State of California
AIR RESOURCES BOARD

Summary of Board Meeting
March 21, 2002

San Diego County Administration Center
Supervisor's Chambers, Room 310
1600 Pacific Highway
San Diego, CA 92101

MEMBERS PRESENT: Hons. Alan C. Lloyd, Ph.D., Chairman
Dr. William A. Burke
Joseph C. Calhoun, P.E.
Doreen D'Adamo
C. Hugh Friedman
William F. Friedman, M.D.
Matthew R. McKinnon
Barbara Patrick
Barbara Riordan
Ron Roberts

AGENDA ITEM #

02-2-1 Public Meeting to Consider a Health Update

SUMMARY OF AGENDA ITEM:

Staff of the Research Division provides the Board with regular and current updates on the health effects of air pollution. At this month's meeting, staff presented information on fine particulate matter (PM 2.5) and associated cardiovascular health effects. The study that was highlighted this month addressed the relationship between PM exposure and a major cardiovascular health effect, myocardial infarction, commonly known as a "heart attack". In addition, this study looked at effects from shorter-term PM exposures of 24 hours or less.

Investigators from Harvard University School of Public Health conducted the epidemiological study of patients who had myocardial infarctions (referred to as "MI") and PM exposures. They studied the risk of MI after hourly or acute exposures to PM. The study design consisted of interviewing 772 patients with MI in the Boston area. The average age of the patients was 62 years old and ranged from 42 to 72 years of age. Hourly concentrations of

PM 2.5 were measured in Boston. The time after exposure to PM was investigated in relation to the onset of MI. The investigators reported that the risk of MI increased with elevated PM 2.5, especially if exposure occurred in the previous two-hour period. They found about a 50% increase in the risk of MI when preceded by a 25 $\mu g/m^3$ increase in PM 2.5 at two hours before the MI onset.

Another important finding was that there was a delayed response associated with 24-hr PM 2.5 measured. That is, one day after exposure to elevated PM2.5, there was a significantly increased risk of MI. The increase in the risk of MI was approximately 70% for an increase of 20 $\mu g/m^3$. The biological mechanism or mechanisms by which PM triggers MI are currently unknown, but may involve different mechanisms of toxicity of PM 2.5. There are also a number of new studies recently published that are evaluating this relationship between PM exposure and cardiovascular health effects including effects on the constriction of blood vessels.

The presentation was well received by the Board and the importance of cardiovascular health effects and air pollution was emphasized. These results are also important as the Board moves closer to hearing recommendations by staff to revise the ambient air quality standards for particulate matter.

ORAL TESTIMONY: None

FORMAL BOARD ACTION: None

RESPONSIBLE DIVISION: Research Division

STAFF REPORT: None

02-2-2 Public Meeting to Consider Research Proposals

The Board approved Resolution Nos. 02-9 and 02-15 by a unanimous vote.

02-2-3 Public Meeting to Consider an Update on California-Mexico Border Activities

SUMMARY OF AGENDA ITEM:

Staff presented an update on the Air Resources Board's activities in the California-Mexico border region. The presentation included an assessment of air quality in the San Diego-Tijuana and Imperial County-Mexicali areas, and a report on air quality management activities over the last two years. Staff informed the Board about

two programs to reduce emissions from vehicles in the border region: the development of a smog check project in Tijuana, and the expansion of the diesel vehicle inspection program at the border crossings. Staff also discussed recent coordination efforts with U.S. and Mexican environmental agencies to develop a coordinated approach to address the environmental impact of several new power plants under construction in the border region.

ORAL TESTIMONY: None

FORMAL BOARD ACTION: None

RESPONSIBLE DIVISION: Planning and Technical Support Division

STAFF REPORT: None

02-2-4 Public Meeting to Consider a Status Report on the Fleet Rule and Reporting Requirements for all Urban Bus Transit Agencies

SUMMARY OF AGENDA ITEM:

At the September 2001 meeting, 14 transit agencies were projected to exceed the 4.8 g/bhp-hr NOx fleet average as of October 1, 2002. Since that time, a number of transit agencies indicated they will comply with the fleet average by October 2002. As of March 2002, however, four transit agencies still projected they would exceed the NOx fleet average. One transit agency testified at the public meeting that it now plans to comply by October 1, 2002, leaving three that may be unable to comply on time. One stated it will be in compliance by the end of 2002 because of its bus delivery schedule. Two other transit agencies stated they will be in compliance by December 2003 because budgetary constraints prevent them from purchasing new buses or engines in the timeframe necessary to comply.

In addition to instituting the NOx fleet average requirement, the rule prohibits engine manufacturers from selling new transit bus engines during 2004-2006 unless they meet a NOx standard of 0.5 g/bhp-hr. At this time no complying bus engines are projected to be manufactured. However, the rule includes an alternative NOx strategy exemption that would allow transit agencies to purchase buses with engines that do not meet the 2004-2006 MY engine emission standards if specified conditions are met.

To receive the exemption, transit agencies needed to apply to the Board by June 30, 2001, with a plan to achieve greater NOx emission benefits than would have been achieved through

compliance with the engine emission standards. Of the 15 transit agencies that applied for the alternative NOx strategy exemption by the June 30, 2001, deadline, seven transit agencies received approval for their plans and are eligible for the exemption. Those remaining have either formally withdrawn in writing or failed to submit an approvable NOx reduction plan by December 31, 2001. As a practical matter, those that have not been approved for the exemption will not be able to purchase new buses during 2004-2006, since none are expected to be certified.

Another requirement of the alternative NOx strategy exemption is the demonstration of advanced NOx aftertreatment technology. All seven transit agencies have elected to do one joint demonstration project. Two transit agencies that have not applied for the alternative NOx strategy exemption have also committed to participating in the joint demonstration, and a third transit agency has informed staff that it is planning a separate NOx demonstration.

Additionally, staff updated the Board on implementation issues. Staff reported that five transit agencies had not submitted their 2002 annual report detailing their fleet compositions and retrofit plans. Despite repeated reminders by staff to submit the past due reports, these five transit agencies had not responded by the Board meeting. By April 4, all five had submitted their annual reports. Furthermore, staff conducted a survey of low sulfur diesel fuel availability among the 70 transit agencies. Low sulfur diesel fuel is generally available in urban areas, and staff will assist agencies that reported they cannot readily obtain the fuel.

Lastly, staff reported on a few outstanding issues related to the regulation. Transit agencies are required to reduce diesel PM emissions by a minimum of 85 percent through retrofitting their bus engines with advanced aftertreatment technology. Staff has established a program to verify these aftertreatment devices, and as of March 2002, two devices applicable to MY 1994-2001 four-stroke engines have been verified. Currently there are no retrofit devices verified for engines older than 1994 MY, and no devices are verified for any two-stroke engine. The regulation requires transit agencies to retrofit 100 percent of their pre-1991 MY diesel engines, and differing percentages of their 1991 to 1995 MY diesel engines, depending on their fuel path, by January 1, 2003. Staff believes that the technology will not be available for pre-1994 MY engines in time to meet the January 2003 regulatory deadline. In an effort to evaluate the available retrofit technology for model year 1994 and newer engines, staff recently conducted an assessment in-use performance of diesel retrofits. The results of the survey indicated that there were few problems with filters that were installed on buses with model year 1994 and newer engines.

Based on the reported information, staff recommended that the regulation be revised to require transit agencies to retrofit newer bus engines sooner, provided as close to that same number of retrofits as possible are completed as would be required by the current regulation. This would be accomplished using the funds already earmarked by the transit agencies for the retrofit of the older engines. Staff plans to propose a revised retrofit implementation schedule for the Board's consideration in September 2002. Staff will work with the transit agencies in the interim to begin the process towards retrofitting all the required engines.

ORAL TESTIMONY:

Henry Hogo	South Coast AQMD
Joshua Shaw	California Transit Association
Chuck Harvey	San Mateo County Transit
Arthur Douwes	Santa Clara Valley Transportation Authority
Durand L. Rall	Omnitrans
Gene Walker	Golden Gate Transit
John Bates	San Luis Obispo Regional Transit Authority
Fred Stephens	San Francisco MUNI
Kevin S. Daughton	City of Fairfield
Jim Gleich	AC Transit
Richard Burton	Monterey-Salinas Transit
David Ellis	Santa Rosa City Bus
Tom Whittle	Torrance Transit System
Bill Luckhurst	Tri-Delta Transit
Diane Bailey	Natural Resources Defense Council
Todd Campbell	Coalition for Clean Air
Paula Forbis	Environmental Health Coalition
Bonnie Holmes-Gen	American Lung Association
Jynell Berkshire	Allison Transmission/General Motors
Jed Mandell	EMA
John Duerr	Detroit Diesel
John J. Malina	Cummins, Inc.
Dave Smith	WSPA
Bruce Bertelson	MECA

FORMAL BOARD ACTION:

The Board approved Resolution No. 02-16 by a unanimous vote.

RESPONSIBLE DIVISION: Mobile Source Control Division

STAFF REPORT: Yes (22 pages)