MULTIPLE AIR TOXICS EXPOSURE STUDY (MATES-II) IN THE SOUTH COAST AIR BASIN

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The MATES-II study is one of the most comprehensive air toxics programs ever conducted in an urban area. Covering a one-year period from early 1998 to 1999, over 30 hazardous air pollutants, both gaseous and particulate, were monitored at 10 locations throughout the South Coast Air Basin of California (Basin) on a one-day-in-six sampling schedule. This was complemented by three mobile monitoring platforms which were used to sample more intensively, but only over a one-month period, at each of 14 additional locations. In all, over 4,500 samples were collected and analyzed.

In addition to the field sampling program, MATES-II included an update of the latest toxics emissions inventory for the Basin, and computer modeling to determine a more complete picture of toxic air pollutant concentrations and associated risks. Since it is not feasible to conduct monitoring at each community, it is important to utilize the models to provide assessments of air toxics on a 2 km x 2 km grid. For the purposes of this study, unit risk factors as established by the California Office of Environmental Health Hazard Assessment were used to estimate population risk.

Results from the 10 one-year sites showed cumulative cancer risk values ranging between 1100 and 1700 in a million, with 71 percent attributed to diesel particulate. Overall, mobile source emissions accounted for nearly 90 percent of the cumulative cancer risk in the Basin, with benzene and 1,3-butadiene as other key contributors. Modeling results are very consistent with the field measurements, and show that, spatially, the greatest cancer risks occur in the south central portion of Los Angeles County, extending southward into the port areas near Long Beach.

While field measurements for the 10 fixed sites were focused on "neighborhood" scale monitoring, the microscale was designed to be in primarily residential areas immediately downwind of facility (industrial) clusters which included sources known to emit toxic air pollutants. Even at these locations, in most instances, the cumulative cancer risks were greater for pollutants associated with mobile source emissions than with those from stationary sources.