Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

APPROVED MINUTES

Advisory Council Technical Committee
1:00 p.m., Wednesday, August 9, 2006

1. **Call to Order – Roll Call.** Chairperson Bornstein called the meeting to order at 1:10 p.m. Present: Robert Bornstein, Ph.D., Chairperson, Irvin Dawid, William Hanna, Stan Hayes, John Holtzclaw, Ph.D. Absent: Sam Altshuler, P.E., Louise Bedsworth, Ph.D.

2. **Public Comment Period.** There were no public comments.

3. **Approval of Minutes of April 12 and June 14, 2006.** Dr. Holtzclaw moved approval of the April 12, 2006 minutes; seconded by Mr. Hanna; carried, with Mr. Dawid abstaining. Dr. Holtzclaw moved approval of the June 14, 2006 minutes; seconded by Chairperson Bornstein; carried unanimously.

4. **Update on the District's Community Air Risk Evaluation (CARE) Program.** Dr. Phil Martien, Senior Advanced Projects Advisor and CARE Program Manager, stated that the CARE program objectives are to (1) evaluate community cancer and non-cancer health risk from ambient toxic air contaminants, and (2) focus the health risk mitigation measures on locations with higher risk levels and sensitive populations. The program is designed in threephases. Phase I concerns conducting scoping studies of the toxic emission inventory and further refinement of the inventory, along with initial mitigation measures. Phase II concerns modeling pollutant concentrations and continued development of mitigation measures. Phase III concerns exposure assessments and mitigation measures.

   Mitigation measures include targeting incentive funds for reducing mobile source emissions; regulating emissions from stationary and indirect sources; advising and collaborating on issues related to development, housing and transportation; sponsoring and supporting applicable legislation; developing model ordinances and enhancing information campaigns. To involve the community and obtain input from other agencies, a Task Force for the CARE program has been created and includes 15 members representing government, business, health and the community.

   Phase I of the CARE program is nearing completion. A preliminary toxic air contaminant emission inventory has been developed. Support studies have been conducted, such as a residential wood burning survey that will help to make corrections in the wood smoke inventory. Source apportionment studies for particulate matter (PM) have been conducted, and include refinements that distinguish new from old carbon in the chemical mass balance analyses, which will contribute to the further refinement of source apportionment. Desert Research Institute is assisting with the speciation of the organic portion of the PM. Demographic and health data will be used to target regions for the incentive programs that will reduce emissions within a given locale.

The development of the emission inventory for area and non-road, on-road mobile and point sources required further chemical speciation in order to obtain more accurate speciation profiles and cancer unit risk factors. Data from this effort are then spatially allocated throughout the map of the model domain. Among the findings and results observed to date, data have been generated for cancer toxicity-weighted emissions based on each pollutant—in which diesel particulate ranks as the foremost pollutant at 81%; and by source category in another rendering of the same data, in which on-road sources and construction equipment are the two major source categories.

With respect to diesel PM, the spatial distributions of this pollutant have been plotted, with highest concentrations found in West Oakland and San Francisco, and also in west Alameda County. The same data have been rendered with unit risk-factors applied.

For chronic, non-cancer toxicity-weighted emissions, acrolein at 48% and formaldehyde at 20% are the major pollutants when data are weighted by pollutant. For source category, on-road mobile sources at 33% and aircraft at 24% constitute the major sources. When the data for formaldehyde are applied to the map of the study domain, concentrations are highest near major roadways and military airports in the Bay Area.

In terms of acute toxicity-weighted emissions, acrolein is the major pollutant at 94%, and aircraft at 40% and on-road mobile sources at 38% are the major source categories of formaldehyde and acrolein. When acrolein emissions are plotted on the study domain, airports show the highest concentration levels.

Demographic and health data have been plotted on the map of the study domain. Data have been plotted for populations under age 18 and then adjusted with asthma hospitalization rates. The plotted data are consistent with the maps of emissions, with western Alameda as an area of particular attention. However, direct inferences of this data are not to be recommended, except insofar as the plots help identify areas with sensitive populations.

Phase I findings are that (1) 80% of cancer health risk is attributable to diesel PM; (2) 50% of chronic non-cancer risk is from acrolein; (3) more than 90% of acute non-cancer risk is also from acrolein; (4) on-road and off-road diesel emissions, including construction, shipping, and rail are large sources of cancer risk; and (5) gasoline powered vehicles and aircraft are the largest contributors to non-cancer risk. The highest concentrations of diesel PM and acrolein are found in eastern San Francisco and western Alameda and Contra Costa counties. These areas also have large numbers of sensitive receptors.

Policy recommendations from these findings are that (1) a gridded toxic air contaminant inventory will be used as a surrogate for exposure; (2) regional demographic data will be used to identify grid cells with sensitive populations; (3) mitigation measures will be targeted for areas with high concentrations of toxic air contaminant emissions and sensitive populations; and (4) follow-up will be conducted with more sophisticated techniques to evaluate population exposure.

Plots over the study domain of toxic air contaminants for total $PM_{2.5}$ weighted by groups under age 18 and over age 64 have been made for identifying projects in areas to which Carl Moyer program grants could be applied to mitigate high concentrations of diesel PM.

With regard to next steps, Phase II will include modeling concentrations and continuing development of mitigation measures. Preliminary modeling on a local and regional scale will also be conducted, along with health risk assessment for the Port of Oakland and large rail yards. Additional mitigation measures for these will be developed.

Phase III will contain the development of exposure assessments, refinement of modeling and measurements, and development of health risk assessments along with continuing work on emission mitigation measures.

In reply to questions, Dr. Martien noted that similar toxic air contaminant analysis has occurred in the South Coast AQMD, and that the plots of data have some degree of parallel with those developed in the Bay Area. Chairperson Bornstein inquired if it might be advisable to request a presentation from the South Coast AQMD staff on its modeling work and then to have a meeting between South Coast and Bay Area staff, as well as Dr. Eric Fujita from the Desert Research Institute (DRI). Dr. Martien replied that this could prove to be productive. The Committee members agreed with this suggestion and requested that the modeling staff of the South Coast be invited to give the Technical Committee a presentation on its toxic air contaminant modeling work to date. Dr. Bornstein suggested that the Public Health Committee be invited join the Technical Committee in receiving this presentation.

5. **Committee Member Comments/Other Business.** Chairperson Bornstein stated that the California Energy Commission is hosting its Third Annual Research Conference on Climate Change in Sacramento on September 13-15, 2006.

6. **Time and Place of Next Meeting**. 1:00 p.m., Wednesday, October 11, 2006, 939 Ellis Street, San Francisco, CA 94109.

7. **Adjournment.** 2:39 p.m.

/s/ Neel Advani
For James N. Corazza
Deputy Clerk of the Boards