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Alan C. Lloyd, Ph.D.
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Gray Davis
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February 20, 2003

Attention: Docket ID No. OAR-2002-0059
EPA West (Air Docket)
U.S. Environmental Protection Agency (MD-6102T)
Room B-108
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460

Dear Sir or Madam:

The California Air Resources Board (ARB) staff is providing comments on the proposed National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE). We have serious concerns with the proposal and request that the RICE NESHAP include a provision to exempt stationary diesel IC engines in California that meet the requirements of California's Stationary Diesel Engine Airborne Toxic Control Measure (ATCM). Our comments, which are briefly summarized below and provided in detail in the attachment to this letter, are directed at the portion of the proposed RICE NESHAP regulating stationary diesel engines.

As you know, the ARB has a long history of successfully implementing effective measures to reduce emissions of air toxics in California. With respect to diesel engines, the ARB has been involved in efforts to reduce the emissions and the associated health impacts of diesel exhaust since the late 1980s. In 1998, the ARB identified diesel particulate matter (PM) as a toxic air contaminant. In September 2000, the ARB adopted the *Diesel Risk Reduction Plan,* an aggressive plan that established a goal of achieving a 75 percent reduction in diesel PM emissions by 2010. Also, in September 2000, the ARB approved the *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines* (Risk Management Guidance). The Risk Management Guidance recommends that catalyzed diesel particulate filters (DPFs) be required for all new prime (non-emergency) diesel engines. Catalyzed DPFs can achieve an 85 percent reduction in diesel PM, and a 90 percent reduction in organic gases and carbon monoxide. Since adoption of the Risk Management Guidance, the local air pollution control districts have been implementing the recommendations, and to date, well over 50 stationary diesel engines have been placed in service with DPF controls.

The Risk Management Guidance was a first step in our efforts to address the toxic emissions from stationary diesel engines. To achieve further reductions from this source category, over the last two years, ARB staff has been developing a statewide ATCM that will reduce diesel exhaust emissions from both new and in-use stationary diesel engines. The proposed regulation requires catalyzed DPFs on all prime stationary diesel engines. We anticipate rulemaking action on this regulation in July 2003. More information on this effort and the current draft of this regulation is available at http://www.arb.ca.gov/diesel/documents.htm.

Our fundamental concern with the proposed RICE NESHAP is that it will create conflicting requirements in California for new diesel engines, unnecessarily increase costs to California businesses, and result in no emission reduction benefits. Briefly, our key issues associated with the proposal are as follows:

- The RICE NESHAP is not health protective because it only regulates organic gases and ignores diesel PM. A more health protective approach for addressing the risk from stationary diesel engines is to reduce emissions of diesel PM.
- The RICE NESHAP does not recognize diesel particulate filters (DPFs) as a significantly more effective control device for reducing diesel exhaust emissions compared to diesel oxidation catalysts (DOCs).
- The RICE NESHAP recordkeeping, reporting, monitoring, and testing requirements are not appropriate for diesel engines meeting a diesel PM emission standard.
- The definition of “reconstruction” should be modified to exclude the cost associated with complying with State and local emission standards.
- The RICE NESHAP requirements are not sufficient to meet the risk reduction goals of the Urban Air Toxic Strategy.

As mentioned previously, these are significant issues for California. To address our concerns, we recommend that a provision be added to the RICE NESHAP exempting diesel engines that comply with the ARB adopted Stationary Diesel Engine ATCM provided that ARB demonstrates that the applicable emission standards are at least as stringent those in the RICE NESHAP.

We believe this approach is consistent with the intent of 40 CFR, Title II, Section 209 which gives California the authority to establish new and in-use standard for nonroad engines. We also believe that providing an exemption in the RICE NESHAP is a more practical approach than seeking equivalency under the Section 112(l) process.

Thank you for this opportunity to comment on the RICE NESHAP. Should you have questions regarding these comments please contact me at (916) 322-6023.

Sincerely,

/s/

Daniel E. Donohoue, Chief
Emissions Assessment Branch
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Enclosure

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Air Resources Board Comments on the Proposed National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Recommendation

To address the issues raised below, we recommend that the RICE NESHAP include a provision to exempt stationary diesel engines in California that meet the requirements of California's Stationary Diesel Engine Airborne Toxic Control Measure (ATCM).

Comments

1. The RICE NESHAP should allow S/L to regulate diesel PM as a more health protective alternative for addressing the risk from diesel exhaust.

- In 1998, particulate matter for diesel-fueled engines (diesel PM) was recognized by the California Air Resources Board (ARB) as the toxic air contaminant (TAC) that best characterized the toxic risk from diesel exhaust. The California Office of Environmental Health Hazard Assessment recommended a cancer unit risk factor (URF) of 300 excess cancers per million per microgram per cubic meter of diesel PM. Quantitatively, diesel PM has a URF that is 50 times greater than formaldehyde.

- All major health agencies agree that adverse human health effects results from environmental exposure to diesel exhaust. From a public health perspective, focusing on diesel PM as a surrogate for whole diesel exhaust is a more health protective approach compared to focusing on only organic gases and the soluble organic fraction as proposed in the RICE NESHAP.
  - The California Air Resources Board identified diesel PM as a toxic air contaminant in 1998 after 10 years of study and debate. (See references).
  - A consistent relationship between occupational diesel exhaust exposure and lung cancer was found in more than 30 human epidemiological studies (Diesel ID Doc, OEHHA 1998).
  - Over 95 percent of the particulate matter emitted from diesel engines is 2.5 microns or less in size. Reducing diesel PM will reduce PM mortality and other adverse health effects such as increases in asthma and bronchitis (Lloyd & Cackette, AWMA, June 2001).
  - If one calculates the potential cancer risk from a diesel engine meeting the proposed formaldehyde standard, an engine could operate 24 hours a day, 365 days a year, and result in a 70 year potential cancer risk of less than 0.1 in a million. However, the same engine could only operate about

eighty (80) hours per year before reaching a potential cancer risk of 0.1 in a million when ARB's diesel PM unit risk factor of 300 cancer/ug/m^3 is used.

2. The RICE NESHAP should recognize diesel particulate filters (DPFs) as a significantly more effective control device for reducing diesel exhaust emission compared to diesel oxidation catalysts (DOCs).

- Diesel oxidation catalysts (DOCs) are not as effective as diesel particulate filters (DPFs) in reducing diesel exhaust emissions and the associated health risk.
  - DOCs reduce mainly the organic gases and soluble organic fraction of diesel exhaust. Catalyzed DPFs reduce organic gases, soluble organic fraction, semi-volatile organic compounds, organic carbon particulate matter, and elemental carbon particulate matter.
  - DPFs reduce diesel PM over the entire particulate size range including ultrafine particulate matter. DOCs do not reduce ultrafine particulate matter.
  - DPFs have demonstrated 85 percent reduction in diesel PM and 90 percent reduction in formaldehyde and carbon monoxide. DOCs have demonstrated 20 to 30 percent reduction in diesel PM and 70 percent reduction in formaldehyde and carbon monoxide.

- The use of DOCs to reduce diesel exhaust emissions is not consistent with U.S. EPA's approach for reducing diesel emissions from on-road and off-road engines.
  - The 2007 on-road heavy-duty diesel engines will need to meet a 0.01 grams per brake horsepower hour (g/bhp-hr) standard for PM. Off-road diesel engines, greater than 500 hp, currently meet a 0.15 g/bhp-hr PM standard. We expect these standards to be reduced to 0.01 g/bhp-hr in the 2010 to 2012 time frame. Meeting these standards will require catalyzed DPF technology.
  - The majority of engines supplied to California for stationary applications currently are nonroad engines certified to meet ARB and EPA's nonroad engine certification standards.
  - At a minimum, all new stationary diesel engines should meet the nonroad engine certification standards.

3. The recordkeeping, reporting, monitoring, and testing requirements in the RICE NESHAP are not appropriate for diesel engine meeting a diesel PM emission standard.

- The recordkeeping, reporting, monitoring, and testing requirements in the RICE NEHSAP focus on formaldehyde and carbon monoxide. These provisions are not appropriate for emission standards based on diesel PM.

- The continuous emissions monitoring requirements in the proposed RICE NESHAP will more than double the compliance cost if these requirements must be met in addition to complying with the parameter monitoring requirements in the proposed Stationary Diesel Engine ATCM.

- The annual source-testing requirement in the proposed rule is not necessary, appropriate, or cost effective for engines equipped with a DPF control system.

4. The definition of "reconstruction" should be modified to exclude the cost associated with complying with S/L emission standards.

- The "reconstruction" definition should be modified to exclude costs associated with adding control systems or making engine modifications required by state or local agencies. The proposed Stationary Diesel Engine ATCM requires in-use prime (non-emergency) diesel engines to reduce emissions by 85 percent or meet a PM standard of 0.01 g/bhp-hr. Meeting this standard will require the installation of catalyzed DPF control technology. Given that the current cost of a catalyzed DPF is about $40/bhp-hr, simply adding emission controls could exceed the reconstruction cost threshold. As a result, engines that normally would not be subject to the RICE NESHAP would become subject simply by taking actions to significantly reduce diesel engine emissions.

5. The RICE MACT requirements are not sufficient to meet the risk reduction goals of Urban Air Toxic Strategy.

- The proposed RICE NESHAP would effect a limited number of engines and achieve an emission reduction from these engines of less than 30 percent, far below the goal of a 75 percent reduction in air toxics specified in the Integrated Urban Air Toxic Strategy.

References

Executive Summary for The Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant
http://www.arb.ca.gov/regact/diesltac/diesltac.htm
http://www.arb.ca.gov/toxics/dieseltac/finexsum.pdf

California's Diesel Risk Reduction Program
http://www.arb.ca.gov/diesel/documents/rrpapp.htm

California's Diesel Risk Reduction Program, Stationary/Portable
http://www.arb.ca.gov/diesel/statport.htm

Risk Management Guideline for the Permitting of New Stationary Diesel-Fueled Engines
http://www.arb.ca.gov/diesel/documents/rmg.htm

Draft ATCM for New Stationary Diesel Fueled Engines
http://www.arb.ca.gov/diesel/documents/111902draftatcm-new.pdf

Draft ATCM for In-Use Diesel Fueled Engines
http://www.arb.ca.gov/diesel/documents/111902draftatcm-inuse.pdf

Diesel Engines: Environmental Impact and Control, Alan C. Lloyd & Thomas A. Cackette, California Air Resources Board, published in the Journal of the Air & Waste Management Association, Volume 51, June 2001.
http://www.arb.ca.gov/research/seminars/lloyd/AWMA2001/AWMA2001.htm