

RECORD TYPE: FEDERAL (NOTES MAIL)

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CREATION DATE/TIME:24-APR-2003 10:20:22.00

SUBJECT:: New CEI study challenges PM 2.5 alarmism underpinning both Clear Skies and

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TEXT:
Particulate Air Pollution: Weighing the Risks
by Joel Schwartz
April 21, 2003

Document available in pdf format: <http://www.cei.org/pdf/3452.pdf>
Executive Summary

America's air quality has vastly improved in recent decades due to progressive emission reductions from industrial facilities and motor vehicles. The country achieved this success despite substantial increases in population, automobile travel, and energy production. Air pollution will continue to decline, both because more recent vehicle models start out cleaner and stay cleaner as they age than earlier ones, and also because already-adopted standards for new vehicles and existing power plants and industrial facilities will come into effect in the next few years.

Nonetheless, both the Bush Administration and congressional Democrats have proposed sweeping new measures to further crack down on power plant emissions. The Administration's Clear Skies Initiative and a more stringent Democratic alternative are largely justified by claims that current levels of particulate matter (PM) pose a serious public health threat. Supporters of these bills promise substantial benefits from additional PM reductions.

Nevertheless, the benefit claims for PM reductions rest on a weak foundation. The U.S. Environmental Protection Agency (EPA) based its new annual fine PM (PM2.5) standard on a study known as the American Cancer Society (ACS) study of PM and mortality, which assessed the association between the risk of death between 1982 and 1998 with PM2.5 levels in dozens of American cities.

Although the ACS study reported an association between PM and mortality, some odd features of the ACS results suggest that PM is not the culprit. For example, according to the ACS results, PM increased mortality in men, but not women; in those with no more than a high school degree, but not those with at least some college education; in former-smokers, but not current- or never-smokers; and in those who said they were moderately active, but not those who said they were very active or sedentary. These odd variations in the relationship between PM2.5 and mortality seem biologically implausible. Even more surprising, the ACS study reported that higher PM2.5 levels were not associated with an increased risk of mortality due to respiratory disease; a surprising finding, given that PM would be expected to exert its effects through the respiratory system. EPA also ignored the results of another epidemiologic study that found no effect of PM2.5 on mortality in a cohort of veterans with high blood pressure, even though this relatively unhealthy cohort should have been more susceptible to the effects of pollution than the general population. The evidence therefore suggests that the existing annual standard for

PM2.5 is unnecessarily stringent. Attaining the standard will be expensive, but is unlikely to improve public health. EPA also promulgated a standard for daily PM2.5 levels. Hardly any areas exceed this standard, making it moot for policy purposes. Nevertheless, the epidemiology of short-term PM exposure and mortality suffers from deficiencies that call into question the extent to which typical short-term increases in PM levels can increase mortality. Sulfate PM-the type of PM caused by coal power plant emissions-is a particularly implausible culprit as a cause of increased mortality. Ammonium sulfate, the main form of sulfate PM, is used as an inactive control substance in human studies assessing the health effects of inhaling acidic aerosols. Inhaled magnesium sulfate is used therapeutically to reduce airway constriction in asthmatics. Sulfate is also naturally present in bodily fluids at levels many times the amount that could be inhaled from air pollution. The evidence suggests that exposure to PM at current levels likely has little or no effect on mortality in most of the United States. Regardless, processes already set in motion guarantee substantial PM reductions in coming years. Additional near-term reductions in PM are probably best achieved by dealing with the stock of high-polluting older vehicles that account for a substantial portion of ambient PM levels in metropolitan areas. This flexible, more cost-effective approach is far more likely to result in net public health benefits than other proposals that are the focus of current legislative and regulatory activity and debate.