

Clean Air Act Advisory Committee
Mobile Source Technical Review Subcommittee Meeting

Dupont Plaza Hotel - Washington, DC
Draft Minutes - October 15, 1997

Michael Walsh, Subcommittee Co-Chair and Margo Oge, Director of the Office of Mobile Sources, opened the meeting and welcomed the participants. They welcomed the returning members of the committee and welcomed new members including: Mr. Gordon Allardyce, Chrysler; Mr. Michael Eaves, Southern California Gas Company; Dr. George Lauer, ARCO; Dr. Robert Schaffhauser, Englehard Corporation; and Dr. Timothy Johnson, Corning. Ms. Oge reviewed several major initiatives underway in the Office of Mobile Sources including:

- Finalizing the on-road diesel truck initiative; a separate process for NOx standards and gasoline trucks will be completed in the next two years;
- Standards for off-road equipment;
- Opt-out procedures for reformulated gasoline; and
- EPA policy on the use of voluntary programs and control strategies (e.g., rideshare, ozone action days, etc.)

EPA Reassessment of In-Use Deterioration of Tier 0 Cars

Phil Lorang, Assessment and Modeling Division, EPA/OMS, reviewed the proposal for MOBILE6 including the downward revision of in-use deterioration of Tier 0 vehicles. He noted that several other parts of MOBILE will be revised “upward” to account for new information such as air conditioning, real-world driving cycles, and the mix of light truck and light cars. Mr. Lorang also reviewed the separation of start emissions from running emissions, a significant change to MOBILE6.

Cold Starts

Vehicles will be broken into technology types and separated by injection types. Start emissions will be based on cold starts. Cold starts will be estimated as grams per start, defined as a 12-hour soak before start. The data on which these estimates are based are the: Federal Test Procedure (FTP) tests, California study of soak time, and instrumented vehicle data. The combined sample of bag-by-bag data is used from approximately 4,400 vehicles. The start emissions were calculated from the 505 cycle. Seventy-seven (77) vehicles were tested and the cold start was calculated from the hot 505 bag that had a no-start component.

Start = Bag 1-Hot 505

EPA developed a formula to predict the start emission for all 4,400 vehicles. For newer vehicles, the estimate is approximately 0.3 g/mile over a typical 7-mile trip. The estimate is 0.2 g/mile for NOx on cars certified to 1 gram. EPA found that there is some deterioration in start emissions but the deterioration is quite low.

Running Emissions

The data used for these analyses include IM240 test from Ohio, Arizona, and Colorado; FTP tests from EPA, manufacturers, and an API study that selected high-mileage cars recently moved into a state from an area with no testing. There was a concern that the FTP data are taken from individuals notified by mail and may not be a successful recruitment method and therefore less representative. The IM240 data lessens any recruitment bias. EPA obtained 240,000 tests from Dayton, Ohio; but the state was using a fast/pass test (30-240 seconds). The Agency began by estimating the full test from the fast pass test using a regression. Another adjustment was made to correct for different driving cycles (IM240 vs. LA4). Another correction occurred to correct for different fuels. EPA also had to correct for 5-digit odometers and had to make some corrections to the data. Then, EPA simulated IM240 data with LA4. Ultimately, EPA found no evidence of significantly higher deterioration by mileage or age in these data than in the FTP data.

Mr. Lorang presented several graphs showing types of vehicles and their emissions by mileage. Because the data set is so large, he noted that the confidence in the mean is quite good. For older vehicles, throttle-body injection (TBI) vehicles showed lower deterioration than PFI vehicles. This may be a function of successful TBI vehicles being the only vehicles that were kept in production and sold.

For the newest model year groups, there is very little slope to the estimates. The deterioration over the first 50,000 miles is low and the "kink" previously shown in MOBILE is gone. Mr. Lorang noted several key findings. For example, EPA's MOBILE estimate of 86-89 vehicles matches the EMFAC (1992) estimate for areas with I/M. The new MOBILE estimates of NOx also match the EMFAC estimates.

EMFAC 7G High-Emitter Adjustment Factors

CARB ran a pilot test program with a relatively high (60%) capture rate. A significant number of high emitters were obtained. When actual emissions were plotted against the EMFAC estimates, CARB found that the estimates were lower and attributed the difference to recruitment bias. CARB split the model years into ranges and created a ratio from the pilot study and the EMFAC estimate to generate correction factors. For example, for 1993-97 model years the EMFAC 7F emission factor is adjusted (multiplied) by 1.27 for HC; 1.35 for CO, and 1.05 for NOx. For 1981 models, the adjustment is 1.48, 1.93, 1.63, respectively. EPA is unsure what the final effect of these data will be on MOBILE6.

Dr. Slott asked whether there was any estimate of the percent of emissions from high emitters. He noted that it is important to know whether reducible emissions are from high emitters or older vehicles that have deteriorated. Virginia McConnell, RFF, asked whether the

linear function is appropriate to describe emissions by mileage. Would it not be better to aggregate the data into groups/categories (high emitters)? Phil Lorang responded that there are very few cars in some of the ranges. EPA will show the distributions around means. Dr. Gibbs, New York State Dept. of Environmental Conservation, asked about the data on high-mileage vehicles. Phil Lorang noted that most of the data points over 100,000 miles are from the API data. EPA will write up the information and release it for 60-day review via e-mail notification and publication on the Internet. The agency will also hire some academics to formally peer review the work. The end result will be the revised MOBILE model (MOBILE6) in the spring of 1998, with final release scheduled for the end of 1998. Mr. Walsh noted that the issues in this analysis are important and drive much of the mobile source program. The agency and the subcommittee are forced to make decisions based on less than perfect data. As the process continues, Mr. Walsh asked the subcommittee what are the better, more creative ways to help EPA handle the issues and are there better data sources? John Elston, New Jersey State Dept. of Environmental Protection, noted that the In-Use Deterioration Workgroup is disbanding, and there may be issues that need their expertise. He believes that the group may add to the deliberations of the Modeling Workgroup.

He added that ECOS has an I/M group that wants to develop a "real-world" I/M test using mass emissions that can be used to define the states' inventories. He noted the problems with the Ohio data. He would like to see a non-FTP protocol developed so that I/M data are useful for future analyses. Phil Lorang responded that a 0.1 percent sample using full IM240 with preconditioned cars would be desirable.

Margo Oge added that members of the In-Use Deterioration Workgroup may wish to join the Modeling Workgroup. Mike Walsh reiterated that the in-use issue is critical and should not be lost. Randy Guensler added that new vehicle technologies are treated like the last technology and then as these vehicles meet conditions (e.g., age, data collected), the assumptions are tested and validated. Dr. Slott noted that there should be strong incentives to collect good data and these data should be made available. Janet Hathaway, NRDC, noted that ambient measurements (e.g., source receptors) are higher than estimates by the revisions to the MOBILE model. The FTP data has recruitment issues and therefore limitations. She believes that this underestimates the mobile source contribution to inventories. The high-emitter adjustment factor may be one mechanism to correct for this disparity. LADCO also found an under prediction by the MOBILE model when compared to ambient measurement due to off-cycle emissions. MOBILE6 attempts to correct for some of this. Steve Gerritson of LADCO encouraged further research into this problem because the problem is not going away especially if MOBILE 6 is lowering the estimate of in-use deterioration.

EPA Research Plan For On-Board Diagnostics II Effectiveness in I/M Programs

Ed Gardetto, Regional and State Programs Division, EPA/OMS, discussed on-board diagnostics (OBD) and their effectiveness in I/M programs. He noted that he gave a similar presentation at a meeting on the previous day. He reviewed the regulatory status, testing program, and pilot program. The regulatory status is that EPA will propose delaying existing

rule implementation for three years until January 1, 2001. To assess OBD technology, EPA needs to answer several questions.

- How well does OBD identify emission problems in actual use?
- What regulatory changes would be required to implement OBD in an I/M environment?
- Can OBD be run effectively in an I/M environment?

EPA is working with Davis County, UT personnel (OBD scan check) and Colorado (visual malfunction indicator light (MIL) illumination check) who are checking OBD status on vehicles. He noted that the agency is willing to work with other areas contemplating voluntarily checking OBD status. So far, the test takes 2 to 3 minutes to scan the system (Utah). There are some concerns about the readiness status of the computer systems. The MIL illumination rates are 0.7 percent (Colorado). Tailpipe failure rates are 0.1 percent, but these are also very new (1996 and newer) vehicles.

EPA also started a test program in October 1997 in Phoenix, AZ. EPA has a goal to test 200 OBD-equipped vehicles. Vehicles will be recruited from the I/M lanes and the Agency is looking for: (1) high tailpipe emissions, (2) MIL illuminated, or (3) computer commanding MIL to be on. The agency is also evaluating the potential to look at rental fleets or dealer systems. EPA also is working with manufacturers to cooperate with local dealerships to identify illuminated MILs that show up at dealerships for warranty repairs. EPA is examining several monetary incentives (\$50) and replacement vehicles to ensure good recruitment. Once recruited, vehicles would be repaired for exhaust leaks and refilled with cert grade fuel, receive LA4 preconditioning, and run an FTP test without diurnal heat build or evap test and an IM240 test. The vehicle would be allowed to reassess itself and clear readiness flags and then retested. Vehicles with high emissions and no MIL will be inspected for possible causes, repaired, and retested. Another test program will start in January 1998. EPA will contract to perform OBD checks at two I/M lanes in Wisconsin. The goal is to test 2,500 vehicles under real-world conditions and prepare draft implementation guidelines by May of 1998.

Mr. Walsh added that there were 50 vehicles identified that failed the I/M test, but only eight of these vehicles had MILs illuminated. Mr. Gardetto responded that Colorado has tested 40,000 vehicles and 284 vehicles had MIL lights illuminated. The data are extremely preliminary so no conclusions can be made. EPA is working with manufacturers and Colorado to better understand these data. Dr. Slott highlighted that a test program in Colorado might help the Agency. Another committee member commented that there is concern about fuel sulfur and OBD systems (oxygen sensors). If fuel tanks are drained and refilled with no-sulfur certification fuel, EPA may miss the cause of the failure. Virginia McConnell, Resources For the Future, asked whether evaporative emissions will be tested. Phil Lorang responded that evaporative diagnostic codes will be examined. Tom Cackette added that there are already Internet "chatrooms" to discuss diagnostic codes with other technicians.

EPA would like to form a workgroup to analyze the data from OBD II. Margo Oge added that the workgroup could assist with the review of the regulatory proposal and provide additional

state and industry resources for some of the testing to leverage Agency resources and expertise. Ultimately, EPA would like to give credit for these programs.

Report on Activities of the In-Use Deterioration Workgroup

Tom Cackette, CARB, led the discussion. He noted that there was a presentation by Desert Research Institute (Mr. Eric Fujita) at the workgroup meeting the previous day that described validation with non-inventory databases. There is an implication that HC emissions are underestimated in the models. The workgroup was concerned that EPA would draw a line through their available data and predict into the future. The consensus of the workgroup was that someone needs to follow through on a quantification method for these newer vehicles. An engineering assessment may be needed for those cars where EPA has no experience with the vehicles as old cars.

The subcommittee report on in-use deterioration has been forwarded to the full Clean Air Act Advisory Committee (CAAAC) and Mr. Cackette hoped that the report would be passed formally to EPA. He asked whether the CAAAC could vote in Tampa to forward the report formally to EPA. Mr. Walsh added that if the Modeling Workgroup takes on the future in-use deterioration activities, there may be a need to add a co-chair to the Modeling Workgroup to ensure that in-use issues are not lost. Gordon Allardyce of Chrysler remarked that the In-use Workgroup should be put on hold and then reconstituted at a later date to take a look at the Modeling Workgroup and other results. Dr. Randall Guensler, GA Institute of Technology, noted that adding new members to the Modeling Workgroup, and charging the group with the review of specific components of the MOBILE6 model, could satisfy the concerns. Phil Lorang responded that the Modeling Workgroup will be charged and asked to prepare a formal statement. Dr. Slott noted that the high-emitter correction factor is one issue that should be looked at by the subcommittee and not just by EPA experts in Ann Arbor.

Development of New Emission Inventory For Non-Road Model For Non-Road Mobile Sources

Megan Beardsley, of the Assessment and Modeling Division, EPA/OMS, lead the presentation. She discussed the non-road source inventory and the EPA non-road model. Approximately 20% of CO emissions are from non-road sources, 27% of VOCs, and 27% of NOx¹. A large percentage of PM₁₀ and PM_{2.5} also come from non-road sources. The 1997 Trends report will show an increase in emissions from non-road sources. The increase is primarily due to a wider range of equipment counted in the inventory.

The non-road model is designed as a tool for States for SIP development and for EPA use for strategic planning. The model is designed to be used with default data, although there will be opportunities to add user-defined data. The model will not include locomotives and commercial marine/aircraft, but may include these sources in the future. The model will be population based and present past, present, and future year inventories distributed by time or spatial scales. An

¹ EPA Trends Report

“alpha” version is complete and a model release is scheduled for August 1998. Ms. Beardsley noted that there are 80 equipment types subdivided by fuel and engine cycle. HC is represented by exhaust and non-exhaust and the model includes CO, CO₂, SO_x, NO_x, and PM. She also noted that sub-county detail is obtainable. The interface developed in Visual Basic software is user friendly. Reporting is done via Microsoft Access. Technical memos will be available to identify the default assumptions used in the model. Ms. Beardsley added that some model assumptions will be readily changeable by users via the model interface; others will be more difficult to change and will have to be edited using a text editor to change files in the model.

Ms. Beardsley added that some emission factors are based on extensive data; others are based on a few tests on a few types of engines. Dr. Guensler asked whether there was a way to grade the quality of the data. Dr. Gibbs noted that the model will give a sense of scale, but the supporting data needs to be documented so that suspect uses can be avoided. He added that these models will be used for unintended purposes. Guidance to manipulate the hardwired files will be needed so that States make their changes correctly. A workshop is planned for January 1998 on the non-road model and its use. [Note from presenter: The workshop has been postponed until March.]

Mr. Walsh asked the Modeling Workgroup whether they should be involved in reviewing this non-road modeling effort. Dr. Guensler, Co-Chair of the Modeling Workgroup, responded that the workgroup would discuss the issue.

Report on Activities of the Modeling Workgroup

Dr. Randy Guensler lead the discussion. The objective of the workgroup is to keep members appraised of modeling projects and to review EPA work products. Preliminary analyses developed for MOBILE6 are described for the workgroup and official comments are prepared. All significant materials are published on the Internet. The scope of the workgroup will be expanded to include review of MOBILE6 and make research recommendations. Two major initiative include: a “big picture” modeling paper, and development of a long-range research plan. The big picture paper reviews users of the model. EPA has prepared a draft and comments are being taken. The complete report will be submitted for review. EPA has been holding workshops and documents are available on the web at:

<http://www.epa.gov/omswww/models.htm>

Mr. Walsh asked that Phil Lorang identify modules of MOBILE6 that the agency wants review by the subcommittee or workgroups. Workgroup members who have suggestions can contact Mr. Lorang.

Control of PM Emissions From Non-Road Diesel Engines

Don Kopinski and Cleophas Jackson of the Emissions Programs and Compliance Division, EPA/OMS made the presentation. EPA began to control smoke from highway engines in the 1970s. Only recently has the agency begun to look at non-road sources. Diesel highway engines are a decreasing PM contributor, while non-road sources are generally uncontrolled and are higher contributors. Most of the diesel PM is under 100 nanometers.

The 1994 Tier 1 rulemaking is being phased in by horsepower category and the standard maintains the California standard. The steady-state test works well for NO_x control, but is less useful for PM control. The 1997 proposal which sets Tier 2 standards are based on an SOP that is a combined NO_x/NMHC standard that begins in 2001 and maintains the steady-state test. The Tier 3 standard (2006) does not address PM but could. In addition, in 2001, the rulemaking will be reviewed to see whether the standards are feasible. Benefits claimed from the new proposal will be obtained from both direct and secondary PM reductions from NO_x reductions. EPA believes that the growth in sales of these engines will make the overall gain low. EPA also recognizes that they are lacking in-use data for these vehicles. Mr. Kopinski noted that the Agency is trying to ensure that NO_x controls do not lead to higher PM emissions. He displayed a graph of engine emissions that show many of the engines meeting the Tier 2 standards for PM. However, when pressured to meet NO_x standards, these PM emissions may rise. Mr. David Merrion, Detroit Diesel Corporation, added that there are on-highway engine technologies that are being applied to non-road engines. These technologies are being applied to the smaller, unregulated engines.

In summary, EPA will proceed with Tier 2 and Tier 3 NO_x/HC standards and determine an appropriate test cycle. Another goal is to obtain more in-use data and coordinate EPA efforts with other data collection efforts by industry, states, and other countries. Harmonization of standards among the U.S. and other trading partners is also an important consideration.

Mr. Kopinski noted that if you listen to a piece of non-road equipment, transient use is the common operating procedure. The 8-mode steady-state test does not measure emissions as the engine changes states (speed or torque). He compared steady-state and transient tests for 25 engines. In some cases the tests agree but they also can be very different. The difference between the tests tends to be accentuated for newer engines built to standards. As you move to cleaner (steady-state) engines, the ratio of the steady-state to transient measurements goes up.

EPA would like to adopt a robust test cycle to supplement (or replace) the 8-mode test and allow the agency to have confidence in the PM control measurements. Keeping the steady-state test may be necessary for harmonization and to maintain the confidence in NO_x control measurements. EPA is currently characterizing engine operation in-use (under contract with SwRI) and developing one or two "lab-runnable" cycles. Mr. Walsh asked whether EPA was working with European partners to help leverage resources. Mr. Kopinski replied that coordination is in place with European manufacturers. EPA also is interested in developing demonstration engines that are low emitters such as engines that meet Tier 3 NO_x+HC and PM standards. Once the test cycle(s) is developed, standards can be set. Special considerations need

to account for operating conditions (slow speeds, dust) and the need for low cost and rugged engines. EPA is looking at fuel changes as one possible mechanism to reduce emissions. Sulfur, cetane, and aromatics are being examined for their effect on emissions.

Report on Activities of the Phase II Reformulated Gasoline (RFG) Implementation Workgroup

Debbie Wood, Fuels and Energy Division, EPA/OMS, lead the discussion. She reviewed the current implementation plan that leads up to the 6-month window before RFG becomes available at the pumps. With respect to communication, the group is examining issues of concern such as health concerns and environmental benefits. Key audiences are also being identified. Message and materials development will occur midway through the project. She noted that California used message teams to brief important stakeholder groups. In April of 1999, the group will meet with representatives of key audiences and distribute materials. When the program is introduced in January 2000, the program will be prepared to respond immediately to inquiries, monitor the media and respond to inaccuracies, and ensure that materials are available. EPA believes that they can use many of the materials developed for California and even some of their test program. However, there are data gaps in the California program that will be filled using new data. John Elston noted that he already is being sent materials on the MTBE problem. What is EPA doing to ensure that responses are available now? Chuck Freed, Co-Chair, commented that significant research is underway and takes time. Margo Oge added that additional communications efforts are underway, especially for MTBE, and the Agency is coming out with guidelines on MTBE in water. Janet Hathaway added that even though NRDC and CARB worked closely with newspapers on these issues, they often write articles with a different tone nonetheless. Mr. Elston noted that many politicians prepare responses in anticipation of questions.

Ms. Wood continued by describing the focus groups conducted in San Francisco and Milwaukee. Most of the participants are aware of RFG; primarily, they are aware of the negatives (e.g., reduced fuel economy) and not the positives (e.g., emission reductions). Only a few individuals noticed any fuel performance problems. She added that they are noticing some small engine problems in Milwaukee. The word "reformulated" tends to make participants think of "new and improved" and a marketing scam. Cost is less of an issue than the benefits of the program and vehicle performance. No one knew that a second phase of RFG is coming. Most believe that the second phase will be easier if they are notified early and positive statistics are provided. The Department of Motor Vehicles appears to be the best agency to send the message. They also appear to trust EPA, gas service stations, and AAA. Messages with visual content made the best impression. The radio appears to be the single best mechanism to reach drivers. A "nickname" for RFG may be developed.

The testing team formed a smaller group to develop test plans. A 4-city (Chicago, Boston, Baltimore, and Houston) test program is being designed. A fleet test program of 800 vehicles will test 100 controls and 100 vehicles in each city. The length of the test program and funding are being decided. A 7-month north (Boston/Chicago) and 3-month south (Baltimore/Houston) testing program has been recommended. The test fuels would follow the pattern of oxygenate use - Boston, Baltimore, and Houston - MTBE; Chicago - ethanol in winter, ETBE in summer.

Funding remains an issue. AAMA has declined to fund anything in addition to their in-kind contribution. Cost is estimated to be \$800,000. Next steps include:

- A focus group will be held in Portland;
- The fleet MOU needs to be finalized; and
- Winter testing of snowmobiles, chainsaws, and snowblowers will be undertaken.

Ms. Wood added that EPA recently conducted a demonstration program with a small municipal fleet in Maine and found no problems using low RVP Phase II summer gasoline. The next meeting of the workgroup is scheduled for January.

Report of the Activities of the National Vehicle and Fuel Emissions Laboratory Upgrade Workgroup

John Kargul, of the Deputy Director's Office, EPA, reported for the workgroup. The workgroup has met twice to advise OMS on the technical merits of the OMS plan to upgrade its laboratory facilities. The current plan covers a 5-year period. The first meeting (August) developed the charter, set the schedule for quick review of work products, and toured the Ann Arbor laboratory. The group also agreed to revisit the longer term goals once the initial tasks were complete in December 1997. The second meeting (September) evaluated comments on the EPA plan, established a format for the report, and divided into subgroups to handle individual products. Key comments submitted to EPA include:

- Industry is most interested in the accuracy of the lab;
- Consider ISO 9000 certification;
- Flexibility to test different fuels;
- Set upper limit for horsepower;
- Heavy-duty engine technologies are changing and will dictate different dynamometers (e.g., low-rpm/high-torque engines);
- Coordinate with industry to develop test procedures;
- More data on heavy-duty diesel engines, non-road, ULEV;
- Harmonization;
- Education and training of staff;
- Focus on science of measurement (metrology); and

- Flexible lab with quality standards (e.g., working with NIST)

In the final report, there will be an assessment of the plan (overview) and category discussions on light-duty vehicles, heavy-duty vehicles, and small engines. Some fuel specific issues will be discussed. Conclusions, recommendations, and minority opinions will be captured. The next meeting is scheduled for October 21. There will be a group review of the draft report on November 18. The report will be finalized in December.

Report of the Activities of the Innovative and Incentive-Based Transportation Policies Workgroup

Bruce Bertelsen of MECA, co-chair, lead the discussion. The workgroup was created this summer to examine policies to compliment existing regulatory programs at both the State and Federal levels. Initial areas of focus include:

- Collecting and using information on emission performance for existing and new vehicles;
- Making I/M more effective; and
- Promoting the use of current and next generation OBD systems.

Many of the issues of interest will crossover to other workgroups and he welcomed participation from other workgroup members. A series of background briefings will be scheduled to hear from those involved in some of these innovative programs. For example, *Consumers Report* will make a presentation to discuss sending a message to the public. J. D. Powers will also make a presentation. A report is planned for July 1998. Mr. Bertelson added that other EPA advisory groups also are looking at incentives. This committee is primarily focused on specific mobile source incentives. The other groups are looking at innovative approaches for small engines and on-road heavy-duty vehicles.

Distribution of Written Report on the Heavy-Duty Engine Workgroup

The Heavy-Duty Engine Workgroup is continuing with their testing program and distributed a written report on the group's status.

Briefing: Mobile Source Air Toxics Activities

Phil Lorang lead the discussion about CAA §202(1)(2). EPA is required to regulate air toxics under this section. EPA did a study in 1993 to summarize what was known about carcinogenic risk and other risks. Primary carcinogens of concern include butadiene, benzene, and diesel particulate matter along with others. Comments were received on the report and were incorporated but the report was not republished. There was no discussion on the need to regulate or not. Mr. Lorang highlighted some of the risk numbers presented in the 1993 report. Currently, OMS is working with OAQPS to update the report, with each office focusing on their respective parts of the report. OMS is reviewing the Title 2 authority, mobile source toxic emission factors, mobile source exposure in urban areas, and non-road activity. OAQPS is

performing exposure modeling, will develop source listings and will develop control strategies. Consistent inventories will be developed between the offices. Where possible, consistent exposure modeling will be reported. Joint presentations will be made on cost-effectiveness.

OAQPS has published a draft list of the 40 worst pollutants in urban areas and the comment period will end soon. The list will be narrowed to 30 and a strategy for control will be developed by the end of 1998.

OMS is developing a toxics module for MOBILE6. The OMS portion of the rulemaking is due by July 2000. ORD is calculating the health effects from individual pollutants. MTBE will be added to the list of modeled pollutants. EPA is looking for data on reformulated gasoline use in older cars.

Exposure modeling is underway using HAPEM-MS3 for 13 urban areas using 1990 census data. More micro-environments are in the model. Details will be kept on specific areas and not solely rolled into a national analysis. Source apportionment and reactivity also will be examined. The 1990 base case will be developed and extrapolated out to later years. Scenarios will be developed for different regulatory approaches or control strategies. Cost effectiveness will be developed in the report. EPA also is looking for any additional data, especially data that are not published yet. No workgroups have been involved in this activity to date.

Mr. Walsh added that with the reevaluation of the heavy-duty standard in 1999, it may be worth examining the research targets used by California. Janet Hathaway asked whether a Univ. Of CA-Riverside study for CARB might be used. She added that there is some new data on unique effects of diesel particles on asthma and immune suppression. Mr. Lorang responded that the study will be as comprehensive as available data allow.

Administrative Matters

A workshop will be held on CAP2000 (Compliance Reinvention) on October 16.

Presentation Recommendations for Upcoming Meetings

- ROVER technology;
- OBD and evaporative emissions;
- New Workgroup on OBD; and
- Consider adding off-road members to the subcommittee

The meeting was adjourned.

List of Members or Member Alternates Attending

Gordon Allardyce	Chrysler Corporation	(248) 576-8053
Doug Berens	Ford	(313) 594-2914
William Becker	STAPPA/ALAPCO	(202) 624-7864
Bruce Bertelsen	Manufacturers of Emission Control Assoc.	(202) 296-4797
Tom Cackette	California Air Resources Board	(916) 322-2892
Gregory Dana	AIAM	(703) 525-7788
Michael Eaves	Southern California Gas Company	(213) 244-5320
John Elston	New Jersey St. Dept. Of Environ. Prot.	(609) 292-6710
Steve Gerritson	Lake MI Air Directors Consortium	(847) 296-2181
Richard Gibbs	New York Dept. Of Environ. Cons.	(518) 485-8913
Randall Guensler	Georgia Institute of Technology	(404) 894-0405
Janet Hathaway	Natural Resources Defense Council	(415) 777-0220
John Johnson	Michigan Technological University	(906) 487-2576
Timothy Johnson	Corning, Inc.	(607) 974-7184
John Kowalczyk	Oregon Dept. of Environmental Quality	(503) 229-6459
Phil Lorang	EPA-Designated Federal Officer	(313) 668-4374
George Laurer	ARCO	(213) 486-0777
Virginia McConnell	Resources for the Future	(202) 328-5122
David Merrion	Detroit Diesel Corporation	(313) 592-7276
Margo Oge	EPA-Office of Mobile Sources	(202) 260-7645
Robert Sawyer	UC-Berkeley	(510) 642-5573
Robert Schaffhauser	Engelhard Corporation	(732) 205-5651
Robert Slott	Consultant	(508) 771-7699
Michael Walsh	Consultant	(202) 241-1297