June 12, 1998

U.S. Environmental Protection Agency
Air and Radiation Docket
Attention Docket No. A-97-10
Room M-1500
401 M Street, SW
Washington, DC 20460

To Whom It May Concern:

On behalf of the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO), we are pleased to provide the following comments on the U.S. Environmental Protection Agency's (EPA's) April 23, 1998 draft *Tier 2 Study*, as announced by the agency on April 28, 1998 (63 *Federal Register* 23255).

As the state and local officials with primary responsibility for achieving and maintaining healthful air quality across the country, the members of STAPPA and ALAPCO are keenly aware of the need to aggressively pursue emission reductions from all sectors that contribute to our nation's air quality problems. We are, therefore, most optimistic about the potential for Tier 2 motor vehicle emission standards to contribute to the attainment and maintenance of our nation's clean air goals by cost-effectively achieving the maximum, real-world emission reductions from new light-duty vehicles and light-duty trucks.

Given current and emerging vehicle and fuel technologies, we believe that EPA has an enormous opportunity to establish Tier 2 standards that could substantially reduce the contribution of motor vehicles to air pollution. Moreover, such tremendous strides in diminishing vehicle emissions of criteria pollutants and precursors can be accomplished cost effectively and with significant ancillary benefits. The associations' commitment to aggressive Tier 2 standards is reflected in an April 1998 *STAPPA/ALAPCO Resolution on Tier 2 Motor Vehicle Emission Standards*, a copy of which is attached. This resolution calls upon EPA to promulgate final rules for Tier 2 in 1999, to take effect no later than with the 2004 model year. Among STAPPA and ALAPCO's most significant recommendations are that 1) Tier 2 standards should be based on the most advanced technologies that will be available in 2004 and beyond, 2) a sharp cut in national gasoline sulfur levels is imperative, 3) the Tier 2 program should include a tailpipe standard for PM2.5, in addition to standards for nitrogen oxides, hydrocarbons and carbon monoxide, 4) Tier 2 standards should be fuel neutral and equally applicable to all light-duty vehicles and light-duty trucks and 5) EPA should consider applying the Tier 2 standards to those complete vehicles, such as sport utility vehicles, full-size

vans and pickup trucks, weighing over 8,500 pounds GVWR used predominantly for personal transportation.

As required by Section 202(i) of the Clean Air Act, EPA's draft *Tier 2 Study* examines whether more stringent emission standards for new passenger cars and light-duty trucks should be required. In doing so, the draft study evaluates the air quality need for and technological feasibility and cost effectiveness of more stringent standards, as well as some related regulatory issues. STAPPA and ALAPCO offer the following comments on these components of the draft study.

Air Quality Need

Motor vehicles are a major source of air pollution nationally. As EPA acknowledges in the draft study, mobile sources account for more than one-half of the nitrogen oxides (NOx) inventory and more than 40 percent of the hydrocarbon (HC) inventory – both of which contribute to ground-level ozone – as well as 80 percent of the carbon monoxide (CO) inventory and a quarter of the PM10 inventory. Light-duty vehicles and light-duty trucks alone account for more than 20 percent of the national NOx emissions, a quarter of the HC emissions and more than half of the CO emissions.

As EPA notes, about 46 million people currently live in areas of the country where at least one of the six health-based National Ambient Air Quality Standards (NAAQS) that was in effect in 1996 is violated. Further, as of last fall, we now have new or revised standards for ozone, fine particulate matter and PM10. For ozone, the agency estimates that in the latter part of the next decade 17 areas with a total population of about 62 million people will continue to violate the new, eight-hour standard, while many others across the country will be in attainment of that standard, but precariously close to nonattainment. For PM2.5, EPA projects that once designations are made, 92 areas, home to roughly 55 million people, will violate the new standard. And for PM10, the agency anticipates that with existing controls, a significant number of areas will still exceed the standard in 2010.

The Clean Air Act calls upon EPA to determine whether there is a need for further reductions in emissions in order to attain or maintain the NAAQS. Given the well-documented adverse health and welfare consequences associated with exposure to criteria pollutants, we believe the data presented by EPA in the draft study make a compelling case in favor of aggressive Tier 2 standards well beyond the current National Low-Emission Vehicle Program. Notwithstanding the compelling nature of these data, however, we are concerned that the draft study does not present a complete picture of the very significant air quality need for Tier 2 standards. Accordingly, we urge the agency to strengthen its assessment of the air quality need in at least three regards.

First, the draft study is heavily weighted toward the ozone need for Tier 2 standards. While we certainly agree that ozone is a critical problem that can be

greatly ameliorated by a strong Tier 2 program, we urge EPA to place equivalent emphasis on PM2.5 concerns and the PM2.5 benefits of Tier 2. Last year, the agency promulgated a new NAAQS for PM2.5. According to EPA's own estimates, fine particulates contribute to tens of thousands of premature deaths each year, as well as serious illnesses and health problems. Because motor vehicles are significant contributors to levels of fine particulates, the agency must give serious consideration to the level of control needed to ensure that these emissions are adequately controlled and, to this end, pursue more stringent tailpipe standards not only for NOx, HC and CO, but for PM2.5, as well. Further, when setting standards for NOx and HC, the precursor role of these pollutants in the formation of fine particulates should be considered, as well.

STAPPA and ALAPCO believe that an emphasis on the PM2.5 benefits of Tier 2 standards, particularly in terms of potential future impacts, is especially important for several reasons. Although the agency contends that light-duty vehicles and light-duty trucks are not currently large contributors of PM2.5, continued increases in vehicle miles traveled from this sector of the fleet could translate into a more substantial contribution in the future. In addition, given the likelihood of increased diesel penetration of the light-duty market under the Partnership for a New Generation of Vehicle initiative, as EPA acknowledges, it is important that we begin now to anticipate and address the obvious PM implications. Also, it is critical for EPA to quantify the degree to which emissions from light-duty vehicles and light-duty trucks result in the formation of secondary particulates.

Second, with respect to CO, we urge EPA to include in the study an assessment of the need for and benefits of further controlling this pollutant under Tier 2. Although the agency indicates in the draft study that it intends to address CO emissions under the cold temperature CO standard provisions of Section 202(j) of the Clean Air Act, we note that the agency has missed the June 1, 1997 statutory deadline for completing an assessment of the need for further CO reductions at cold temperatures and, further, that CO nonattainment problems are not limited to cold weather areas. Tier 2 standards may provide CO benefits at a range of ambient temperatures. This issue, including its implications in the long term, should be fully assessed in the study. In addition, we note that controlling CO will also provide the ancillary benefit of reducing ozone. EPA should include in the study a discussion of the effects of reduced CO emissions on ozone levels.

Finally, in addition to leading to unhealthful levels of ozone, PM and CO, motor vehicle emissions also play a role in acid rain and visibility problems and contribute significant levels of greenhouse gases and toxic air pollutants. Substantially reducing light-duty vehicle and light-duty truck emissions will yield important benefits related to these air pollution problems and will also further the objectives of pollution prevention. These important additional benefits of Tier 2 standards, beyond contributing to attainment and maintenance of the NAAQS, must not be overlooked and should be clearly assessed in EPA's cost-effectiveness evaluation and articulated in the final study.

Technological Feasibility

Vehicle Technology and Emission Standards

Given the critical and continuing air quality need for aggressive Tier 2 standards, STAPPA and ALAPCO advocate standards that will reflect new and emerging vehicle emission control technologies and propulsion systems currently available or expected to be available in 2004 and beyond, as well as California LEV II standards. We firmly believe that EPA must take full advantage of the most advanced technologies that will be available when this program takes effect in order to maximize our ability to reap the greatest benefits possible. For this reason, we are disappointed that the draft study focuses almost entirely on making improvements to current technologies, rather than on pursuing new technologies that will be cutting edge in the next decade. We strongly urge the agency to revise this section to reflect in much greater detail the costs and benefits of the array of emerging advanced technologies, including, but not limited to, electric, hybrid-electric, fuel cells and gasoline-powered engines with very low emissions, equivalent to those from zero-emission vehicles when associated power plant emissions are taken into consideration.

We also believe that the significant work that has been conducted in California with respect to California LEV II standards should serve as the baseline for federal Tier 2 standards. California has proposed a LEV II program to apply to passenger cars, light-duty trucks and some medium-duty vehicles beginning in 2004. The proposed program includes, among other things, lower tailpipe standards, a zero evaporative and refueling emission standard and an extended useful life (to 120,000 miles). The program would apply to all Transitional Low-Emission Vehicles (TLEVs), Low-Emission Vehicles (LEVs) and Ultra-Low-Emission Vehicles (ULEVs) and, further, add a new category for light-duty vehicles – the Super-Ultra-Low-Emission Vehicle (SULEV). For both LEVs and ULEVs, LEV II would impose a 0.05-grams-per-mile NOx limit (at 50,000 miles), to be phased in over three years, beginning in 2004; this limit would drop to 0.02 gpm for SULEVs. California's proposed LEV II program further includes PM standards for diesel vehicles at 120,000 miles (TLEV – 0.04 gpm and LEV, ULEV and SULEV – 0.01 gpm). At 120,000 miles, SULEVs would also be required to meet a NMOG standard of 0.01 gpm and a CO standard of 1.0 gpm. CARB staff indicated in its November 1997 draft preliminary staff report on LEV II that it believes the SULEV standards can be achieved cost effectively using the best available, "though not necessarily the most exotic," control technology, as well as a variety of fuels.

The vehicles that will be affected by the federal Tier 2 program will remain on the road for the next several decades. The basis for these standards should not be dated from the outset. Rather, capitalizing on the direction being pursued by California is a sensible course of action that will result in a meaningful vehicle control program that will sustain critical emission reductions well into the future. We urge EPA to

provide in the study a more complete discussion of the proposed California LEV II program, including its emission reduction potential and cost effectiveness, to ensure that the continued consideration of Tier 2 standards is appropriately forward looking.

Sulfur's Effect on Tier 2 Technology

A key issue related to Tier 2 standards is the impact of sulfur in gasoline on emissions. Sulfur in gasoline is a catalyst poison; its impact undermines the performance of vehicle emission control systems. As vehicle technology becomes more advanced, the poisoning impact of sulfur becomes more pronounced, with some advanced technologies precluded entirely in the absence of very low-sulfur gasoline. We believe that, unless suitably resolved, the issue of gasoline sulfur poses the greatest obstacle to stringent and effective Tier 2 standards.

STAPPA and ALAPCO strongly advocate a sharp reduction in national gasoline sulfur levels, based on a cap of no higher than 80 parts per million, which is expected to result in an average sulfur level of 40 parts per million. Such an action – which we recommend take effect by 2003, so that the gasoline will be available for the 2004 model year – will ensure that Tier 2 vehicles will achieve their maximum potential real-world emission reductions.

On May 12, 1998, STAPPA and ALAPCO participated in EPA's public workshop on gasoline sulfur. At that time, we provided comprehensive comments on the recently released *EPA Staff Paper on Gasoline Sulfur Issues,* as well as the results of an analysis conducted by the associations on the emissions impact of reducing sulfur in gasoline. As we urge EPA to adopt aggressive Tier 2 standards, we note that cleaner cars, well beyond the NLEV program, are not enough. As vehicle technology and corresponding federal emission standards advance, so too must our fuel. Without very low-sulfur gasoline, cleaner vehicles will not achieve their full emission reduction potential and we will lose vitally needed emission reductions. Our comments on gasoline sulfur and the results of our analysis, as presented at the public workshop, are attached. We strongly urge EPA to reduce sulfur in gasoline consistent with our recommendations.

In addition to the attached statement and related materials, we would also like to offer several comments on the gasoline sulfur discussion included by EPA in the draft *Tier 2 Study*.

First, there appears to be a serious error in the draft study related to the characterization of the emission benefits of reducing sulfur in gasoline for LEV-type technology. In presenting the EPA methodology for modifying MOBILE5b, the data included in Tables A-8 and A-9 of Appendix A seem to significantly underestimate the NOx, NMHC and CO benefits of reducing sulfur in gasoline, compared to the 1997 Coordinating Research Council and AAMA/AIAM studies.

EPA should correct this error so that the full benefits to Tier 2 of controlling sulfur in gasoline can be accurately assessed.

Second, EPA appears to have concluded that the reversibility of sulfur's impact on catalysts is the major issue with respect to whether a gasoline sulfur program should be regional or national. We assert, however, that of equal if not greater importance is the fact that high-sulfur gasoline presents a barrier to the introduction in this country of advanced technologies, such as lean-burn direct-injection engines and fuel cells. This fact alone provides ample justification for a uniformly stringent national gasoline sulfur control program that will allow for Tier 2 standards that reflect the superior emission control performance and fuel economy offered by these advanced technologies. It is also significant to note that the increased fuel efficiency of these vehicles will lead to reduced fuel purchase, more than offsetting any price increase associated with sulfur removal. Increased fuel efficiency also has the ancillary benefit of reducing CO2 emissions.

Third, with respect to the issue of reversibility, we encourage EPA to reference in the *Tier 2 Study* the paper presented by Johnson Matthey at the recent public workshop on gasoline sulfur. The reversibility study upon which this paper is based is the only one that ages catalysts in a real-world manner – using gasoline containing sulfur – in contrast to other gasoline sulfur studies that use a standard catalyst temperature aging protocol. The Johnson Matthey study concludes that even for a "minimal" 45 hours of engine aging with gasoline containing sulfur, the sulfur effect is more than 50 percent irreversible, even after subsequent high-temperature exposure. This further substantiates the need to adopt a uniform national gasoline sulfur limit.

Finally, EPA should conduct a thorough assessment of the applicability of emerging refinery desulfurization technology, as offered by CDTECH, which promises to reduce the cost of stringent sulfur control by more than half. Using such cost information would substantially enhance the cost effectiveness of a stringent national gasoline sulfur control program and provide further support for aggressive and effective Tier 2 standards.

Cost and Cost Effectiveness

STAPPA and ALAPCO applaud EPA for acknowledging at the beginning of its cost and cost effectiveness section that "[o]ne lesson to be learned from the past 30 years of controlling motor vehicle pollution is that the costs of future technologies are usually less than originally estimated. The auto industry, as well as government regulators and outside experts, over-predict future costs." This important fact is one that must be kept in mind throughout the consideration of Tier 2 standards. Although the cost data and comparisons presented by EPA in the draft study already show Tier 2 to be a cost-effective strategy, we urge EPA to continue to stress that we have learned through experience that actual costs of the program will almost certainly be far less than currently anticipated.

We also urge EPA to include in its cost-effectiveness assessment for potential Tier 2 standards the total environmental benefits of reducing ozone precursors, particulate matter, secondary particulates, toxic air pollutants and acid rain precursors, improving visibility and achieving ancillary benefits of reduced greenhouse gases, improved fuel economy and other environmental improvements.

Finally, STAPPA and ALAPCO also stress the importance of ensuring that consideration of Tier 2 motor vehicle standards not take place in a mobile source vacuum. The assessment of Tier 2 standards must be conducted in a broader context, whereby we take into account the implications of controlling or not controlling light-duty vehicles and light-duty trucks not only on other mobile sources and fuels, but on stationary and area sources, as well.

Regulatory Issues

EPA identifies in the draft study a series of regulatory issues related to Tier 2 standards. STAPPA and ALAPCO would like to provide their perspective on some of these issues.

Relative Stringency of the Tier 2 LDV and LDT Standards

STAPPA and ALAPCO believe that the same numeric Tier 2 standards should apply equally to all light-duty vehicles and all light-duty trucks 1, 2, 3 and 4 (up to 8,500 pounds GVWR). Light-duty trucks represent an ever-growing portion of the light-duty market – currently accounting for almost half of the light-duty market share. Although most of these vehicles are now used as passenger cars, they are subject to less stringent emission standards than light-duty vehicles. As EPA notes in the draft study, if this inequity continues, in 2007, national light-duty truck emissions of HC and NOx will exceed light-duty vehicle emissions by 83 percent and 66 percent, respectively. We find this to be not only unacceptable, but entirely unnecessary, and urge EPA to resolve the disproportionate impact of light-duty truck emissions.

The associations also recommend that EPA consider applying Tier 2 light-duty vehicle and truck standards to those complete vehicles, such as sport utility vehicles, full-size vans and pickup trucks, weighing over 8,500 pounds GVWR used predominantly for personal transportation.

Uniform Versus Separate Standards for Gasoline and Diesel Vehicles

The associations believe that Tier 2 standards should be fuel neutral and that such fuel-neutral standards should not be compromised or relaxed to accommodate greater emissions, such as NOx and PM2.5, from diesel engines. We agree with EPA's conclusion in the draft study that the current Clean Air Act waiver for diesel fuel is clearly not intended to continue.

Evaporative HC Emission Standards

We believe EPA should pursue tighter evaporative emission standards and we urge the agency to clarify the study in this regard. The draft study cites both California's proposal for a zero evaporative emission requirement, as well as one manufacturer's recent announcement that it is able to produce a vehicle with zero evaporative emissions in use. EPA should give serious consideration to the viability of a zero evaporative emission standard and consistently apply such a standard to the cost-effectiveness calculations in the study.

Extended Useful Life and Other Ways to Improve In-Use Emission Performance

STAPPA and ALAPCO firmly believe that automobile manufacturers should be held fully responsible for producing vehicles with durable emission control technologies. In addition to pursuing an extended useful life, EPA should explore in the study ways in which the Tier 2 program can increase assurances that emission controls will remain durable for the *full life* of a vehicle.

Test Fuel Specifications

We recommend that EPA reconcile the disconnect between certification/in-use audit gasoline and conventional gasoline, particularly with respect to sulfur content, to ensure that compliance testing reflects real-world conditions.

Conclusion

As EPA continues its assessment of Tier 2 standards, the tremendous opportunity facing the agency can not be overstated. STAPPA and ALAPCO ardently support the adoption of a strong Tier 2 program that reflects the most advanced technologies that will be available in the next decade. Such a program is cost effective and, moreover, imperative in order for us to achieve and sustain clean air across the country. We encourage EPA to refine its draft *Tier 2 Study* as we have recommended to ensure that the many benefits of this program, as well as the vast technological possibilities, are clear. On behalf of STAPPA and ALAPCO, we offer our assistance to EPA as it proceeds with this critically important effort.

Sincerely,

John Elston
Chair
STAPPA Mobile Sources
and Fuels Committee

Richard Baldwin
Chair
ALAPCO Mobile Sources
and Fuels Committee

Attachments