Home cooking, traffic are sources of key air pollutants from China

EurekAlert!

Almost 80 percent of air pollution involving soot that spreads from China over large areas of East Asia — impacting human health and fostering global warming — comes from city traffic and other forms of fossil-fuel combustion, such as home cooking with coal briquettes. That's the conclusion of a study in ACS' journal Environmental Science & Technology, which resolves long-standing questions about sources of air pollution responsible for Asia's infamous atmospheric brown clouds.

Örjan Gustafsson and colleagues from China, South Korea and the United States point out in their study that nobody has been certain about the exact sources of soot, or "black carbon," air pollution from the People's Republic of China. People can inhale these tiny particles deep into the lungs, and estimates implicate soot with 500,000 premature deaths annually in China alone. Black carbon in the atmosphere also absorbs sunlight, and scientists think it is second only to carbon dioxide as a factor in global warming. Gustafsson and his team set out to identify the exact sources of black carbon in China.

They describe using a powerful carbon-14 identification method to trace fully four-fifths of the black carbon emitted in China to incomplete combustion of fossil fuel such as coal briquettes used in home cookstoves and automobile and truck exhaust. "To mitigate near-term climate effects and improve air quality in East Asia, activities such as residential coal combustion and city traffic should be targeted," they conclude.

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