

## SUMMARY OF BOARD ITEM

**ITEM # 02-7-1:** PUBLIC MEETING TO CONSIDER A HEALTH UPDATE

**STAFF RECOMMENDATION:** Informational Item

**DISCUSSION:** Staff of the Research Division provides the Board with regular updates of new developments in studies relevant to the public health impacts of air pollution. At this month's meeting, staff will present information on the latest results of the Children's Health Study (CHS). Following the presentation, staff will show a recently completed video on the CHS and its findings of the impacts of air pollution on children's health.

**SUMMARY AND IMPACTS:** The Children's Health Study (CHS), principally funded by the California Air Resources Board (ARB) and performed by the University of Southern California (USC), has been studying the effects of chronic air pollution exposures on the health of children living in twelve Southern California communities since 1993. These communities have different levels and patterns of air pollution. Results published in 2001 show that children in the communities with the highest levels of air pollution, as compared to those in the communities with the lowest levels, had lower rates of lung function growth. The study investigators have published an analysis in July 2002 on a second group of children, which confirms the results in the first study. This analysis found that higher exposures to acid vapor, ozone, nitrogen dioxide, PM2.5, and elemental carbon in PM2.5 significantly decreased measures of lung growth and functioning. Confirmation of slower growth in a second group significantly strengthens the evidence supporting the adverse lung growth effects of higher pollution exposures. The results also show that these adverse effects are still occurring despite more recent lower pollution levels. In contrast to the previous study, children studied with higher ozone exposures also had reduced growth of lung function. The slower lung growth associated with higher exposures to

elemental carbon may indicate a specific respiratory effect of diesel exhaust. Diesel engines are a major source of elemental carbon in very small particles. Slower lung growth over a period of several years, now confirmed in two different groups of children, is the strongest evidence of a chronic effect of air pollution on children's respiratory health. Lung function reaches a maximum in young adults; children whose lungs have grown more slowly may have lower maximum lung function, a question of intense interest to respiratory researchers. Adults with lower maximum function may be more susceptible to respiratory diseases and chronic problems as they age.

The ARB has produced a video, through the USC School of Journalism, documenting the results of the Children's Health Study and the effects of air pollution on children's health.