

**Clean Air Act Advisory Committee
Mobile Sources Technical Review Sub-committee
Old Colony Inn, Alexandria, Virginia
April 18, 1996**

INTRODUCTION

The Sub-committee held its fourth meeting at the Best Western Old Colony Inn in Alexandria, Virginia. Professor Bob Sawyer opened the meeting and asked the Sub-committee members to introduce themselves. Margo Oge noted that Melvin Branch has resigned from the Sub-committee and she has asked John Elston, ECOS, to take his place.

WORKGROUP STATUS REPORTS

Following is a report from each of the workgroups on the status of their work to date.

Certification Workgroup

Jane Armstrong, EPA, made the presentation on behalf of the workgroup. Kelly Brown, Ford, and Ms. Armstrong chair the workgroup. EPA, CARB, and industry representatives have been meeting for some time to discuss the certification process, and she looks forward to additional input from the Sub-committee.

A Statement of Principles has been developed and signed by EPA, CARB, and 18 manufacturers. The major goals and positions of these parties include:

Reengineering the compliance process to reduce process time and test complexity, with more optimal use of resources and a focus on in-use compliance;

In-use performance is more preferable to prototype testing; and

Incentives should be developed to reward those manufacturers who are in compliance.

Industry and joint EPA/CARB task groups are working in parallel to develop specific proposals. Industry and government are working independently and each effort will be coordinated through the workgroup prior to presentations to the Sub-committee.

Six groups are working on the following certification areas:

Transition group - aiming to coordinate the process for the 2000 model year

Certification Groupings and Durability group - looking at seven categories of products with similar expected deterioration rates;

In-Use Compliance group - will become more active once groupings are developed;

Information and Application group - evaluating the information needed and identifying information that can be streamlined or eliminated;

Small Volume group - consider the role of small manufacturers; and

Fuel Economy group - examining fuel economy labeling and CAFE standards to ensure that these programs are preserved and remain stringent as other changes occur.

The workgroup does not have any specific proposals to present at this time and expects to work closely with the In-Use Deterioration workgroups. Some of the certification process changes will require regulatory changes, while others will not.

Dave Kulp, Ford, made a presentation on the six industry task group efforts. AAMA and AIAM are working together to provide EPA with a coordinated set of recommendations. Each task group has a mission statement and a set of deliverables. He briefly described each of them.

Discussion

The group discussed the fact that Ford and Chrysler have not signed the SOP. Kelly Brown, Ford, commented that there is still some confusion over the interpretation of the SOP language. Gordon Allardyce, Chrysler, noted that the manufacturers all agreed on the major principles, but still have some concerns. He wants the overall compliance demonstration burden reduced, but has not seen proposals that meet this goal. He believes that there may be an increased burden and increased risk to the manufacturers, especially under the Recall program. Current proposals appear to require that manufacturers test their own vehicles, provide the data, and “turn” themselves in. He added that the workgroup discussions have been fruitful but there are still reasons for concern. Jane Armstrong added that EPA does not need signatures to work together and EPA will continue to work with Ford and Chrysler. Margo Oge noted that it may take several years to work out the details and she asked that the manufacturers sign the SOP and work with EPA and CARB to refine the details.

In-Use Deterioration Workgroup - Data Analysis Team

Bob Slott, Shell, made the presentation on behalf of the Data Analysis Team of the workgroup. The team met on April 17 and discussed the following:

Work on economic incentives to reduce vehicle emissions performed by Virginia McConnell, Resources For the Future;

A Sierra Study funded by API and presented to the team by Steve Welstand, Chevron. The study examined failure modes and their relationship to emissions. The study indicated that carbureted vehicles failed mainly for mechanical reasons, and fuel injected vehicles failed mainly for electrical reasons. The oxygen sensor was the failure mode that contributed most to emission increases. Automakers noted that since 1990, vehicle technology has improved and the aging of these later vehicles is most important.

A presentation made by Greg Dma, Association of International Automobile Manufacturers, on FTP data from model year 1990 - 1994 vehicles, some with mileage above 100,000 miles. The findings are similar to data presented by the American Automobile Manufacturers Association to the workgroup on March 13. Both data sets show that the relationship between emissions and mileage is most similar to the latest EMFAC model and dissimilar to MOBILE 5.1. The increase in emissions deterioration that MOBILE5.1 predicts after 50,000 miles is not supported by these data for 1990 - 1994 vehicles.

A presentation by Mike Rodgers, GA Tech, summarizing EPA sponsored studies on remote sensing in several cities, including Nashville, Atlanta, Raleigh, Boston, and Houston. Approximately 350,000 vehicles are represented in these databases and can be cross tracked to available I/M data. In one study, zip codes were used to show that lower

economic areas have higher emitting vehicles for the same model year cars when compared to higher economic areas. In another study comparing the same vehicles before, during, and after the oxygenated fuel season, the analysis showed that there was no apparent effect of oxygenated fuels on CO.

EPA would like to analyze I/M databases but may be unable to release funds for this effort because of current budget uncertainty. However, CRC sponsors research on vehicle emissions and has developed a program to analyze IM program databases. The workgroup will be suggesting what information should be collected to better understand in-use deterioration. Penny Carey, EPA, distributed the EPA plan for analysis and the workgroup will respond with comments to EPA prior to the next meeting.

Discussion

Pat Raheer asked about differences between the MOBILE and EMFAC models. Bob Slott did not discuss the algorithms but instead discussed that MOBILE uses data from earlier vehicles. For newer vehicles, the relationship between mileage and emissions does not show a discontinuity in the deterioration rate. He also noted that emissions can either increase slowly over time or rapidly increase after a major component breakdown. In his opinion, both mechanisms are occurring. The workgroup has assembled existing studies but has not initiated new studies on existing data. The extent of their efforts will depend on the amount of funds available to EPA and the workgroups ability to influence studies that are currently underway.

In-Use Deterioration Workgroup - Future Technology and Engineering Team

Tom Cackette, CARB, made the presentation on behalf of the workgroup. He explained the rationale for dividing into two groups. The Data Analysis team is focusing on existing vehicles, but has little data on new and future vehicles. The Future Technology and Engineering team, is looking at the engineering of new vehicles and examining compliance or other activities to ensure that in-use deterioration is limited.

The team met on April 17. The first part of their meeting involved an engineering assessment, a look at problems with current and future technology vehicles, frequency of failures, and tools to identify individual vehicles as high emitters (OBD II, remote sensing, enhanced I/M). There are many systems that could cause high emissions, but cars are becoming far more durable. The failure rate is expected to be very low for most of these systems and the marginal impact on emissions is also expected to be small. OBD should identify all failures except for positive crank case ventilation system failures and liquid fuel leaks. These two occurrences could have significant emission effects and also can be expected to have more than low potential for failure in use, especially beyond 100,000 miles. The team also began to identify compliance options to ensure that in-use deterioration is limited. The team plans to meet in the next six weeks to begin recommending solutions from the general knowledge available.

Discussion

PCV valve failures were discussed. Tom Cackette noted that an early evaluation of California's I/M program showed many non-functioning PCV valve systems on older cars. Repairing them would have provided one third of the benefit of the SmogCheck program. However, these vehicles were not identified via the SmogCheck program. It is not apparent to him that the technology has changed significantly to make the PCV system more durable, although current diagnostics may be better.

A discussion of the ability of remote sensing to detect high emitters followed. Tom Cackette noted that vehicles fail differently. Removing the oxygen sensor or removing the catalyst has an emission impact but not the multiple percent CO increase that might be expected. He believes that no one piece of the control system is producing all of the reductions. However, there is some evidence that oxygen sensor replacement may be the first line of remedial action on older vehicles. On newer vehicles, the OBD system should identify such a failure. Even with 100,000 mile compliance programs, the existing sensor technology should last that long. The compliance program has to have suitable incentives to fix or replace the vehicles when parts of the control system fail.

Margo Oge reiterated the charge to the In-Use Deterioration workgroup: to ascertain the degree of in-use deterioration; identify technological solutions; and identify the causes of in-use deterioration. Progress is being made in all areas. She hoped that by fall the workgroup would be able to make recommendations to EPA and propose further areas for research. Virginia McConnell, RFF, added that economic incentives will be included in many of these areas.

Modeling Workgroup

Lois Platte, EPA, made the presentation on behalf of the workgroup. The workgroup has developed Review Procedures and Validation Procedures for the MOBILE model and she asked that the Sub-committee review these documents and provide comments.

Review Procedures. The goal of the review procedures is to provide a wide range of reviewers for EPA model development and revisions. The workgroup has agreed on the basic procedures but not all members could agree on whether major revisions should be handled under a rulemaking process. In the procedures document, major revisions are distinguished from minor revisions (e.g., corrections, etc.) The procedures cover notification of interested parties of revisions or modeling reports (e.g., via the *Federal Register*; mailing lists, EPA BBS); materials to provide; modeling workshops; 60-day comment period; and EPA response to comments prior to release of the model or report. Included in the materials for reviewers should be the purpose of the work, summary of data, and impact of the change on emissions estimates. A non-technical executive summary should also be prepared. Bob Sawyer added that non-technical users (academics, national labs) are interested in the methodology but are not part of the regulatory process. Phil Lorang added that the best form of peer review should include individuals without a financial interest to comment; most of the workgroup members have a financial interest in the model outputs.

Validation Steps There is no single set of validation procedures that would validate all of the model components. Validation steps also may only indicate that there is a problem, but not necessarily indicate where the problem is. Validation steps include: field studies; EPA involvement in other studies; validation on a periodic basis; comparison of MOBILE and EMFAC; and comparison of PAMS with MOBILE. Validation should occur on an ongoing basis and the group recommended a 5-year interval between full evaluations. MOBILE should be compared to EMFAC prior to any release of the model. MOBILE should be compared to PAMS (Photochemical Air Modeling System) because the workgroup believes that this analysis could identify relative amounts of evaporative or exhaust emissions and compare these amounts to MOBILE estimates.

The workgroup recommended that: field studies include tunnel studies or verification in a laboratory; data should be independent of data used to develop the model; data should be

collected from on-road vehicles; and data should be collected under conditions that match pollution events. EPA also should be more involved in the planning of studies and consulted on comparisons of MOBILE outputs. OMS and ORD should continue to coordinate validation research efforts.

Remote Sensing Credits The Modeling workgroup prepared a statement on RSD credits and EPA has released this document for comment from the Sub-committee. Margo Oge added that there has been some advancement in the technology and she encouraged that the workgroup and industry representatives meet to discuss these advancements.

Research. The Modeling workgroup has listed areas for further research and Lois Platte supplied this list for the Sub-committee's review. The workgroup would like comments on areas for more immediate action.

Discussion

Tom Cackette asked about the PAMS/MOBILE comparison. He believes that PAMS contains ambient speciation of hydrocarbons and may not be the best comparison. Lois Platte added that PAMS may not be the best data set (because MOBILE does not predict species), but others may be used to help validate MOBILE. Lois Platte discussed summaries of tunnel studies prepared by Terry Newell, EPA. In some tunnel studies, MOBILE may underestimate emissions but there is no clear conclusion from these studies.

Mike Walsh asked about comparisons of MOBILE and EMFAC. Lois Platte replied that, structurally, the models are based on the same types of information. Information display is different (e.g., start-up and running emissions). The models also treat fuel and temperature effects differently. There are large differences in deterioration rates and the treatment of future fleets. Mr. Sawyer asked that the workgroup consider, in the long-term, alternative approaches to modeling emissions. In addition, there are many uses for MOBILE beyond state SIP requirements. Randy Guensler highlighted that the workgroup is identifying areas where the greatest effect can be realized. He hopes that there can be better documentation on the algorithms, how they were developed, and under what conditions the model is most valid.

The group discussed the rationale for having both the MOBILE and EMFAC models. While there are fleet and fuel differences that need to be considered, EPA and CARB are working on a way to develop similar code so that the models are more similar. Some members felt that only one model is necessary; the input or parameters may vary but the models should not. A single model that incorporates the best features of both is highly desirable. Tom Cackette added his commitment to eliminate differences between the models. The data that support the models are different for each model, and EPA and CARB have made different assumptions, based on what each agency believes is most important, for various components of the models. He added that the models could be significant educational tools so that many more users (e.g., policy makers) can evaluate different parameters.

Mike Walsh asked whether particulates would be included in MOBILE. Lois Platte responded that there is a particulate model (PART 5) but that there are no plans to incorporate this model (or others) into MOBILE. Very little particulate data exists. Tom Cackette asked whether there is a need to focus more on heavy duty and off road sources. Randy Guensler noted that heavy duty emissions were identified as a high priority by the National Academy of Sciences.

Ms. Platte noted that fuel effects and the complex model are a high priority for inclusion in MOBILE 6. Randy Guensler added that the research survey will identify new data sources that could facilitate some changes in MOBILE. She added that the focus is primarily on light duty vehicles and she is contacting the Engine Manufacturers Association to identify another representative. EPA is developing internally a non-road model and would like to identify reviewers for this new model. The workgroup has defined an initial list of priority areas where more data are needed and this list will be made final and distributed once the data survey results are in.

Heavy Duty Engine Workgroup

Tom Bond, BP Oil, made the presentation on behalf of the workgroup. The workgroup is charged with evaluating engine and fuel technologies and their individual or combined capability of meeting the 2004 standards for heavy duty engines. Allan Lloyd, John Wall, and Mr. Bond chair the workgroup.

The group met for the first time on March 14. They evaluated available data for 4 g/bhp-hr NOx engines. The group held a conference call on April 11. The group has created a mission statement, a plan for an engine and fuel test program, and identified data sources (VE1, EPEFE, Ricardo/ULETE, SWRI). A subgroup is attempting to obtain the release of some private data and other data for more analysis. Bill Lovelace, CARB, is attempting to make available data on California diesel fuels that include a range of properties.

The group is developing a test program that protects proprietary engine technologies while still illustrating how these engines respond to fuel parameter changes. A Caterpillar engine at Southwest Research Institute will be used and tested with two initial fuels to validate that the SWRI engine can approach the 2.0 g NOx standard. The advanced engines under development by the engine manufacturers will then be tested with these fuels for comparisons. If these tests are successful, a matrix of fuels will be developed and evaluated for potential effects on HC and NOx emissions. The group has targeted mid to late 1997 to complete this effort. Funding sources are still being determined. In-use deterioration is not under consideration and will not be considered until the test program and data analysis are well underway.

Discussion

Margo Oge offered to have EPA brief the Sub-committee on its efforts to regulate heavy-duty engines and any information on deterioration for current, heavy-duty vehicles. Bob Sawyer asked that EPA also discuss the certification procedure and in-use emissions for these vehicles.

MARY NICHOLS, ASSISTANT ADMINISTRATOR, OAR

Mary Nichols reviewed several issues facing the Agency and the Air Office. She has been working with the House Appropriations Committee on their review of the Agency's 1997 budget.

She noted that EPA's first Administrator, Bill Ruckelshaus is heading a group that is evaluating the future organization of EPA. The recommendations of this group may provide for EPA to become a cabinet level agency. There are very few opportunities to make fundamental changes in an Agency and EPA needs to be prepared to take advantage of these opportunities when they occur.

She highlighted a presentation made by Dr. Alberts, National Academy of Sciences, where he discussed the role of science in EPA's mission and what the Agency should be doing so that their mission is based on the best science. She noted that EPA is increasing the level of peer review for the science and engineering that supports rulemakings. The Agency also believes that each program office is responsible for ensuring that the best science is available for decisions.

She noted that Federal Advisory Committees have proven themselves useful to the Agency, but are expensive and Congress has questions about their use across government. OMB has set a cap on the use of these committees and the funds allocated for this information source. Administrator Browner defended EPA's use of these groups, especially by OAR, and Ms. Nichols believes that the Administrator's points made a strong impression on members of Congress.

Ms. Nichols commented on EPA's discussions with the Federal Energy Regulatory Commission (FERC). FERC is in the process of enacting an "open access" to transmission rule. This rule is important because it opens the market to competition. EPA is concerned about the short-term, real potential for increased energy production by older facilities with significant emissions. EPA filed comments on the EIS prepared by FERC and urged FERC to consider mitigation options. The final EIS has been released and EPA is evaluating the EIS but believe that the emission impacts are still underestimated.

Ms. Nichols commented on the 49-state LEV rule. EPA is in the process of responding to comments on the rule. Once finished, the rule will undergo an expedited review process in OMB. Drafting the rule has been complicated because the states and automakers could not agree on many implementation elements and EPA has been forced to make certain decisions unilaterally.

EPA'S NO_x/PM NON-ROAD INITIATIVE

Don Kopinski, EPA, presented several slides that review EPA's Non-Road Initiative. EPA undertook a study in 1991 and identified non-road sources as a significant source of emissions, particularly large diesel engines. Tier I regulations have placed NO_x controls on some of these engines. Mr. Kopinski noted that the engines covered in this initiative are not small marine and small gasoline engines, or those found in locomotives, aircrafts, or ships.

Non-road engine emissions are a significant part of the NO_x and particulate emission inventories. Many of these engines are uncontrolled for particulates. Large diesel engines (175 - 3,000 hp) contribute most significantly to the NO_x inventory. Small diesel engines contribute less to the inventory, but sales of these engines are growing.

A 6.9 g/bhp-hr standard is currently being phased in. The Initiative is examining a 4 g/bhp-hr standard similar to the 1998 highway standard. A 4 g standard would only maintain current NO_x and particulate levels.

The initiative is a joint EPA and CARB project to meet the needs of non-attainment and attainment areas. The current steady state test procedure is being re-examined. An ANPRM is expected this summer after a Statement of Principles is agreed to among the engine manufacturers, equipment makers, EPA, and CARB. Global harmonization is an important issue so the initiative is examining mechanisms to ensure that this rulemaking considers these issues.

IMPACT OF THE HIGHWAY BILL ON I/M

Gene Tierney, EPA, and John Elston, STAPPA, presented on the impacts of the recently passed Highway Bill. The National Highway System Designation Act of 1995 includes a provision on I/M. One of the provision's effects is a shift of the burden to states to implement an I/M program that is effective and to demonstrate that it works. The bill affects I/M in three ways:

It bars EPA from requiring states to implement centralized I/M240 inspection programs. States may still implement such programs, but EPA cannot require them. EPA had essentially taken this step previously through a rulemaking in their flexibility amendments to the I/M rule, so the bill codified that process.

It eliminates the section of EPA's I/M rule that establishes a credit discount (commonly referred to as the 50% discount) for decentralized test and repair I/M programs. This overrode a rule the Agency had promulgated in 1992.

It establishes a state demonstration program for decentralized systems. This allows states the opportunity to design test-and-repair or hybrid I/M programs, as follows:

States must have submitted an I/M plan to EPA by March 27, 1996;

The plan must include legislation, proposed regulations, a description of the proposed program, and a discussion of the basis for the credit claimed;

States have 18 months from the date of approval of the plan to demonstrate that the program actually achieves the credit claimed in their SIP;

The bill provides for EPA to approve plans on an interim basis and fully approve plans once demonstration shows that credit is being achieved in practice.

EPA is currently implementing this act. The Agency has received plans from 12 states (Alaska, California, Georgia, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, Texas, Utah, Virginia, and Washington, DC). EPA is reviewing these plans and will take action on them by mid-summer of this year, and expects the programs to be implemented no later than mid-1997.

The key issue for EPA is how the evaluation protocol should be designed in order to determine if the credits are in fact being achieved. EPA has asked ECOS to convene a working group to set up a process to determine the protocol.

John Elston, ECOS and the Mobile Source chair of STAPPA, continued the presentation. ECOS is a newly formed organization of state environmental commissioners. The current chair is the Illinois environmental commissioner. Margo Oge sent a letter to ECOS recommending that they become involved in the evaluation process for this program.

ECOS is looking at an 18 month process from the time EPA approves a program until full SIP approval. A team of 12 to 15 representatives from various states has been formed to begin looking at this process. The team has a good balance of representatives from states with centralized and decentralized I/M programs. They are currently identifying issues that will be

critical in evaluation. Margo Oge added that this process of working with the states is very encouraging. EPA hopes to avoid situations in the future where the Agency is pitted against a state over I/M programs. She views the process as important in setting up a forum for technical advice and assistance to the states. EPA hopes to identify aspects of programs that are successful as well as unsuccessful, and share that information with other states.

Margo Oge stated that the purpose of this presentation was informational. The sub-committee is not being asked to take on additional tasks in this area. The sub-committee may want to be active in this area sometime in the future, particularly with respect to the ECOS evaluation process.

IMPACT OF FY 1996 BUDGET UNCERTAINTY

Chris Grundler, EPA, spoke on the impact of the FY 1996 budget uncertainty on the Office of Mobile Sources. OMS has had to make choices based on the reduced FY 1996 budget. They have been forced to budget on a month-to-month basis, and have attempted to preserve as much of the President's and Administrator's priorities as possible. The current operating plan is at 60% of the FY 1995 funding level. A particular problem for OMS is that funding for the Ann Arbor research facility comes out of the Office's operating budget, rather than from other sources as does the Waterside Mall facility. This means that contract dollars are 62% below FY 1995 levels. Similarly, travel dollars are 69% below FY 1995. This has affected meetings similar to this sub-committee meeting. OMS employees have been affected through stoppages in promotions and awards.

Fully funded areas include replacement of the computer system used in certification, fuel economy, emissions modeling, and testing programs, due to the phase out of mainframe services. Also fully funded are heat, light, and telephones for the Ann Arbor lab facility.

High priority areas for OMS are the NQ/PM Initiative (On and Off Road rules), the Clean Car Program, I/M program support and development, Re-engineering the Compliance program, outreach and public information, and targeted human resources development.

The areas that have been most affected by the budget uncertainty are: modeling and emission factors work (due to the expense of acquiring data); transportation systems and modeling; program implementation for certification and fuel economy compliance, recalls, and fuel and fuel additives; technology development; basic infrastructure maintenance; and new program implementation for non road engines, a revised FTP, and marine engines. Approximately 32 rulemaking efforts have been impacted.

Legislation recently passed by Congress and signed by the President provides increased flexibility for small businesses, and requires agencies to go through extra effort during rulemakings to understand the impacts on small businesses and involve them in the process. EPA is not yet sure how this act will impact their process but they feel it will be significant.

OMS PUBLIC INFORMATION CAMPAIGN

Susan Bullard, EPA, presented on the public outreach effort being undertaken by OMS. EPA desires to educate the public on the impact of mobile sources on air quality. The Agency believes the key to doing so is to provide a strong foundation in science and technology in order

to provide the credibility that will motivate people to change their behavior.

OMS is in its first year of organized public outreach. In the past, OMS has not discussed with the public the benefits of the rules and regulations the agency has implemented. EPA believes the public will be much more willing to take action if they believe that what they do will improve their health and result in cleaner air.

OMS intends to do three primary things with respect to outreach:

Strengthen the public health message. The Agency feels that this message has been lost; Raise consumer awareness and willingness to take action, and present the menu of options that people can choose from to improve air quality; and

1. Work with service technicians because they are a interface with consumers. This includes enhancing their training and ability to successfully diagnose and repair vehicles.

OMS needs to base these efforts on strong science and technological solutions, coupled with behavior changes. This is where OMS seeks the input of the sub-committee.

As part of their outreach strategy, OMS will work in partnership with organizations that represent credible sources for information, such as public health, academic, and consumer organizations. EPA is going to convene a group of state and local organizations to determine if their efforts will add value, and to build off of successful programs.

OMS is currently focusing on motivating people to maintain their cars. They are avoiding terms like "inspection and maintenance" and focusing on things like public health, maintaining their investment, and reading their owner's manual. They are targeting the latter part of the ozone season for implementation of the outreach and focusing on literature that will be distributed in nonattainment areas.

OMS is also working with the Department of Transportation in order to reinforce each organization's message on transportation and air quality. EPA will deliver a public health and environmental message while DOT will deliver a quality of life message.

The Environmental Health Center, which is part of the National Safety Council, has conducted a literature search. They found that there is a lot of information about air pollution, but very little about mobile sources. They conducted a limited survey to find out what people understand about air pollution and about mobile sources, what people know about actions they can take, and how far people are willing to go to improve air quality, and who they trust for messages about air quality. About 800 people in Houston, Los Angeles, Milwaukee, Newark, and Philadelphia. The following items were uncovered by the research:

The health benefits should definitely be emphasized. These are the most powerful messages.

- Respondents felt strongly that they were being "responsible" when asked how they feel about undergoing I/M testing.
- The number one reason that people get their cars tested at I/M stations is to get the required sticker.
- People are not as receptive to limits on personal freedom (e.g. carpooling) as they are to learning about car maintenance.

Messages from public health organizations, such as not-for-profits involving health professionals, carried the most weight, followed by messages from federal agencies. Following that were other not-for-profit groups such as environmental organizations.

The national environment is considered at greater risk than the local environment. The most that people are willing to pay to repair vehicles with emission problems is approximately \$200.

OMS will be working with STAPPA during its public outreach campaign. Susan Bullard has about 25 to 30 people within OMS who are dedicated in some way to bringing the outreach effort into decision making, program development, and program implementation. She is emphasizing the value of outreach to the technical staff within the Office. OMS is working on an evaluation process to determine if the outreach method will have a positive effect on air quality.

Susan Bullard will contact some members of the sub-committee for input into the outreach campaign. She will also keep the sub-committee informed of the work she is performing.

MEETING WRAP-UP

Mike Walsh thanked the members for participating and then adjourned the meeting.

ACTION ITEMS

John Elston, ECOS, recommended that a liaison be formed between ECOS and the sub-committee. In addition, he will give an update at the July meeting on the ECOS process discussed earlier

EPA will give a presentation at the next meeting on their recent on-road heavy-duty engine regulation and how it addresses in-use deterioration.

Kelly Brown was requested to report at the July sub-committee meeting on a recent meeting between the European and US auto industry addressing trade and standardization.

ADMINISTRATIVE ITEMS

The next sub-committee meeting is tentatively scheduled for July 16, 1996 in Washington. Another meeting is tentatively scheduled for October 9, 1996, also in Washington.

**Mobile Sources Technical Review Sub-committee
List of Members or Member Alternates Attending
April 18, 1996**

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Bruce Bertelsen	Manufacturers of Emissions Controls	(202) 296-4797
Kelly Brown	Ford Motor Company	(313) 322-0033
Tom Cackette	California Air Resources Board	(916) 322-2892
Joe Colucci	General Motors	(810) 986-2526
Gregory Dana	Assoc. of International Automobile Manufacturers	(703) 525-7788
John Elston	STAPPA/ECOS	(202) 624-7864
Richard Gibbs	New York Dept. of Environmental Conservation	(518) 485-8913
Randall Guensler	Georgia Institute of Technology	(404) 894-0405
David Hawkins	Natural Resources Defense Council	(202) 783-7800
John Johnson	Michigan Technological University	(906) 487-2576
John Kowalczyk	Oregon Dept. of Environmental Quality	(503) 229-6459
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