

Acid Rain in the Spotlight

Two events in the past week — the release of a research summary report by the Environmental Protection Agency and a public meeting of the National Commission on Air Quality — symbolize the newfound officiality of a years-old environmental problem — acid rain.

Acid rain, or more properly acid precipitation, is defined as the increased acidity of wet or dry precipitation due to greater quantities of atmospheric sulfur dioxide and nitrogen oxides from the combustion of fossil fuels. Acid rain has long been a subject in scientific circles (SN: 6/15/74, p. 383; 7/10/76, p. 25) and is a fact of life in northwestern Europe. But growing evidence of its effects in the United States — crop damage and fish kills in the Adirondacks — and President Jimmy Carter's August 2 environmental message to Congress, which identified acid rain as a major environmental threat, have brought it to the fore. And with President Carter's directive to form by Jan. 1, 1980, a 10-year comprehensive Federal Acid Rain Assessment Program managed by a standing Acid Rain Coordination Committee, the flurry of papers and hearings and research contracts and deadlines has begun in earnest.

EPA, co-chair with the Department of Agriculture of the Acid Rain Coordinating Committee and slotted to receive more than half the \$10 million annually allotted to acid rain research by the President's directive, is among the first to produce something from all the fuss. At a press briefing last week, Stephen J. Gage, EPA Assistant Administrator for Research and

Development, described the three thrusts of EPA's acid rain research program: environmental effects, atmospheric effects and monitoring.

Included in the program, which is outlined in a report called "Acid Rain Research Summary," will be studies of:

- the already-damaged lakes of the Minnesota Boundary Waters Canoe Area, northern Wisconsin and Michigan,
- crop sensitivity to sulfuric acid,
- the U.S. lakes sensitive to acid rain, in order to determine factors that lead to or would prevent acidification, and
- the transport, behavior and reactions of sulfur dioxide and nitrogen oxides in the atmosphere.

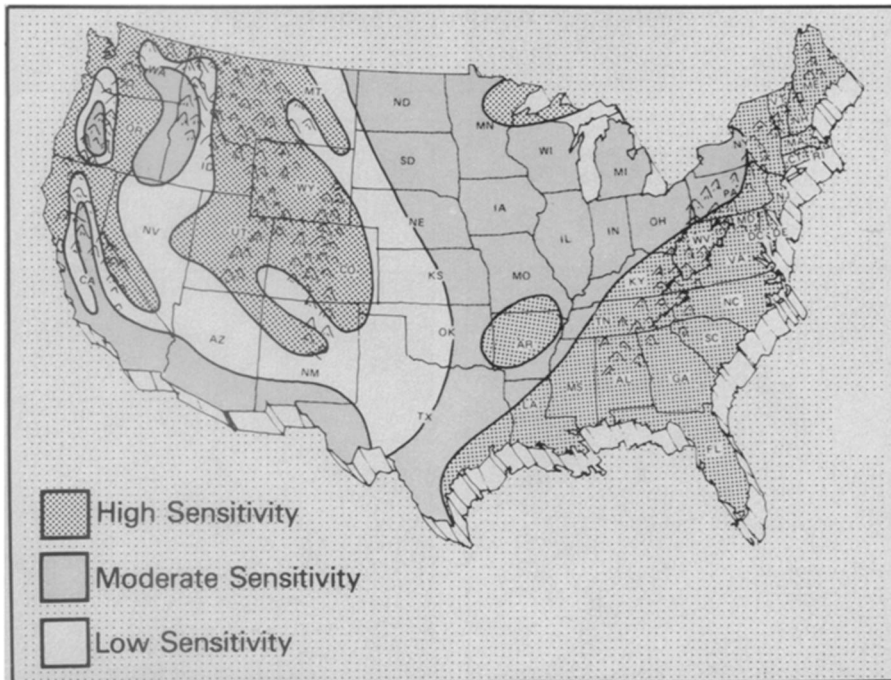
At least two networks will monitor the fall of acid rain. EPA will coordinate the U.S. part of a major global network established by the World Meteorological Organization as well as contribute to the more than 50-station National Atmospheric Deposition Project Network (formerly NC141, see SN: 6/24/78, p. 407).

But, as one reporter pointed out at the briefing, outlining research needs is one thing, taking care of the immediate threat is another. Increasing acidic precipitation has already caused the average pH of the Adirondack lakes to drop from 6.5 in the 1930s to 4.8 now; more than 90 of those lakes are completely fishless. And the problem is spreading westward, as pointed out by University of Colorado (Boulder) researchers William M. Lewis and Michael C. Grant.

At a public meeting of the National

Commission on Air Quality, which was established by Congress to evaluate the Clean Air Act, Grant and Lewis described "definite, unexpected evidence of acid precipitation near the continental divide." Four years of measurements near the Indian Peaks Wilderness Area 30 miles north of Denver — an area thought to be pristine — showed a nearly seven-fold increase in rain acidity, they said. Moreover, the researchers cannot pinpoint the problem's geographic source; with increased use of tall stacks on coal-burning power plants, shooting pollutants higher into the atmosphere, the culprit could be Denver, or it could be California.

And that problem — long-range transport — is one of the Commission's main concerns; its unwieldy charge, the Clean Air Act, is not now designed to regulate long-range transport of pollutants. According to EPA's Gage, improved controls of sulfur dioxide emissions will reduce the level of that pollutant. Nitrogen oxides, "in a few years," will be controlled at an 80 percent to 90 percent level as opposed to the current 40 percent to 50 percent level, he says. Even so, long-range transport will continue to make acid rain a transboundary, international problem. The answer, according to Gage, lies in understanding the mechanisms of acid rain enough to control it and in gaining the legislative handles necessary to do so. That answer does not bode well for the Clean Air Act. Says Gage: "Unless the Clean Air Act is changed there will be no way to get to the problem." □



Preliminary map indicating acid rain-sensitive areas of the continental United States.

Incest and 'vulnerable' children

The taboos surrounding incest have inhibited not only victims from discussing it but, until recently, behavioral scientists from studying it. Now, however, information is mounting concerning who participates in incest and under what circumstances. What remains less well known is why it occurs. Most explanations center on emotional difficulties of the adult involved in the incestual relationship, but some experts suspect that the child's level of vulnerability may also be involved in some cases. And in a report in THE INTERNATIONAL JOURNAL OF PSYCHIATRY IN MEDICINE (Vol. 9, No. 2), a Yale University psychiatrist suggests that certain children may indeed be more vulnerable than others to incest.

Robert K. Davies, now medical director at Fair Oaks Hospital in Summit, N.J., studied the medical records of patients admitted to the psychiatric inpatient unit