# Office of Environmental Health Hazard Assessment

George V. Alexeeff, Ph.D., D.A.B.T., Director
Headquarters • 1001 I Street • Sacramento, California 95814
Mailing Address: P.O. Box 4010 • Sacramento, California 95812-4010
Oakland Office • Mailing Address: 1515 Clay Street, 16th Floor • Oakland, California 94612

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor


# Study provides a plausible explanation for the link between cardiovascular mortality and fine particle air pollution exposure

June 19, 2014
FOR IMMEDIATE RELEASE


SAM DELSON 916-324-0955 (o)
916-764-0955 (m)


SACRAMENTO – A new study in *Environmental Research* demonstrates a strong association between exposure to fine particles emitted from fuel-burning engines and C-reactive protein (CRP), which is directly linked to deaths from cardiovascular disease.

The study by scientists at the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) is among the first to link long-term exposure to fine particle air pollution, also known as PM2.5, to elevated levels of CRP. High levels of CRP are key indicators of inflammation, which is the body's response to inhaling irritating fine particles and is strongly associated with heart disease and stroke.

The study's link between PM2.5 and CRP provides a plausible explanation for the previously documented connection between PM2.5 and cardiovascular mortality.

"The study also gives valuable information about how certain personal characteristics make individuals more susceptible to the effects of air pollution," said lead author Dr. Bart Ostro, chief of OEHHA's Air Pollution Epidemiology Section. "This may help individuals and their health care providers take steps to reduce the impacts of air pollution."

The study, titled "Chronic PM2.5 exposure and inflammation: Determining sensitive subgroups in mid-life women," found that:

- Diabetics and smokers experience particularly large effects of PM2.5 on CRP.
- People with low incomes, high blood pressure, or who are using hormone therapy may also be more vulnerable to PM2.5.
- Statin medications and moderate alcohol consumption can reduce the impact of PM2.5 on CRP.

"These are significant findings that might help us develop better approaches to reducing risks associated with PM2.5 exposure," said Dr. John Balmes, a professor of medicine

at the University of California, San Francisco, and member of the California Air Resources Board.

OEHHA scientists Brian Malig, Rachel Broadwin, Rupa Basu, and Rochelle Green are coauthors of the paper, along with researchers from several other institutions.

The study analyzed data from 3,000 women observed over a five-year period from the SWAN (Study of Women's Health Across the Nation) cohort. Women recruited from six different metropolitan areas throughout the United States provided blood samples every year of the study. The researchers were able to isolate the effect of air pollution after taking into account other factors that might affect CRP.

C. Arden Pope III, professor of economics at Brigham Young University and an expert on environmental epidemiology and public health, said the research is significant because the five-year period of the data shows the effects of long-term exposure to PM2.5. He added, "The fact that this research sees effects of PM 2.5 on CRP is very useful, largely because it demonstrates that the link between air pollution and inflammation is likely true."

The opinions expressed in the research are solely those of the authors and are not official policies or positions of the State of California or the California Environmental Protection Agency.

OEHHA is the primary state entity for the assessment of risks posed by chemical contaminants in the environment. Its mission is to protect and enhance public health and the environment by scientific evaluation of risks posed by hazardous substances.

###