

FEDERAL ADVISORY COMMITTEE ACT
CLEAN AIR ACT ADVISORY COMMITTEE
MOBILE SOURCES TECHNICAL REVIEW SUBCOMMITTEE

CO-CHAIRS: MICHAEL WALSH AND ROBERT SAWYER

DESIGNATED FEDERAL OFFICIAL: GREGORY GREEN

Minutes of the Subcommittee's Meeting on April 12, 2000
Alexandria, VA
DRAFT as of June 8, 2000

Introductions and Opening Remarks

Bob Sawyer and Mike Walsh (Co-chairs) called the meeting to order just after 9:00 am.

Chris Grundler (EPA, filling in for Margo Oge) made several announcements concerning forthcoming rules involving diesel and MTBE, EPA's study of toxic emissions from mobile sources, and nonroad mobile sources.

- EPA intends to propose an onroad diesel rule this year.
- EPA intends to phase out MTBE without losing the additive's air quality benefits.
- EPA is responding to a court-ordered deadline affecting the proposal pertaining to toxic emissions from mobile sources.
- EPA is continuing to work on nonroad mobile sources, a topic that will be discussed further by the Subcommittee today.

Mr. Walsh asked whether anyone had concerns with the minutes from the Subcommittee's previous quarterly meeting. Mike Kulakowski (Equiva) stated the minutes had minor errors which he would convey to John White.

Greg Green (EPA) announced a change in the agenda. The discussion of recommendations from the OBD Workgroup is being postponed indefinitely. EPA is still resolving issues surrounding OBD testing and I/M 240 testing. A member asked whether the 2001 implementation date is in question. Mr. Green responded that implementation will probably be delayed one year.

Announcements

John White (EPA) described the documents in the agenda packet, which are listed on the third page of the agenda. The packet also includes a copy of the overheads in today's presentation on EPA's nonroad engine programs. Mr. White announced that Eileen Gauna (Southwestern School of Law) and John Hornback (Commonwealth of Kentucky) resigned from the Subcommittee. Mr. Hornback will continue to serve on the RFG Phase II Workgroup. In addition, Dave Merrion has retired from Detroit Diesel. Tim Tindall, his alternate, will serve the remainder of his term.

The Future of the MSTRS

Pat Rahe (Hogan & Hartson) recommended that MSTRS establish more of a relationship with the Clean Air Act Advisory Committee, in particular, the Linking Land Use, Transportation, and Air Quality Subcommittee co-chaired by Bob Wyman and Gay MacGregor. Mr. Walsh

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recommended that Mr. Wyman or Ms. MacGregor give a report on their subcommittee's agenda to MSTRS. Mr. Grundler agreed with the recommendation, and said that two other CAAAC subcommittees, both dealing with global climate change, may be of interest to MSTRS. Bill Becker (STAPPA/ALAPCO) said that the CAAAC subcommittee dealing with airborne toxins also is of interest. Mr. Green will invite the chairs of those subcommittees to make brief presentations to MSTRS.

Tina Vujovich (Cummins Engine Co.) expressed support for the proposed direction for MSTRS, but she also expressed the concern that moving too far into policy work could interfere with the joint (EPA -- industry) project work that has been fostered by MSTRS. Mike Kulakowski (Equiva Services) agreed and added that the subcommittee should not lose its focus on technical issues.

Samuel Leonard (General Motors Corporation) said he would like to see the current and projected emission inventories for mobile sources and all other sources. The information would help target this subcommittee's efforts. Mr. Walsh replied that EPA's 1998 emission trends report has been published, and that additional inventories have been published in the Tier II regulatory impact analysis. Mr. Walsh agreed that the best emission estimates should drive the subcommittee's efforts.

John Elston (New Jersey) asked Mr. Green to clarify his statement about the future of the subcommittee. Mr. Green said he had reiterated a recommendation made by the subcommittee itself, and it is important for the subcommittee to recognize the policy implications that are part of the subcommittee's technical recommendations.

Bill Becker (STAPPA/ALAPCO) said that policy discussions involving members of the subcommittee and persons in the audience would be beneficial to stakeholders and would add to the communication that occurs during the formal public comment process and Congressional hearings. The subcommittee should not merely focus on technical issues, despite their importance.

John Kowalczyk (Oregon D.E.Q.) requested an update from EPA on its responses to the subcommittee's recommendations. That information may also help shape the subcommittee's definition of priorities. Mr. Walsh will add that item to the agenda for a future meeting.

John White (EPA) reminded the subcommittee that its meetings take place according to a schedule that is different than the meeting schedule for the other subcommittees of CAAAC. The difference in schedules may affect the ability of MSTRS to work more closely with CAAAC. Mr. Raher advised the subcommittee to stay with its current schedule because it may be one of the reasons why the subcommittee's documents and decisions are effective; the atmosphere of the CAAAC's meetings are not as conducive to effectiveness. Mr. Walsh agreed with the recommendation to stay with the subcommittee's current schedule.

The Impact and Significance of Nonroad Mobile Sources on Air Quality and Public Health: The EPA Perspective

Glenn Passavant (EPA), Alan Stout (EPA), and Cle Jackson (EPA) gave a three-part presentation on EPA's regulatory programs for nonroad engines. It provides an overview of the applicability, emission standards, and statutory authority for programs affecting a variety of vehicles and equipment: commercial aircraft; locomotives; lawn and garden equipment; and spark-ignition and diesel engines used in marine, industrial, and recreational applications. The presentation may be downloaded from the following locations.

- <http://transaq.ce.gatech.edu/epatac/documents/stout.pdf>
- <http://transaq.ce.gatech.edu/epatac/documents/jackson.pdf>

Mr. Becker requested a pie chart of the emissions from the nonroad engine source categories. Mr. Passavant replied that EPA does have emissions estimates, but, for various reasons, estimates that are comparable across categories are difficult to obtain. Mr. Walsh asked if EPA has a long-term strategy to buttress the data on emissions. Mr. Passavant replied that the agency does have a strategy for improving information on emission factors and activity levels.

Mr. Kowalczyk said EPA should take a closer look at aircraft emissions. Mr. Passavant said there are several reasons limiting EPA's ability to act. First, aircraft engine tests are very expensive (\$1 million/test), and manufacturers claim emission performance does not deteriorate. EPA's authority to regulate aircraft is cumbersome because aircraft are an international commodity with large offshore sales. Finally, manufacturers and others are extremely nervous regarding liability concerns.

Ms. Vujovich said she had not heard a convincing argument as to why EPA has not attempted to reduce the sulfur in aviation fuels. One member mentioned the problem of jet fuel contaminating oil pipelines as a reason to pursue fuel changes. Another member explained that the need for predictability of performance and the huge cost of testing limit changes in aviation fuel. Mr. Walsh made a related but more general point that as on-road emission standards have become more stringent, nonroad NO_x emissions become more significant and that EPA needs to take another look at regulating the fuels and engines used in nonroad engines and equipment. Issues related to NO_x vs. CO tradeoffs are also relevant here.

Mr. Becker said state and local regulatory agencies can regulate the non-aircraft equipment in use at airports such as tugs and lifts, but they cannot regulate aircraft. It is unfair to require diesel manufacturers and utilities to take strong actions to reduce NO_x but to allow the inadequately-controlled aircraft industry to escape controls. One option is to use a stakeholder process to require some retrofit of aircraft (balanced against the industry's concern for consistency between airports).

Coralie Cooper (NESCAUM) observed that 40% of the NO_x emissions associated with airports are from aircraft, and some newer aircraft engines emit 50% less NO_x than the majority of the fleet. There are options to set more stringent standards for aircraft engines based on new technology.

Mr. Elston observed that, if one were to consider airports as point sources (an analogy made by Mr. Passavant), airports represent a large slice of the pollution pie. If one were to look at the progress that is being made to reduce emissions from airport equipment and aircraft, one would find less progress than with reducing emissions from the other types of point source. Mr. Passavant agreed, although emission reductions from ground traffic (people driving their cars to the airport) and nonroad ground equipment can be addressed more easily than aircraft. Mr. Elston asked whether the issue of airport emissions might be a relevant question for the full committee (CAAAC) or the Linking Land Use, Transportation, and Air Quality Subcommittee.

Mr. Walsh asked whether incentives could be designed to accelerate replacement of older engines with newer engines. A member said another approach would be to restrict the types of aircraft flying into particular airports. Mr. Becker reported that Sweden has set landing fees that are greater for aircraft with dirtier engines.

Members also discussed issues associated with emissions from locomotive engines, which are subject to three tiers of standards. Mr. Walsh asked about the possibility of a fuel standard and earlier reductions in particulate matter than that required by 2005. Mr. Passavant said the control technology expected to be used to meet the PM standard is not after-treatment technology, although, by 2005, there is a good chance that EGR will be in use. Diesel fuel with sulfur of 2000-3000 ppm may cause durability problems for the EGR system. Some railroads use nonroad diesel fuel already. John Johnson (Michigan Technological University) commented that the industry probably would want low-sulfur fuel developed before 2005.

Referring to Mr. Stout's presentation on small and large spark ignition engines, commercial and recreational marine engines, and land-based recreational engines, members asked whether the standards are technology based. Mr. Stout replied that they are based on the greatest degree of reduction achievable, considering cost, feasibility, etc. Because they mostly affect consumer products, the costs must be kept relatively low. Members also noted that EPA may have to address technical feasibility and other issues for a fairly small slice of the emissions pie. Mr. Stout suggested that highway sources should take the lead and then EPA and the manufacturers can use technology transfer to address nonroad emissions.

Members also discussed constraints associated with controlling emissions from commercial marine engines, which are governed by an international body, the International Maritime Organization (IMO). First-round NO_x standards have been set, and the IMO has started work on a second round. They will also address the fuel sulfur issue. For example, areas may be able to petition to use low sulfur fuels.

Mr. Kowalczyk asked how extensive and how good is EPA's database on in-use emissions from small and large spark ignition engines, commercial and recreational marine engines, and land-based recreational engines. Mr. Stout replied that EPA's emissions estimates incorporate information from several sources, including laboratory and production testing conducted by industry and calculations of in-use emissions. Mr. Passavant added that it is very hard to get a robust dataset, but the information is adequate for making the determinations required by section 213(a) of the Clean Air Act, as amended, which establishes prerequisites for regulation.

Members suggested EPA consider data from other countries and coordinate information. Mr. Passavant said that production in most of the affected sectors is for the domestic market, so foreign data are less useful.

Gordon Allardyce (DaimlerChrysler) requested a quick overview of the ability to use current technology to significantly reduce emissions from nonroad engines (listed on the second overhead of Mr. Passavant's presentation). Mr. Stout reiterated information on expected emission reductions. Mr. Allardyce requested preparation of one table that would provide information on both expected emission reductions and control cost (total cost or cost as a proportion of engine cost). Mr. Passavant said staff would prepare that table.

Mr. Kowalczyk requested information on post-control emissions from nonroad engines by source category. When compared to comparable information for onroad sources, the Subcommittee could see whether there are categories not taking their fair shares of the burden of control. Mr. Passavant said staff would prepare that information before the Subcommittee's July meeting.

Members discussed the relationship between existing smoke inspection programs for diesel engines and emissions reductions. Mr. Passavant said that the purpose of smoke inspections is to identify high emitters, but there is not an exact correlation with emissions. In Colorado's experience, measuring CO may be a better indicator of PM than smoke. EPA is collecting data on duty cycles to address emissions reductions. EPA recognizes there are engineering, equipment, and fuel issues associated with reducing nonroad emissions.

Other Perspectives on the Need for Control of Emissions from Nonroad Mobile Sources

Tom Cackette (CARB) gave the presentation "Reducing Emissions from Off-Road Engines" (<http://transaq.ce.gatech.edu/epatac/documents/cackette.pdf>). Among other things, the presentation compares on- and off-road diesel engine standards for NO_x and PM; compares NO_x and PM emissions from 2004 diesel trucks and cars; and describes opportunities for lower heavy-duty diesel emissions. The latter include after-treatment technologies (such as particulate filters and selective catalytic reduction), which "have come of age." It is important to address low sulfur fuel requirements to ensure the control technology can be maintained. California is limited in acting on its own because of interstate commerce considerations and other regulatory constraints. Mr. Cackette also stressed the importance of addressing off-road diesel emissions to address the diesel PM cancer risk.

Ms. Vujovich said that she is disturbed that EPA's Office of Transportation and Air Quality (OTAQ) is taking the low-sulfur issue in incremental steps. Speaking as a representative of an engine manufacturer and being worried about after-treatment technologies for on- and off-highway engines, low-sulfur fuel is crucial. Taking incremental steps does not help her understand technology development lead time and how it can fit into a long-term strategy. MSTRS might be able to provide a framework for dealing with the issue. Working with one market or segment at a time does not result in the most cost-effective results for any of the industries involved.

Mr. Leonard "seconded" Ms. Vujovich's remarks. Some people will use off-road fuel in on-road vehicles, destroying the effectiveness of after-treatment equipment.

Mr. Kowalczyk recalled that at a conference sponsored by STAPPA/ALAPCO on diesel fuel, representatives of the trucking industry said that they would not accept an on-road sulfur program for fuel unless off-road fuel is treated equally. Their views must be heard.

Bob Sawyer (Univ. of California at Berkeley) said, based on the tier 2 sulfur experience, that time might be the limiting factor in addressing this issue.

Numerous members of the Subcommittee continued the discussion of issues pertaining to reducing sulfur in nonroad diesel fuel. They expressed concerns with secondary impacts of regulation, unintended contamination of fuels in the distribution system, and whether NO_x adsorbers are the appropriate approach.

- In the states where home heating oil is the same as nonroad diesel fuel, how would the price of home heating oil change if refineries were to reduce sulfur in those fuels?
- Would refineries increase the sulfur in home heating oil?
- If the sulfur content is limited, will there be adequate supply of heating oil?
- Is contamination of one fuel by another due to commingling in pipelines likely to be a problem? What is the cost of expanding the "interface" in a pipeline to minimize contamination?

Mr. Kulakowski suggested EPA should identify a cost effective mixture of technologies and fuel to establish needed reductions versus setting the reduction up-front.

Mr. Grundler responded to Ms. Vujovich's proposal for a comprehensive examination of low-sulfur fuel issues. EPA has considered the relationship between reducing sulfur in onroad and nonroad diesel. From representatives of small refineries, the agency heard that they would prefer fuel changes to occur at the same time. Nonetheless, EPA has not figured out "how to get there from here" in the time frame during which the agency wants act given the technical issues.

Margo Oge (OTAQ's Director) would welcome a proposal from the Subcommittee for addressing the issues.

In response to a question about timing of the Subcommittee's efforts, Mr. Grundler said EPA intends to propose a rule addressing onroad sulfur May 1, 2000 and promulgate a rule by the end of the year. He expects some comments on the proposal to recommend that EPA address the whole fuel pool in its entirety. The Subcommittee could provide input that would EPA address that comment. The Subcommittee would need to act at its July meeting.

Mr. Raher said the full CAAAC should consider this issue, and it meets June 16. That meeting would be the only opportunity CAAAC would have to consider recommendations from the Subcommittee.

Mr. Kulakowski asked the Subcommittee to consider questions about process and use of outputs. What is this Subcommittee going to provide over and above what EPA would receive in public comments? The Subcommittee and EPA would hear from the same people: engine

manufacturers, states, and oil industry. What would EPA do with recommendations from the Subcommittee if they are substantially different than EPA's preferred policy?

Dr. Sawyer replied that the Subcommittee's role is not always to be helpful. Sometimes the Subcommittee comes forward with observations or recommendations that it feels the need to make. The debate in the rulemaking will be focused on onroad emissions, but the Subcommittee's issue is nonroad emissions, which are off the agenda of the rulemaking process. So nonroad issues may or may not come up in public comments. The nonroad issue is one the Subcommittee cannot avoid. Dr. Sawyer recommended that the Subcommittee at least consider the nonroad sulfur issue at the July meeting. The Subcommittee should create an ad hoc working group, which would gather information, prepare a presentation for the July meeting, and develop a proposal for whether the Subcommittee should do anything.

Mr. Kowalczyk agreed with Dr. Sawyer's proposal. Recalling a comment made during the morning by Mr. Becker, talking about an issue will help even if the Subcommittee can't reach a consensus. He added that the Western Regional Air Partnership will be considering this issue in April or May, and it could have some useful information to share with the Subcommittee. Mr. Raheer also agreed with Dr. Sawyer's recommendation.

Ms. Vujovich underscored the importance of the issue for her company. Tier III regulations are imminent. If she does not know the sulfur content, then she does not know the after-treatment control technology that can be used. If she does not know the sulfur content soon, her company will be late getting technology out. She also expressed an interest in expanding the public policy discussion on low-sulfur fuels to include more than the issue of enabling technology. Issues about the in-use fleet are important.

Mr. Passavant made a distinction between timing of rulemaking about sulfur content and timing of implementation. The latter issues have been thought about for both onroad and offroad diesel.

Mr. Green said it would be desirable to use the Subcommittee to start a discussion among engine manufacturers, refiners, states, and environmental groups. That discussion would be helpful to EPA.

Mr. Kulakowski observed that API, NPRA, and engine manufacturers spent close to a year having that discussion. He felt the stumbling block was the proposal that the emission reduction had to be 90% and based on the use of NOx absorbers and 5 ppm fuel. The oil industry asked what could be achieved with 50 ppm fuel, but they never got an answer. That is an issue he would want the Subcommittee to explore, if it is going to address sulfur.

Mr. Grundler assured the Subcommittee that EPA will ensure a coherent approach to regulating fuel sulfur content. Ms. Vujovich said that timing is of the essence, and that waiting two years to know what offroad is, and one year for onroad is, is very difficult. When EPA sets the sulfur level for onroad, it should set the sulfur level for offroad. A simultaneous decision would allow engine companies and equipment manufacturers to design and develop their products. Tim Johnson (Corning, Inc.) added that when an engine manufacturer looks at the after-treatment

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technology that will be applied in one market, the big picture (i.e., sulfur levels) helps because it assists with making decisions about future applications of the same technology or different technologies.

Mr. Passavant asked whether if decisions about sulfur levels weren't made in the same time frame, would more lead time after the decisions had been made be just as acceptable? Ms. Vujovich said she did not know the answer. To explain, she gave an example of NOx control technologies. SCR has been used in onroad applications; engine manufacturers question whether NOx absorbers are a viable alternative for NOx control for onroad equipment. These technologies are transferable with the right amount of lead time. There are two different paths to look at for NOx control in the future of onroad and nonroad. Manufacturers would like to know whether they are going down a single path or two different paths. Tim Johnson said manufacturers could be facing a foregone conclusion to go down two paths if the sulfur levels are distinctly different--regardless of the timing of fuel sulfur controls. Mr. Kulakowski said he needs to know how to design a refinery four years in advance of the implementation date, and the design depends on all the requirements that affect both onroad and nonroad fuels.

Mr. Elston reminded members that the regulatory tool box is not limited. States can use permits, pollution prevention, and other tools to address nonroad emissions. For example, California requires nonroad vehicles to use onroad fuel.

Mr. Kowalczyk said that engine manufacturers, the oil industry, and states all want to know the answers to both questions (i.e., onroad and offroad sulfur levels). Perhaps the Subcommittee needs to ask EPA to talk at the July meeting about the alternatives they have to bring these two together or explain in more depth why they have to be disconnected. Mr. Grundler said they won't come together this year because the President has ordered EPA to deal with onroad diesel by the end of this year. Mr. Passavant said fulfillment of the legal requirements for various regulatory analyses would preclude EPA from finalizing anything for nonroad fuel at the same time EPA finalizes the onroad fuel regulation.

Dr. Sawyer said this may not be essential time for the Subcommittee to act. Ms. Vujovich does want the Subcommittee to address the issue. Mr. Rahe said that if there is a benefit to simultaneous regulation, then the Subcommittee should say so as an advisory committee. Mr. Passavant said that EPA could make a supplemental notice of proposed rulemaking on the issue after it has received the public's comments, which could lead to accelerating action by six months.

Mr. Elston commented that the states are facing important attainment date deadlines. If the rules are not in effect until 2006, they will be too late to help the states, who will be forced to take action on their own.

Mr. Kulakowski offered a suggestion for how the Subcommittee could proceed. Put time on the agenda for the July meeting for interested parties to summarize their comments on the onroad fuel regulation that EPA will propose in May and let the comments be the basis for discussion.

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Dr. Sawyer, Ms. Vujovich, and Mr. Green endorsed the proposal. Dr. Sawyer recommended focusing on the nonroad fuel issues.

Dr. Sawyer concluded that, at its July meeting, the Subcommittee would hear from members about their comments on the proposed rule. The meeting will take place in the vicinity of Washington, D.C. Ms. Vujovich recommended forming a balanced group of speakers. Mr. White will coordinate the speakers.

The meeting ended at 3:30.

Action Items

- EPA will prepare a pie chart of the emissions from the nonroad engine source categories.
- EPA will prepare a table that provides information on both expected emission reductions and control cost (total cost or cost as a proportion of engine cost) for nonroad engines.
- EPA will prepare a table showing post-control emissions from nonroad engines by source category and from onroad sources.
- Mr. White will coordinate speakers on EPA's proposed onroad fuel rule for the Subcommittee's July meeting.

Attachments:

Listing of Members, Alternates, Speakers and Staff
Listing of Observers

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Attendees (Members, Alternates, Speakers and Staff)

NAME	ORGANIZATION
Gordon Allardyce	Daimler Chrysler Corporation
Bill Becker	STAPPA/ALAPCO
Robert Brown	Ford Motor Company
John Cabaniss	Association of Int'l Auto. Mfrs. Inc.
Tom Cackette	California Air Resources Board
Coralie Cooper	Northeast States for Coordinated Air Use Mgmt.
Tom Durbin	University of California - Riverside
John Elston	NJ State Dept of Env. Protection
Steve Flint	NYS Dept of Env. Conservation
Beth Friedman	EC/R Incorporated
Jerry Gallagher	J. Gallagher & Associates
Greg Green	US EPA
Chris Grundler	US EPA
Cheryl Hogan	US EPA
Cleophas Jackson	US EPA
John Johnson	Michigan Technological University
John Kowalczyk	Oregon Dept. of Environmental Quality
Mike Kulakowski	Equiva Services, LLC
Sam Leonard	General Motors Corporation
Dale McKinnon	Manufacturers of Emission Controls Assn.
Brian J. Morton	EC/R Incorporated
Shonna Okada	EC/R Incorporated
Glenn Passavant	US EPA
Patrick Raher	Hogan & Hartson, L.L.P.
Bob Sawyer	University of California at Berkeley
Alan Stout	US EPA
Timothy Tindall	Detroit Diesel
Tina Vujovich	Cummins Engine Company
Mike Walsh	Consultant
John White	US EPA

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Observers

NAME	ORGANIZATION
Hazel Barbour	Texas Natural Resource Conservation Commission
Richard Bishop	John Deere Engine Group
Bruce Carhart	Ozone Transport Commission
James L. Cigler	PPEMA
Gary Cross	Dunaway and Cross
Greg Dana	Alliance of Automobile Manufacturers
David Ferris	General Motors
Katharine Fredriksen	Koch Industries, Inc.
Chuck Freed	Consultant
Ed Gardetto	US EPA
John German	American Honda Motor Co, Inc.
Charlie Gorman	Snap-on
Jeff Hazle	NPRA
Dale Kardos	Dale Kardos and Associates
James Kennedy	BNA
David Lax	API
Walter Lewis	Porsche Cars North America, Inc.
Michael Lord	Toyota Technical Center, USA
Bob Maxwell	Consultant
Peter McClintock	Applied Analysis
Clayton Miller	Lewis and Company
Vincent Mow	Waekon Corporation
Yasumi Nakamura-Newbraugh	Nissan North America, Inc.
Jack Peckham	Hart Publications
Ann Raridon	Geo-Centers, Inc.
Mark Saxonberg	Toyota Motor Sales, USA
Robert Shaw	DaimlerChrysler
Jeb Stuart	Construction Industry Air Quality Coalition
Joe Suchecki	Engine Manufacturers Association
Lawrence Taylor	Environmental Systems Products, Inc.
Suanne Thomas	Volkswagen of America, Inc.
Andy Vaichekauskas	Mitsubishi
Birgit Wolff	Colorado State University