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Pollution's long commute
Air carrying mercury, pesticides to Rocky Mtn. Park, studies show

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ESTES PARK – A series of new studies underway in Rocky Mountain National Park shows that air pollution is blanketing the alpine peaks, snowfields and lakes with mercury, pesticides and other hazardous chemicals – some carried by air currents from across the globe.

Preliminary research, part of a federal project to assess airborne contaminants at eight Western parks, is indicating how significant levels of industrial pollution can build up thousands of miles from the source, even in places many consider pristine.

Draped across the Continental Divide, the 415–square–mile park is famous for its rugged mountains, sweeping views, elk herds – and, more recently, summertime ozone levels that threaten to violate federal standards.

However, the new studies reveal how air currents swirling around the peaks are delivering a rain of mercury, pesticides, insecticides and other long–lasting chemicals that slowly build up in the park's forests, lakes, soils and fish. Many of the new studies, which were discussed at a two–day symposium sponsored by Rocky Mountain National Park, are still underway, so the results are preliminary.

"The reason we're looking at parks is basically they are indicators of what might be occurring in other places," said Donald Campbell, a researcher with the U.S. Geological Survey in Denver.

Campbell is leading the first– ever assessment of mercury deposition in the park. The assessment shows that park soils and waters are acting like sponges by soaking up the toxic metal.

Coal–fired power plants, like those in eastern and western Colorado, are one of the biggest sources of airborne mercury pollution. Mercury is a potent neurotoxin that is particularly dangerous to infants and toddlers.

In the park's Loch Vale, researchers estimated that 88 percent of the mercury that comes down with rain or snow stays in the park, where it is accumulating in the trout of high lakes and streams. An analysis of a small number of fish showed mercury concentrations are about half the level required to trigger federal health advisories.

The study showed mercury levels in snow samples taken from beneath the park's forests were two to three times higher than samples from open areas. Campbell suggested that could be because pine needles are raking particles that carry mercury from the air.

Another new study found levels of persistent chemicals including pesticides and herbicides in the park's snow and lake sediments. Some of the chemicals, including polychlorinated biphenyls, or PCBs, have been banned for decades in the U.S., suggesting that weather patterns may be transporting the chemicals from across the Pacific Ocean, said Dixon Landers, a researcher with the U.S. Environmental Protection Agency.

One of the most subtle but potentially serious threats to the park comes from the deposition of nitrogen oxides from factories, farms and cars. The deposits are carried on upslope winds from the Front Range in the spring and summer.

Researchers have known for years that increasing levels of nitrogen in the park were changing the park's soil and water chemistry, particularly on the eastern slope. This, in turn, affects algae, aquatic animals and soil bacteria, eventually leading to changes in forest health.

However, a new study by Colorado State University student Sanjay Advani found that some areas were becoming saturated with nitrogen.

Nitrogen oxides mix with water vapor to create nitric acids. But nitrogen levels have increased to the point where they are overwhelming the ability of park soils and water to act as a buffer against acidification, Advani said.

Another computer model developed by CSU student Melannie Hartmann suggested that at current rates of nitrogen pollution, acidification of the parks' lakes could become a significant problem within 16 years.

The new research should be a wake-up call for policymakers, said Vicki Patton, a senior attorney with Environmental Defense.

"Every day that we delay dealing with today's pollution problem allows more time for the buildup of harmful chemicals that will persist for generations," she said.

Doug Benevento, director of the Colorado Department of Public Health and Environment, said the state is currently focused on addressing ozone problems along the Front Range. But he acknowledged that the state also will have to address chronic air pollution problems at the park.

In addition to Rocky Mountain National Park, teams of researchers collaborating on the Western Airborne Contaminants Assessment Project are evaluating pollution at the following national parks: Denali and Gates of the Arctic and Noatak Preserve in Alaska; Mount Rainier and Olympic in Washington state; Glacier in Montana; and Sequoia in California.