Revamping EPA's Science

Critical internal study prompts agency-wide structural reform

By JANET RALOFF

Few people would argue that sound science should underpin environmental assessments and regulations – especially those that may prompt billion-dollar responses. Currently, however, science performed by and for the Environmental Protection Agency (EPA) "is of uneven quality, and the agency's policies and regulations are frequently perceived as lacking a strong scientific foundation," according to a new analysis, conducted at the request of EPA Administrator William K. Reilly.

Indeed, the new study charges, EPA lacks a mechanism for ensuring that it bases its policy decisions on the best, most relevant science. It also finds that "EPA does not have a coherent science agenda and operational plan to guide scientific efforts." Finally, it observes, the agency has failed to convey to its employees or the public a desire for and commitment to high-quality science – a factor that the report's four authors suggest may help explain EPA's widespread reputation for generally lackluster research.

"Frankly, I am concerned about science at EPA," Reilly admitted at a recent congressional hearing. Acknowledging that "peer review is not uniform across the agency," he added that many decision makers under him also lack access to people who can advise them about the uncertainties in the science or the validity of data being used as a basis for new actions and rules.

But that will change – beginning immediately, Reilly says. To support this pledge, he announced three weeks ago the first dozen or so directives he plans to implement in response to the new analysis – from the hiring of a personal science adviser and the creation of up to six "endowed chairs of science" to increasing the participation of outside scientists and science societies in the development of EPA's research agenda.

Says Reilly, "I am confident that these changes . . . will lead to greater scientific credibility for the EPA."

Last May, Reilly established a four-member expert panel to assess both his agency's use of science and its nurturing of research capabilities. Led by civil engineer Raymond C. Loehr of the University of Texas at Austin, who currently chairs EPA's board of outside science advisers, the panel also included Bernard D. Goldstein, director of the Environmental and Occupational Health Sciences Institute in Piscataway, N.J. (and a former EPA assistant administrator for research and development); Anil Nerode, director of Cornell University's Mathematical Sciences Institute; and Paul G. Risser, provost of the University of New Mexico in Albuquerque.

Initially reported to Reilly in January, their findings and recommendations were issued last month in a 50-page EPA document, *Safeguarding the Future: Credible Science, Credible Decisions.* Among the 11 key findings: The agency often fails to consider appropriate scientific information early or often enough in its decision making; fails to enlist routinely the best scientists – especially those at universities – to provide it with data; and fails to evaluate the impact of its regulations, thereby losing an opportunity to learn from past decisions. The panel report concludes with a series of recommendations for countering these and other deficiencies.

Goldstein publicly released the panel's findings at a March 19 hearing before the House Committee on Science, Space and Technology. Reilly responded at that hearing with fairly detailed plans for revamping EPA science, vowing to:

• Restructure the agency's research agenda on the basis of issues – such as global change, wetlands, habitat loss and indoor-air quality – instead of on the environmental media in which problems occur, such as water, air or solid wastes. Reilly promised to publish by mid-June a statement in the *Federal Register* describing about 25 of these priority areas. EPA will then develop a plan of attack for studying them via workshops, science briefings, research grants and the formation of "cluster" programs – agency-wide groups to coordinate regulatory and policy efforts in specific areas, such as groundwater protection.

• Seed his agency with a cadre of science advisers. Not only would Reilly hire his own adviser for day-to-day help in making sure the best science filters into all of EPA's decisions, but he would also see that each assistant administrator and regional office obtains one. Together, these in-house consultants will form a new Council of Science Advisers within EPA – helping to organize briefings for Reilly, to review the agency's research agenda and to prepare a uniform peer-review policy for all EPA research (to be in place by summer).

U.S. Fish and Wildlife Service

• Establish well-funded research appointments to entice scientists with world-renowned reputations to join the agency. Under the Intergovernmental Agency Personnel Act, EPA can hire such individuals for up to four years – matching their former salary, even if it exceeded the normal ceiling on federal pay. EPA expects to invest an additional $1 million annually in laboratory and supporting resources for each of these "endowed chairs," says Erich Bretthauer, who heads the agency's Office of Research and Development (ORD). Though Reilly holds open the prospect of up to six such appointments at one time, Bret-

thauer says EPA is "only going to have two immediately – to come on in this fiscal year."

• Create special career ladders to retain valued scientists and engineers throughout the agency. Only within ORD – which employs about 1,464 of the agency's 7,050 scientists and engineers – do managers currently evaluate career researchers solely on their published peer-reviewed research, Bretthauer notes. Reilly plans to institute a similar policy for career researchers within other departments. The agency will also create a second system to evaluate and reward the agency's nonresearch scientists and engineers – those whose work primarily involves ensuring that policymakers both see and responsibly employ research data.

• Reduce by probably 35 percent this year, or about $50 million, the agency's reliance on "level-of-effort" contracts – large, well-funded agreements that provide research and technical support. Although convenient from an administrative viewpoint, such contracts do "not promote or ensure the use of high-quality science" and may fail to receive adequate quality assurance or peer review, the expert panel said. Bretthauer says EPA will channel the $50 million saved here into small, focused grants to outside investigators, such as university researchers. EPA anticipates more than doubling the current number of such grants – to perhaps as many as 500 within five years.

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Goldstein said his panel purposely did not estimate the cost of its suggested reforms. "However, there is no question additional resources will be needed," he added.

In fact, inadequate funding may be a major factor limiting EPA's research prowess, many observers say. "Funding for conduct of R&D at EPA was cut by 50 percent between fiscal years 1978 and 1983 – and it has never recovered," notes Ralph De Gennaro of Friends of the Earth, in Washington, D.C. After adjusting for inflation, he says, EPA's current research budget of $528.4 million remains 11 percent below its 1980 level and is "utterly inadequate."

A March 12 analysis of EPA's research and development budget by the agency's Science Advisory Board (SAB) levels similar criticisms. It notes that while ORD's responsibilities have increased substantially over the past 13 years, its budget has fallen by $6.5 million (in inflation-adjusted 1980 dollars), and its staffing dropped by 17 percent. "Clearly, such inadequacies in research funding will result in a debilitated research program ... [and] less informed environmental decisions," the panel said.

Some programs have taken a bigger economic beating than others. For instance, while radiation research funding (primarily on radon) has nearly doubled since 1980, research budgets for other programs have fallen: pesticide studies by roughly 14 percent, air quality by about one-third, drinking water and toxic substances by approximately 60 percent and water quality by some 70 percent, the SAB reported.

Moreover, it found, research facilities and equipment "are reaching obsolescence at an alarmingly increasing rate, with little replacement funding available." At the agency's current rate of replacing obsolete resources, the SAB warned, "it will take ORD 30 years (assuming no increases in costs for such purchases) to obtain acceptable instrumentation.... New monies for facilities and equipment must be made available if ORD is to function as a credible research institution."

While money and institutional change can upgrade EPA's scientific capability, only time and political will can reform the agency's long-standing reputation – noted by the expert panel Reilly appointed – for sometimes letting science take a back seat to antiregulatory policies advocated by recent administrations.

Though the expert panel didn't give specific examples, researchers within EPA cited several instances that have rankled the agency's research staff. For instance, while EPA's scientists were reporting that some of the nation's largest environmental health risks trace to residential radon (SN: 8/15/87, p.105) and pollutants emitted in the home (SN: 9/28/85, p.198), high agency officials were arguing before Congress – at the administration's behest – that the science budgets for EPA's tiny radon and indoor-air programs were expendable. Similarly, EPA scientists were in the forefront of investigators documenting developmental and neurological problems associated with low-level exposures to lead (SN: 12/20&27/86, p.390). During the mid-1980s, EPA's staff and its Science Advisory Board were also calling for dramatic reductions in the levels of lead deemed excessive in children's blood (SN: 11/22/86, p.333). Nevertheless, the agency waited five years to issue rules for reducing lead in drinking water (SN: 5/18/91, p.308) – a leading source of this toxic metal.

Critics cite the agency's record on nitrogen oxides. In 1989, EPA scientists confirmed analyses by others suggesting that curbs on nitrogen oxides would prove far more effective at reducing smog ozone than would reductions in urban hydrocarbon emissions (SN: 9/17/88, p.180). The agency nonetheless retained hydrocarbon controls as the basis of its war on ozone under the recently revised Clean Air Act. What's more, the act's acid-rain provisions allow large polluters to substitute stricter controls on sulfur for weaker controls on nitrogen oxides (SN: 11/3/90, p.277).

Or consider EPA's record on noise: Despite a determination by its staff that noise problems pervade America at levels serious enough to threaten health, the agency shut down its program for generating noise-abatement regulations and for enforcing existing noise-reduction rules (SN: 8/17/91, p.100).

Well aware of this problem, Reilly is initiating reform here, too. For instance, in February 1991 he petitioned the nation's largest polluters to voluntarily reduce their emissions of the 17 chemicals his agency had just deemed the greatest risks to health (SN: 2/16/91, p.101). As of four weeks ago, 734 companies had collectively pledged to reduce releases of these chemicals by 304 million pounds – an average of 50 percent per company.

Last Aug. 16, Reilly worked out a compromise hailed as an even bigger triumph – an accord with gasoline makers, the states and environmentalists on the development and use of the cleaner-burning gasolines called for under the revised Clean Air Act. The settlement will require the nine smoggiest cities – accounting for 25 percent of U.S. gasoline sales – to offer the fuels. Other areas may choose to do so, especially if they suffer from smog ozone.

What makes this accord unusual is that all participants agreed not to file legal objections. Deliberately heading off such litigation – which has come to characterize costly and controversial regulations – should bring the rules into force years earlier than EPA would otherwise expect, officials note. EPA also hopes the compromise will become a model for future environmental problem solving. □