

Acid Rain Program: Mixed Review

In 1989, when the National Acid Precipitation Assessment Program (NAPAP) was winding up its 10-year, \$600-million study of acid rain, Environmental Protection Agency (EPA) administrator William K. Reilly appointed an oversight review board to look at the "quality, scientific integrity, credibility, and practicality" of NAPAP's final, long-awaited report. And for good reason. All of those qualities had been called into question a couple of years earlier, following the release of NAPAP's interim assessment, which was widely blasted as biased. As a result, NAPAP had lost credibility with much of the scientific community and Congress as well.

Now that oversight board, chaired by Milton Russell of the University of Tennessee and Oak Ridge National Laboratory, has weighed in with its final evaluation of the program. The verdict: Overall, NAPAP was a success, but far from a resounding one. And when it turned to NAPAP's weaknesses, the board minced no words in its slim critique.*

While giving the program high marks for its scientific research and lauding it for its "commendably open and inclusive" style during its final years, the board faulted NAPAP for giving short shrift to public policy concerns. This criticism was made recently by many other NAPAP observers with whom *Science* spoke (15 March, p. 1302). But the board went on to criticize parts of NAPAP's scientific research program as well. "NAPAP failed to pursue at all or with sufficient vigor a number of ... questions that turned out to be important to policy decisions," the board concluded. Among these are the possible health effects of acid rain, its long-term effects on soils and forest ecosystems, and the social and economic costs and benefits of alternative policies for curtailing acid rain.

The board's toughest criticisms were leveled at NAPAP's policy assessment. Pointing out that NAPAP was created not to do scientific research per se but to provide information needed to resolve a nagging policy question, the board concluded that "the assessment function should have been the central focus of the NAPAP endeavor from the first, but it was not." Instead, the report says, "NAPAP scientific efforts were guided to an excessive degree by the potential to resolve interesting scientific questions....Interim assessments and periodic reports of findings were late or lacking, leading to a partial disconnection between the research and analysis products of NAPAP and

the decision-making process. This was especially evident in 1989 and 1990 when publication of the findings followed policy decisions, not preceded them."

NAPAP also failed to communicate its findings to the public or provide a lay summary, says the board—a major shortcoming. Consequently, it adds, "the public was not as knowledgeable as it could have been when the early acid rain debates occurred." What's more, NAPAP statements that were intended for public consumption were so exhaustively reviewed that "simple statements fell victim to careful articulation of each nuance and in the process became less accessible to the press and the public."

Nonetheless, the board concluded that, warts and all, NAPAP was a "an innovative institutional departure" that deserves consideration as a model, "imperfect but improvable," for such large and complicated problems as climate change or drug abuse. Much of the report is devoted to lessons from NAPAP, should anyone plan to undertake a similar interagency effort. Those are, in brief, to define key policy questions early in the game and design the research effort to address them; and to analyze, interpret, and release

findings early and often. Such a program needs strong intellectual leadership, "otherwise a compromise of mush, promising all things to all interests, may result." A means of conflict resolution is also essential so that the program will not be "paralyzed by the wishes of one or a few of the participating agencies."

Russell and his colleagues also have some specific suggestions for the new, scaled-down NAPAP. Originally scheduled to expire in December 1990, NAPAP was given a last-minute reprieve by Congress in the Clean Air Act Amendments of 1990, essentially to monitor the effects of the new acid rain controls to see what the nation is getting for its money. The board recommends that NAPAP continue long-term studies on the effects of acid rain on forests; begin investigations into its possible indirect health effects; and perform benefit-cost analyses of different levels of acid rain controls in case a mid-course correction to the law is required. The board also urges NAPAP officials to avoid the temptation to rely on the old familiar institutional arrangements that served NAPAP poorly during its first decade. "The board has always provided us with useful and very interesting advice, and this is no exception," says the new director, Patricia Irving, who adds that she has included some of the board's ideas in her draft plan for the new NAPAP.

■ LESLIE ROBERTS

A Lesson Learned, Again, at Valdez

The 48 million liters of oil that the *Exxon Valdez* spilled was not the only catastrophe to strike Prince William Sound in 1989. The National Oceanic and Atmospheric Administration (NOAA) announced last week that, contrary to the best advice then available, washing the oil off 400 miles of beach with powerful streams of hot seawater—the first time this has been used as the primary cleanup mode for a spill—was more destructive than leaving the oil where it was.

"On balance, I think [the hot water] was a mistake," says NOAA hazardous materials expert John Robinson. "We should have left larger areas to recover naturally."

The \$2-billion cleanup's hot water washing had several deleterious effects. While it may have helped photogenic species such as birds and seals, more mundane critters toward the base of the food chain, such as clams, snails, and barnacles, were simply cooked by the 65°C heat. Others were buried and smothered when the high-pressure streams pushed around sand and mud. And the hot water washed the oil from the upper beach to the lower beach and tide pools, where it damaged all sorts of plants and animals before being partially collected.

In terms of the abundance and diversity of life, oiled beaches that were left untreated are now similar in most instances to sites where no oil had come ashore, says NOAA's chief scientist, marine biologist Sylvia Earle. Treated beaches are clearly in the worst shape.

Sadly, the lesson that overly ambitious oil spill cleanups can be counterproductive is not a new one. When the *Torrey Canyon* spill oiled the rocky Cornwall coast of England, response teams doused the shoreline with toxic solvents to disperse the oil. The oil was gone, but the shore was sterilized. Says Earle: "Sometimes the best, and ironically the most difficult, thing to do in the face of an ecological disaster is to do nothing."

■ RICHARD A. KERR

*The Experience and Legacy of NAPAP," available from NAPAP, 722 Jackson Place NW, Washington, D.C. 20503.