

TMI-2, which the GAO estimates will cost \$600 million in unsecured revenues. Nor is it clear how the company will finance the \$400 million in long-term debt obligations or the \$2.3 billion in construction programs that come due between this year and 1985. The financial pinch will tighten this fall, for the 45 banks that cooperated in extending GPU an emergency line of credit have lowered the borrowing limit from \$412 million to \$200 million, effective 1 October.

The greatest unknowns are the cost and the amount of time needed to clean up the damaged reactor. The company's own cost estimate is around \$1 billion, of which about \$200 million has already been spent. It is quite possible that with regulatory delays, financing troubles, and unexpected technical problems, the cost will rise. The company has had a couple of recent disappointments, typical of the kind of setbacks that drive expenses up. The director of the cleanup program, expressing "dismay" that funds were so tight, resigned in July after a year and a half on the job. Then in September the system intended to de-

contaminate the water in the containment building developed serious problems. Meanwhile, the Bechtel Corporation, the contractor in charge of the operation, continues to raise cost estimates. In explaining the changes, a Bechtel spokesman said last week, "Estimating what it would cost at first was like asking in 1958 how much it would cost to send a man to the moon: it had never been done before." As the engineers began looking inside the containment building this summer, they began to draw up more detailed projections of the work to be done.

Richard Thornburgh, the governor of Pennsylvania, made a strong plea for federal help in July. His proposal, probably the best publicized of several, asks that the cost of cleaning TMI-2 be shared by the federal government (25 percent), the nuclear and electric utility industries (25 percent), Pennsylvania and New Jersey (6 percent), GPU (32 percent), and the insurance fund (12 percent). The key to success in this case is to get Washington to make its pledge first. But according to a White House energy policy-

maker, neither the Administration nor Congress is enthusiastic about making such a large commitment. The official said the Administration agrees in principle that it should help out, so that the nuclear industry can get back on its feet. But he said the help would probably be limited to handling TMI-2 waste and definitely would not amount to a 25 percent contribution to the general cleanup effort. The 1982 budget allocates \$37 million to the Department of Energy (DOE) for research and development on cleanup technologies for TMI-2—which is just "peanuts," as one DOE official said.

The Edison Electric Institute, the national organization of investor-owned utilities, also likes Thornburgh's idea "in principle." And, like the White House, it does not want to pledge such a large commitment. The Institute's board of directors and a special task force on TMI-2 will both be in Kansas City on 10 September for meetings. GPU hopes that they will produce a tangible offer of help, for lacking this, the future looks dark.

—ELIOT MARSHALL

## Tight Screening Plan for EPA Data

*EPA scientists are upset by a new proposal for peer review of oral statements and research results*

The new Reagan Administration overseers of scientific research at the Environmental Protection Agency (EPA) have developed an aggressive plan to prevent researchers from making discrediting public statements about environmental problems. The plan would require every oral presentation by an EPA scientist, scientific consultant, or research contractor to be reviewed at four levels of the EPA bureaucracy for what the agency terms "inappropriate policy statements or conclusions."

The plan, which has been circulated by EPA's new research director, Andrew Jovanovich, would also establish an unusually rigorous system of peer review, in which everything from slide presentations to computer software would have to be approved by at least seven officials before it could be displayed or released. Scientific manuals and reports would have to follow a circuitous path through the agency involving as many as 30 steps before their conclu-

sions become known to the general public.

The effort is designed to ensure that research results "are of high quality and based on credible scientific and technical knowledge," according to the most recent EPA draft. But it has been widely and strenuously criticized within the agency's scientific division. One person there calls it unworkable, while another terms it a disaster. "It could bring things to a screeching halt with its myriad clearance and feedback loops," says a third, who like the others requested complete anonymity because they feared reprisal.

Most of the individuals who spoke with *Science* said that the proposal was well intentioned even if seriously flawed. They say that EPA administrator Anne Gorsuch and deputy administrator John Hernandez, like previous political appointees, have expressed a serious commitment to improving the quality of the agency's work. But the Administration's open distaste for new regulatory initia-

tives has given rise to suspicions that the program is deliberately intended to enchain a major source of environmental information. As one EPA employee put it, "No published data—no new or revised pollution risk assessments—no standards which can, therefore, be defended—violà, you have instant regulatory reform."

The suspicions are apparently heightened by the agency's plan to trim the research budget by \$60 million next year, or about 33 percent when the effects of inflation are taken into account. EPA is, for example, ending its support for research on the health effects of diesel exhaust fumes, utility ashes, indoor air pollution, mining wastes, and offshore oil drilling. It is curtailing research into the environmental effects of pesticides and toxic pollutants. Water quality research is being drastically cut, and the agency is reducing its support for long-term epidemiological studies of the effects of air pollutants. Some critics feel

the cuts are at odds with the Administration's call for more and better information before regulations are imposed.

The new policy for official review of work and statements by agency scientists and scientific consultants is a variant of a broader EPA information control program soon to be announced by Gorsuch. That program will require that all "factual or informational" documents with policy implications or a printing cost that exceeds \$10,000 to \$25,000 to be reviewed by the agency's science adviser and public relations officer before they can be released. The more narrow research policy was written by Herbert Wiser, an EPA staff physicist who was formerly the principal science adviser in the research office. His instructions came from Jovanovich, who previously managed an oil shale program at the Denver Research Institute, and once served as vice president of Western United Research, Inc., which makes pesticides.

The policy will affect 15 EPA laboratories around the country which have projects under way on politically sensitive topics such as the effects of exposure to acid rain on reproduction, the neurologic effects of heavy metals and petroleum products, the long-term risks of chlorinating drinking water, and the effects of pesticides on various hormone activities. The policy will also affect academic researchers performing studies for EPA.

The proposal requires that newslet-

the author for revision, whereupon the review process begins anew.

One EPA employee estimates that under the new policy senior officials will at present publication rates have to review three full reports a day—to say nothing of numerous anticipated oral presentations. Edward Tuerk, an official in EPA's office of air, noise, and radiation, told Hernandez that the process would place "a back-breaking burden on the [EPA] science adviser." Another EPA scientist suggests that the current process of giving timely advice to the states on environmental problems may cease. Some employees will stop appearing at conferences rather than submit their speeches and statements for clearance, the scientist predicts. One victim might be industry, whose representatives attend such meetings to obtain information and advice.

The scientist adds that the intention of the policy is essentially good. The agency can be jarred by the release of alarming scientific data that have not been seen at the upper levels. Wiser notes that the agency lives in perpetual fear of being surprised by data showing "that 100,000 people are going to die in New York city next weekend, or that a heavily-controlled pollutant really has no effect." Everyone agrees that EPA has been embarrassed in the past by the premature release of data that later proved of little consequence. Partly as a result, the National Research Council in a 1977 report urged an expansion of

to hype the American people into believing things, such as a great environmental concern on this issue or that issue," by releasing incorrect scientific information. "Sometimes a publication is aimed at generating a conscience on a particular item, and it becomes a policy statement," he says, adding that scientists should not make policy statements.

Jovanovich denies that the new policy will slow the release of scientific information, but his superior, Hernandez, says that there will be fewer reports from EPA in the future. "It is modeled on the peer review system at the United States Geological Survey, which has the reputation of being the slowest to publish stuff in the world," Hernandez says admiringly. "I would much rather have a lot fewer good products than a lot of things that nobody has a lot of confidence in." Asked for recent examples of EPA research that was released without adequate review, Hernandez cites the 1979 chromosome study of residents in Love Canal, New York. Other EPA scientists are quick to point out, however, that the study was leaked inadvertently to the press, and officially released over the opposition of EPA officials, at the direction of the Carter White House. Hernandez also cites as inappropriate fare the presence of pro-regulatory remarks in recent reports on the leaching of asbestos into drinking water from pipes and on the presence of dioxin in Great Lakes fish.

Gage says that if the new program is to be at all effective, it has to place more emphasis on external peer review at lower levels of authority. At present, the proposal permits either a lab director or a superior to request such a review, at his or her option—actually a less stringent requirement than under the previous Administration. Wiser says that he wanted extensive internal review first so that outside scientists will not be confronted with "extremely poor work, or mistakes in grammar and spelling."

Gage also criticizes the requirement for review at the upper levels of EPA's research bureaucracy. "Bureaucrats who manage research are not often qualified to provide rigorous scientific review. Less than half make any attempt to keep up with the scientific literature." Gage is concerned that the proposal "can only increase paranoia," a worry that seems borne out by the strength of the internal sentiment against it. "Honest differences of opinion within the agency should be allowed to come out," he says. "A bureaucratic system that is too rigid will be counterproductive and ultimately fail."—R. JEFFREY SMITH

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**"It could bring things to a screeching halt with its myriad clearance and feedback loops," says an EPA scientist.**

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ters, brochures, articles, reports, conference and workshop proceedings, films, slides, computer programs, and all oral presentations outside the agency be reviewed for "scientific content and merit, inappropriate policy statements, and editorial quality." The review begins with an author's immediate supervisor, who sends the material to two experts elsewhere in the agency. When approved, it goes on to an "intermediate manager," who sends it to two different EPA experts. A "technical manager" sees it next, followed by the laboratory director, then an EPA publication review center in Cincinnati, Ohio, then a headquarters director, then the science adviser, and perhaps Jovanovich. At five different steps, the material can be returned to

EPA's peer review system. Under former research director Steven Gage, the agency set up a series of committees to review research proposals and established awards of up to \$5000 for the best EPA-funded reports to appear in a peer review journal. The agency's formal scientific advisory board, composed of about 80 outside experts, has been called upon increasingly for advice and review. Gage, who is now in private industry, says that publications are now much better.

But the agency's new appointees disagree. Jovanovich says that some of the work performed by EPA contractors is still "of very poor quality." Hernandez, a former professor of civil engineering at New Mexico State University, says that it is his impression that EPA has "tried