

Acidity levels in Maine lakes fail to improve

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ORONO — A pollutant that is an important component of acid rain has declined substantially across the northeastern United States during the past decade. But the change has so far resulted in little improvement in the overall chemistry of the region's acidic lakes and streams, according to a new national evaluation of the 1990 Clean Air Act.

"The bottom line is that in most regions there's been a tiny improvement in the acidity of lakes and streams," said Steve Kahl, director of the University of Maine's Sen. George Mitchell Center for Environmental and Watershed Research, who led the evaluation for EPA.

"That's not true for Maine or for New England, interestingly enough, but there's been a little bit of improvement in Wisconsin, in the Adirondacks, in Pennsylvania and New York."

Those improvements could be reversed now that the Bush administration has announced that it is relaxing air pollution regulations for coal-burning power plants, refineries and manufacturing facilities. The change in direction in clean air policy, widely decried by environmentalists and public health advocates, will affect emissions of sulfur dioxide and nitrogen oxides, the major pollutants that cause acid rain.

"The whole problem with our dirty air here in the state of Maine is with these dirty power plants that are not being cleaned up," said Susan Sargent, Maine spokeswoman for the National Environmental Trust. "And they're not going to be cleaned up anytime soon, thanks to President Bush and his gutting of the Clean Air Act."

Maine and eight other states are suing the administration over its decision.

Modest recovery

Kahl could not say what specific effects the change in course would have on acid rain pollutants, but he said it's clear that the progress that has been made in reducing acid rain so far could be set back by the new policy.

"No question about it, there are measures of success out there" in the effort to clean up acid rain, Kahl said. "But the recovery aspect of it is modest enough to make one believe that recovery's not going to continue unabated if we don't continue to make progress in air pollution issues."

The EPA is required to report back to Congress this year on the effectiveness of the acid rain provisions of the Clean Air Act Amendments of 1990. Those provisions required more than 100 power plants in 21 states to cut their production of sulfur dioxide, which is a byproduct of burning coal.

The agency asked Kahl, a leading acid rain expert, to head a team of scientists in reviewing data gathered from acid rain hot spots during the 10-year period from 1990 through 2000. Other scientists involved in the project came from Oregon, Virginia, Pennsylvania, New York and Vermont.

Their evaluation shows that since 1990, sulfate concentrations in rain and other forms of precipitation have dropped by about 20 percent, and there's been an accompanying, substantial decrease in the amount of sulfates in surface waters across the Northeast.

"That's really good news because that means that we can in fact influence the chemistry of lakes and streams," Kahl said. "To say this in a lay person's way, sulfate (sulfuric acid) is no longer

controlling the chemistry of acidic waters the way it used to be. It's really quite astonishing how much things have improved in a decade."

The amount of nitric acid in precipitation, however, has slightly increased over the same time period. That could be because the newest controls haven't kicked in yet, or because the pollution spewing from the nation's automobiles is putting the brakes on any improvements.

"We're all driving our SUVs, kicking nitrate out the tailpipe all the time, so in reality nitrate is not going to improve in the near term, at least not until we all start driving hybrid vehicles," Kahl said.

How has all this translated into acidic lakes and streams? The Adirondacks have seen a promising decrease in acidity, with the number of acidic lakes dropping from 238 a decade ago to 149 today. In the Upper Midwest, 80 of the 250 lakes that had problems in the mid-1980s are no longer acidic.

The scientists also found that the waters of New England and the Ridge-Blue Ridge region that includes Virginia remain relatively unchanged. In New England, 384 of the 386 lakes that were acidic 10 years ago still have problems.

There was no evidence that the number of acidic lakes and streams has increased in any area, despite a possible increase in natural acidity in some places and a curious decline in calcium and magnesium, substances in the soil that neutralize acids when they leach into the aquatic environment.

'An astonishing decline'

There are some places - the University of Maine long-term research site at the Bear Brook watershed near Beddington, east of Orono, is one example - where levels of neutralizing calcium have diminished as much as 40 percent in the last 15 years, "an astonishing decline," Kahl said.

"That has implications for fish that need calcium, for mussels that need calcium to make their shells," he said. "I really wonder about the mussels."

Theories on the causes behind the drop in calcium run the gamut from climate change to nutrient-impooverished soils.

Some scientists theorize that as the climate changes and trees absorb more carbon dioxide, they are increasing their uptake of calcium and other nutrients as well. Others say there's now widespread impoverishment of these nutrients in northeastern soils, so there's less available to leach out into lakes and streams.

"A third possibility of that we've decreased the amount of acidity so much that we're not actually leaching calcium and magnesium any more; therefore, the soils are retaining it and building their nutrient capacity," Kahl said, "and that's actually a good thing, the fact that we're not seeing it in the stream. So it could be neutral, good, bad, or unexplained climate change, but you need long-term data to figure those things out."

The new report found that the status of Maine's 100 acidic lakes remains relatively unchanged. Maine may not have seen much improvement in its waters yet because of the drop in acid-neutralizing substances and because the state has higher levels of natural acidity.

The average pH of rain in Maine is 4.8, about twice what it was in pre-industrial times.

Conrad Schneider, a Brunswick resident who works for the Clean Air Task Force, a national advocacy group, said he thinks that underlying ecological conditions are not the only reason New England is seeing fewer benefits of acid rain controls.

Under the current market-based emissions trading system, he said, power plants can overcontrol their emissions in one place, then sell their pollution credits to another plant somewhere else. Under that kind of system, he said, there's no guarantee that the power plants that affect this region will reduce their emissions to levels that would improve acid rain conditions here.

Schneider said controlling emissions from power plants should be a priority because they are the dominant source of sulfur pollution and could implement the most cost-effective controls. Schneider said a similar acid rain study released last year by the Hubbard Brook Research Foundation in New Hampshire found that sulfur emissions from power plants would need to be cut by no less than 80 percent to allow ecosystems to begin a biological recovery by midcentury.

"If we need to go 75 percent reduction or 80 percent reduction from the current levels," he said, "and instead what we're doing is we're making it easier for power plants to increase their emissions, then not only are we not solving the problem, we're headed the wrong way again."

More than power plants

Kahl said while he is concerned that the progress that has been made in cleaning up acid rain could reverse itself under the administration's new policy, he also thinks, as a citizen as well as a scientist, that focusing solely on the power plant issue is "short-sighted."

"The only way that you can make a rapid change in your reliance on oil or on your emissions is to increase conservation," he said. "And if you increase conservation, you reduce the problems of (carbon dioxide) and climate change, you reduce mercury emissions, you reduce ozone, you reduce asthma-causing particulates, and you reduce acid rain.

"I think the level of conversation needs to be raised to not focus on the details of whether a particular plant in Ohio is going to be able to spew out another five tons of sulfur dioxide or not," he said. "We ought to be looking at the bigger, long-term picture of efficiency and energy conservation."

Scientists who reviewed the acid rain report noted the need to continue collecting long-term data because acid rain has implications for everything from forest health to climate change.

Kahl agrees, he said, because the field has proven to be so unpredictable. In 1998, for example, the data showed that Maine lakes were getting healthier and the Adirondacks weren't. The new review shows that today the opposite is true.

"You remember three years ago we had a budget surplus in the federal government that was going to increase and continue absolutely forever," Kahl said. "Human nature is to extrapolate everything in a straight line. So in 1998 we extrapolated that Maine was improving and the Adirondacks weren't, and now it's the other way around because there's variability in these things. Therein lies one of the reasons why we can't declare victory after passing legislation and walk away and not continue to monitor the situation."