

National study examines health risks of coarse particle pollution

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Researchers at the Johns Hopkins Bloomberg School of Public Health have conducted the largest nationwide study on the acute health effects of coarse particle pollution. Coarse particles are airborne pollutants that fall between 2.5 and 10 microns in diameter. These particles are larger than fine particles (less than 2.5 microns) and are produced by processes such as mechanical grinding, windblown dust and agriculture. These particles are of interest from both public health and regulatory perspectives.

The researchers examined associations between daily changes in hospital admissions rates for cardiovascular and respiratory outcomes and daily changes in coarse and fine particulate matter levels for 108 urban U.S. counties, which included approximately 12 million people enrolled in Medicare during the years 1999 through 2005.

The study, published in the May 14, 2008, edition of JAMA, found no evidence of an association between daily changes in coarse particles and the number of hospital admissions for respiratory diseases. The study found evidence of an association with hospital admissions for cardiovascular diseases. After taking into account fine particle levels, the association with coarse particles remained but was no longer statistically significant. The study also found that the risk of a cardiovascular hospital admission due to coarse particles was higher in more urban counties.

“Overall, the evidence was mixed, but the data suggest a link between

cardiovascular admissions and ambient exposure to coarse particulate matter. This association was not statistically significant when we adjusted for fine particulate matter,” said Roger D. Peng, PhD, lead author of the study and an assistant professor in the Bloomberg School’s Department of Biostatistics.

“Although the evidence was not conclusive, the benefit of our approach is that it can be easily replicated when new data become available. Given that we found an association with coarse particles before taking into account fine particulate matter, our findings need consideration when the Environmental Protection Agency’s standard for particles in the air is next reviewed.”

The EPA regulates the levels of fine particle pollution, but does not yet have a standard for coarse particle pollution.

Previous studies by the Hopkins researchers demonstrated a strong link between fine particulate matter pollution and increased hospital admissions for cardiovascular and respiratory illnesses.

“We found continued evidence of an association between fine particulate matter and risk for hospitalization in this new data set, an extension by three years of our previous analyses,” said senior author Francesca Dominici, PhD, professor in Biostatistics. “We urge continued monitoring of the coarse fraction of particulate matter so that further studies can be carried out.”

Source: Johns Hopkins University

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