

US EPA ARCHIVE DOCUMENT

**TESTIMONY OF
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U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON CLEAN AIR, WETLANDS, PRIVATE PROPERTY
AND NUCLEAR SAFETY
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE**

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Thank you, Mr. Chairman and Members of the Subcommittee, for the invitation to appear here today to discuss our proposed Tier 2 standards for cars and light-duty trucks and the accompanying low sulfur requirements for gasoline.

Our proposal follows from sweeping changes over the past couple of decades in how Americans move around. We've gone from under 100 million light vehicles in 1970 to 200 million last year. And we're driving farther -- from about one trillion miles per year in 1970 to over two trillion miles per year today. And as you probably know, there has been a dramatic shift in recent years toward sales of the larger light vehicles meeting emission standards 2 to 5 times less stringent than passenger cars. All indications are that these trends will continue indefinitely into the future, and they will have significant impacts on increasing emissions from motor vehicles without the progress in cleaner engines and gasoline that we propose.

Our proposal, over the next decade, will improve and maintain the nation's air quality by phasing-in both cleaner engines and cleaner burning gasoline using flexible, market driven

mechanisms that we believe are fair to industry and will result in minimal consumer costs while preserving vehicle choice.

JUSTIFICATION FOR ACTION

These issues were highlighted in the context of the Clean Air Act's requirement that we reassess light-duty standards. We reported to Congress last year on the three issues specified in the statute: whether there would be an air quality need for new tailpipe standards in the post-2004 time frame, whether such standards could be technologically feasible, and whether they could be cost-effective. We presented evidence in the report that we believe supports our proposed determination that new standards are in fact needed and that significantly more stringent standards would be feasible and cost-effective.

In our proposed rule, published last May 13, we assessed these issues further and presented a sizeable body of new data and analysis to support our conclusions. Before I summarize the content of the proposal, let me say a few more words about the strong case we see for new emission standards for passenger cars and light trucks. As we describe in much detail in the proposed rule, our air quality projections identified large parts of the country, involving about one hundred thirty million residents, that would be at or near unhealthy levels of pollution in the middle of the next decade, even with all expected control programs in place. A large part of that problem will be ozone, which reduces the lung function of otherwise healthy people and increases hospital admissions for people with respiratory ailments like asthma and which, under longer exposures, permanent lung damage can occur. Particles are the other major part of the problem because they can penetrate deep into the lungs and are linked with premature death, increased hospital admissions, and changes in lung tissue. Other environmental problems related

to pollution from motor vehicles, such as agricultural damage, impaired visibility, and nitrogen deposition in our nation's waterways, also remain a concern across the nation.

Although today's vehicles are over 90% cleaner than cars available twenty-five years ago, the vehicles covered by the proposal -- cars, minivans and full-size vans, pickups, and SUVs -- are big contributors to air quality problems. For example, they will be responsible for about 20% of ozone causing NOx emissions nationwide and approach 40% in some metropolitan areas like Atlanta in 2004. And since more vehicles are being purchased and more miles are being driven, total emissions from these vehicles will increase after 2010, eroding the progress made by local and state government in cleaning the air. This was a large part of the evidence that led to our decision to propose new standards for this vehicle class.

Based on a significant body of industry and government data, we have proposed that much lower vehicle emission standards are within reach of current and developing emission control technologies; improvements in today's technology, not new breakthroughs, are what will be needed. In fact, many vehicles being sold today in California and the Northeastern U.S. are already employing technologies that can achieve lower emission levels when operated on low sulfur gasoline. Based on data generated by industry test programs and our own vehicle certification process, we believe that substantially lower emission levels are technologically achievable. Since these large emission reductions would come at a fairly modest cost, we estimated that the program would be cost-effective compared to other programs that could achieve similar air quality results. All in all, our broader analyses for the proposed rule reinforce the findings on air quality need, feasibility, and cost-effectiveness that we reported to Congress last year and confirm our direction regarding new emission standards for light vehicles.

On the fuel side of the equation, it became clear early on that lower sulfur gasoline will be needed to allow the improved emission control technologies to be effective in reducing emissions. There is widespread agreement that sulfur degrades emission control performance for all vehicles, reducing the effectiveness of the catalyst in converting pollutants such as hydrocarbons, carbon monoxide, nitrogen oxides, and particulate matter. Further, a joint industry research project by the Coordinating Research Council, a consortium of oil and auto companies, as well as other research, has found that high levels of sulfur permanently damages vehicle emission controls. Unfortunately, this problem will get worse in the future because as emissions levels are lowered, the more effective emission control systems are even more sensitive to sulfur. So we recognized that gasoline sulfur levels must be reduced -- significantly -- to enable cleaner emission control technologies to work their potential and to reduce the damage to current vehicles' emission control performance, and we have proposed a comprehensive program to reduce gasoline sulfur levels. Though our proposed program would not directly regulate California vehicles, ozone levels in California will be reduced through reductions in emissions from vehicles sold outside California that later enter California temporarily or permanently. According to California, about 7 to 10 percent of all car and light truck travel in California takes place in vehicles originally sold outside of California.

Shortly after we released our Tier 2/Gasoline Sulfur Control proposal, a panel of the Court of Appeals for the District of Columbia Circuit ruled, among other things, that the Clean Air Act provisions EPA relied on in promulgating national ambient air quality standards (NAAQS) for ozone and PM represented unconstitutional delegations of authority, and remanded the record to EPA for further consideration. We have since issued a Supplemental Notice that

analyzes this decision in the context of our Tier 2/Gasoline Sulfur proposal. We stated that the decision of the panel does not change EPA's proposed requirements for a Tier 2 program and does not impact EPA's proposed determination that the Tier 2 program is a necessary and appropriate regulatory program that would provide cleaner air and greater public health protection. In addition, the Supplemental Notice also provides additional ozone modeling information that supports the need for the proposed program.

For example, in our original proposal, we established that states will need the Tier 2/gasoline sulfur program to attain and maintain the old (1-hour) ozone standard and pre-existing PM-10 standard, as well as the new (8-hour) standard and revised PM-10 standard. In the Supplemental Notice, we presented a more detailed description of the available ozone modeling data, which shows a strong need for additional emission reductions to meet the 1-hour standard. We concluded that more than 70 million people living in 17 areas will be affected by violations of the 1-hour standard. We also concluded that 15 million people living in 21 counties will be impacted by violations of the pre-existing PM-10 NAAQS. In total, approximately 83 million people in this country will live in areas that violate one or both of these air quality standards in 2007. Additional emission reductions will be needed to meet these standards, and since light-duty vehicles contribute a significant fraction of these emissions, the emission reductions that will be obtained from the Tier 2/gasoline sulfur proposal will help to address this need.

PROCESS

Our proposal is the culmination of an extensive deliberative process during which we worked intensively with a wide range of stakeholders. Before completing the proposal, we met repeatedly with the vehicle manufacturing industry, the oil refining industry (including a special

outreach process with small refiners), states, environmental organizations, and other parts of the federal government. We logged many hours at all management levels in meetings with individual companies and trade associations, state organizations, and others to understand the issues and the capabilities of each group to respond to these concerns. The perspectives of these many stakeholders are reflected in the design of our proposed program and the principles on which we based it.

PRINCIPLES

Through this broad deliberative process, we developed a list of overarching principles for the design of a strong, national program, including:

- Do not constrain consumer choice of vehicles or driving styles, either due to cost or technical factors;
- Treat vehicles and fuels as one system;
- Hold cars and light trucks to the same emission standards, since in the vast majority of cases they are used for the same purposes, and the fleet mix is shifting toward larger vehicles;
- Set emission standards that build on the success of the National Low Emission Vehicle Program (NLEV) and that are fuel neutral, so that it won't matter whether the vehicle is fueled by gasoline, diesel, or an alternative fuel;
- Make sure that the standards and accompanying program not preclude the introduction of technologies that are both low emission and fuel efficient;
- Employ performance standards and provide both automakers and gasoline refiners a menu of flexible provisions for demonstrating compliance with the program; and

- Provide sufficient lead time to allow automakers to design even their heaviest light-duty trucks to meet our standards and to allow refiners to install the necessary equipment.

VEHICLE PROGRAM

The auto and oil industries and other stakeholders provided meaningful proposals during the development of the proposal. Based on our work with all stakeholders, including offices within the Administration, we drafted a proposed set of standards which balance concerns regarding cost, benefits, and timing. We believe that the Tier 2/gasoline sulfur standards that we proposed in May represent a common sense, cost-effective plan resulting from the many levels of interaction and cooperation we experienced in this process.

Our proposal consists of two parts: Tier 2 emission standards and gasoline sulfur requirements. Even though the focus of this hearing is on gasoline sulfur levels, I want to briefly talk about the vehicle requirements included in the Tier 2 program since it is critical to treat vehicles and fuels as one system in order to achieve the full air quality benefits of additional control requirements. The emission standards require manufacturers to meet a corporate average NO_x standard of 0.07 grams/mile -- a 77% reduction from NLEV levels and approximately 90% reduction from Tier 1 levels. These standards are phased-in over time beginning in 2004, and the heavier vehicles (between 6,000 lbs. and 8,500 lbs GVWR) are given the greatest amount of time, until 2009. During the phase-in period, the remaining cars and smaller trucks will continue to meet NLEV emission levels, and the heavier trucks, which are currently certified to Tier 1 standards, will have to meet much cleaner average levels of 0.2 g/mi NO_x. The program as proposed should provide flexibility for manufacturers to comply with the Tier 2 standards while still meeting their customers' desires for larger trucks and SUVs, potentially including clean-

technology diesel-fueled vehicles. For example, manufacturers that surpass their corporate average standard in a given year could bank NOx credits for future use or sell them for use by manufacturers that are having trouble meeting the corporate average standards.

Based on vehicles already in development, including some on the road today, as well as technology demonstration at our own laboratory, we believe that these challenging levels are technically feasible and that manufacturers can comply with these standards in the proposed time frame, even for the increasingly popular larger light trucks.

Overall, we have estimated that these requirements will result in only modest increases to the cost of producing these vehicles. We estimate that the technologies required for cars and the smaller light trucks will average about \$100/vehicle. The heavier trucks will require more changes, particularly since they are starting from less stringent standards; still, this technology will average about \$200/vehicle.

GASOLINE SULFUR PROGRAM

To enable the emission control technologies necessary to meet these proposed standards, we have proposed a national gasoline sulfur standard of 30 ppm on an annual average basis and a maximum cap of 80 ppm, with a credit program to allow for compliance as late as 2006. Based on the air quality concerns I mentioned earlier, we believe a national program is the best option, due to the permanent damage that sulfur causes to vehicle emission control performance and the magnitude of environmental benefits to be achieved from this program. The technologies anticipated to be used to meet Tier 2 emission levels are expected to be even more sensitive to sulfur than today's technologies, and these new technologies simply cannot operate on high sulfur levels and continue to perform as designed.

Current information also indicates that these catalysts will have a partial but permanent loss in performance if they are exposed to high sulfur levels for even a short period of time. This permanent damage can on average mean a loss of as much as 50% of the emission-reducing capacity of a catalyst, which means some Tier 2 vehicles would have emissions performance similar to vehicles currently available. For example, a 1999 Ford Taurus designed to meet National LEV standards that was a part of an industry testing program only recovered 40 percent of its capacity after a short exposure to gasoline with a sulfur content typical of current gasoline. As vehicles are required to maintain tighter controls on operations in order to meet low emission standards over a range of operating conditions, the ability of the catalyst to reverse the negative sulfur impact is further lost. Hence, tighter emission standards would require not only substantial reductions in sulfur levels, but timely and uniform reductions across the country to protect the new technology.

There are additional reasons for a nationwide sulfur control program. NLEV vehicles being sold today in the Northeast and by 2001 in the rest of the country are currently using high sulfur fuels. As a result, NOx emissions from these vehicles may be on average 140% higher than they would be for an NLEV vehicle operated on 30 ppm gasoline. Sulfur reductions will thus result in emission benefits from existing vehicles as well as enabling future Tier 2 vehicles. A low sulfur program will also be consistent with similar programs currently in place in California and Japan and in Canada and Europe by 2005, thereby helping facilitate introduction of cleaner vehicles worldwide.

The role that sulfur irreversibility will play on vehicles which travel across the country also supports the need for a national program. A regional sulfur control program would

compromise the ability of a vehicle/fuel program to achieve the air quality reductions needed to protect public health by limiting the effectiveness of the emission control systems in “high-sulfur” regions versus “low-sulfur” regions. In addition, clean vehicles which for any number of reasons might travel to a “high-sulfur” region would be irreversibly damaged. Along those lines, although the State of California already has a strong gasoline sulfur control program, that state will see additional air quality benefits from a national program from vehicles crossing the border as well as gasoline market benefits associated with the broader availability of clean gasoline.

A national program will better provide broad environmental and health benefits including: reduced levels of criteria pollutants such as nitrogen oxides and particulate matter, reduced air toxics, reduced acid rain, improved visibility, reduced nitrogen deposition in our nation’s waterways, and reduced agricultural damage. Finally, we believe that a national 30 ppm sulfur program would likely be sufficient to enable the introduction of fuel efficient technologies, such as gasoline direct injection.

We believe that there are a number of promising technologies available to refineries to remove sulfur now or in the near future. Several technologies have been developed that reduce the capital investment, the loss of octane value, and the energy consumption involved in desulfurizing gasoline compared to conventional methods. Two specific technologies, CDTech’s CDHydro/CDHDS and Mobil’s OCTGAIN, were closely examined during the development of this proposal and we believe they will be cost-effective viable technologies for removing sulfur from gasoline. In addition, a number of refineries and other companies are exploring other technologies. We believe the industry will make extensive use of these technologies in meeting the proposed requirements.

To enhance the flexibility of compliance for the oil industry, we have proposed to provide refiners with two additional years, until 2006, to comply with the proposed requirements through a voluntary banking and trading credit program. This credit program will allow sulfur credits to be generated as early as 2000 by refineries making early reductions in sulfur levels. To provide some protection to the Tier 2 vehicles that will be phasing into the fleet in this same time frame as the credit program for refiners, refiners will meet a maximum cap standard of 300 ppm in 2004 and of 180 ppm in 2005 as well as actual in-use average sulfur level standards that are substantially lower than current sulfur levels. The rule is expected to be finalized at the end of this year. Under this proposal, refiners will have four years for planning and construction. If early credits are generated and sold, refiners purchasing those credits would have up to two additional years to phase-in the 30 ppm average standard.

In addition to these provisions, the particular problems of small refiners have been carefully considered. We convened a panel under the Small Business Regulatory Enforcement Fairness Act (SBREFA) to evaluate the potential impact on small refiners of our proposed gasoline sulfur standards. The panel used the Small Business Administration (SBA) definition of small refiner based on the total number of employees in the corporation, including any non-refining functions. Based on the panel's recommendations, we have proposed to allow refiners employing no more than 1,500 people an additional four to six years (beyond 2004) before they will be held to the 30 ppm average/80 ppm cap standards. In the interim, about half of these small refiners would have to reduce their sulfur levels below 300 ppm, but they would not have to meet the same levels that the majority of refiners will be held to in 2004. This delay would

allow small refiners to make the required investments over a longer time, and we expect that all of them would be able to comply by the end of the delay period.

Throughout the proposal development process a number of specific issues were identified as a concern. We listed these issues in the proposal and are asking for comment on how to address these concerns. As an example, we have asked for specific comment on other potential definitions for small refiners -- ranging from the crude oil processing capacity of the refinery to counting employees only involved in gasoline production. While the purpose of these provisions is to provide some relief to the smallest refiners, we are looking forward to working with the entire industry to find the most appropriate definition.

A number of other issues are outlined in the proposal where we are keenly aware of the concerns likely to be expressed and are seeking input and ideas from the public and the industry. A specific example is the concerns expressed by refiners regarding the time constraints on being able to construct the necessary desulfurization equipment in time to meet our standards or to generate credits through early reductions. We have proposed to work with industry and the states to streamline the construction permitting process to minimize the potential that permitting could be a roadblock to early compliance. In addition, we are requesting comments on a general hardship provision.

Although I believe our proposal expresses a clear willingness to design the most workable program possible, I do not want to minimize the cost and effort that the oil industry will expend in meeting the proposed standards. We estimate that it will cost 1-2 cents/gallon to reduce gasoline sulfur levels to the proposed standards. However with the flexibilities we have outlined in the proposal and the advances in desulfurization technologies that have occurred in recent

years, we believe we have outlined a sound and effective proposal for reducing sulfur from gasoline.

Since diesel cars and light trucks will also be impacted by the proposed vehicle standards, we've also released an Advance Notice of Proposed Rulemaking which raises questions about the need to control diesel sulfur levels to enable these technologies to meet the Tier 2 standards. After we consider the comments we received last week on the issues associated with controlling diesel sulfur levels, we plan to issue a Notice of Proposed Rulemaking late this year, so that refiners have this information at the same time that they receive our final regulations for gasoline sulfur control. Since this decision has significant implications for the refining industry, we would work with representatives of this industry to identify workable options and we would work with small refiners to address their unique concerns.

PUBLIC HEARINGS

To gather reaction to our proposal, we held five days of public hearings in June in four sites across the country: Philadelphia, Atlanta, Denver, and Cleveland. We heard testimony from a large number of individuals, representing environmental and public interest groups, automotive and oil companies, states and state organizations and many private citizens. By and large, the responses we've received have been positive. While we received constructive feedback about specific aspects of our proposed program, the majority of testifiers expressed support for our proceeding with Tier 2 emission standards and the associated gasoline sulfur standards. The comment period for the proposal closes on August 2, 1999.

We look forward to working with the states, environmental organizations, oil and auto industries, and other stakeholders to better understand their recommendations so that we can

develop the strongest possible program. As an example, we are currently working with the Western Governor's Association to better address concerns of Western states and Western refiners in our program. We intend to complete this process and issue final requirements for Tier 2 vehicles and gasoline sulfur levels by the end of this year.

CONCLUSION

In conclusion, let me emphasize that we believe that the progress that has been made to date to bring cleaner vehicles to our nation's highways has been one of the reasons our air quality continues to improve. However, as we move into the next century, there is no doubt that even cleaner vehicles and gasoline need to continue to be part of the solution as we strive to ensure clean air across our nation.

Thank you again for this opportunity to discuss our program with you. I would be happy to respond to any questions that you may have.