State of California
AIR RESOURCES BOARD

Summary of Board Meeting
October 29, 2004

California Environmental Protection Agency
Central Valley Auditorium, Second Floor
1001 I Street, Sacramento

MEMBERS PRESENT: Hons. Alan C. Lloyd, Ph.D., Chairman
Dorene D'Adamo
Henry Gong, Jr. M.D.
Lydia Kennard
Ronald O. Loveridge
Barbara Patrick

AGENDA ITEM #

04-9-6 **Health Update on the Effects of Air Pollution on Lung Development From Age 10 to 18**

SUMMARY OF AGENDA ITEM:

This health update presented findings from the ARB-funded Southern California Children's Health Study. Prior published results and the latest peer-reviewed publication on the effect of air pollution on children's overall lung development were summarized. The earlier analyses found that annual lung function growth rates were reduced for those children exposed to higher levels of the pollutants PM2.5 (particulate matter less than 2.5 microns in diameter), nitrogen dioxide, acid vapor, and elemental carbon. Relocating from an area of high PM10 (particulate matter less than 10 microns in diameter) exposure to an area of lower exposure resulted in an increase in lung function growth, although the increase may not make up for the adverse effect of the previous exposure. High ozone exposure had a possible causal role in the development of asthma in children playing multiple outdoor sports. Ozone was also associated with a substantial increase in school absences.

The newly published results extend the previous lung function growth rate findings by following the same children from the ages of 10 to 18, when lung development is often largely complete and a reversal of lung function growth deficits is increasingly unlikely. By age 18, children who grow up in polluted areas are five times more

likely (7.9% versus 1.6%) to have underdeveloped lungs (80% of normal) compared to teenagers living in low-pollution communities. Lung function deficits in adulthood are a strong risk factor for respiratory complications and death. The pollutants associated with these deficits are products of fuel combustion; as such these results can likely be generalized to other areas of California. Continued efforts to reduce urban air pollution are warranted.

Board Member Dr. Gong commented that the Children's Health Study was a landmark study of the health effects of long-term exposures and was notable for having studied the effects on thousands of children. Dr. Gong also commented that the study had not seen much effect of ozone on lung function. Staff responded that the investigators were surprised not to find an ozone effect on long-term changes in lung function. However, other substantial ozone effects were observed, such as the effect of ozone on the causation of asthma in children who play multiple outdoor sports. Dr. Gong asked if the results would relate to the general population of children, especially children of lower income families, since the subjects in the study were predominantly children of middle income families. Staff responded that children of lower socioeconomic levels would most likely be more affected. Since the effects in the study were seen on middle income and non-asthmatic children, the effects on children at greater risk may be even more severe. Dr. Gong also remarked, and staff agreed that the life-long effects are not conclusively proven, but are probable. Board Member Loveridge commented that this was a landmark study and the results have been influential in policy decisions. Chairman Lloyd asked if the results were being used in ozone standard setting. Staff replied that they were to the extent they were applicable. Chairman Lloyd also discussed that the European annual-average standard for nitrogen dioxide is considerably lower than the U.S. standard. Staff responded that the European standard is surprisingly low and that health studies of nitrogen dioxide effects may indicate that a short-term standard is more important than an annual average. Nitrogen dioxide may also be a marker of co-pollutant effects rather than the causal agent itself.

ORAL TESTIMONY: None

FORMAL BOARD ACTION: None (Informational Item)

RESPONSIBLE DIVISION: Research Division

STAFF REPORT: No

04-9-7: Report to the Board on the Lake Tahoe Atmospheric Deposition Study

SUMMARY OF AGENDA ITEM:

This informational item updated the Board on the status of the Lake Tahoe Atmospheric Deposition Study (LTADS), a 3-year multi-divisional research effort. The primary objective of the study is to support the Lahontan Regional Water Quality Control Board (Lahontan) in its development of the Lake Tahoe Nutrient and Sediment Total Maximum Daily Loading. In November ARB staff will provide to Lahontan initial estimates of the atmospheric deposition of nitrogen (N), phosphorus (P), and particulate matter (PM) directly to Lake Tahoe. These results will be input, along with estimates of other sources of N, P, and PM to Lake Tahoe (e.g., streams, shore erosion, surface runoff, groundwater), into a water clarity model for Lake Tahoe. In the spring of 2005, ARB staff will provide a final LTADS report including its final estimates of the atmospheric deposition to the Lake along with analyses that focuses on identifying and characterizing the sources of those materials.

After the presentation, the Chairman asked staff how the ozone levels in forests in the Lake Tahoe Basin compare to ozone levels in the forest in the San Bernardino Mountains. Ozone levels in Southern California forests are much higher, approximately twice that of Tahoe. Dr. Gong asked about efforts regarding carbon monoxide in the Basin, particularly with respect to watercraft emissions. Because deposition of carbon monoxide is not a concern to the lake clarity modelers, LTADS does not attempt to estimate carbon monoxide levels. However, regulators in the Basin are aware and concerned about emissions from watercraft on the lake.

ORAL TESTIMONY:

Mr. Harold Singer, Lahontan Regional Water Quality Control Board
Dr. John Reuter, Tahoe Research Group

FORMAL BOARD ACTION: None (Informational Item)

RESPONSIBLE DIVISION: Research Division

STAFF REPORT: No

04-9-8 Public Meeting to Consider the Draft Report, "Planned Air Pollution Research, Fiscal Year 2004-2005"

SUMMARY OF AGENDA ITEM: Staff presented the draft report entitled, “Planned Air Pollution Research, Fiscal Year 2004-2005”, which contained 22 research projects. The report describes projected funding allocations and proposed research projects; some recommended for funding and others recommended if funding becomes available.

ORAL TESTIMONY: None

FORMAL BOARD ACTION: Approved Resolution No. 04-30

RESPONSIBLE DIVISION: Research Division

STAFF REPORT: Yes

04-9-9 Public Meeting to Consider Research Proposals

SUMMARY OF AGENDA ITEM: Staff presented 2 research proposals entitled:

- Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-making; and
- Climate Change – Characterization of Black Carbon and Organic Carbon Air Pollution Emissions and Evaluation of Measurement Methods

ORAL TESTIMONY: None

FORMAL BOARD ACTION: Approved Resolution Numbers 04-31 and 04-32

RESPONSIBLE DIVISION: Research Division

STAFF REPORT: Yes