noncancer endpoints, it is generally assumed that a threshold exists below which one would not anticipate health impacts. We generally use human data, when available to evaluate these reference exposure levels or health assessment values. Sometimes, we're stuck using animal data. We generally look at a concentration at which no effects were observed and incorporate uncertainty factors by dividing that concentration to account for things we don't know about. For example, we look at the differences between animals and humans, and also intra-individual variability in the human population in response to the toxicant. We use a hazard index approach in estimating potential public health impacts. This is a standardized approach. We've been using it for years, as has U.S. EPA and other organizations. Essentially, what you're doing is ratioing the modeled ground level concentration here, depicted as GLC, to your health assessment value, at which you do not anticipate adverse health effects. That ratio is the hazard index. This is done for specific target organs. Where you have more than one chemical that impacts the same target organ, you actually add those ratios to get a cumulative hazard index. This, of course, assumes additivity. We're not sure if that's a valid assumption or not, especially at lower concentrations. This table summarizes cancer risks for exposure to the modeled

carcinogens, and is based on the latest version; that is, the post-peer-review version of the modeling done by the Air Resources Board. As such, it's a little different than Table 7 in the report, although not much different. As can be seen, if you look at, in the left-hand column, benzene and butadiene have the highest estimated cancer risks for all scenarios, including '97 and 2003. They are, therefore, the drivers of the cancer risk estimates. Formaldehyde is also a significant contributor. While you heard earlier that there was an increase in acetaldehyde in the revised model, compared to the original model, that increase does not result in a very significant increase in cancer risk, and that is because acetaldehyde is not a particularly potent carcinogen. Our hazard index analysis revealed that eye irritation and respiratory irritation were the most sensitive noncancer endpoints that we needed to be concerned with. This table presents the chemical-specific acute hazard quotients and the cumulative hazard indices for eye irritation. Again, these values reflect the latest CARB modeling run. And so, it's a little bit different than the Table 8 in the report; in fact, it's a little lower, as were the cancer risk estimates. The hazard index indicates potential percentage of individuals to experience eye irritation under the modeled conditions. For the acute scenario, remember, they're modeling, basically, an ozone episode, so it's very unfavorable meteorology. You would not encounter these acute hazard indices each day of the year. The cumulative hazard index is largely driven by PAN and ozone. NO2 also contributes significantly. And again, we have assumed additivity of the effects. In this table, we're looking at hazard quotients and hazard indices for one-hour exposures for respiratory irritations, so a slightly different toxic endpoint. The cumulative hazard indices are driven by ozone and nitrogen dioxide, and again, represent unfavorable meteorology, essentially an ozone episode. Acetaldehyde also contributes, although to a much lesser degree. And essentially, ethanol and MTBE aren't irritative enough to even come into the picture. Our h0azard index analysis also revealed that respiratory irritation is an important endpoint for chronic exposures. And now, we're comparing the annualized average concentrations at ground level modeled by ARB with reference concentrations for chronic exposure that we do not believe would anticipate adverse health effects. As you can see, the hazard indices are above one on a cumulative basis and significantly above one for formaldehyde and PM10. Nitrogen dioxide also contributes, although by itself, it is less than one. Again, we used additivity assumption to get the cumulative hazard index. For respiratory irritation, there's another uncertainty in doing that in that, for example, formaldehyde is really an upper-airway irritant. PM10 results in lung irritation. So we're looking at two different regions of the lung, but we're adding the endpoints. So that's a source of uncertainty. As in any assessment of potential public health impacts, there are a number of uncertainties inherent in the process. Data gaps and dose response information necessitate assumptions that tend, in general, to overestimate the risk. Appendix A of the document describes uncertainties for each chemical. Another source of uncertainty in dose response assessment is the lack of peer-reviewed regulatory numbers. We ended up draft health protective concentrations for butadiene for one-hour exposure, ethanol, PAN, acetaldehyde, and MTBE, all for one-hour exposure because those numbers did not pre-exist. And also, we had to develop chronic reference exposure levels for ethanol and PAN. Another source of uncertainty is basically inadequate toxicity database. That's a commonly-encountered source of uncertainty in health risk assessment. An example here is, there is very limited information on the toxicity of the alkylates. Additionally, there is very limited study on

low exposures to ethanol. The primary focus in the literature has been looking at people who abuse or consume large amounts of ethanol. There were also, of course, uncertainties on the exposure assessment side of the equation. Bart Croes went over a few of the uncertainties from the CARB model, although they seem to be resolved and probably are less uncertain than the uncertainties in the dose response assessment. Some of the exposure assumptions that are implicit in developing health assessment values have uncertainty associated with them. And then for this particular assessment, some of the water contamination issues still have a little bit of uncertainty, although the latest Water Resource Control Board draft dealt with almost all of these. And then the final uncertainty is risks posed by exposure to complex mixtures. It's not well characterized, so we do not have a database with lots of information about what happens to either animals or people when they're exposed to multiple chemicals. Some of the research needs that we saw are, of course, from the toxicologist's perspective, a little more information on the toxicology of currently identified pollutants, the necessity to develop peer-reviewed regulatory health assessment values, perhaps more measurement of chemicals, particularly in water, as we move on. Another research need we see is information on localized hot spots. For example, the air modeling that was done for CARB really represents regional modeling and does not look at sub areas or communities that are right next to a freeway, for example, which would be a localized hot spot. And also, as mentioned by Dave Rice, a full lifecycle analysis is also a research need that we see would be very useful to do. The conclusions of our health assessment are really based on looking at the differences from one fuel to another. And essentially, there are no substantive differences in the different non-MTBE 2003 fuel scenarios, for either cancer risk or for noncancer hazard index. The data at the point where we were in finalizing our document for quantitative risk estimates regarding water contamination were not available, and in fact still are not available. What we would need to do in the typical risk assessment paradigm is have a water concentration of a substance and compare that with a concentration that we think would not be adverse. But I think you've heard earlier today that if you stop using MTBE, you have taken care of, at least in the future, MTBE leaks. If you use ethanol, it's rapidly biodegraded. We do not anticipate that you would ever get concentrations of ethanol in a well water that would result in adverse health impacts. Okay. I have two additional slides. We did look at all of the public comments and the peer review comments. And one comment that was repeated was that we treated MTBE as a carcinogen by the inhalation route, but not ethanol. I think it's fair to say that there is co-evidence for the carcinogenicity of inhaled ethanol. There is, however, substantial epidemiologic evidence that abuse of alcoholic beverages or consumption of large quantities of alcoholic beverages is a known risk factor for mouth, throat, and liver cancer. We feel that this reflects extremely high dose and high dose rate effects. And also, it's a rat effect. It is complicated by interactions with smoking such that the mouth and throat cancers are seen in smokers and are synergistic with the carcinogens in the tobacco smoke. Linear extrapolation of these effects to really low doses we do not believe is predicted by the data. The ethanol exposures from common foods and drinks are really much higher than projected air exposures. You have some ethanol in your orange juice just by virtue of having yeast in the air and sugar in the fruit. So you can't get away from it completely. Nonetheless, one of the commenters, Professor Richard Wilson, from Harvard, provided a potency factor based on oral studies in rats, and

suggested a very conservative value of 2 times 10 to the minus 4 per milligram per kilogram day. Although we do not recommend using this number, you can look at it as a bounding estimate. And it does provide estimates of hypothetical risk. This risk factor or cancer slope factor is about tenfold lower than that calculated for MTBE. And if you apply it to the concentrations of ethanol measured into the air and modeled by CARB, all of the cancer risks are less than 10 to the minus 6, which is considered diminimus. So we don't think that there's going to be a carcinogenicity risk from ethanol. That concludes my presentation. Thank you very much.

CHAIRMAN HICKOX: I'd like to thank you very much. I'd like to lead off with a question, if I may. I'm sure that one or two others in this room had a chance to see the 60 Minutes presentation on the subject Sunday night. And I was troubled by some of the responses to the reporter's questions. For instance, I think I was led to believe by the responses that there are not -- there were not sufficient studies with regard to the health consequences of MTBE, and that they yet do not exist. And of course, one of the principle reasons that we're here today is to not duplicate -- if in fact that's a true statement, to look at ethanol used in potentially large quantities in gasoline and its health implications here in California. Could you first help clarify for me some of the perceived conclusions or responses to the questions on that Sunday -- first of all, did you see the Sunday night program? I guess that's the place to start.

DR. MARTY: I did not. I taped it, but have not reviewed the tape.

CHAIRMAN HICKOX: Help, Joan.

DR. MARTY: Joan -- George Alexeeff did review it. I think in answer to the first question that there was -- apparently, people were concerned that there were not enough health studies on MTBE when MTBE was introduced in gasoline, that's probably a true statement. Since then, there have been a number of health studies that we can now use to estimate potential public health impacts.

CHAIRMAN HICKOX: Right. And I saw the show once, but I think the indication is also that there is still a lack of studies with regard to health effects. And I did not believe that to be the case. Would you like to help with our question?

DR. MARTY: I -- I'm not sure that I would say that there are inadequate health effect studies on MTBE. There's always room for more information in toxicology studies. They're expensive to conduct, so you don't get a lot of bang for your buck. But overall, I think we have a pretty good indication of the carcinogenic and noncancer health effects that may be associated with MTBE usage.

DR. DENTON: Okay. I'd just like to say something, and then George, maybe you can comment. I think that the 60 Minutes piece was -- did not do the studies that had been done on MTBE. MTBE studies was required under TOSCA. And there were two big inhalation studies which were done in the 80's. And then there was this big ingestion study which was done in the early 90's. And 60 Minutes then went on to explain it had been done. So that within the requirements of the law, the requirement at that time, there

were these studies done. In addition, U.S. EPA used that information to set their (inaudible) drinking water numbers. So it was just not pulled out of the air. There was information and there were studies, both ingestion and inhalation. Maybe there should have been more, but it wasn't like there was nothing. George, do you want to say anything?

DR. ALEXEEFF: Yeah. George Alexeeff, with OEHHA. There were a couple of things. One is, last year, we did present a comprehensive review of the cancer information to the Carcinogen Identification Committee. And we also did a comprehensive public health goal on MTBE. You know, when you're looking at that data, we feel there was a fairly extensive amount of information on cancer. So we think that's -- although there's some difficulty interpreting it and there's some difference of opinion interpreting it, we think there's a lot of studies. Also, on the reproductive side, there were a large number of studies conducted. And there clearly is no, you know, strong indication of reproductive health effects. We were able to develop acute standards and chronic standards and a carcinogen standard for MTBE. We also had previously developed, you know, an action level for MTBE. And I think part of the problem is U.S. EPA hasn't done all those things. So I think we have -- there is enough data to do that. You do have to make assumptions, but compared to other chemicals, I think we have enough information on MTBE.

CHAIRMAN HICKOX: All right. Thank you. Obviously, the importance for me with regard to this is that we're trying to draw some comparative analyses between ethanol used in large quantities in gasoline in California and the relative health risk as compared to baseline for the existing fuel which has MTBE. So whether or not there are adequate studies with regard to the health effects relating to MTBE, I think has some importance in all this deliberation. Are there any other comments or questions from the Council?

DR. LLOYD: Just one comment, Dr. Marty, I guess. Your comment vis-à-vis the expense of toxicological studies in terms of bang for the buck; I'm sure you don't want to generalize them, but I think there are cases where in fact they may be very important and head us in the right direction. So I don't want people to get the feeling that they're not valuable. In fact, sometimes, they're extremely valuable. On the other hand, you talked about uncertainties and data gaps. And you mentioned alkylates. Clearly, that's a class of chemicals that is not the focus here, it's ethanol. But I would be interested in your comment there. Do you have any specifics -- if you had a limited number of dollars, as we all do, to look at some of those, what specific alkylates would you look at?

DR. MARTY: I would probably look at -- there's the trimethylpantanes, I think, constitute 50 to 80 percent of the alkylates in a typical gasoline. So 2-3,4, 2-2,4 trimethylpantane would be a good starting point. There is some information on this. It's limited but there is some information.

DR. LLOYD: Do you see any increase or reduction as to both of these compounds?

DR. MARTY: I don't know. I don't know if there will be or not.

DR. LLOYD: Thank you very much.

CHAIRMAN HICKOX: Other comments or questions? Seeing none, as indicated on the agenda, we'll have about a fifteen-minute break at this point in time. And then when we return, we'll hear testimony from the public on these reports. Thank you. (Whereupon a fifteen-minute break was taken.)

CHAIRMAN HICKOX: I'd like the Council to please be seated. We're ready to move on. We have over 25 requests or so from people who would like to offer comments. And so we're going to take a portion of those prior to our break for lunch. I would ask that the people that have requested the opportunity to speak hold their remarks to three to five minutes, if at all possible. And I'd also like to ask those who are coming forward to speak to please wait a moment or so after making your comments so that the Councilmembers can ask questions that they may have. So we'll take approximately 10 or so of the approximate 25 to 30 requests to offer comment before we break for lunch. And again, your cooperation in holding your remarks to three to five minutes would be very much appreciated so that we can get all the way through this on a timely basis. Would you go ahead and call the names of the first five to ten, or so.

MS. HUTCHENS: Yes. I'm going to call the first ten names so that you can be ready. And there are a few seats in the front that you can come to. And then I'll call your name individually. Bob Johnson, Alex Evans, Lois Wellington, Janet Hathaway, James White, Dave Smith, Estella Holeman, Al Sutton, Brenda Marsh-Mitchell, and Gloria Zurveen. Now, I'll go back to the first witness, which will be Bob Johnson.

MR. JOHNSON: Thank you for the opportunity to speak here today. My name is Bob Johnson. I'm the Organizing Director for the United Domestic Workers of America. We are an affiliate of AFSCME, the American Federation of State, County, and Municipal Employees, and also an affiliate of the AFL-CIO. I believe you've been presented with a letter from Ken Msemaji, who's the President of our union. We have some particular concerns about this matter and how it relates to our membership. We represent homecare workers who work in the public funded program, In-Home Supportive Services, in California. Our members, who are predominantly middle-aged women of color, serve the elderly and disabled. Our members go into the individual homes of the elderly and the disabled to provide care to make it possible for the elderly and disabled to remain in their own homes and to avoid going into more costly, institutionalized care. Consequently, our members are very dependent on being able to travel. In many cases, our members take care of multiple clients. Our members, which we represent actually in 28 counties in California, ranging everywhere from San Diego to Humboldt County and in between, have a situation where public transit is usually not an adequate alternative. They primarily depend upon their individual, private vehicle to go to the homes to do the care. As I said, they often times have multiple clients that they take care of, spend a few hours in the home of a particular individual providing assistance, and then drive in the same day, maybe to as many as five different clients that they care for. I certainly, we want to commend you on your effort to make sure that both our water and our air are clean and safe, but also ask that you move in caution in looking for an alternative, particularly

because of the possible impact of cost. For our members, due to the fact that they have to use their private vehicle in the course of their work and are not paid well -- those that have been able to benefit from unionization have a union contract and make somewhere in the area of $8.00 and $9.00 an hour. And we do have some contracts that do provide for mileage. However, our best contract, the mileage rate is several cents below the suggested IRS rate. Most of the homecare workers in California, and there's roughly 200,000 homecare workers, do not yet have the benefit of union protection and make minimum wage and receive no benefits and do not receive compensation for mileage. In addition to driving their clients that they care for -- driving to the clients' homes to care for them, they also often times drive the clients to doctors' appointments and on other errands. And so they are using their vehicle quite extensively. So for them, the cost of gasoline is a disproportionate amount of their income and, as I said, if they're not under the benefit of a union contract are not receiving any compensation from the program, which is actually a State and County program. So we would ask that you move with caution. Again, we are very pleased that you are acting. Obviously, something needs to be done in this situation because of the problems that have developed with the current additive. But we would ask that you look carefully as to finding a way to finding a solution that will not negatively impact working people, particularly working people who are at the lower end of the economic spectrum, and to do what is possible to make sure that the fuel is affordable. It is already quite costly, which I'm sure you're aware of. I would also finally add that while we represent members throughout California, the counties in which we have the largest concentration of membership are San Diego, Orange, and Riverside Counties. We would also hope that there will be an opportunity for public input in other parts of the state, including Southern California, where the bulk of our membership is located. Again, I thank you for the opportunity to address you today. I ask that you proceed in caution and not have a situation where we're trading one bad option for another bad option, and the net result is a rise in gasoline costs and a very negative impact on people who are struggling to get by as it is. Thank you.

CHAIRMAN HICKOX: Before you leave the podium, I appreciate very much your cautionary remarks. We are very aware of the concerned that you've addressed to this body today. I would just like to be reassured that you and your people that you represent do have an understanding that we are currently under a federal requirement to ensure that 2 percent oxygen is used in gasoline in nonattainment areas. And you could help in our efforts to seek a waiver that would give us more flexibility simply for the purpose that you have highlighted, to ensure that the cost associated with this change will be minimized, and in fact that the cost to the consumer will be negligible, hopefully. Are you aware of that, and are you in a position to help? MR. JOHNSON: Yes. Well, I mean, certainly, what we're often times faced with is many challenges, in particular, the fact that our own program that our members work in is actually funded both -- or inclusive of Federal money as well as State and County money administered by the County. So, we go through a lot of challenges, many times, of dealing with three different levels of government. We can certainly appreciate your situation and are sympathetic to that. Again, our plea is that we hope that a solution can be found that meets the needs of the general public, which is certainly making sure that we have clean air and clean water, but at the same time not hurting the people who are the most vulnerable to being hurt by

increased costs. We certainly, again, support your efforts. We applaud your efforts but ask that you keep in mind how this may have impact on a very large portion of the population. I might just add to that, as I said, we have 200,000 homecare workers now. Due to increased aging population, it is estimated that within the next ten years, the number of cases in homecare will double in the State of California. So we're talking about twice as many people needing to use their private vehicles to go from home to home and to provide rides to doctor visits and other things for the elderly and the disabled.

CHAIRMAN HICKOX: Any other comments or questions? Thank you very much.

MR. JOHNSON: Thank you.

MS. HUTCHENS: Alex Evans.

MR. EVANS: Thank you. Mr. Secretary, Directors, and Secretaries, my name is Alex Evans. I'm the Vice-Mayor of the City of Richmond. I've instructed the Clerk's office, here, to tell me when three minutes are up and promised them that I would stop on the dot. I'd like to take just a second, though, to say hello to Director -- Chairman Eaton. I have not had the pleasure to call him as such in a public meeting. Congratulations, Chairman Eaton. As you are all well aware, Contra Costa County, in which Richmond is located, is the workhorse of the Bay Area when it comes to refining oil. There are four refineries located in my county. And Richmond is the home of the Chevron refinery. We are the only city with a refinery in Contra Costa County. So we bear the burden of refining oil for Northern California. There's no other county in Northern California with quite the same burden. And we've carried that burden for almost a hundred years. Chevron and the City of Richmond were essentially co-founded at the same time. So we are well aware and appreciate the opportunity that that burden provides our citizens. But also, we are well aware of the cost that that has had as well. I don't want anything that I say here in any way suggest that there should be a lessening of standards on air quality. I am the sponsor, along with Senator Don Perata, who is the author of a bill to increase the penalties for air pollution. So I am very concerned about air pollution specifically. What I'm going to ask you to do today is to consider something that Mr. Hickox spoke of, the 60 Minutes episode last night. Now, while I don't watch the show, and I certainly don't rely on them for scientific evidence and research, nor would I ever ask you to do the same, given the distinguished body that you've assembled here to provide research, I think you need to consider the consequences of a show like that as well as the general discussion that has occurred around additives to gasoline and think about the confidence or lack thereof the public has in the decisions made by your agencies as well as my agency. And what I'm going to ask you to do is -- and I've asked Chairman Lloyd directly in a letter -- I'm asking this group as well to consider coming to Contra Costa County, holding hearings there, and building a level of confidence in your decision that today is lacking. That cannot happen in meetings here in Sacramento. The entire Board of Supervisors for Contra Costa County has called for hearings in Contra Costa County. For example, they are in their own board meeting today. So they have had to send a lowly vice-mayor here to make this plea on their behalf. So if you could come down to my

county, you could get the full input of the entire Board of Supervisors, elected officials, people concerned about health, people concerned about transportation, people concerned about the effects of your decisions. And I think in the end, you will make a decision that will carry much greater confidence with the public. Thank you very much for the opportunity to be here today.

CHAIRMAN HICKOX: Thank you. Any comment or questions?

DR. LLOYD: Thank you very much for coming here. You may be a lowly vice-mayor, as you say, but obviously, you are a very important representative of the City of Richmond. As you know, we took a lot of these issues into account in our deliberations. We also recognize a lot of the issues you talk about are going to come into play through CEQA and through the local permitting process. Also, of course, one of our Boardmembers, Supervisor Mark DeSaulnier, is a member of your board there. And I think he also expressed some of these concerns. And so you do have a very active voice there. And I think the hearings have been valuable there.

MR. EVANS: Thank you, Chairman Lloyd. I appreciate your concern, and I look forward to addressing you at home.

CHAIRMAN HICKOX: Any other comments? Thank you.

MS. HUTCHENS: Lois Wellington.

MS. WELLINGTON: Good morning, and greetings to each of you. I am Lois Wellington. I am President of the Congress of California Seniors. We have in our organization just over 600,000 seniors throughout the State of California. So of course, while I certainly have no scientific background to even begin to understand a great deal of what I have heard, the concern for people who live throughout the State is very deep indeed. A number of questions have been asked of me because so many of the people are deeply, deeply interested. They are deeply affected by whatever decisions you will make. And let me assure you, we are very grateful to you for taking this time and making this effort to look at all of this. We'd just like to emphasize a few of those points. It is estimated that 3.2 million pounds of hazardous air pollutants are removed from our air every day because of our current formula. And that's fine. It's wonderful. We certainly have enjoyed it. We do not want to return to the days when one couldn't drive more than three or four miles without stopping to wipe stinging eyes. That was enough. We want also to have care for the increased risk of respiratory problems that occur not only in the young, but a great deal in older people. They are so susceptible to these respiratory ailments. We want to be assured that the best possible care will be taken to ensure that air quality, if not improved, will not be any worse. In the Los Angeles and San Francisco Bay Areas, where the impacts of air quality are the greatest, the gains made are so important to us. And I hear little about either San Francisco or Los Angeles, where there is such a large concentration of older people. I'm also concerned about the indication that there will be increased use of diesel trucks to transport this additive and tankers going through the Panama Canal, perhaps coming up to the port of Long Beach; the possibility

of a tanker problem, an accident. It has happened before, and it can certainly happen again. What extra caution, what extra care will be taken? What about the increased use of diesel trucks, not only the traffic, but the soot that comes from the use of diesel fuels? If their numbers are increased greatly, we not only have the traffic to be concerned about, but the air quality. The California Energy Commission says that ethanol isn't like other additives, and adds that the transportation difficulties will be appreciably increased. What is the attention being paid to these problems? Also, we would ask most sincerely that there be more time allowed for dialogue and review of these ethanol studies. Study all the available alternatives to determine which ones enhance the highest air quality. As for input from the areas where California seniors will be most affected by the new gasoline specifications, namely, Los Angeles and the San Francisco Bay Area, I will add a note also, as others have, of appreciation that you are holding these hearings. But please, go about the State. Let people have input, both those who are scientists, and those who will live by and with the decisions you will make. Thank you.

CHAIRMAN HICKOX: Thank you. Comments? Questions?

DR. LLOYD: I'd like to make a comment. Again, thank you for your very sincere comments. I would like to make a couple of points. You mentioned the air quality issue. And as you recognize, Secretary Hickox and Governor Davis instructed the California Air Resources Board, as we look at options here, to make sure that there is no backsliding, whether we had the waiver or didn't have the waiver. And I think that that's what we tried to cover here. So I feel confident that -- given the available information, that we are there. So I think that clearly, we don't want to go back to what you were talking about. The other part I think we take very seriously, which we addressed in some other forums, the issue of diesel trucks and traffic. Clearly, our concern is on the air quality side. The traffic congestion side is another issue that we can't solve that we're aware of. But in terms of exposure to diesel particulates, we are very concerned with that. And in fact we're working with the State and those manufacturers to minimize that risk. The good news is that there are many technologies available today which can actually be retrofitted or we can have new trucks. Many options like natural gas are available to reduce that risk. So as that risk recedes, we will clearly be working very closely with people to make sure that the risk to your public health is in fact minimized; not only minimized, but significantly improved.

MS. WELLINGTON: Thank you. One certainly does appreciate that. And I would ask again, also consider the use of tankers, the ocean-going vessels. And I think particularly of the port of Long Beach and the possible, possible disasters. One has to consider that possibility. Truck traffic in the Los Angeles area is a serious issue. So I'm particularly gratified to hear you speak of that and give attention to it. Among the senior population, we experience such a tremendous number of people who suffer from respiratory difficulties: Allergies, asthma, all those problems. So, when I return to make a report, as I will, because we have so many people asking questions, I certainly will include your remarks, all that I've heard today as much as I can possibly understand all of it. I'll be working on that. So once again, thank you.

CHAIRMAN HICKOX: Thank you very much. I'd like to just add one small comment. We're going to be here until about Thursday, at this rate. But I would like to suggest that one of the things I would hope that you would bring back to your membership group is that what we're about here is trying to deal with the commitment that the Governor has made that we will remove MTBE from our gasoline supply. Some of these similar kinds of concerns that you've expressed with regard to the future use of ethanol also exist. It is -- MTBE is, in some cases, tankered in. And so, all that I'm trying hopefully to have you bring back is that we are measuring these relative risks. And the purpose of this discussion this morning is to ensure that the technical people that we rely upon have adequately looked at the consequence of using ethanol in large quantities as compared to the risk associated with the current use of MTBE in very large quantities. And it's, I think, the general consensus of these reports that in fact in this myriad of risks that we're looking at, on an overall basis, there's likely to be less risk. But that's not to say that there isn't a need for -- you heard it in the remarks from the people with regard to the water-related issues, that all of these scenarios were not deeply studied. And for example, the consequence of a tanker rupture has not been adequately looked at. And we will attempt to do that. We appreciate your expressed concerns. So thank you.

MS. WELLINGTON: Thank you very much. Could I add just a little bit? I have not heard enough other than the 60 Minutes program about why MTBE is so poor, so bad. I've heard a great deal about the -- about ethanol, why it is better.

CHAIRMAN HICKOX: You missed our hearings in February.

MS. WELLINGTON: I know.

CHAIRMAN HICKOX: Without taking an enormous amount of time here for others who wish to speak, let me just say that the prior administration in 1998 commissioned a half-million-dollar study by the University of California system to, in a somewhat similar fashion, try to determine what the relative risks of the continued use of MTBE would be, both, for the health of the People of California and with regard to risk to the environment. And the overwhelming information as determined by us individually, and more importantly the Governor, was that there was sufficient risk to the environment with the continued use of MTBE that we need to eliminate it, eliminate its use. To go into the technical details would take more time than you and I would want to take right now. But I'd be happy at lunch to talk to you a little bit about it. Come see me.

MS. WELLINGTON: All right. I would like to be able to answer some of the questions put to me about why this hearing now is so important to our well being. And I guess I did miss that because I'm not well educated, other than 60 Minutes, about why there are so many problems. And I'd like to know more.

CHAIRMAN HICKOX: We'll take more time later. But you've hit some bull's eyes here, so you know what you're doing.

MS. WELLINGTON: All right.

CHAIRMAN HICKOX: Thank you.

MS. HUTCHENS: Janet Hathaway.

MS. HATHAWAY: Hello. My name is Janet Hathaway, and I'm with the Natural Resources Defense Council. Hello. It's nice to see so many familiar faces and to know that you're attending to this really important issue. I have a number of slides that I'll move through really quickly to try to be succinct. But I did want to commend you on this really difficult balancing act that you are undertaking. And I think that there is probably no more thankless assignment than to figure out how to make sure that air quality, groundwater, and transportation costs are all somehow kept in the proper balance. It's incredibly hard to do. But my main points here, and the reason I wanted to talk with you, is that I take a slightly different interpretation of Mr. Rice's work. Really, all these comments that you're going to see on slides have to do with Mr. Rice's work. And while I have great respect for what he did, I'm asking a slightly different question than he did. From his point of view -- and I think it's a completely valid point of view, just a different one than what I'm taking, the question is, how does ethanol fate and transport compare to MTBE fate and transport in the environment? I think that's an important question. I think it's well answered. And you had his presentation on that. I'm looking at the question of, how does ethanol fate and transport affect BTEX and MTBE that are already in the environment, in our soils where there have already been leaks, and does that perhaps predispose us or tilt the balance in favor of nonoxygenated fuel to some extent? I think that's a truly important question because we know there's already at least 30,000 leaking underground storage tanks. Those storage tanks, in most cases, did involve gasoline that had MTBE in it. And now, with ethanol, we're going to be affecting that mix. That's the reality we're facing now. It's not a clean slate that we're starting with. Okay. So the most important lesson MTBE taught us is that our storage tanks and pipelines do leak, and they leak vast quantities. And though we're eliminating MTBE, and I think there's no question that that should and will be done, the question that must be asked is, what kind of fuel should result, and will we have problems with our leaking underground storage tanks that are made worse by ethanol? So, next slide. All these following slides are from this Chapter 9, which is in the -- Volume IV, Chapter 9, Mr. Rice's work. Next slide, please. And as they say, future pipeline and refinery and gas station leaks and spills are unavoidable. We have to assume that there will be some, and that's part of the reason for concern. Do we know enough about the behavior of ethanol-containing gasoline? That's, I think, the key question. Next slide. The most important thing that I think is raised by the Rice work is that gasoline substances, such as the BTEX compounds, are significantly affected when there are ethanol spills. And I think it's important to note that especially when the ethanol spills are pure ethanol, the effect on BTEX in terms of solubility and migration are great. And that is not an insignificant possibility, because, as has been noted, there will be separate storage of ethanol; pure, straight ethanol, and those facilities will have to, you know, be essentially -- there will have to be assumptions, I think, to be realistic, that occasionally, there will be leaks and spills at those facilities. Next slide, please. So what is known? We know that ethanol does affect the migration rate of gasoline compounds in unsaturated zone soil, which is the nonwatery part of the soil. We

know that ethanol will reduce capillary forces. It means that it will allow the gasoline compounds to flow more rapidly through soil. Chemically -- ethanol can chemically alter pore structure of some minerals, and most significantly, clays can be altered in a way that make them much more permeable to the BTEX compounds. I think this is truly important. To protect our groundwater, we need to make sure that this permeability does not result in BTEX compounds ending up in our drinking water. Next slide, please. So, given that, there is this possibility of changing the pore structure of clay and hydrolic conductivity of ethanol increasing the migration of the gasoline contaminants, what should we do? Next slide. One thing we're going to need to do is to know how to adequately react to spills that involve ethanol. And that's something that may be minor, if we're talking about an ethanol 10-percent blend that spills. But it may be very significant if it's a storage tank or a blending facility where there's a hundred percent ethanol that spilled on pre-existing BTEX and MTBE. Next slide. Now, if there is a spill, how is ethanol going to affect the breakdown of BTEX? And I think there -- Mr. Rice and his colleagues at Lawrence Livermore acknowledge that there is relatively little known about the sequential or simultaneous degradation of BTEX in the presence of ethanol. Now, that's not to say that there will be a big problem, but just there isn't much in the way of field work. There are modeling runs done, but I think that more important is to ensure that we have some field studies on biodegradation and what would be needed to respond to a spill, given that there will inevitably be spills. Next slide. So given that there may be longer plume length and some hindering of the biodegradation of BTEX compounds, which are very toxic compounds; I mean, that's the key thing, there may be an increase, a 20-percent relative increase in public drinking water wells impacted by the most toxic substances that are in gasoline. And I think that is truly problematic. That's right from Volume IV, Chapter 9, page 7, in the Rice report. Next slide. So the use of ethanol as a fuel oxygenate is likely to increase benzene detection rates. And I think that that, too, is reason to be concerned about moving toward ethanol. Next slide. And this is really a conclusion slide. Without better understanding of the complex ethanol BTEX interactions in the real world, in the real soils that are out there, with an understanding that we already have contaminated soils around these distribution and storage facilities, we may be risking some very significant and costly cleanups. Finally, next slide. And I think a response that many people might think of is, "Well, but ethanol has been used in the Midwest and Colorado and Arizona". But I think it's really key to point out that right from the Rice report, it says none of those states require that ethanol concentrations be measured in groundwater. And, indeed, there has been very little information about ethanol plumes and their effect on BTEX, very little study of this. Next slide. So for California to avoid repetition of the MTBE problems, it's going to be important to secure better data on water contamination potential and on cleanups, which would be necessary if there are ethanol gasoline spills. Okay. Next slide. And a key research need is to have better analytical methods for detecting ethanol at low levels. I thought it was extremely important to note in the Rice report that there is no routine method for detecting ethanol at below 50 parts per billion in water. And as you remember, MTBE, at one part per billion, was enough to cause people to be very concerned, and I think rightly. We need to be able to know, not necessarily because ethanol would be a problem, but it would be an indicator that we have a migrating plume that might contain BTEX, that might contain MTBE and other substances. So having such an analytical method, I think, is pretty key.

And then finally, I urge you to consider funding field and laboratory research work on BTEX degradation in the presence of ethanol, and in particular, where there are pure ethanol spills. Thank you so much.

CHAIRMAN HICKOX: Thank you. Comments? Questions?

MS. HATHAWAY: Any questions?

MR. KEESE: My question would be, do you accept the conservativeness of Mr. Rice's assumptions?

MS. HATHAWAY: I would say that some are conservative and some are not conservative enough. One that is clearly not conservative enough is to look at pulses of leaks rather than ongoing leaks. The Santa Monica situation with MTBE was an ongoing significant leak. And those kinds of leaks are going to be the biggest problem for us in terms of groundwater contamination. Another thing that is not conservative about the way Mr. Rice proceeded -- although I acknowledge there are other conservativisms -- another issue that I take with relying on that to say don't worry about the future with ethanol is that it did look at the 100 percent pure ethanol mass spills. And that is a realistic possibility and is very likely to occur where there already is contamination from other gasoline compounds.

MR. KEESE: Thank you.

CHAIRMAN HICKOX: Alan?

DR. LLOYD: Janet, again, thank you for your presentation. Given what we've heard this morning, and given the bottom line on each of those, do you disagree with the advice that was given to the Council?

MS. HATHAWAY: I would strongly urge the panel to press for a waiver of the oxygenate mandate so that we can --

DR. LLOYD: How would we do that any stronger?

MS. HATHAWAY: Well, I think that maybe I'm preaching to the converted, here. I think that all of us know that unless we have an oxygenate waiver, the costs will be higher, the risk that we're talking about of these large spills of ethanol-moving plumes of contaminants into our groundwater are greater. And so we're basically stuck. We do have to -- we do have to move away from MTBE. But my point is really that we need to study the ethanol effects on BTEX and on MTBE better in the field if we're going to be able to respond to leaks that are inevitable in the future if we don't get a waiver.

DR. LLOYD: All right. And do you have a bottom line?

MS. HATHAWAY: The bottom line is, we do have to move away from MTBE. I wouldn't move as quickly as the Governor has urged that we do unless we can finalize studies on the field fate and transport of ethanol. That's my bottom line. In order to protect groundwater and make sure that we don't repeat these errors, I'd commission studies right away. The field studies, I think, are pretty key, and having analytical techniques that can monitor ethanol, I think, are pretty key.

CHAIRMAN HICKOX: Janet, respecting all that you've offered as comments today, could I just ask: Is your organization doing everything it can to help us obtain the waiver requested, or alternatively, federal legislation that would effect the outcome? Have you been there?

MS. HATHAWAY: Absolutely. I have been there. We were part of the Blue Ribbon Panel that came out with a recommendation to get the Congress to lift the oxygenate waiver. I've sent many letters. I'll send another.

CHAIRMAN HICKOX: Thank you.

MS. HATHAWAY: Sure.

CHAIRMAN HICKOX: Any other comments or questions?

MS. HATHAWAY: Thanks so much.

CHAIRMAN HICKOX: Good seeing you, Janet.

MS. HUTCHENS: James White.

MR. WHITE: Mr. Secretary, distinguished members of the Council, my name is Jim White. I'm an environmental government relations consultant; White Environmental Associates, based out of Brea, California. I have over 23 years of experience in the oil industry, particularly with petroleum storage tanks, oxygenated gasoline, and reformulated gasoline. While I do have clients with interests in these matters before you today, I am here representing myself. Now, I understand that by the California Energy Commission's estimates, California drivers, motorists, are going to be paying up to a million dollars per year for gasoline without MTBE. I also understand that MTBE is not a health issue per se. The primary motivation behind MTBE phaseout is a projected threat to groundwater aesthetics. I'm very concerned that the decision to ban MTBE was entirely too focused on the threat of MTBE getting into groundwater and not how it got there or how such groundwater contamination might be further prevented whether MTBE is present or not. Somehow, an assumption was made that MTBE, disregarding other gasoline components, will continue to leak from the tanks and there are no solutions short of banning MTBE to protect the groundwater. If this is true, why were thousands of people put out of business by requiring the installation of expensive tank leak prevention and detection equipment that some are now saying won't work? Come on now. The tank systems with their leak prevention and detection do work, if they are properly installed

and maintained. The California Bureau of State Audits ran an audit in 1998 that observed that "most of the leaking storage tanks were not consistently monitored for leaks". The audit found over 25 percent of the tank sites reviewed were not even permitted or otherwise subjected to the protective tank regulations through enforcement. Now, the University of California MTBE Study actually looked at potential tank program problems, but the study's Summary and Recommendations gave little consideration to these findings and actually misstated its own findings relative to benefits of the tank program improvements. These findings included a strong indication of lacking compliance and enforcement. The tank portion of the study estimated a decrease in leakage probability of up to 95 percent, given upgraded status of tanks. The study gave no consideration to improving the tank program pursuant to safeguarding groundwater versus a recommendation to phase out MTBE. By order of the Governor, a Tank Advisory Panel was also formed by the State Water Resources Control Board in conjunction with the UC Study to investigate tank program problems relative to MTBE getting into groundwater. Most of the problems identified by the panel had to do with faulty installations, disconnected leak detectors, and a general lack of maintenance. This is the group that inspected seven sites in South Lake Tahoe and found that all seven had multiple violations of the tank regulations. While their findings were very revealing relative to compliance and enforcement problems, there was no mention and apparently no consideration of the panel findings and the resulting Governor's Executive Order. I'm glad to say these tank programs have not gone totally ignored, as further protective measures are forthcoming in the near term. Recently passed SB 989 requires the inspection of tank systems at a minimum of once a year from once every three years and additional enhanced leak detection for high-risk sites within 1,000 feet of a drinking water well -- it will be required to have enhanced leak detection. There's a requirement for containment under all gasoline dispensers, eventually. Tampering with leak detection devices has also specifically been declared illegal, and the penalties for doing so have been increased. And the list goes on. The fate and transport matters you are considering today are probably not going to be resolved in the near term, as we've heard. California motorists are going to pay and additional -- up to an additional billion dollars per year on new, more costly formulations of gasoline that still have many unresolved questions and have no guarantee of maintaining the progress we have already made toward achieving better air quality. Why shouldn't we consider improving California's tank program through their enforcement program at a cost that is sure to be well below that of new formulations of clean-burning gasoline? It is not too late to conduct an objective cost-benefit evaluation of tank program improvements versus a ban on MTBE. This Council could be instrumental in proposing such an evaluation in addition to the further investigation of other yet to be resolved matters regarding reformulated gasoline. Thank you very much.

CHAIRMAN HICKOX: Thank you Jim. Any comments or questions?

MR. LOWRY: Do you have a recommendation for what an appropriate penalty should be for gas station operators who fail to inspect their tanks?

MR. WHITE: Fails to inspect his tanks?

MR. LOWRY: Sure.

MR. WHITE: I think that's been -- that's been handled in the current regulations. And they're right in the process of revising those regulations to beef up that penalty. The problem out there right now is a general lack of enforcement from many of the 107 different UST agencies, tank agencies that we have out there. There are some agencies, many agencies -- I visited 24 last year -- a lot of these agencies are doing an excellent job. But there are others that are strapped for resources. They cannot get out there and inspect the tanks, as needed.

MR. LOWRY: How do we fix that problem?

MR. WHITE: It's -- actually, that problem's being discussed right now in the State Water Resources Control Board. But it is a serious problem.

MR. LOWRY: Thank you.

CHAIRMAN HICKOX: Thanks, Jim.

MR. WHITE: Thank you.

MS. HUTCHENS: Dave Smith.

MR. SMITH: Good afternoon. This is -- I'm Dave Smith. I work for ARCO. Today, I'm representing the Western States Petroleum Association. As many of you may know, WSPA is an organization that represents over 30 companies that refine and market gasoline and petroleum products in six western states and are very much affected by your decision today. We were very supportive of the Governor's Executive Order, including the requirement for this process to occur. And we congratulate you on this process. It probably doesn't bear mentioning, but I'll go ahead anyway: We do support the oxidate mandate removal for California; WSPA does, and ARCO does as well. We've been doing everything that we can. We appreciate all the efforts of the State and people like Janet Hathaway and others who have been trying to help us remove the Federal oxygenate mandate from California. WSPA has commented on each and every one of the reports that were put into the public domain. And they are actually attached to the submission that we -- the letter that I'm reading from, or taking comments from. I find myself agreeing, not surprisingly -- I hope I don't get in trouble for this, but I am agreeing to a large extent with what Janet Hathaway said about many of the data gaps. And Janet, thank you for going through a lot of those details, because I won't. But let me read you something from my cover letter, because this was so carefully worded by many of the WSPA members; in other words, if I don't say this exactly the way it is, I'm in big trouble: "WSPA would like to commend the agencies for their efforts, which were significantly constrained by the short amount of time and limited data. Despite this, there has been -- this significant effort -- WSPA does not believe the studies performed to date fully analyze the risk associated with replacing MTBE with ethanol as an oxygenate. We

are concerned that the Council will consider an incomplete analysis as justification for rendering an ambiguous decision. An ambiguous decision on the acceptability of using ethanol in California gasoline while effectively mandating its wide-scale use in the State creates a very large uncertainty for refineries like my own and others that have less than three years to meet the Phase 3 gasoline rules." I had -- I was going to -- just for the sake of time, one of the things that I wanted to bring up was the apparent lack or the small amount of effort or information that was presented by OEHHA about the risk associated with water and what kinds of risks were resulting from the use of ethanol and otherwise. I found it interesting that Mr. Rice made -- and I'm not -- I'm paraphrasing, but Mr. Rice made the comment that there could be high concentrations of ethanol in water related to spills. And Dr. Marty made the comment that she believed that there were no -- she didn't believe there were no adverse health effects in drinking water wells from ethanol, that would be expected from ethanol in drinking water wells. So, I think there does need to be significantly more work done in looking at the exposure potential in groundwater and surface water along these lines. There are a number of other areas where there are data gaps. Many of them have already been mentioned in the report -- the State Water Resources Control Board. There are over 24 data gaps that are identified. I won't go into those, but many of those, we agree with. UST compatibility and technical remediation methods are missing. There are no drinking water standards for ethanol, and there is very little fuel data on ethanol. So, there is a lot of work left to be done. Now, excuse me, but I have to do a little bit more reading: "There's a unique aspect to the decision that the Council must make. A "safe use" determination by the Council would amount to an endorsement of the defacto imposition of a requirement on refineries to use a specific oxygenate, ethanol, even though oxygen, per se, is not needed to meet California's stringent reformulated gasoline regulation. There is an understandable concern on the part of our refiners and members; that is, in the case of MTBE, they will begin to be placed at risk with respect to litigation and exposed to liability for a constituent which is not needed to meet California gasoline specifications, but are nonetheless being mandated to use, this time with no choice at all among oxygenates. Leaving gasoline manufacturers and handlers to make their case for some type of immunity from liability, with some form of express protection in such a circumstance is highly inequitable. We really ask that the Council suggest that this inequity needs to be addressed by the State." With regards to future direction, I'll just say that we do agree with Janet and others that additional research is needed. We'd like to see that this work be done as quickly as possible. We'd suggest that a partnership could be formed. We've been part of an MTBE research partnership. An ethanol research partnership could be formed. We believe much of this data could be accomplished before the end of this year in as much as our refiners are having to make investments to go to CARB Phase 3, here, in the next two or three years. So, in conclusion, we're faced, as has been said, with some very difficult choices here. It seems like there's certainly some uncertainties. Your charged with making a decision about whether or not to concur with the ARB's decision that there's no significant, or shouldn't be any significant impact on public health and the environment. WSPA does agree that such a decision needs to be made, and it needs to be made promptly so that we can proceed, if appropriate, with getting on with CARB Phase 3 gasoline. But we certainly understand that as further work is carried out that we may uncover some serious problems. And some of these things may have to be reconsidered. And WSPA looks

forward to working with you and your various agencies on all these issues. Thank you very much. Any questions?

CHAIRMAN HICKOX: Any comments or questions? At this point in time, does ARCO plan to use ethanol?

MR. SMITH: I think we're going to be required to use ethanol. And we currently use ethanol. I mean, that's not a flippant answer, but we do use ethanol in other parts of the country. And right now, it looks like unless the mandate is removed, we will be using ethanol.

CHAIRMAN HICKOX: All right. Thank you. Joan?

DR. DENTON: Dave, I think what Melanie was saying as far as the drinking water risk was, the concentration that one would expect that you might see in drinking water well as a result of a spill of ethanol is so much below what you would see as far as the threshold for a health effect. I think she used the term negligible. There would be a minimal risk. Do you not agree with that?

MR. SMITH: Well, I think, as others have said, there's probably a number of scenarios that need to be looked at. There are certainly some of the situations in Santa Monica where the drinking water wells were close to the service station; you could foresee fairly high concentrations of any contaminant that got out of an underground storage tank. So the other thing, of course, is that we don't really know what an acceptable level is for ethanol in water, or drinking water, since there isn't one set yet. So, I mean, included in WSPA's comments was the fact that we would certainly encourage this state to begin the process of establishing drinking water standards for ethanol and that we would begin a joint effort in looking at technology or remedies as to how to clean it up if in fact it does get outside of the containment areas. We learned all these things through MTBE, that we hadn't started these things. We have an opportunity to begin those processes now. Some could say that we should have already started them. But here we are today. I think this is a great opportunity for all of us to agree that there needs to be a lot of additional work. This state has an opportunity to lay out a plan. And we could come together and work with you on that plan to address these issues.

CHAIRMAN HICKOX: David?

DR. SPATH: Recognizing that you do use ethanol in some other states, are not these same questions coming up in the other states? Do you propose to undertake the same types of studies, as Janet has suggested, in those states where you are using ethanol?

MR. SMITH: Well, I think that the studies that Janet is suggesting would be applicable. I would think they would be applicable in those other states. I think those other states are looking to California, as many times they do, on leadership on these kinds of issues. So I think that to the extent that we do the studies that both Janet and I and other people are

calling for, I think they will try to help to address those other states. Was that responsive to your question?

DR. SPATH: Somewhat.

MR. SMITH: Somewhat. It's as good as it gets. I'm sorry.

CHAIRMAN HICKOX: Yes, Jim?

MR. STUBCHAER: Has ARCO experienced any problems with the ethanol attacking the piping or things that connect the pipes or the pipes themselves?

MR. SMITH: I can say with quite a bit of certainty that we have not. We have not had -- especially over the last many years, as we've gained experience in using oxygenates, we haven't had problems with that. There is, as was brought up, there is a concern that there were certain Fiberglas resins that were used back in the 80's, that ethanol may affect those. I was glad to hear that the Water Board was -- brought that up to you. WSPA had commented that that was an issue that should be brought before you. And I'm glad that they did that. And that should be part of the plan that you put forth, to say that that needs to be addressed. And it sounds like the Water Board's doing that. So that's good.

CHAIRMAN HICKOX: Alan?

DR. LLOYD: Dave, well, when you talk about studies, clearly, you're not talking about open-ended studies. Do you have some sort of timeframe that the members of WSPA would be looking at?

MR. SMITH: Well, that's a fair question. I think in our comments, we had suggested that each of the agencies would try to identify which of the data gaps were most important. In other words, of the uncertainties that they feel, which of those studies need to be done first? What would be most helpful? We obviously have some thoughts on that idea about what studies could be helpful. We would like whatever studies are done to be done as expeditiously as possible, because refiners, ARCO, all the other refiners are going to have to -- are starting their engineering and planning to meet the 2000 and -- or the CARB Phase 3 requirements. In the case of some individual companies, they've promised to speed that up even further. So, I mean, I don't know, I think we need to do it as quickly as possible. We hope that we could do some of it this year. I know that wasn't very responsive to your question. We'd be glad to sit down -- I really think it's up to the agencies to identify where they think are the biggest data gaps. And we'll be there to help them.

CHAIRMAN HICKOX: Bill?

MR. KEESE: Can I ask you, between the BTEX and setting a standard for ethanol in drinking water, are those on the same page as to areas that are significant data gaps?

MR. SMITH: I'm sorry. Could you repeat that?

MR. KEESE: Janet Hathaway's suggestion that we need to study the additional benzene plume effects of adding ethanol --

MR. SMITH: Yes. We did highlight that in our cover letter as being a significant issue.

MR. KEESE: I thought you did. But comparing the need to do that with the need to set a standard for ethanol in drinking water --

MR. SMITH: Okay.

MR. KEESE: Did you prioritize one of those over the other?

MR. SMITH: That's a hard one for me to --

MR. KEESE: I would think that would be an easy one.

MR. SMITH: I would think the finding about the plumes would be first.

MR. KEESE: And the alcohol extent of the drinking water probably about last?

MR. SMITH: Well, I don't know about last, but we'll certainly need it before we start using it in large quantities in California. That's the very first question that came up when people started finding MTBE in drinking water, was, "Well, what's a safe level?" And at that point in time, nobody had an answer, which really caused a lot of public concern.

DR. LLOYD: Dave, I just wanted to reiterate a point I made earlier, though. With Phase 3 gasoline, we expect benzene to be lower. So that should be taken into account as we look at some of the scenarios.

MR. SMITH: You know, Dr. Lloyd, you're right. I've asked questions like, you know, what happens if you reduce MTBE concentration in half, or you know, different questions to the ground hydrologist. And in many cases, they say that that may very well not have that big of an effect when you get to the drinking water well. I don't necessarily understand all that, but that's what they tell me. So, that's my only response to you. And I kind of got that response from Mr. Rice, that maybe there was, you know, there was going to be some changes. But I don't disagree. Benzene will likely go down because of CARB Phase 3. I'm trying to leave, sir. Any other questions?

CHAIRMAN HICKOX: No.

MR. SMITH: Thank you.

CHAIRMAN HICKOX: Thank you.

MS. HUTCHENS: Estella Holeman.

MS. HOLEMAN: Thank you. Hi. My name's Estella Holeman. I'm the Executive Director of the Black Women's Forum, an organization that represents over 1,500 women in Los Angeles, Southern California. I'm also the Executive Director of the Alliance of Black Women's Organizations, of which we have over 100 presidents and executives of black women's groups in the Southern California area representing a variety of international, national, and local chapters. I'm here to speak on a couple of issues. And I have Joan Jackson here with me, who's a member of Black Women's Forum, because we have an environmental task force. And our environmental task force is new only because environmental injustices are so old. It was time for us to finally come to grips with the fact that our water and our air is central to our livelihood. I was speaking earlier with some women. We were talking about, although I'm not a bible-toter, that man was given dominion over the earth, and that did not mean domination. So when we find ourselves in places where, as my grandmother says, "We're jumping from the frying pan into the fire and then back into the frying pan", we need to come to grips with the fact that we're moving quickly on issues that will have a long-term effect not only on us, but on our children, and on our children's children. I'm not here to advocate anything in particular except to say I advocate having public hearings like this so people like me and people like the ones I represent can be fully educated on subjects related to what impact it will have on our future. I hate that I have to come to Sacramento, but much to my surprise, I'm enjoying this dialogue. I love these public comments. I love the things that they're asking you to think about. I think that we should not rush this process when -- just because we have a deadline. My grandmother would say, "Change the deadline". I think that we're jeopardizing public health when we're talking about adding something to what already exists that we don't know long-term effects of. We don't know enough about ethanol. After the public comment, I really question things related to ethanol and the transportation of ethanol. We also know that within the African-American community and communities of color, there's always a concentration of environmental hazards put in that area. I don't know what the long-term effects are going to be, but I can tell you that the short-term effects are, even though we have cleaner air, we have children with more asthma. We have adults with more asthma. I think that we really need to stop and think about what we are doing that will affect us in the future. Joan is going to comment on -- going to make two comments that will be very brief, because I know your stomachs are grumbling. But this process really needs to be open to the public. We need to come -- people need to come to Southern California and speak to constituents like mine and speak to members who may not have had an interest in environmental affairs until I may have mentioned something about clean water and clean air and how their children aren't breathing. I would encourage that you reach out to as many people as possible on as many levels as possible. And make it simple, if you can. I mean, I appreciate these presentations, but not everybody is college educated. And they need to know in layman's terms what affect short term and long term, any kind of change is going to make. I would have loved to have had something like this happen before we added MTBE. But since we can be on the front runner of any changes that can be made now, I would really love for you to come down to Southern California and talk to people like me. Joan? Thank you. My name is Joan Jackson. And since you've already been invited to Contra Costa County, I would like to invite you to Los Angeles County. The Los Angeles traffic and air quality

go hand in hand in the Los Angeles basin. And you can say that we've already talked about diesel trucks and the effect they will have on the environment. But as we speak today, there are many children who have asthma and other respiratory illnesses who do not have adequate health coverage. And can you guarantee in five years we won't be back here again talking about those children? Thank you.

CHAIRMAN HICKOX: Any comments or questions? Well, like I said, we're going to be here until Thursday, because I do feel the need to offer just a small amount of comment. I absolutely agree with you and am very pleased about your sense of the need for public comment with regard to major issues like this which your government tries to address for you. I wish I had the time to repeat some of what we heard in February of last year when we heard public hearings on this issue and the Governor ultimately made the decision to ask that MTBE taken out of gasoline in California. The need to be cautious, the need to take time, the need to be fully aware of the consequences of what we're doing makes absolute common sense. I'd just like to add one more bit of comment for you to take back to the folks that you wish to offer comment about what we're doing here. There are a large number of people in California who believe that the end of 2002 deadline that the Governor set with his Executive Order was inadequate, that it was taking too long; that every day that goes by, more of this chemical is finding its way into the groundwater and potentially, potentially, will ultimately find its way into drinking water supplies. We've already had two fairly large episodic events where groundwater has been made -- or drinking water has been made unusable in Santa Monica and in Lake Tahoe. And so all that I want to offer is a balancing set of comments about all these considerations. There is the view that waiting until the end of 2002 to get MTBE out of gasoline is in fact doing a disservice to the People of California and creating a greater risk and potential long-term cost associated with cleaning up more groundwater that will be contaminated. So what we have to do is find a balance in all of this and ensure that we do, in fact, carefully study the consequences of the alternatives, but recognize the need to as quickly, as expeditiously as possible, eliminate this threat to groundwater that exists today. I hope that helps a little in explaining why we are here and why we're at this stage of this process. So thank you both for being here, representing the public interest. I appreciate it very much. Next.

MS. HUTCHENS: Rebecca Barrantes.

MS. BARRANTES: Good afternoon, Councilmembers. My name is Rebecca Barrantes, and I'm representing the Latin Business Association. I'm here to represent over 700,000 Latino-owned businesses in Southern California alone. And that number is even larger, when you look at the whole State of California and the revenues that we bring to this great state. We are one of the reasons why we have a booming economy here in California now. And we want to keep it that way. We want to keep it that way because it does mean a healthy economy, it means a healthy community, and it means people have jobs. But more importantly, maybe it means that our kids have a chance at a good education, because now we have money there that we can put towards that use. But I'm going to tell you something else. If we haven't learned ourselves from our past mistakes, if we don't take the time and do the studies and fill the data gaps, okay, and look at the

lessons learned and have that be the driver -- and yes, we have to move expeditiously. But let's answer as many of the questions as we can. Let's address water quality issues. Let's address the air quality issues. Let's address the health and safety issues that have been raised here today. But let's look at economic health, too. What does it mean when you have the potential for additional truck traffic? The devil's in the details. You have regulations and a deadline to meet. That's understood. The possibility of increased rail or truck traffic to transport ethanol or any other hazardous substance through our communities needs to be looked at in an implementation plan, in a mitigation plan, something that our communities are always watching for. And as you can tell, we're here. We're listening. And we're willing to help you with that. We're willing to comment. You come to us and tell us, "This is what we're planning on doing", we'll tell you what we think about that. We'll help you find a solution. So I encourage you to keep doing this, even if it takes longer than Thursday. It might take a little bit longer than that.

However, I do want to say this: When it comes to Latino businesses, we depend on our workers being healthy, coming to us and being able to provide for their families. Those kids who are in school, if they can't breathe, they can't work. So we encourage you again, as you're looking at ethanol and you're looking at transportation that you consider that what's already there in these communities and what's impacting us in terms of our health, in terms of transportation and traffic, we have, probably one of the worst conditions in Los Angeles. What really concerns me also is that if we go ethanol what the economic impact is going to be at the pump. As business people, we have a need to transport goods and services and people all over the place in order to keep this economy going. So again, we're concerned about what the impact would be on our continued ability to be a part of this great economy. And lastly, I'm concerned a bit about this whole idea of waiving the federal requirement. And maybe I need to be educated a little bit more about what that means for a nonattainment area, such as our own Southern California Air Basin. I'd be interested to know what our AQMD thinks about that, because if for any reason there is any backsliding, somebody has to pay for that. And who is that going to be? That's going to be the people who drive. It's going to be businesses. It's going to be your families. It's going to be a lot of people who have to pay for any gains in air quality made that somehow get lost. And so I think we really need to look carefully, if we start waiving requirements, what that would mean to a local air quality management plan and control measures and all of those things that we have in our plan now that are working. And they're working really well. And we've seen some wonderful air quality years, at least for the last two or three years, and that's because of some good things that we've been doing. So, I'm concerned a little bit in terms of what waiving that requirement would mean to any gains that we've made in the Southern California Air Basin. I want to thank you very much and commend you also. I think you're doing the right thing. And I think you should keep doing this, because it's only going to help you and help your decision to be better informed and also to be backed by a consensus of public opinion. Thank you very much.
CHAIRMAN HICKOX: Thank you. Comments or questions?

DR. LLOYD: Yes. Thank you very much for your comments. I'd just like to point out that some of those issues came up at our hearing on the Phase 3 regulation. We had a similar presentation from the Mayor of Huntington Park, calling attention to the issue of

potential increase of truck traffic. We have subsequently gotten a letter urging us to be more active in that part of the evaluation. I've also gotten a letter from Gloria Romero, Assemblymember from the 49th district, similarly educating us to this issue, which is a very important one for the community, asking us to participate. As I mentioned earlier, this comes up through CEQA and it will come up through the local districts. And we're very, very committed to work with them on this issue, which I think is an important one. And again, we're delighted to work with you on this.

CHAIRMAN HICKOX: I'd also just like to say that I want you to be assured that the request for a waiver from the federal requirement that there be 2 percent oxygen in gasoline sold in nonattainment areas will in no way do anything to cause us to backslide from what we've already accomplished with regard to the use of clean-burning fuels in California. It's just designed to give our refining and distribution system a little bit more flexibility in how they go about reading the Governor's Executive Order. There likely will be some amount of ethanol used in California. It's just a matter of how much. And whatever happens, there will be no backsliding of what we've accomplished. Period. End of sentence.

MS. BARRANTES: And in terms of the refineries' costs, those will not result in any additional cost in terms of them being able to make the gasoline as clean as possible?

CHAIRMAN HICKOX: The cost to meet the regulations that have been adopted by the Air Resources Board will vary by refinery. And therein lies our capitalist system. They compete with one another. Our objective is to create as much flexibility so that they'll compete with one another in a way that will result in the least cost impact to the drivers of California, whatever that means.

MS. BARRANTES: Thank you.

CHAIRMAN HICKOX: Clean fuel, as low a cost implication as possible, and flexibility.

MS. BARRANTES: Thank you.

MS. HUTCHENS: Al Sutton. No?

CHAIRMAN HICKOX: Next.

MS. HUTCHENS: Brenda Marsh-Mitchell.

MS. MARSH-MITCHELL: Good afternoon, everyone. Good afternoon. I came a long way. My name is Brenda Marsh-Mitchell. I'm the Executive Director of Mothers In Action. I work for an organization called Brotherhood Crusade. I've been there 30 years. I represent parents. Mothers In Action, we vote -- listen to me carefully -- we vote, we pray, we take care of our families and our community, and we raise Sam. We really do this. But today, we're here representing the children. We work in the schools. We're taking our schools back, book by book. We do the things that the teachers don't do; we

make sure that the children are in class and that they're excelling in their grades. However, today, I'm sorry that we didn't bring children today. But if you were in South Central Los Angeles, you could talk to our children and our parents. We try to educate them on everything that's coming in the community that affects them. I noticed the gentleman from ARCO was drinking a bottle of water. We can't afford bottles of water for our children in our community. So we can't afford the luxury of not knowing what's in the water. We would like to invite you to our community. We hold great town meetings. We can fill up the room. But we want to learn, and we want to understand what it is you are bringing into our community. I saw a map, and the trucks are riding all on the 10 Freeway and 110 Freeway. That's my community. I don't see nothing on the 405. I don't see nothing on the 210. We want to understand what's coming into our community and how it affects us. I don't know how many of you have children with asthma. In our community -- and it came from the Center for Disease Control -- there's over 500,000 children in California with asthma. I know as a parent -- I have three kids -- two of them had asthma. I was a working parent, so I had to get up in the middle of the night to take my child to the doctor. The kid's uncomfortable, whatever, with asthma. We don't want to see another kid come up with asthma because we rushed to judgement. We will flood Governor Davis' office to ask for a town hall meeting. We will ask each of you to please come to our community and talk to us. We're not saying we're against it. We're not saying we're for it. We want to understand what it is you're doing in our community. And ARCO, I'm so glad, I'm so glad you said you'd like to help, because we're consumers. And we know how to picket at the pump, too. You understand?

MS. SELDON: Good afternoon. My name is Sharon Seldon, and I am also a member of Mothers In Action. And I am a mother. I have two boys, and both of them have asthma. As a parent, I was very surprised when I went to an educational hearing about asthma and found out that one in every two children are susceptible to asthma. And it's due -- and they told me this -- it's due to the environment. And we're talking here today about adding more to our environment. The South Coast Air Quality Management District has said that they have recently found that about 71 percent of the emissions from diesel are putting a risk of cancer in our air. I recently have gone through this with my niece, who is, thank you, in remission from cancer. My niece lives in Long Beach, right in the area of the refinery. This is hitting home for me. What I'm urging is that you come to our community. Let us know. These parents have to hear what you're bringing into our areas and know that this is a possibility. I understand you say you have to find a balance. We want you to find a balance. We want to know the positives, the negatives, because we're in these areas, we're on those freeways. Granted, you want to bring it in on the 10. My husband's a truck driver. I know that this is going to affect me personally. And about bringing these refineries and these trucks up to a certain requirement so they can make this change: I haven't heard anything, and I'm not all knowledgable, but is there some kind of program that you guys are going to come up with, some kind of rebate or something to assist these truck drivers, these refineries? These are the kinds of things that we need to know. As a parent, as a person that's receiving an income on a trucker's salary, I want to know. I'd also, as everyone else has, like to compliment you on this effort. I want to hope that in finding in this balance, you take our children and our people in our community into consideration. Thank you.

MS. MARSH-MITCHELL: I would like in closing just to add that we boast of having a membership of 700 parents. That's a whole lot of kids in the African community. And we would, again, like to invite you to South Central Los Angeles to hold a meeting, a town hall meeting, or whatever you want to call it. Thank you.

CHAIRMAN HICKOX: Thank you. Alan?

DR. LLOYD: Yes. I just want to follow up. Again, thank you very much for the presentation. I saw enough to realize I want you with us, not against us.

MS. MARSH-MITCHELL: I would, too.

DR. LLOYD: But the other thing I wanted to say, again, just to reiterate what Secretary Hickox said, there will be no backsliding. That is a commitment.

MS. MARSH-MITCHELL: But in our community, we want to hear that, not just Sharon and I, but the rest of our parents. They need to hear that.

DR. LLOYD: Good. And I would also reiterate we've addressed that in terms of cleaner gasoline. We've also addressed that in terms of cleaner diesel. On the asthma study, we're just initiating a major asthma study in California to further look at the relationship between air quality and asthma. So I think we're addressing these issues. We're seeing the issue that you have and want to work with you.

MS. SELDON: Thank you.

CHAIRMAN HICKOX: One more.

MS. HUTCHENS: Gloria Zurveen.

MS. ZURVEEN : Good afternoon. Saved the best for last, I guess. To the Secretary and the members, I'd like to thank you for allowing me the opportunity to appear before you today. I stand here today addressing you not only as a publisher of the Pace Newspaper for the past five years, but I stand here representing many parents of Los Angeles and the surrounding communities who are members of Parent Action Coalition for education, PACE. PACE is a parent association that started over five years ago to combat the blatant neglect of abused children in our public school system. It is our mission to ensure that our children grow up in a healthy, whole and safe environment in our homes, schools, and communities. It's amazing that I published my last issue of the newspaper last month, and on the front cover, without knowing this meeting was going to be taking place -- but I had some parents and community members insisted that I come here today that I represent them -- i have on the front cover, here, Brigadier General Celeste King, as well as Mr. William A. Berg, Chairman of the Board of Directors for the South Coast Air Quality Maintenance District. I did the research on them and featured them on the front page because that is how much of a concern that is to me as a publisher in my community and

an editor. I'm also deeply concerned, as well as parents who have been speaking to me in reference to their children's illnesses relating to not only asthma, but bronchitis as well. That's a very bad disease as well that comes from environmental effects. And we have a situation here, as I'm here presenting myself before you today, where the Air Resources Board approved these new gasoline regulations after just one Sacramento hearing last month, I believe. Now, the Environmental Policy Council -- that's you -- is supposed to make a ruling on the safety of ethanol in our gas after just one hearing in Sacramento. I am here representing these parents, as I've said before. And that is for South Central Los Angeles, Watts, and Los Angeles. And they desire to be heard, because we do care. We care, believe it or not. We care. Some people might not think we care, but we do care. We care about the technical gasoline regulations and the usage of the new fuel additive, ethanol. We care. Everyone has to live with the effect of bad air quality. My question to you is why should our health be risked in order to transport gasoline that could pose an even greater threat to us in our communities, according to Barry Wollenstein, Executive Officer of the South Coast AQMD. Diesel soot from trucks and buses is responsible for 71 percent of the cancer risk from the toxic air pollution. In the Los Angeles Air Basin, the risk average is 1,400 cancer cases; population of a million, with residents of Central Los Angeles County most threatened by heavy diesel-powered traffic, and most of them on the freeways in our community. We care. We also care about the potential for the increase in the cost of gasoline by using this ethanol. We care because the increase in this gasoline cost could have a detrimental effect on the low income residents in many different ways. Believe it or not, 6 and a half cents, that's a lot of money coming from low income residents. Finally, we care enough to ask you today, that this Council not make any decisions before allowing us an opportunity to have a hearing in Southern California, and particularly, South Central, Watts, and the Los Angeles area, where air quality problems are the most severe and have the greatest inpact on our children. Thank you.

CHAIRMAN HICKOX: Comments or questions?

DR. LLOYD: One comment I would make. I would encourage you -- we are obviously aware of the health concerns related to diesel particulates. On that line, we have a meeting at Diamond Bar at the South Coast Air Quality Management District Headquarters January 27th to look at cleaning up the emissions from buses.

MS. ZURVEEN : In Diamond Bar?

DR. LLOYD: Yes.

MS. ZURVEEN : Anytime our way soon? That's up in the hills.

DR. LLOYD: California's a big State. We refer to that as Los Angeles. Sorry.

MS. HUTCHENS: One last in this group is Gene Fisher.

DR. LLOYD: Speaking of the hills, Gene.

MR. FISHER: Good afternoon, Mr. Chairman and members. The ladies have spoken. They've done so eloquently. I don't know how I could say it any better. But, as the President of the Board of Directors of the Watts Learning Center, which is a charter elementary school in South Central Los Angeles, I've come to know that our children -- our commitment, number one, is to have a world-class education for these children. The children are in South Central L.A. 98 percent of them are on the "Free Lunch" program; that's low income. 75 percent of the parents are single. We can't teach the children if they're in the sick bay. And what we find is that an inordinate number of them are suffering from asthma and other ailments at a time they should be in the classroom. This brings me to the table. My background is, I worked for the South Coast Air Quality Management District in practically all facets for more than 31 years, the last 15 years of which I represented them in Sacramento and in local government arenas. I lobbied for strong legislation so that the air quality agencies, including the Air Resources Board and the Air Quality Management District would be able to do what they're doing to clean up the air. I'm not here, however, to discuss the technical aspects of this problem, really. I know that you have government employees who've done a study and lots of studies. I've seen charts and graphs and all of those things. The bottom line is really very simple as to whether or not the air quality is healthful, whether it is going to be maintained healthful, and for the most sensitive populations, that the cost won't be borne unfairly on them. My background is chemistry -- formal training -- and also environmental studies. I'm here because I've seen the children. I know that the are a sensitive population. And the ladies that came here today are hearing the same things that I am as I represent the children as they try to get a good education. The State's current formula for gasoline has significantly helped. They're cleaning up our air quality in Southern California. There are 90 percent fewer air pollution alerts compared to the 1970's. That's a step forward. We're making progress. My concern is as theirs is and was, that there be public input, public input in our area. We have the largest population in the State of sensitive, low-income people that are not being a party to this. They cannot afford to come to Sacramento and participate in this hearing. I think the best decisions are those decisions that will include the broadest input. We believe strongly that there's something that might add to a fast cleanup of the air to protect our health in our community. We feel that if a hearing were held there, they were properly educated, some of the political decision could be made to be facilitated by the input that that community could provide. We know and we heard that the increase, potential increase in gasoline due to the reformulation, due to truck accidents, due to inability of the refineries to produce the need is real. Yet, we will be able to face that with an understanding there would be support for the Governor and others if in fact it was well understood that whatever decision was made was a decision that was needed. We face, basically, a history of bearing an unfair cost on the community and also of unfair health impacts of the results of decisions that are made by public bodies such as this and the Air Resources Board and others. We don't feel that that's right. We feel that a democratic process should be promoted. I've talked to Dr. Lloyd, and I know his commitment is to do just that. I guess it's a question of environmental justice. We just came from Martin Luther King's birthday celebration yesterday. And there was a lot of talk about justice. Well, environmental justice is indeed a part of that. We must meet with the public in the areas of the state with the worst smog problems affecting the largest sensitive and most

vulnerable populations. We all deserve an opportunity to be heard in an open process and to help ensure the clean air and water for our children, safe streets, and reasonable prices at the gasoline pump. Mr. Chairman, I certainly appreciate your taking me out of order and for giving me this opportunity to be here.

CHAIRMAN HICKOX: You're very welcome, Gene.

DR. LLOYD: Just one comment, and I think, and this goes to your colleagues also,

Gene: I am sympathetic to the fact that it takes time to travel, etc., but in terms of children's health, the Air Resources Board initiated and continues to support a world-class study at the University of Southern California, USC, with Dr. John Peters. And they're addressing a lot of these issues with children's health and exposure to various pollutants. I strongly suggest that maybe you ask Dr. Peters to give you a briefing on that program. And I want you to understand that in fact we are very concerned about children's health. It ranks right up there.

MR. FISHER: Thank you. I understand that. It's just that our parents don't. And they need a conversation about that. And that would be very, very helpful for them to, say, send their children to school and understand, say, what they might be able to do to improve their health.

CHAIRMAN HICKOX: I guess I'd like to also add that your overriding expression of concern about children's health has certainly been heard in the legislature. Bills have been passed and signed by the Governor. Many of the people here with me today, the management of their individual boards and departments have put forward requests for additional funding for programs to expand our efforts to fully understand the consequences of the children with regard to threats to the environment. And I understand what I think is next, is that, that's great, but we need to somehow find a better way to be in your neighborhood and in your homes to help you understand what we're trying to do on their behalf as well as on the behalf of all of the People of California. So again, I appreciate you being here today, and I hear you.

MR. FISHER: Thank you very much.

CHAIRMAN HICKOX: I think it's time to take a lunch break. Is forty-five minutes enough?
When we return, we'll continue taking testimony. (Whereupon a one-hour lunch recess was
taken.)

CHAIRMAN HICKOX: Can we begin again? It's an estimate that we have 15 or so additional requests to be heard with regard to the morning's agenda item. As soon as we've completed testimony, we'll determine the will of the Council with regard to this item and then move on to our afternoon agenda item and try and wrap this up by 4:30. So

let's move ahead, again mindful of the perhaps three to five minute limit on comments and questions.

MS. HUTCHENS: Okay. I'll call the next group and then individually. Bruce Heine, Charles Ramsey, Scott Wetch, Father Richard Estrada, Jane Lowenthal, Joe Diaz, Erick Moreno, Brian Johnson, Neil Koehler, Mark Radosevich, Professor Richard Wilson, Daniel Hernandez, and Dr. Franco Reyna. And the first one is Bruce Heine.

MR. HEINE: Good afternoon. Thanks in advance for your attention. My name is Bruce Heine. I work for Williams Energy Services Company. Williams is a leading energy and communications company. Among our energy business and assets, we own and operate petroleum pipelines. We own and operate refineries and ethanol plants. The reason I wanted to speak to you today was to review the issue of how ethanol is moved in Congress. I've heard a lot of comments earlier today and at the ARB hearing on December the 10th in regards to the increase in truck traffic that's due to the inability to see ethanol shipped in other, more innovative fashions or ways. Our company believes it's a myth that ethanol cannot be shipped in pipelines. And again, we do own and operate our own pipelines. And, in fact, we have 72 terminals along our system and the systems of others. If ethanol is handled in a way that takes into consideration its special handling characteristics, we believe it can be piped on a regular basis for some short distances. In fact, we've done a test ourselves, where we ran ethanol in a pipeline from Kansas City to Des Moines, Iowa. And the test was done successfully. This is nothing new. We completed this test back in 1981. The results that we got from testing that delivery of ethanol in the pipeline was that the product came out generally fine. And our scientists and technical folks believe that if we did it on a repetitive basis that we would successfully be able to accomplish it. Traditionally, ethanol has been moved by truck and by railcar and by barge. And more specifically, I think the concerns that we hear and that you've heard today are increased truck traffic, which is due to ethanol not being able to be shipped in a pipeline. We think that because refiners are going to be looking for solutions that are out of the box, you will start to see, probably, short-haul shipments of ethanol in pipelines. It will probably happen in California. As a result, that will help to diminish the increased truck traffic that will be carrying ethanol tanker trucks from a primary port of delivery, say, in Long Beach, out to the terminals inland California. So, my message to you today is give the refiners credibility that they'll be looking for innovative ways that will be economic, that will be safe, that will ensure product integrity. And one of those ways is to ship ethanol in a pipeline. Thank you.

CHAIRMAN HICKOX: Any comments or questions? Jim?

MR. STUBCHAER: Why are you limited to short-term hauls?

MR. HEINE: Well, it's not necessarily limited to short-haul distances. There are longer hauls that have been done in Brazil. Here in the United States, however, I think it makes practical sense to look at shorter hauls from a quality control perspective. The haul that we did was some 200 miles. And if we had a reason to test it further distances, we probably could come back with a better answer for you. I'm not aware that here in the

U.S. that a test has been done of any substantial distance. There hasn't really been the need for one in the Midwest. There are a lot of opportunities to haul ethanol by tanker truck that make good economic sense. We just haven't done that. There's no technical reason it can't be shipped longer distances.

CHAIRMAN HICKOX: Anyone else? Thank you.

MR. HEINE: Thank you, again.

MS. HUTCHENS: Charles Ramsey. (No response.) Scott Wetch?

MR. WETCH: Hi. I'm Scott Wetch, and I'm representing the State Building and Construction Trades Council, on behalf of the 350,000 men and women in the construction trades employed in California. I'm not here today to take a position in favor or against the use of ethanol. I would not presume, nor would the building trades presume to tell the Air Resources Board or this body how to formulate gasoline. But the concern that we have is for the health and safety of the workers within the refineries for the members that we represent. We would ask that as you go down this road, as you evaluate the various potential replacement additives to gasoline, that you ensure that you take the time to fully evaluate the health and safety ramifications involved in the retrofitting process and the effects that it would have on the men and women who work in the refinery. Certainly, in the wake of the TOSCO tragedy, the issue of safety in the workplace within the refineries is one of great concern to many, many people, the community as well as the workers within the refineries. Specifically, I think the timeline that you adopt for the retrofitting and for the use of whatever the additive is that you -- that is settled on, that there be serious consideration of the impacts, what sort of strains would be placed on the workforce in order to meet that timeline. I would encourage the Resources Board to sit down with OSHA, sit down with representatives of the employee groups, and have some serious evaluation of what sorts of issues they would be faced with. Particularly, we are concerned with the use of out-of-state contractors who come from states where they don't have the sort of developed training and safety sort of programs that we have here in place in California. All of our members that work within the refineries are journeyman that have gone through certified apprenticeship programs approved by the California Apprenticeship Council, certified through the Department of Industrial Relations, and who work closely with OSHA. We would certainly be in favor of any sort of requirements that would require that employees of out-of-state contractors have to have gone through the same sort of training and apprenticeship program to ensure not only the safety of the workers doing the retrofitting, but also the impact that it could have on the community should something go terribly wrong, as in the TOSCO incident. So those are our comments. Thank you.

CHAIRMAN HICKOX: Thank you.

MS. HUTCHENS: Father Richard Estrada.

FATHER ESTRADA: Good afternoon. My name is Father Richard Estrada. I am a pastor of Our Lady of Soledad Church. It's a Catholic church on Los Angeles' East Side, and also the founder and director of a youth organization called Jovenes,Inc. I came this morning with four young students, college-aged students. We'd like you to know that we're really impressed by the work that you're doing and that we're really learning a lot about the environment. We're very concerned with all the issues. And more than ever, we want to go back and educate -- and learn and educate our peers. During lunch, this is what they asked me to say -- right now, they're on a tour of the State Capitol building. They asked me to say this: Finding ways to improve the quality of air that we breathe is the responsibility of every member of our community. They also said that an informed community is a healthy community. And they also asked me to say, or to invite you to come to the communities, especially those that are most affected by transportation, by those communities that are close to the freeways where traffic is going to go through and where the refineries are. We need -- the community needs to be informed. And they need to work with you. You need to hear them. So, we're asking you, very simply, to come to these communities to have a forum such as this in our communities. And this is what they asked me to say today. Thank you.

CHAIRMAN HICKOX: Any comments?

DR. LLOYD: Yes. Thank you very much. Again, I think I --

CHAIRMAN HICKOX: Father? (Father Estrada returned to the podium.)

DR. LLOYD: I stated earlier that I gave a commitment from the Air Resources Board to go down into the communities and participate in a dialogue with the citizens as we move ahead with the Phase 3 gasoline so you understand all the issues and we get a chance to respond to all the issues. Thank you very much.

MS. HUTCHENS: Jane Lowenthal? Joe Diaz? Oh.

MS. LOWENTHAL: Good afternoon, Commissioners, Chairman. I'm Jane Lowenthal, and I come with a broader interest. We've heard folks talk this morning who have come from organized groups. As a professional arbitrator and mediator and a community advocate, I come with a perspective that says, let's listen to everyone. Let's bring all the parties to the table so that we can have fewer -- so we will have need for fewer times when we get back and say we've made all these terrible mistakes. I would like us not to be back here five years from now and be saying the same thing about some of our choices today or in this limited period of time. I thank you for the opportunity to speak to you. I'd like to say that I think the most important thing for me is the confidence of the community, the confidence of the population, that indeed, they see the work that you guys are doing as our government in action -- well, not guys. Sorry. I say guys all the time. My concern is that we see this as representative government. And I believe that the only way that folks are going to have confidence in that is to be able to have the hearings and to be able to speak. And you have been so respectful of that today. I'm very glad to hear that. I think there are only a couple of things I wanted to bring to the floor, because

so much of it has already been mentioned. I'm very concerned about the diesel trucks. I'm from Southern California, though I'm up here a lot. But the traffic down there is not only appalling, but in some of those areas they were talking about this morning, the accident rates are enormous. One can only listen to our all-the-news, all-the-time kind of radios and here the traffic reports. I promise you that every single morning I'm in the car driving someplace, there is an accident in those areas, before I leave for work, while I'm on the road, and in the afternoon. And if we are going to be needing more trucks -- as well you know this -- if we are going to be needing more trucks, then indeed, they have to be diesel. And if we haven't cleaned up those diesel emissions, etc., it will be even more enormous and more problematic. I'm concerned about that. The MTBE problem has seemed to be one of leakage. And I think that that's where the hysteria has come in. But we have such a good opportunity now to see if we can find an alternative. We were talking at lunch about the possibility of benefits of a waiver. And that certainly seems to give us or buy us time and give us alternatives. I'm very concerned about the potential monopolistic opportunities involved in one form versus another, and I know you all are too. I'm hoping that the waiver's going to do it. I certainly look forward to perhaps you pointing out what other alternatives we can help you with that will give us the chance to get more of what everyone needs. As a mediator, I want to see if we can't compromise and get as many people to get as much as they can. I was taught that ethanol can't go in a pipeline -- I just want to make this as an add-on because of the comment we just heard. And I was fascinated by the comment that we can take it on short haul. I took a plane ride today from Los Angeles that was longer than that short haul. So I certainly think we need to remember, as I'm sure you all have done the math, but 200 miles isn't going to get us any further than Diamond Bar to my house in Chatsworth, which is the North San Fernando Valley. So unless those studies come about to prove that we can take it a lot more on the long haul than the 200 miles, then we need to go revisiting that issue. But you heard it and so did I. I thank you very much. I thank you for your attention to the community, and I can see how clearly this is impactful because of all your very thoughtful comments and questions to the people who are here. Thanks very much.

CHAIRMAN HICKOX: Comments or questions? Thanks.

MS. LOWENTHAL: Thank you.

MS. HUTCHENS: Joe Diaz?

MR. DIAZ: Good afternoon, Board. I'm just nervous. I come a part of the L.A. Conservation Corps, but representing residents of Pico Liso and Laurel Heights area, part of a public housing area where the 710 and the 5 meet at that area. I'm a parent of two daughters, 7, and a four-year old -- four-month kid. And our thing is, we know where ethanol is going to go into our gas system because of the Governor's -- and I honestly respect that decision he makes. But also, his decision is to make education his number one priority. And I hope this Board makes its number one priority to make it safer for children when they grow up. Ethanol is not going to take effect tomorrow; it's going to take effect when my daughter is 16 or 18 -- my youngest one. My oldest one will be 28. So I want to make sure it's safe for them a couple of years from now. So that's what I

come with. Gas stations, I hear you guys saying that there's not going to be an increase of gas when we go to the gas pumps. How sure is that from you guys? Do you guys make that a for sure thing that it's not going to raise too much? As it is, we pay in L.A. $1.65 for gas, and that's regular unleaded -- I mean -- yeah, regular unleaded. And super unleaded just goes higher. So what I want to know is how increase is the gas going to go for residents of East L.A., and not just -- Los Angeles in general; I shouldn't say East L.A., but Los Angeles in general. As further you go west, it gets more expensive. So I want to know how we plan to do the long run from here. That's my last say.

CHAIRMAN HICKOX: I thank you for your comment, and let me just offer this thought for you. In our system, we try as much as possible to let market forces determine the price of goods and services. And it's true that the things that we do up here have the opportunity to affect the price of goods and services in California. To the best of our ability, we try to minimize that. We're not always as successful as we would like to be. The studies that have been the product of a number of these peoples' efforts show that depending upon which of any one of a number of different scenarios plays itself out, the price impact of making this change should be bearable by the market, something minimal. But I promise you, each and every one of us understands the personal implications of that and how it affects families. I have two children with families of their own. And I know what you speak of. And I would like to be able to try to convince you that we take very seriously our responsibility to be aware of that concern. And I appreciate you bringing that to our attention. Thank you.

MR. DIAZ: Thank you, guys, for taking the time to hear us all. I appreciate it.

CHAIRMAN HICKOX: Okay.

MS. HUTCHENS: Erick Moreno. Brian Johnson?

MR. JOHNSON: Good afternoon, Secretary and Council. My name is Brian Johnson. I'm the Environmental Programs Manager for the City of Santa Monica. Santa Monica has been in some measure an unfortunate focal point for the matter that is before you today. We were somewhat unceremoniously plunked upon the very steep learning curve of MTBE in reformulated gasoline as we saw well after well after well and gallon upon gallon of our drinking water being lost. So as you can imagine, our community is very interested in your deliberations today. The good news is, I will refrain from inviting you back down to our community, as I'm sure many of you have grown quite weary of that trip. I want to thank you for the opportunity to present two comments this afternoon. One will be quite brief, as it has been brought up before. But I would like to drive it home. It's that issue of mixed constituents in the plumes and how they will behave. The second involves the prioritization of release scenarios that have been evaluated thusfar. We have learned that the lion's share of releases do not occur in pristine environments; rather, they typically occur in environments that have been previously contaminated with -- in most cases, at UST sites -- with mixed hydrocarbons, with the BTEX aromatics, and with MTBE. In Mr. Rice's presentation, plumes which were evaluated were comprised of benzene only, if I understand this correctly, benzene and ethanol and MTBE. And it

appears that the most typical UST releases of the scenarios which may be looked at would contain the mixed hydrocarbons, BTEX, MTBE, and if approved, we're layering another constituent, ethanol, into that mixture. As I understand it, this mixture has not been evaluated, was not one of the scenarios that was looked at. The plume dispersion characteristics, the co-solubility, and those matters have not been fully evaluated. And I would suggest that such an evaluation would indeed prove useful and imminently practical in the real world of underground tank cleanups. Secondly, I would like to comment on the prioritization of release scenarios under evaluation or which have been evaluated and to suggest another scenario that warrants, what I believe, a serious consideration. Other than UST's, the focus thusfar appears to be on the acute, the discreet, large volume, above-ground release events, that although certainly catastrophic and dynamic, they facilitate or enable us to observe, to monitor, to attempt cleanup in a more open and straight forward manner. Alternatively, the UST's rely upon a buried technology to detect unseen releases and failures of the systems. And as mentioned by several other prior commenters, underground tanks have leaked in the past and inspite of our best efforts will continue to leak into the future. Now, taking the most troubling characteristics of these prior two scenarios, I believe, highlights the need to prioritize evaluation of subsurface product transmission pipelines that have been mentioned. As has been revealed in Santa Monica's unfortunate experience, these pipelines are sleeping giants. They carry millions of gallons of product per day under tremendous pressure. Most are over half a century old, over 50 years old. And the current testing technologies simply cannot, cannot detect environmentally significant leaks from these vessels. These pipelines traverse hundreds and thousands of miles throughout the state, throughout our cities, and in our case and quite importantly, adjacent to countless water production wells and well fields. I would respectfully suggest that pipelines be considered for a more formal and detailed evaluation of the potential leak scenario. Thank you for your time.

CHAIRMAN HICKOX: Comments or questions? Thank you.

MS. HUTCHENS: Neil Koehler.

MR. KOEHLER: Good afternoon. My name is Neil Koehler, the General Manager of Parallel Products. And we are California's only ethanol producer today. We think that there's an opportunity to build a vibrant industry in this state. We certainly think that will be very good for the State of California. We convert waste products from the food and beverage industry to ethanol in Southern California. A few very brief comments. I think that this was a -- certainly, the process that was initiated by the Governor's Executive Order was a very tall order, a tall process to fill, particularly as it relates to the deliberations today and all of these agencies dealing with all of the very scientific and technically-oriented materials before them, to try to pull that together in a very quick time, integrate it, and come to you today with recommendations which are clearly that ethanol is a ready and appropriate substitute for MTBE that provides significantly less risk to the environment than MTBE. I would like to concur with those results and encourage you to vote positively on them. And that's been from the technical and the scientific side. I would also like to say being in -- having been in this business for 20 years, that there really also is a very large body of commercial evidence. Ethanol,

contrary to some of the comments today, it almost sounds as if it's brand new and untested. And in fact ethanol as a compound has obviously been around for a lot of years. But as a fuel, it has as well and is used extensively in other parts of the United States. All of the states around California use ethanol at times of the year in all of the gasoline. As part of the Reformulated Gasoline Program, the City of Chicago opted to use ethanol. And I believe there's in excess of four hundred million gallons per year of ethanol that's blended into every gallon of gas year round sold in the Chicago area. Certainly, due to water contamination issues in a big city like that, they are aware of what's going on in their groundwater, and they have not had any problems with BTEX plumes or any other water quality issues that have arisen out of the use of ethanol. It's been a very, very, successful program. It continues to both improve the air quality while protecting the water quality. So it's -- I just wanted to offer that commercial evidence to support the more scientific and technical evidence that's before you today. I would also like to say that we've heard a bit about cost, and certainly, all of us in California are concerned about cost. I would just -- and it's been suggested that possibly adding ethanol to gasoline could raise cost. And I just wanted to also say that we have a problem with taking MTBE out. If we're losing some volume, and to the extent that we can bring supplies of additional gasoline and ethanol, that that is important to hold the cost down. And to the extent that ethanol is not made from crude oil, is really produced in an entirely different way, that that is a new supply of liquid fuels. And the diversity and the addition of that new supply to the liquid fuel complex here in California, in my mind, should be a very positive impact on gasoline costs in California. Finally, while we're not arguing around the margins when we talk about MTBE and its health effects, my perspective as an environmentalist who got into this business of producing ethanol from waste products, I think there's a much bigger issue, and that is, what are we going to do in the future? What is our energy future going to look like? I think this body, trying to pull together from across media view all of the looks, both environmentally and economically, is very well positioned to look at that. And I see this crisis as a way to re-examine our energy future. And to the extent that ethanol is a renewable fuel, that is certainly the direction we need to be going. We want to encourage the growth of an ethanol production industry in this state, and we want to recognize that -- while I've heard a lot about mandates of oxygenates -- for us to recognize that we have a defacto mandate on gasoline. We have a hundred percent mandate on gasoline as one very toxic and insecure fuel source all of its own. We need to challenge ourselves so that our children and our grandchildren can look forward to a much more diverse, sustainable, renewable energy future as we move forward. And certainly, we feel very strongly that ethanol is a part of that, both as an additive in gasoline and as an ultimate replacement fuel. Thank you very much for your time.

CHAIRMAN HICKOX: Comments or questions?

DR. LLOYD: I'd just like to agree with Neil on the latter point that this points out the fact that we have, as we're debating here today on the relative merits of the fuels, we should also be looking to the future to renewable fuels as part of that mix.

MS. HUTCHENS: Mark Radosevich.

MR. RADOSEVICH: Good afternoon. My name is Mark Radosevich. I'm the founding partner of the Standard Alcohol Company of America. I appreciate the opportunity to address this Commission this afternoon briefly on your subject of the overriding MTBE controversy. As I understand the problem with MTBE -- I've given you a chart -- something I've pulled off of the Internet and added a few descriptive characters to it -- it appears to be basic chemistry that's the problem. We've got a triple carbon bond, which is very difficult for the natural bacteria in microbes to break down. So, of course, when this does leak into the groundwater, it will persist. A few parts per billion of MTBE in the groundwater will make your shower smell like turpentine. And nobody wants that. I have to concur with many of the comments of the gentleman ahead of me who expressed his interest in your Commission approving ethanol, which is before you today. I understand ethanol very well. In my own career, in the last 26 years, I have visited and documented the workings of 65 alcohol plants, ethanol plants. It is both a wonderful food and fuel economy. I wish the ethanol industry would talk more about the food benefit and the process. However, they don't. I also wish that they would talk, in fact, I wish the refiners would mention that ethanol has been the super ingredient which has made super premium unleaded super since 1981, when AMOCO Oil introduced it to America first, soon after the gasohol scare of the 1978/'79 era. We didn't have much of the product around in 1980. And in '81, it appeared to us as super premium unleaded. Most of the general public that I run into has extremely little information about the constituent elements of gasoline. They don't know that our gasoline that we all depend on has got 150 to 200 constituent elements to it, very highly-branched hydrocarbons, of which several of them are known carcinogens, the complexes that were discussed here this morning. I see smog over cities as nothing more than an oily haze in an atmosphere of water vapor. Our precious earth is the blue planet. The handout I gave you is a real interesting aerial view of the earth. I chose that from an advertising perspective to show just how thin the blue layer is that surrounds our planet. It's only about fifteen miles thick. When we're in a jumbo jet, we're -- we know that we have to have pressurized air to stay out of about half the distance into that blue when we're traveling. All of the pollutants that are emanating from our tailpipes, from our industrial smoke stacks, from our burning rainforests, from loose nukes, like Chernobyl and things like that, are really pretty much contained within the first few miles of the blue as an oily haze in a water atmosphere. The secret to ethanol and to the product that I chose to use this forum to introduce you folks and the world to today is water solubility. That is the key. In terms of dealing with combustion fuels, we need to be dealing with water- soluble characteristics. H2O is what surrounds us and keeps us alive on this planet. By simply adding an oxygen atom to a hydrocarbon chain, we convert that hydrocarbon chain into a water-soluble alcohol. Methanol, C1 methanol, is actually liquid methane, natural gas. We've added oxygen and methane; it becomes liquid methanol. Ethane with oxygen is ethanol. Propane with oxygen is propanol. Within the last 26 years, I have combusted thousands of gallons of ethanol, not only in blends, but I have combusted it straight; neat, as we say. I've been across the country and back, on national TV, pouring water into my fuel tanks, demonstrating water-soluble characteristics of fuel alcohols. About eight or nine years ago, I happened upon a catalytic formula. It was the best thing that has ever happened to me in my own career with fuel alcohol, that allowed us to essentially use a methanization process, but to create

a hybrid of fuel-grade alcohol. I have been working for the last seven years on a product we've termed Envirolene, which is a higher-mixed alcohol. It's a C1 through C5 blend, essentially. For the layman, we're blending methanol, ethanol, propanol, butanol, and pentanol. For certain applications, we can synthesize 6-carbon hexanol, 7-carbon heptanol, and 8-carbon octanols. The chart that I gave you here indicates the single-carbon chemistry of all of these alcohols. Out at the end, we're at ethanol. At the beginning we're just at methanol -- excuse me -- octanol at the end. The key with fuel alcohols, of course, is that a single carbon chain, the natural microbes in the bacteria in our atmosphere and our ground can break these down. An elderly woman this morning was so concerned about a tanker rupture of ethanol being delivered to California at one of the two ports, the two major ports. I'd rather see a tanker of fuel alcohols go into our precious oceans any day than liquid petroleum. We're all familiar with the Exxon Valdeez. Ten years ago, it was revisited, a ten-year birthday this summer. At the turn of Y2K, we were witnessing the ravages of petroleum washing up on the beaches of Turkey and of France. Petroleum products float on water, and their combustive products float in our water vapor. The Envirolene product that I gave to you today has got 139 octane points. The refiners should be extremely interested in that. We anticipate producing that product from feed stocks like natural gas, both in an onshore or an offshore application, utilizing the waste-flare gas commonly associated with offshore drilling wells and producing the product in the neighborhood of 25 or 30 cents a gallon. In terms -- I'm most excited about some patents that came my way in 1992 for municipal solid waste gasification. I perceive that the fuel of the future is going to be gasified from the waste streams of society. I say gasified, not incinerated. Gasification. We're talking about gasification of municipal solid waste; sewer sludge, garbage, blended coal, and producing a new green fuel that works like mouthwash for your cars for maybe 5 or 10 cents a gallon. I definitely support the Ethanol Renewable Energy Blender's Tax Credits. The farm alcohol economy cannot continue to manufacture ethanol without those. From the Standard Alcohol Company's perspective, we'd like to see those tax credits staying in place as long as possible to spur the development of very near-term future fuel projects which will be publicly owned or municipally funded. Everyone in this room, I hope, will not only be a consumer of a new green fuel of blended alcohol, higher-mixed alcohol, but can also become a shareholder in that operation. That's our plan. I've had an opportunity to show this fuel and demonstrate some of its characteristics to people with the California Energy Commission, Secretary Hickox and his EPA staff, a few folks from CARB have seen it, and Jim Boyd, from Resources, right around the fourth of July weekend. As six months have ensued, I did not plan to bring this fuel public through this particular venue until it actually happened. I didn't see the MTBE issue as an opportunity to demonstrate a new fuel, something better than ethanol, stronger than ethanol, as water-soluble as ethanol, that can be -- that we can outproduce ethanol maybe a hundred to one at one quarter of the cost. And I've decided to take this opportunity to at least introduce this Commission to the product. I urge you to vote in favor of the ethanol mandate right now as opposed to MTBE. MTBE is a good oxygenate, but it doesn't biodegrade, so it should probably be removed from the system. I'd be happy to answer any questions you have. Again, thank you for this opportunity to address your body.

CHAIRMAN HICKOX: Comments or questions?

DR. LLOYD: Yeah. How much have you sold of this in Colorado at the moment? Have you sold anything?

MR. RADOSEVICH: No. No, sir. I have been working on alpha tests with the product for the last year. None of this is available for commercial or wholesale sales at this point in time. We have combusted several thousand gallons. I would be very happy to work with the California agencies and provide you people with railcars of the product, if you'd like, for testing.

DR. LLOYD: So what are you doing with the railcars at the moment full of this?

MR. RADOSEVICH: I don't have railcars full of them, but I can produce railcars full of the product rather quickly from natural gas. And in the four corners, we would use natural gas. I'm also connected to the floating methanol plant ship. There is a particular vessel that has been designed to take advantage of the waste-flare gas, like around Santa Barbara and be able to process that into the mixed alcohol at, maybe, 25 cents a gallon. Those boats will take about two years to build. Our waste gasification technology; we're looking to prototype it in Eastern Pennsylvania, utilizing trash from New York City, and essentially working to solve two problems of society simultaneously. That will be about an eighteen-month operation to get a prototype. We're still looking for funding for it right now. We're a totally private enterprise hoping to go public this year.

DR. LLOYD: One quick last one. Have you done any work -- you mention in your article -- about reforming of this to hydrogen. Have you done any work on that?

MR. RADOSEVICH: In terms of reforming it to hydrogen?

DR. LLOYD: Yeah.

MR. RADOSEVICH: It can be reformed to hydrogen just as easily as methane or methanol can. Thank God, we're not worried about reforming this, turning it into a hydrogen reformate. I've got seven years' background in the emerging direct methanol fuel cell, the new water engine which will soon appear -- soon, folks -- under the hoods of our automobiles. Ford Motor Company, Daimler-Chrysler, Ballard, Methanex, Petro-Canada, names that you have heard of before, are working in secret and at overtime rates to develop the new engine to re-power the earth. And it will be fueled on straight methanol and water. We will not produce Envirolene for direct methanol fuel cells because of those extra carbon bonds. Carbon-carbon-carbon bonds are difficult to break down through fuel cells. So we anticipate more carbon in our blend stock for gasoline, diesel, and jet fuels. And we will be distilling a methanol fraction from our mixed alcohol for the direct methanol fuel cell when it becomes commercialized in the next three or four years. We don't plan to reform it at all, but it can be, sir.

DR. LLOYD: Thank you.

CHAIRMAN HICKOX: Any other comments or questions?

MR. LOWRY: I have a question. Is this a substitute for gasoline, or do you add it in gasoline.

MR. RADOSEVICH: All alcohol -- good question. All alcohols feature an air-to-fuel ratio at about 7 points of air to 1 part of fuel. Our gasoline engines today are at about 14 parts of air to 1 part of fuel. The higher-mixed alcohol has an energy density of E85, 85 percent ethanol and 15 percent gasoline. It works wonderfully as an alternate substitute fuel in flex-modified automobiles. Our problem with Detroit is, they're only offering the flex option and a very few models. And it's kind of a chicken and egg situation right now. They requested of our little company to come in with CONOCO or Exxon on our arm, and then they would know we were serious, and they would put the flex option in the remaining internal combustion engines that will be built on this planet. With adjustments, it becomes a substitute fuel. We are finding in our own alpha testing that we are running very high volume blends, 25, 35 percent at 139 octane, with absolutely no modification to existing diesel or gasoline compression technology, again, because of the extra carbon length. The engine sees it as gasoline, more as gasoline. The environment sees it as a water-soluble substraight, biodegradable.

DR. DENTON: I have a quick question. Just in smelling it and putting it on my hand, it seems to be quite volatile. The volatility?

MR. RADOSEVICH: The volatility: Our alcohol shares the same -- a portion of the same revapor pressure increase that you will get with ethanol. About 40 percent of that mixture is ethanol. In fact, 2 or 3 percent are esters. Every woman that's ever smelled that green fuel has got the whiff of fingernail polish remover. Ethylacetate is what is fingernail polish remover. That is in that fuel by about 1 and a half percent. It combusts just fine. With final testing, we'll determine whether we're going to leave that one and a half percent ester in the fuel or whether we'll distill in on out. It burns with a very pretty blue flame. It is -- the flames are put out with a simple mist of water vapor. That's the value of water-soluble fuel chemistry.

DR. LLOYD: I notice you have "Poison" on it.

MR. RADOSEVICH: It is just as poisonous to drink as is gasoline. Methanol is poisonous. Ethanol is not, or our body can tolerate some ethanol. We know if we take too much ethanol we'll go down. We go back into three-carbon propanol, poisonous four-carbon butanol. You shouldn't drink it; five-carbon pentanol, no. It's a fuel alcohol. It's not for consumption. It is naturally denatured in its own synthesis process. Ethanol, as we know, is normally denatured with a little natural gas or a little bit of methanol, anyway, when it comes from grain-alcohol plants. They don't want that fuel-grade ethanol to be consumed.

CHAIRMAN HICKOX: All right. Thank you very much.

MR. RADOSEVICH: Thanks for this opportunity.

MS. HUTCHENS: Lloyd Forrest?

MR. FORREST: Thank you, Panel, Mr. Chairman. I'm Lloyd Forrest, of TSS Consultants. We're a small consulting firm that specializes in biomass technologies such as biomassed ethanol. We've been working for developers or investment banks as part of their risk assessment financing team on these kinds of technologies since 1986. Since 1988, we've been working on proposed biomassed ethanol projects in California. We're currently part of the project team for the Gridley ethanol project that's proposed to use rice straw north of here, about 70 miles. We're also part of the project team on the proposed Collins Pine project up in Plumas County that would locate a biomassed ethanol facility adjacent to a biomassed ethanol plant and use material that's burned in forest fires. Biomass, for those of you that don't know it, here in California, we have a large waste disposal problem. And the fuel that you see being burned in wildfires is a biomass. We have an overaccumulation of fuel in our wildlands, creating higher costs and losses from wildfire in California. Second, the ag disposal problem, in terms of ag residue, the rice straw problem, that's a biomass problem, a waste disposal problem. And the urban woodwaste, such as greenwaste that goes into landfills is a biomass problem. In effect, in contrast to bringing ethanol from the ethanol states and bringing it in by ship and piping it or piping it but running it in by rail or truck, California has enough of a waste disposal problem to provide probably all the ethanol that California would need looking five or ten years down the road in terms of reformulated gasoline use here in the state. That's certainly not here today. There is no existing plant. But there is a lot of market interest and the potential for a future ethanol market to build that industry here in California. We thought prior to the phaseout of MTBE that there would probably be, in the next three to four years, two to four biomassed ethanol plants built in California, primarily using ag residue and maybe some forest residue and some urban waste. The phaseout of MTBE is creating a much bigger demand here in California for ethanol, which the marketplace, I think, is looking at and saying there may be an opportunity here for investing, creating jobs, and actually, in two areas that have high unemployment here. I think you've heard from one of the -- a number of people from the inner-city areas. Those are areas that have 30-plus percent unemployment, in some cases, as high as 90 percent. I did spend some time working under a previous administration in the Watts labor area, also in Telecu, in East Oakland -- I mean, West Oakland, and Telecu in East Los Angeles with some of those groups. And they're very parallel with the rural areas of the state; high unemployment, no infrastructure, low-paying jobs, if at all. The reason I'm mentioning these is, the creation of a biomassed ethanol industry in California could create some win, win, wins. One, it could add infrastructure and jobs in both of those areas, which builds a tax base for certain government services and providing support to schools and infrastructure. Two, it could help solve some major waste-disposal problems here in California; on the ag residue side in lieu of open-field burning, on the forest side in terms of reducing the fuel that goes up in wildfires annually in California, and also helping to reduce the greenwaste going into urban landfills in California. So, the potential is there for some win, win, win by helping create a biomassed ethanol industry here in California. It certainly cannot be here overnight. Having worked for probably 20 or 30

investment banks on these kinds of financing the projects for biomass technologies, I can tell you that the number one barrier to creating that industry is the assurance of a long-term market for the ethanol here in California. Assurance: I can be very specific on that. It requires the investment folks looking down the road and seeing a market for somewhere in the reasonable ten-year period, which is a tough, tough barrier for creating a biomassed ethanol industry in California. I've had discussions with some of you and a number of you staff in trying to wrestle with that. I submitted at your Diamond Bar hearings last year, when you convened this group, some estimates of how much of an industry could be built or what time period with some assumptions on that. I'm certainly available to work with your staff. I think the last comment I'd like to make is, I've been involved over the years, I guess decades -- I'm showing my age a little bit -- in a number of these kinds of wrestlings with policy issues here in California and where it crosses single-purpose agencies and multiple stakeholder groups. I would say this is probably one of the better forums, cutting across the agencies in trying to deal with the trade-offs among the benefits and the downsides of wrestling with these environmental issues that certainly impact the State. So I'd compliment you on doing this but encourage you to do it even more in the future on these kinds of issues. I'm available to answer any questions.

CHAIRMAN HICKOX: Comments or questions? Thanks.

MS. HUTCHENS: Necy Sumait.

MS. SUMAIT: Good afternoon. I'm Necy Sumait. I am the Manager for Arkenol for their projects here in California, trying to convert rice straw into ethanol just a few miles north of here. Arkenol is a California company that is trying to use California's biomass to produce fuels and chemicals like ethanol. We spent the year looking at the potential negative impacts of ethanol, and I thought it would be useful to, you, know, again highlight the positive impact, the positive benefits of ethanol that shouldn't be ignored in these deliberations. The air quality benefits of ethanol has been well documented, particularly with regards to carbon monoxide. Ethanol is a renewable fuel. You've heard this morning, it's easily biodegradable. As a matter of fact, you know, this morning, there was some, as Neil had mentioned earlier, some concern about a new additive. Ethanol's been used in several parts of the United States and in California prior to 1996 as well. After ethanol is produced, it's actually poisoned with unleaded gasoline so that, you know, people won't drink it. Using ethanol will advance our fuel diversity goals, increase our dependence on petroleum products. And these should have the good benefits with regards to competitive gasoline prices in the future, particularly with the coming of biomass-based ethanol and the ability to produce home-grown fuels. With technologies such as Arkenol's we can convert the waste products and our waste issues into fuels and chemicals like ethanol. The project that we are working on right now in Sacramento is based on rice straw. We've also looked in Southern California about using portions of segregated municipal solid waste, particularly the portion that is left over after you take out the high-value paper; the cardboard, the stuff that's left over that still has lots of cellulose that typically ends up in landfill. So we've tested that through a process. It is high in cellulose. It is clearly a potential feed stock for us, particularly in the urban areas such as Los Angeles. I want to emphasize what Lloyd has said: In getting these projects

financed, it's important to have a long-term market. If investors can't look to the future to assure themselves that there is a long-term market for ethanol, you know, it's difficult enough to get project financing for these first-of-a-kind technologies, let alone if there's no certain market out there in the future. And if there was a market for ethanol, then the new economic development created by a new industry will come to California. New jobs: We can even have the seasonal jobs that's in agriculture right now by having a long-term, year-round industry that would need employment. It would provide a large-scale solution to California's waste management issues. As such, I hope that the Council will find that ethanol is acceptable and urge you to encourage to explore how California can foster the development of this opportunity to create a sustainable future for this state in an environmentally responsible manner. That concludes my comments today.

CHAIRMAN HICKOX: Comments or questions? Thank you.

MS. SUMAIT: Thank you.

MS. HUTCHENS: Professor Richard Wilson.

PROFESSOR WILSON: Good afternoon, Mr. Chairman, lady, and gentlemen. My name is Richard Wilson. I'm a Professor of Physics at Harvard University, and I'm spending six weeks at University of California at Berkeley. And I was asked by the Lyondell Corporation if I would come and tell you my views on some of these things here. In making an assessment of the risk of public health on the environment of the change from MTBE to ethanol, it's obviously necessary to compare the risk of ethanol and MTBE on a comparable basis, as much as possible. And I don't believe that OEHHA has completely succeeded in this end. For example, the most important thing about ethanol is, it's unequivocally a human carcinogen in the commonplace sense that under certain groups of people, it has been demonstrated or shown to cause cancer. And that was mentioned this morning by Dr. Marty, in response to my comment. This cannot be said of MTBE. It has never been shown to cause cancer. Ethanol has been show to cause cancer in biology animals, as of course has MTBE. Both are at very low levels. And the one important feature is both indirectly are very weak carcinogens. Now, then, the question is, should one assume a linear dose response at low doses? I believe there's as much and even more justification for assuming lineality at low doses for ethanol than there is for MTBE because of these human experiences that I mentioned. And so I think it is proper to assume it is linear. I believe, however, that the risk with OEHHA, the risk from cancer from ethanol, even if we assume the potency I assume, is not a big risk. Nor, however is the risk from MTBE. And neither should be used as a basis for choosing MTBE or ethanol as an additive for gasoline. I believe there is already plenty of adequate data to make this assertion. That statement that the risk is small already comes from the numbers that are represented by OEHHA, with which I agree. Now this lead, number two, to a paradox: We all consume a little bit of ethanol, some of us have some in our water for lunch. And we don't all get cancer. Now why is it that there is a risk? The answer is clear: You cannot measure a risk below 1 in 100. It's not possible. And we're talking about risk 1 in 1,000,000; 10,000 times smaller. So that tells us the risk which exposes a normally moderate drinker is much bigger than the one in a million, or 10 to the minus 6.

And that should tell us in addition what that risk of one in a million means. It means it's absolutely miniscule. It is smaller than many risks we commonly accept. And that is true, not only for ethanol, it's also true for MTBE. So this reinforces the statement that the direct cancer risk from MTBE or ethanol should not be used as a basis for any decision that you make. Now, there are, however, the combustion products that we've heard about this morning: Formaldehyde, butadiene, benzene. Those are the numbers which OEHHA presented which I agree are 50 times greater than the risks here. They begin to be appreciable. And therefore, the question comes, which, ethanol or MTBE, would give the greatest risk from these combustion products? That question far outweighs the other question. It should be the one you should start considering. It is here that the data are inadequate, as was mentioned on 60 Minutes the other night, not on the data of the direct carcinogenicity. Now, here, I have very little to say. But I do want to mention one thing -- two things which are not mentioned today. One is that MTBE was put in for a purpose. Ethanol was put in for a purpose. It is to reduce other pollutants and (inaudible) EPA concentrate on ozone. But I would like to concentrate on fine particulates, which we at Harvard believe are the major hazard. In fact, we believe the fine particulates in the Los Angeles Basin have a risk somewhere between 1 in 100 and 1 in 1,000, which is somewhat greater than the other risks that we talked about today. These two should be compared on which reduces those risks more, not on the basis of the miniscule residual risk we're talking about. Those are the issues on which you should concentrate. And those are the issues, unfortunately, on which there is inadequate data. Now, finally, I would, please, in your discussion on these things, I hope you will make absolutely clear, that the direct cancer risk of neither MTBE nor ethanol are a basis for discussion. To include them or consider them as a fundamental basis for discussion would distort the scientific process and would come back to haunt you in decisions later on. There may be many other reasons for not liking MTBE. The foremost reason is, of course, it stinks. I have a strong suspicion if it didn't stink, we would not be having this hearing.

CHAIRMAN HICKOX: Comments or questions?

DR. LLOYD: I had a question on the fine particle issue.

PROFESSOR WILSON: Yes.

DR. LLOYD: Have you actually looked at comparisons with ethanol and MTBE in (inaudible) gasoline?

PROFESSOR WILSON: I don't know of good data for that purpose, no. I would like to see good data. But I think it's an extremely important question. And when I testified at the Air Resources Board in 1982, that was what I was talking about.
DR. LLOYD: Now it's reached it's time, because it's obviously a very critical issue. Sorry it took so long.

PROFESSOR WILSON: By the way, in case you don't know it's a critical issue, I'd be happy to send any member of the Board a copy of our book on the subject, if you'll just give me your address.

DR. LLOYD: Yes. I guess -- I believe we could pay for the book. But the other issue this morning that was talked about, PM10, are you -- do I gather from what you're saying that you're more concerned about PM2.5 --

PROFESSOR WILSON: Oh. There are a very large number of reasons for believing that PM2.5 or even PM1 are much more important than PM10. The primary one is, those are the things which penetrate the filters in the nose and get absorbed in the lungs. And those are the ones which are actually produced in the combustion products. And there is -- the epidemiological evidence all tends to point to the idea that the finer the particles, the worse off you are.

DR. LLOYD: If you would indulge me, Mr. Secretary, on one issue which is not related to this, but it is related to what I hear in that comment. Do you have any comment on the relative risk of fine particle emissions from diesel as against natural gas?

PROFESSOR WILSON: I would suspect -- no, I really don't. I would just suspect these would be worse, by instinct. But I haven't studied it.

CHAIRMAN HICKOX: Any other comments? Good questions. Thank you very much.

PROFESSOR WILSON: Thank you.

MS. HUTCHENS: Daniel Hernandez.

MR. HERNANDEZ: Good afternoon. My name is Daniel Hernandez. And for those of you who are bilingual in the office -- here present with us, it's Daniel Hernandez. I represent Paradise Valley Hospital, in San Diego County. We're based in National City. We're part of the Venice Healthwest system. We're a 247-bed facility that serves a predominantly low income, senior, and ethnic population. I'm going to read from a prepared statement. And then, in listening to some of the testimony, I want to mention some possible impacts on the health care system and also the budget for the State of California. "The threat to the public health from poor air quality has been effectively reduced by California's first gas reformulation process. Clean air reduces the threat of respiratory illnesses ranging from asthma to bronchitis and emphysema. These ailments hit children and seniors the most severely. However, we must now change that formulation because of threats to our drinking water supplies. While changing the formula is necessary, we simply do not know enough about this new formulation to say that it will not pose a future threat to public health. This formula must be proven safe, and safe for our drinking water and also for preserving the air quality gains that have been achieved by the first gas reformulation. If we are going to require refiners to adhere to this formulation and put ethanol in our gasoline, then we must exhaustively study the additive's potential impacts on public health. Unfortunately, Southern California residents have not been fully engaged in this process, despite the fact that we have the most to lose in terms of air quality. We would appreciate the opportunity to express our concerns in a public forum held in Southern California." And by the way, by Southern California, we

also mean San Diego. Many times, we get left out because things don't happen that make it down the 5 or the 405 and get to San Diego. And one other thing I wanted to mention: This is of extreme importance, because we also have issues related to international commerce and border trade, as you're aware of. "We need to ensure that all of the unstudied risks of ethanol and this new formula have been addressed before we move ahead. Scheduling a public forum for the residents of Southern California will help make sure those risks are addressed and that public health remains our top priority throughout this process." Now, I mentioned that I had some other comments. In listening to the comments that were made regarding the economics, job creation, safety; since I work in health care, and I work in the public relations and marketing aspect of it -- my background is working with community-based organizations, predominantly organizations that serve ethnic populations and new immigrant populations. Many of these new immigrant populations come from countries where they do not traditionally trust the government and have not appreciated the benefits of health care services. The fiscal impact of increased visits to the ER through specialized programs in inner-city hospitals, which traditionally rely upon Medical funding, Medicare funding, the California Kid's funding and other federal funding, is going to present a severe effect on an already overburdened system.

The low Medical reimbursement: I'm not sure if you're aware of it or not, but Medicare reimbursements in the last three to five years have been cut in half by the Federal Government. So you have inner-city hospitals with increased ethnic populations receiving less money. And they're required to provide more services. The increase in traffic pollutants in the air is going to cause more kids with asthma to be visiting the ER room and specialized programs. In San Diego County, we do not have a health care system that's set up on a countywide basis. We rely upon a system of community clinics and provider hospitals. I personally am from Imperial County. The situation is even worse there. If ethanol is passed and there are new jobs created, I would suggest that Imperial County be a focal point, because there, annually, there is a 25 percent unemployment rate. So if we're going to get serious about the business of what we're doing, let's look and see where it's needed most. Thank you.

CHAIRMAN HICKOX: Comments or questions? Thank you.

MR. HERNANDEZ: Thank you.

MS. HUTCHENS: Dr. Franco Reyna.

DR. REYNA: Good afternoon. Thank you for the opportunity to speak to you today. I am Franco Reyna. I represent the Multi-Cultural Area Health Education Center, a community-based agency in East Los Angeles. And I also represent most of our Latino community that we serve in the area of East Los Angeles and throughout Los Angeles County. I stand here before you to offer you our commendations for the wonderful work that you're doing in terms of cleaning up our air and also our water. But our concern is that our citizens are not being informed of the new formulations with the new gas, what the new situation will be on down the road when MTBE is banned. We would like to be

heard. We would like to be informed. We, as a community-based agency, are trying to do as much as we can to inform the people that we serve, but it's not enough. We need you to come down to our communities, to maybe hold hearings, to hear what we have to say, to inform us of what the possibilities are down the road in terms of problems, in terms of how our communities may be affected. A lot of the folks that we service are very uninformed because they don't speak the language. And we're not speaking of only Latinos, but other ethnic populations that know or speak English in very small quantities. They are the ones that are going to be most affected, because they are the ones that are usually residing in the areas where the terminals are, where all the talk is that we hear about for the increased traffic. So, once again, I come here today to invite you to come to Los Angeles, to Southern California, including San Diego, to listen to what we have to say, to give us some more feedback, some more information about what the alternatives are so that we can offer you our suggestions. And maybe you can learn from what we have to say. Thank you.

CHAIRMAN HICKOX: Thank you.

MS. HUTCHENS: Mr. Guy Horton. He wasn't sure if he wanted to testify. So that concludes our public testimony. We also have three written comments to be submitted into the record. Mr. Bill Vance will read those into the record.

DR. VANCE: Hi. Bill Vance, with CAL/EPA. As mentioned, the Policy Council did receive three submittals today of written comments. I've taken the liberty of reading through those comments. And primarily, they address issues that we've heard this morning and this afternoon. They deal primarily with diesel emissions from the increased truck traffic that would be required to distribute ethanol by tanker trucks as well as the potential impacts on the cost of gasoline from the removal of MTBE. What I would like to recommend to the Council is that we admit these to the administrative record, and we'll make them part of the transcript today.

CHAIRMAN HICKOX: Please. Without objection?

DR. VANCE: Okay. Done. (Submittal No. 1, by Al Madrid, Mayor, City of La Mesa, California.) Dear Secretary Hickox: I would like to commend your recent work in protecting our water supplies from the threat of gasoline leaking from the underground storage tanks. But, now begins a new chapter. We must meet the challenges of developing a new formula for California's gasoline that provides the same benefits to our air quality, poses no future threat to our water supply and ensures the availability of gasoline to California motorists at a reasonable cost. I am distressed that the community I serve and all of the residents of Southern California are being left out of this important decision-making process. Southern California communities will be impacted most heavily by any decisions on air quality, yet no public forum has been provided for the residents of these communities to express their concerns. Several air quality issues have yet to be addressed regarding this new gas formula. For example, the proposed additive ethanol would have to be transported by diesel truck to refineries and other terminal sites. The California Air Resources Board, however, has not addressed what the impacts of the

additional diesel emissions would be on our air quality. Both the Air Board and the Federal Environmental Protection Agency have announced plans to crack down on diesel emissions, but a new gasoline formula that puts more diesel trucks on our roads seems contrary to those plans. Also, motorists in our area need assurances that the availability and affordability of gasoline will not be jeopardized by any new regulations. Currently, we don't have any such assurances. The Air Resources Board estimates that its new gas regulations will reduce the production capability of California refiners by 10 to 20 percent. This reduction may increase our vulnerability to supply shortages and price increases if any of our refineries has a fire or an accident, as happened earlier this year. These unstudied risks indeed make coming up with a new gas formula a challenge. Decision-makers in Sacramento should not have to meet that challenge alone. An opportunity should be provided for the residents of Southern California, who have so much at stake for our air quality, to be a part of this process. Again, I would like to commend the swift and responsible actions that you have taken on this issue and offer any assistance I may be able to provide in scheduling a public forum for the members of my community. Sincerely, Al Madrid, Mayor (Submittal No. 2, by Ken Seaton-Msemaji, President, United Domestic Workers of America.) Dear Secretary Hickox: It has recently come to our attention that plans are underway for a major shift in gasoline additives that, while aimed at protecting Californians from contaminated water supplies, could pose some unknown threat to air quality and have a deleterious effect on gasoline supplies and prices. Our organization represents employees in the publicly funded home care industry. Our members provide domestic and personal care services to homebound elderly and disabled individuals who would otherwise be forced into more costly, often less humane institutions. We have members in 28 counties but our largest membership is in the Southern California counties of San Diego, Orange, and Riverside. Home care workers are low income, predominantly middle-aged, minority women who rely on automobiles for much of their work and who rely on maintaining their own good health in order to safely and effectively serve the frail, elderly, sick and vulnerable individuals who rely on their care. Like everyone, our members want to know that the water they drink and the air they breathe are safe and reliable. Because they spend a disproportionate share of their income on consumables, including gasoline, they also want these products to be affordable. The current examination of an alternate gasoline additive from MTBE appears to be reasonable. However, as the representative of thousands of low income individuals who might never have heard of ethanol and its purported advantages, we just want to be sure that the shift to any alternative is done so only after a thorough examination of all likely impacts on our health, environment, consumer prices, etc. Moreover, we want our community, and every community throughout Southern California and the state to be included in this decision-making process, to be advised of all future developments regarding this issue in a timely manner, to have our voices heard, and to have our concerns considered. Thank you for your attention to this important issue. We hope to hear back from you. Sincerely, Ken Seaton-Msemaji, President (Submittal No. 3, by Roger Cazares, President/CEO, MAAC Project.) Dear Secretary Hickox: A new chapter begins for California in meeting her energy requirements; and you, Secretary Hickox, and your department, are the protagonists ensuring California protection against dangerous environmental pollutants. Our state has always been the leader in safeguarding the health of her citizens by demanding innovative and exacting protections from industry, business,

and those who live here. Your recent work in this area against the threat of gasoline leaking from underground storage tanks into our water tables must be commended. It gives me hope that we will indeed meet the challenge before us and find solutions in reformulating California's gasoline so as to no longer pose a threat to our precious water supply, benefit likewise the quality of our air and still be affordable to our motoring citizens. Inasmuch as I have hope, I am concerned that the needs of the people in my region will be overlooked -- and, in fact, that we will not be part of the process. I am the CEO of a multi-service, multi-faceted social service agency whose clients are found throughout San Diego County, from Oceanside to San Ysidro. MAAC Project's constituency, in 35 years, numbers well over a million. San Diego has the highest gasoline prices than any other area of California and attempts to redress this issue have failed. Any decisions on gasoline production, supply, and essentially air quality will heavily impact the communities and people we serve, and, in fact, will most heavily affect Southern California communities more than any other. Reformulating California's gasoline is of paramount importance; yet several air quality and safety issues have not yet been considered or addressed in the development of this formula. A major concern and one problematical reality is that the proposed additive ethanol cannot be "pipelined" along with gasoline due to an inability to guarantee product quality. Instead, ethanol would require transport by diesel truck or cargo ship to the refineries. This comes at a time when both state and federal agencies have announced plans to crack down on diesel emissions. What are the effects of such additional diesel emissions on California's air? I do not believe that the California Air Resources Board has addressed these obvious impacts. Nor have other areas of safety been addressed by the appropriate board or agency. What are the increased risks of accident incidences with every additional road or sea shipment of this additive? The serious development of a new gasoline formula which increases diesel traffic on our roads and cargo shipments to our shores is incompatible to a crackdown on diesel emissions and careful evaluation of health and safety considerations for California. The Air Resources Board has released estimates that its new regulations for gas will reduce the production capability of California refineries up to 20 percent. San Diego needs assurances that there will be a gasoline supply that is affordable and available. There are no such assurances as it stands now; with the proposed regulations, the refinery reduction leaves San Diego motorists vulnerable to shortages and even higher prices than we are already experiencing. Should there be a repeat of a refinery failure due to a fire, my constituents would be extremely affected. San Diego County has always had very little input into decisions which greatly impact its citizens' daily lives. We want to assist you in the beginning of the process. There are still numerous unanswered questions and undetermined and unstudied risks which make your task of reformulating a gasoline formula for California's future difficult. You should not come to the decision alone, Secretary Hickox. San Diego, and other communities of Southern California welcome the opportunity to address this issue and assist you in your determinations. Please allow me and others to assist you in bringing this important issue to a public forum so that you can arm yourself with the concerns of the citizens whose safety and health you want to protect. In the meanwhile, I, once again, would like to extend my thanks for the work that you have been doing on our behalf. Sincerely yours, Roger Cazares, President/CEO ---o0o---

CHAIRMAN HICKOX: Having concluded the public comment portion of our agenda dealing with this subject today, I would like to invite the Council to discuss the issues we've heard today. And I would look to one of you for a motion as to whether or not we should approve these reports. I would assume that among the members of the Council, the Air Resources Board, the Water Resources Control Board, and OEHHA should probably help direct our discussions and decisions. Your boards and departments have contributed the most to this effort to determine the fate and transport consequence of the potential use of ethanol in large quantities as a substitute for MTBE in the future. As you know, this was called for in the Governor's Executive Order in a major effort to try and avoid the outcome that appears to be, in a simplistic sense, what has resulted from MTBE being added to gasoline with the very noble effort in mind to produce a cleaner burning fuel and provide cleaner air in California, but in the end has resulted in problems with regard to contamination in groundwater and also in the drinking water supplies. So, would you help us begin the efforts to determine whether or not we believe that these reports should be included as presented.

DR. LLOYD: Yes. Mr. Secretary, just a point of clarification. I know when we approved our Phase 3 Regulation, we also directed staff to do some additional studies on an ongoing basis and in a timely manner. I'm just wondering if this process here, whether that plays into what we're dealing with now? Are we just looking at the reports or are we also recognizing, maybe, the need to do some additional studies but not as a condition to the reports?

CHAIRMAN HICKOX: It's my impression that the reports themselves include many references to the need for additional studies and additional attempts to provide more information that would buttress the findings. But, again, it's my sense from all that I've heard and read that on balance -- and again, this is where I think the rest of us would look to the three of you -- you still stand behind the individual determinations of the reports as presented?

DR. LLOYD: Yes, indeed, very much. In fact, I'm happy to move a motion that's required here, if in fact your interpretation is correct.

CHAIRMAN HICKOX: Are you making a formal motion?

DR. LLOYD: Yes. I would make a formal motion.

CHAIRMAN HICKOX: So would somebody like to second it?

MR. STUBCHAER: Well, I will second the motion, and then we could have a discussion.

CHAIRMAN HICKOX: How about some discussion?

MR. STUBCHAER: I'm willing to go along with approving the reports because of the fact that Mr. Rice pointed out that ethanol is highly degradable and MTBE is not, and his

statement, which I agree with, that additional data would be unlikely to change that conclusion.

CHAIRMAN HICKOX: All right, Jim. Thank you. Any other comments? Joan?

DR. DENTON: I'd like to say that I think the reports were very well done. I can remember a year ago, this project seemed to be insurmountable with what was required to comply with the Governor's Executive Order. And I think that basically, all three departments have really done an excellent job. I would also second the second. I believe the reports should be approved. I think the one thing that I would add, perhaps incorporate into the report is the element that I asked James Gianopolis to clarify, and that is, the impact the potential impact of ethanol on the underground storage tank system. And I think that is a potential environmental impact that at least needs to be outlined within the framework of this report, the current knowledge that we have and the in fact very wise additional research that's going to be done. But I do think that's an element that's missing. And I think it's something that could be easily added into the report. That's it.

CHAIRMAN HICKOX: Before I recognize you, Bill, I guess my view, by the way, is that we do have time, here. While some might argue that we're at a threshold moment and that we're going to set things in motion with this action, I believe that that already was done with this -- the Executive Order signed by the Governor last March 25th. We're simply taking the necessary steps to protect against unwanted consequences from that decision that the Governor made. And I think that the preponderance of the evidence contained in these three reports seems to me to give us the ability to continue to move ahead. But these additional studies to provide more information will be ongoing, and we still do have some time in this process. Bill?

MR. KEESE: I would concur with what you've said. I heard an offer from the industry this morning to participate in the study that Dr. Denton has suggested could be included in here. I was wondering if you had any thoughts about that at this time? It seems to me you're talking about a study of that major nature, which I believe WSPA suggested could be done within a year with their help a lot better than it could be done without their help.

DR. DENTON: Are you directing your question to me?

MR. KEESE: Mr. Chairman and you.

CHAIRMAN HICKOX: I think he's suggesting that he's supportive of your proposal but that
you may want to include that while adding the initial focus on this study that we should take the industry up on their willingness to support and help.

DR. LLOYD: I think also it plays into the issue that's ongoing that the industry is working with the ARB, that the Air Board also join in that, because that's an ongoing study.

MR. KEESE: And it was focused by NRBC also, this issue. I don't think we have to decide now exactly who it is that does it. I just think it could be a collaborative effort --

CHAIRMAN HICKOX: Right.

MR. KEESE: -- among different agencies that get involved in these studies.

CHAIRMAN HICKOX: Jim?

MR. STUBCHAER: Yes. I believe that the mixed plume studies should also continue. And I don't think they need to be part of the motion that we're going to vote on in a few minutes.

CHAIRMAN HICKOX: All right. Any other discussion on the motion?

DR. LLOYD: I have one. I would not like the record to remain without Professor Wilson's comments vis-à-vis cancer risk from various gasoline blends. I'd like to see if there's any reaction to those comments.

DR. DENTON: Do I have any reactions? Melanie, would you like to speak to that? I think Melanie, in fact, in her discussion, was talking about Dr. Wilson's comments. But I know Melanie was taking notes.

DR. MARTY: Yeah. I think Dr. Wilson agreed with us that the cancer risk from MTBE in air and ethanol are not significant in the overall scheme of things in that the real drivers are benzene and butadiene and also formaldehyde. He brought up another issue that he thought we should really be looking at; PM, particulate matter, 10 micrometers or less.

DR. LLOYD: No, 2.5 or less.

DR. MARTY: 2.5, and also ozone. And in fact, we did look at that with CARB's modeling analysis. Since the fuels have to be fully complying, the essential -- essentially, the results of the modeling indicate that there is no difference in any of the 2003 fuel scenarios, including MTBE and the two ethanol formulations in the nonoxygenate. So I think that that question has been answered.

CHAIRMAN HICKOX: Okay. Dan?

MR. EATON: Mr. Chair, I'd just like to get some more of a comment as opposed to a discussion point. But first, I'd like to thank you for leading this, and for those of you in the audience, for your comments. You may not realize, but today is sort of a unique situation in the sense that you get certain reports from different arms of this agency coming together in trying to lay a solid foundation on something that really is an ongoing debate, which I think you have already stated quite clearly. And that really, the

information presented has not only withstood the scrutiny of the public comment period, but is a first step, as the test of time will prove that. As we move along, as I was talking to Dr. Denton on the way in, is that if anything we've done today, is that if history repeats itself -- they always say we tend to repeat history -- if history repeats itself, we've taken that perspective as a solid one. I would be glad to work to approve this motion.

CHAIRMAN HICKOX: Terrific. Any other discussion or comment on the motion?

MR. LOWRY: Mr. Secretary, as the Director of a department, I'll echo Mr. Eaton a little bit. This is a first step, or one of the first steps to a multimedia approach to California's environmental problems. And the folks around this table with us are going to make the difference. The people who work in our departments who are at this table are going to make the difference as to whether we can answer our questions on a multimedia basis or repeat history in a negative way.

CHAIRMAN HICKOX: Thank you very much.

MR. KEESE: I'll make a final statement, Mr. Chairman, since I don't vote, that I would be supportive of this, were I voting.

DR. SPATH: Let me at least allow myself to second that, being a nonvoting agency. And certainly, I'd like to commend the other agencies for the wonderful work done and a lot of good science.

CHAIRMAN HICKOX: Well, thank you again, very much. That being the conclusion of our discussion on the matter, I would like to call for a vote on the motion. All those in favor, say so by stating aye. (The Council voted aye collectively.)

CHAIRMAN HICKOX: Any opposed? (None opposed.)

CHAIRMAN HICKOX: Thank you very much. Now, it's time to proceed to an overview of the proposed California Phase 3 Reformulated Gasoline Regulations and how the regulations would affect the properties of future gasoline. Dean Simeroth will be making a presentation to the Air Resources Board.

MR. SIMEROTH: Thank you, Secretary Hickox. In light of the time, I'll try to keep this relatively brief and cover the information at the same time, as soon as we get the slides going.
Connie, why don't we go into the overview. This afternoon, I will provide a brief background of
our reformulated gasoline programs, the adoption, or the approval of MTBE, of the Phase 3 Reformulated Gasoline Regulations, the effects that it will have, and then get into what steps the Staff sees being taken now. As you're well aware, the Governor's Executive Order directed a number of things, including the Air Resources Board to adopt the Phase 3 Regulations and to pursue a waiver from the federal oxygen requirement. In addition to that, the Sher Bill, Senate Bill 989, was passed and signed by the Governor. That has the

effect of ensuring that we won't do the backpedaling that was discussed earlier. And not only that, it will improve upon the emissions and get more air quality benefits. The Bowen Bill, Senate Bill 529, establishes for Phase 3 and the future, the mechanism for conducting the multimedia review of any additional changes to our reformulated gasoline regulations. In terms of benefits of the California Reformulated Gasoline Regulations, the Phase 2, the one that we're living under now, they're basically the most significant pollution reduction measures, or one of them, that we've undertaken. And they're listed here (referring to slide). You can read them. I won't take the time to read them all to you, but it is very significant to the Air Board and to the Air Quality. In terms of California Phase 3 Reformulated Gasoline Regulations, or RFG3, the Air Resources Board approved them on December 9th, 1999. They are responsible -- responsive, excuse me -- to the Governor's Executive Order. It will result in the removal of MTBE from California gasoline by December 31st, 2002. It will preserve the emission benefits and add flexibility to the production of gasoline without the use of MTBE. I'll spend a little bit of time on the external process we used in developing these regulations. We met with individual stakeholders numerous times, practically weekly, over the years' timeperiod starting late March '93 -- or 1999. Excuse me. We held nine public workshops over the timeperiod. And I'd like to compliment the Energy Commission staff in their efforts in working with us. They were much appreciated. We were advised by consultants from the University of California; in particular, Dr. Robert Sawyer, from University of California, Berkeley, on the technical aspects of the regulations, and by Dr. David Rocke, of the University of California, Davis, on the statistical, mathematical-type aspects in our development of the model. We also subjected the regulations prior to their approval to peer review by Dr. Catherine Koshland, of University of California, Berkeley, Dr. Donald Lucas, University of California and Lawrence Berkeley National Laboratory, and by Dr. Larry Caretto, of the California State University, Northridge. He's Dean of the College of Engineering there. For the Reformulated Gasoline Program, we went at the eight parameters of gasoline. These are shown here (referring to slide). They range from the Reid vapor pressure on the volatility, to the distillation temperatures, and most importantly for today, the oxygen content. In terms of the actual specifications for those properties, shown here are the Phase 2, which are the current, and the Phase 3, which are the approved. What we show here is the flat limits and the cap limits. The cap limits are not to be exceeded anywhere in the distribution system. The flats limits are -- the averaging limits, which are not shown, are slightly more stringent than the flat limits -- what the refiners use to produce gasoline and what we check when we do enforcement at the refineries and the production and import facilities. You'll notice, we've made relatively minor changes to the program. The benzene standard was made more stringent. The sulfur standard was made significantly more stringent. The aromatic hydrocarbon flat limits, or the refiner standard, was left the same, and there is some increase for the cap limit, adding more flexibility. Olefins are the same. Oxygen: If you'll notice, we've never mandated that all gasoline have oxygen in it. We've left refiners to make that choice in producing gasoline. But, however, the Federal Reformulated Gasoline program overlays ours, and in the Federal Reformulated Gasoline area, they require about 2 percent oxygen in gasoline in California. At this time, RFG is subject to that requirement. And that's in the greater Sacramento metropolitan area and virtually all of Southern California, and in about a year, maybe in the San Joaquin Valley as well. Next slide,

please. Compliance options for refineries, I've touched on briefly. They can simply produce meeting flat limits or an average limit, where they can have some flexibility. But most gasoline is produced using what is referred to as a predictive model; it's a mathematical model that relates one gasoline property to another so that you can increase one property at the expense of reducing other properties to offset. The main thing is, you preserve the environmental benefits of the fuel in doing this. And that model is used to ensure that that happens. And it covers oxides of nitrogen, hydrocarbon emissions, and toxic emissions, all four toxics that have been identified as being significant. And virtually all gasoline that's produced in California is made using the predictive model approach. In terms of the effects for Phase 3, our finding is that it will preserve the emission benefits. It will not result in any increase in hydrocarbons, oxides of nitrogen, or toxic emissions. And in fact, oxides of nitrogen and in potency weighted toxics, we expect some modest reductions. In terms of the changes to the gasoline, remember earlier, we didn't change, except for sulfur, the specifications very significantly. We think the changes that will result is: One; obviously, there will be no more MTBE used after December 31st, 2002. There will be an increased use of ethanol, whether we have the waiver or not. In Southern California, the South Coast Air Quality Management District, in the wintertime, we're still in violation of the carbon monoxide standard. And under that program, 2 percent oxygen is required in the wintertime. That's about 100,000,000 gallons of ethanol a year from that program alone. If we don't get the waiver, then ethanol will be used extensively in almost all of our gasoline. There will be increased use of alkylates. In using the word alkylates, I'm referring to the higher-octane alkanes -- a lot of "tanes" in there -- where you're putting something in specifically to increase the octane of the fuel. Those are being used today around the 15, 16-percent level. That's going to go up. If we use ethanol at 5.7 percent, which is 2 percent oxygen, that will increase by about 5 percent to replace that 5 percent loss of volume. If it's nonoxygenated, there's certainly the regular grade. And midgrades will have increased use of alkylates; basically the octanes -- or, I should say iso-octanes in this case and iso-heptanes and iso-hexanes. There will be less benzene, as you've heard earlier. And certainly, with the standard for sulfur going down, significantly less sulfur. But basically, except for the MTBE, it's going to look pretty much like gasoline is today in terms of all the parameters. Next slide, please. Environmental Impacts: Certainly, we'll not have MTBE contamination of the water resources. That will be limited to pre-existing emissions of MTBE. There will be less benzene for both the air and the water, no net increase in greenhouse gasses. To the extent ethanol is produced from biomass waste in California, there may be a decrease. And there will be some decreases in oxides of nitrogen and potency-weighted toxics. And equivalency on the hydrocarbon emissions, we're going to hold the line. This is ethanol fate and transport health risk analysis (referring to slide). You've been discussing that prior to my talkings. There's no sense in me going back over it. The bottom line there is, I was anticipating your decision. And if you hadn't have, I would have had to have done some fast talking, here. In terms of the next steps, we're going to continue to work to pursue the EPA oxygen waiver, the waiver of the oxygen requirement from EPA. There are a number of technical issues that we've committed to looking into. And we'll be reporting back to our Board every six months, starting a few months from now, as a matter of fact, and every six months after that until after the program is implemented. I won't go through all those, but it's all the technical issues that have been identified in the

Environmental Fate and Transport Analysis that my counterpart mentioned this morning. And if we find that things need to be changed, we will be coming back to the Air Resources Board to recommend changes. After the implementation of Phase 3, our intention is to go out and determine, if we preserved the benefits or not. If we did, fine. If we didn't, then we'll be back to the Board with the appropriate recommendations. In summary, we think that Phase 3 is consistent with the Governor's Executive Order. It meets the requirements of both the Sher and the Bowen Bills. It meets the Environmental Fate and Transport findings that were necessary for it to be successful. And we don't think at this time that there will be any adverse impacts expected, significant adverse impacts expected. And we recommend that the Environmental Policy Council find that the -- there will be no significant adverse impact on public health or the environment from the Phase 3 Regulations. That concludes my presentation. I'd be happy to answer any questions.

CHAIRMAN HICKOX: Any comments or questions from the Environmental Policy Council?

DR. DENTON: Dean, I have a question for you. Some of the people who spoke today talked about the potential economic impact on oxygenated fuel. And I noticed it wasn't in your slides, but you might recall the Board estimated six cents a gallon; is that correct?

MR. SIMEROTH: That was the upper end. By the time the hearing occurred, we were thinking it's more towards the lower end of the cost impact or one or two cents, depending upon the decisions made by the refiners. And one of the reasons for the upper end is that we felt the first year, there may be some unexpected problems, as we've seen in the past. And we've seen more than the minimum. But the long term, or the actual implementation, we think, is going to be a very modest cost increase.

CHAIRMAN HICKOX: Joan, just as a reminder, this was mentioned earlier, that all oil refiners are not created equal. Some have indicated, one in particular, that they felt that this conversion to RFG3 could be accomplished with no cost at all. At least, the Chairman of the Board was willing to offer that as a potential outcome.

DR. LLOYD: Mr. Secretary, I would just like to reiterate the comment to compliment the Energy Commission staff for their leadership and cooperation.

CHAIRMAN HICKOX: Bill?

MR. KEESE: Dean, help me out a little. You said, in the L.A. Basin, because of the carbon monoxide, ethanol would still be required to the tune of 180,000,000 gallons a year?

MR. SIMEROTH: Approximately about 100,000,000 gallons a year, and it would be for a four-month timeperiod in the wintertime. One of the changes we -- that was approved at the hearing was shortening the wintertime season for carbon monoxide nonattainment from five months to four months.

MR. KEESE: And is that expected to be forever, the next five years? What?

MR. SIMEROTH: Well, I hope it's not forever, or I may be looking for something else.

MR. KEESE: Are we moving down in carbon monoxide?

MR. SIMEROTH: There's been a relatively steady decrease. One of the things that's been happening is, the automotive fleet has been getting steadily cleaner in the carbon monoxide emissions. And that's bringing down the time. What's unknown is exactly when that will be enough to bring us into compliance.

MR. KEESE: And you don't have any --

MR. SIMEROTH: It's going to be a number of years.

MR. KEESE: Thank you.

MR. SIMEROTH: You're welcome.

CHAIRMAN HICKOX: Ed?

MR. LOWRY: I'm interested in your environmental impacts analysis on this. Does it go beyond simply burning the fuel? How extensive was it?

MR. SIMEROTH: We looked at the evaporative emissions. We looked at the distribution of gasoline. We also looked at the amount of increased emissions that would result from the distribution of ethanol. One of the things -- the .06 percent actually, I think, came out of our report. We copied it out of another report, but we checked that number with the Energy Commission staff and their estimates on what it would take to distribute ethanol into California. And also, I'd like to say that I concur that ethanol won't simply come in by rail and be distributed by truck. It going to come in by marine and rail. And the portion that comes in by marine that goes into the refineries, the refineries who have distribution systems at their refineries, there will be no further distribution for that quantity. And in the South Coast, that's a fairly substantial amount. That's approximately half, or slightly over half the gasoline that's distributed out of the refineries and not from the truck terminals that are remote from the refineries. Those truck terminals that are remote probably will receive their ethanol by rail at a central facility and trucked over to the main gasoline facility, where it will be blended into the gasoline when it's loaded into the truck and subsequently distributed. We tried to think of everything we could.

DR. DENTON: Dean, assuming that -- say that we don't get a waiver. Would there be enough ethanol by December of 2002 to meet California's oxygen requirement?

MR. SIMEROTH: At a price, yes. There is enough production, and production that could be started up that is now shut down that could supply us, but it would come at a different price than what I quoted.

CHAIRMAN HICKOX: I'd add to that that in the considerable number of meetings that we had in Washington during 1999 to try to solve this problem via federal legislation, there was a continuing statement from the ethanol-producing segment of our country that there is underutilized capacity in our system, and that they could, in fact, meet our demands. But to just share with you once again the numbers as they have been explained to me, without any relief from this 2 percent requirement that's imbedded in the Clean Air Act, our demand for ethanol will be in the neighborhood of 580,000,000 a year. We now produce and utilize about 5,000,000 gallons a year in California. That's a pretty good-sized increase. The national production of ethanol in 1998 -- that's over a year old -- was 1.425 billions gallons of ethanol nationwide. So, 580,000,000 gallons represents a very substantial increase in the demand for the commodity, and it represents some of our concern and why we continually sought this waiver. It's not that we have a prejudice for or against ethanol. It's that we felt that flexibility was required in the system. And even if we obtained the waiver, there would still be a fairly substantial amount of that, perhaps half, in the range of half of that amount of 580,000,000 utilized in California. So it would be a pretty good-sized demand, even with the waiver. All right. Is there any -- are there any requests for public comment on this report? Not seeing any, I'd like to invite the Council to discuss this testimony. I also would like invite from you a motion that the Council determine whether there will be no -- whether or not there will be a significant adverse impact on public health and the environment that is likely to result in the change in motor vehicle fuel that is expected to be produced in meeting the ARB's proposed Phase 3 Reformulated Gasoline Regulations. Again, to refresh your memory, Senator Bowen, in her bill, wanted to buttress the Governor's determination in his Executive Order that we do all that we can to protect the People of California from repeating the problem where we go about solving one problem as it relates to the environment and create another. And specifically, not only are we, this body, required to make this determination with regard to this change in reformulation gasoline, but all future -- we'll be doing this again someday, possibly, maybe. So in order to provide some structure for this determination, a resolution has been committed to writing that all of you have received a copy of. If, based upon the testimony with regard to the fate and transport and health effects of ethanol as a substitute for MTBE and in conjunction with the ARB's presentation of their report, which was the basis for their reformulation of the gasoline proposal adopted at their December meeting, if you feel that what's contained in this resolution reflects your understanding of the basis for this determination that's been proposed, then we could move -- somebody could move -- for the adoption of this resolution subject to any changes that you would like to make. I'd prefer not to take the time to either read into the record -- I actually made a few highlights to see if it would add any value to our discussion for me to briefly go through it, but there is no way to briefly go through it. It's four pages at length. I think that what's important, what's in the first three pages, basically, is the reflection of what has gone before, including the creation of the Council, the Federal law which requires the 2 percent oxygen, the action taken by the ARB. And again, on page four, that is really reflective of the information

contained in the studies that we approved just a little bit ago. And so I guess what I would ask you to do is to carefully look, if nothing else, at page four to ensure that based upon the presentations today and the testimony, that you're comfortable with the language that's included on page four. And Chairman Lloyd and I, for instance, have in fact had some sidebar discussion about how we might want to consider some changes in the final paragraph based upon some of the continued expression of concerns. I'll get to that in a minute. But, I guess, either offer some thoughts and comments, or please, somebody, put a motion on the table for adoption of this resolution.

MR. HELLICKER: Moved.

CHAIRMAN HICKOX: Second?

DR. DENTON: Second.

MR. HELLICKER: And the resolution being that the Council determines that there will not be a significant adverse environmental impact on both the public and the environment, including any impact on air, water, or soil that's likely to result from the change in gasoline that is expected to be implemented to meet the California RFG Phase 3 Regulations approved by ARB.

CHAIRMAN HICKOX: Precisely. Alan?

DR. LLOYD: Yes. One thing I think, Mr. Secretary, we discussed, and I think in fairness to the testimony here today, that I made a commitment to go to various parts of the State to explain our regulations and to also get feedback of local concerns about the distribution and potential increase in truck traffic and how that may be mitigated. So I think if Mr. Secretary wants to put something into the record to add to our commitment and to be reflective of that, I'd be very happy to carry it out.

CHAIRMAN HICKOX: If the maker of the motion and the second of the motion are interested in supporting that comment, then what I would hope we would be able to do is simply give some thought after adoption of this resolution, to precisely where wording would be inserted in order to carry out the wishes of the Chair of the Air Board. I do think there's been enough comment today in reflection of concern about the impacts from traffic associated with a different distribution system that would be envisioned if we ended up with ethanol in fairly large quantities being blended in California gasoline. Is everyone okay with that? All right. Anymore discussion on the resolution?

MR. KEESE: I would just say, Mr. Chairman, once more for the record, we have reviewed your proposed resolution. And were I voting, I would vote in support.

CHAIRMAN HICKOX: Thank you.

DR. SPATH: And I'll second that.

CHAIRMAN HICKOX: Thank you, David. All those in favor indicate by saying aye. (The Council voted aye unanimously.)

CHAIRMAN HICKOX: All those opposed? Not hearing any, it's a unanimous vote. I guess what I would like to say in conclusion is just to repeat some of what all of you have already said. I'm very pleased with the first meeting of the Environmental Policy Council and the outcome today. I suspect that the Governor and others who are watching what we've done today will also reflect favorably. It is important that we do what we can to create a greater sense of comfort on the part of the public that we work in behalf of; that we are in fact trying to the best of our ability to think together as a group and solve problems with regard to the protection of the environment in a way that is reflective of a cross-media view. I suspect for some of you today, it's been something of an educational process. And I very much appreciate your involvement, Bill and Dave, not being part of CAL/EPA. You're cousins, at least. We've done this before. Thank you both very much for being here today. If nobody else needs this microphone, I'm going to give it back to the Resources Agency and adjourn this meeting.

(Whereupon the Proceedings were concluded at 4:05 p.m.)

STATE OF CALIFORNIA)

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COUNTY OF SACRAMENTO)

I, SAHAR DEMOS, do hereby certify:

That on the 18th day of January, 2000, at the hour of 9:00 a.m; that I took down in shorthand notes the said proceedings had; that I thereafter transcribed my shorthand notes of such proceedings by computer-aided transcription, the above and foregoing being a full, true and correct transcript thereof, and a full, true and correct transcript of all the proceedings had. Shorthand Reporter in and for the County of Sacramento, State of California