

November 14, 2008

U.N. Report Sees New Pollution Threat

By [ANDREW JACOBS](#)

BEIJING — A noxious cocktail of soot, smog and toxic chemicals is blotting out the sun, fouling the lungs of millions of people and altering weather patterns in large parts of Asia, according to a report released Thursday by the [United Nations](#).

The byproduct of automobiles, slash-and-burn agriculture, wood-burning kitchen stoves and coal-fired power plants, these plumes of carbon dust rise over southern Africa, the Amazon basin and North America. But they are most pronounced in Asia, where so-called atmospheric brown clouds are dramatically reducing sunlight in many Chinese cities and leading to decreased crop yields in swaths of rural India, say a team of more than a dozen scientists who have been studying the problem since 2002.

Combined with mounting evidence that greenhouse gases are leading to a rise in global temperatures, the report's authors called on governments both rich and poor to address the problem of carbon emissions.

"The imperative to act has never been clearer," said Achim Steiner, executive director of the United Nations Environment Program, in Beijing, where the report, titled "Atmospheric Brown Clouds: Regional Assessment Report With Focus on Asia," was released.

The brownish haze, sometimes more than a mile thick and clearly visible from airplanes, stretches from the Arabian Peninsula to the Yellow Sea. During the spring, it sweeps past North and South Korea and Japan. Sometimes the cloud drifts as far east as California.

The report identified 13 cities as brown-cloud hotspots, among them Bangkok, Cairo, New Delhi, Seoul and Tehran. In some Chinese cities, the smog has reduced sunlight by as much as 20 percent since the 1970s, it said.

Rain can cleanse the skies, but some of the black grime that falls to earth ends up on the surface of the Himalayan glaciers that are the source of water for billions of people in China, India and Pakistan. As a result, the glaciers that feed into the Yangtze, Ganges, Indus and Yellow rivers are absorbing more sunlight and melting more rapidly, researchers say.

According to the Chinese Academy of Sciences, these glaciers have shrunk by 5 percent since the 1950s and, at the current rate of retreat, could shrink by another 75 percent by 2050.

"We used to think of this brown cloud as a regional problem, but now we realize its impact is much greater," said Prof. Veerabhadran Ramanathan, who led the United Nations scientific panel. "When we see the smog one day and not the next, it just means it's blown somewhere else."

Although their overall impact is not entirely understood, Professor Ramanathan, a professor of climate and

ocean sciences at the University of California, San Diego, said the clouds might be affecting rainfall in parts of India and Southeast Asia, where monsoon rainfall has been decreasing in recent decades, and central China, where devastating floods have become more frequent.

He said that some studies suggest that the plumes of soot that blot out the sun have led to a 5 percent decline in the growth rate of rice harvests across Asia since the 1960s.

For those who breathe the toxic mix, the impact can be deadly. Henning Rodhe, a professor of chemical meteorology at Stockholm University, estimates that 340,000 people in China and India die each year from cardiovascular and respiratory diseases that can be traced to the emissions from coal-burning factories, diesel trucks and kitchen stoves fueled by twigs.

“The impacts on health alone is a reason to reduce these brown clouds,” he said, adding that in China, about 3.6 percent of the nation’s annual gross domestic product, or \$82 billion, is lost to the health effects of pollution.

The scientists who worked on the report said the blanket of haze hovering over Asia and other parts of the world might be mitigating the worst effects of greenhouse gases by absorbing solar heat or reflecting it away from the earth. Greenhouse gases, by contrast, tend to trap the warmth of the sun and lead to a rise in ocean temperatures.

Mr. Steiner, the head of the United Nations environment program, said the findings complicated the global-warming narrative. The brown clouds mask the impact of the greenhouse gases, he said: Without the blocking effect of the smog, he said, [climate change](#) would be far worse.

“All of this points to an even greater and urgent need to take on emissions across the planet,” he said.

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