

## Reactor Emissions: AEC Guidelines Move Toward Critics' Position

Two years ago, the state of Minnesota broke a long-standing convention, if not a federal law, by setting limits on the release of radioactivity from nuclear power plants which were far stricter than any imposed by the Atomic Energy Commission. Before long, Minnesota found itself locked in a legal battle with the Northern States Power Company, which sought to establish that the province of reactor regulation was the AEC's alone. The state lost the first round of the fight, and now it is appealing a federal district court's ruling in the utility's favor. But whatever its legality, Minnesota's maverick action has since evolved into a minor national movement toward the Balkanization of authority over radiation standards.

At least three other states—Vermont, Maryland, and Illinois—have followed suit with their own tough restrictions on the radioactive effluents of atomic power plants. The attorneys general or the governors of 24 states, the Virgin Islands, and Puerto Rico have indicated support of Minnesota's position. And half a dozen utilities, perhaps sensing something inevitable in the wind, have tried to shorten costly delays in reactor licensing by yielding to the demands of state governments and environmental groups for stricter controls of radioactive pollution.

Against this background, the AEC proposed last week to sharply reduce the limit on the amount of radiation exposure that the public is permitted to receive from light-water-cooled nuclear power reactors. Under the new rules, the AEC said, atomic power plants would be allowed to expose individual members of the public to radiation doses equaling only 1 percent of the level permitted under current federal radiation standards.

Specifically, commission officials told a Washington news conference, the new guidelines would consist of reactor design and operating criteria aimed at minimizing the amount and concentrations of radioactive wastes lost to the environment. Reactor plants that complied with the proposed criteria would

be exposing persons living nearby to no more than 5 percent of the dose that they normally receive from natural sources, such as cosmic rays. (The natural background dose varies from 90 to 200 millirems and averages 100 millirems in the United States. The rem is a standard unit of radiation exposure to man.)

The commission's new conservatism comes at a time when its regulatory authority is not only being challenged by aggressive state governments and environmental groups, but is also being eroded by reshufflings of the federal bureaucracy. Before the advent of the Environmental Protection Agency (EPA), the AEC held exclusive sway over general health and safety standards for radiation exposure and over the control of radioactive emissions as well. But last December, Congress transferred the commission's responsibility for setting general environmental standards to the fledgling EPA—a move that reduced the AEC's role in this field mainly to one of regulating emissions from reactors, nuclear fuel processing plants, and allied facilities.

But the commission's grip on even this vestige of authority over radioactive emissions is by no means secure—a fact which lends its new proposal a distinctly Damoclean appearance.

Under the 1970 amendments to the Clean Air Act (which became law in December) the EPA is empowered to set emission standards for "hazardous substances." Obviously, these might include such things as mercury and asbestos. But the language of the act and its legislative history do not clearly exclude—nor do they specify—radioactive wastes. Richard J. Denney, Jr., an assistant general counsel for EPA, says the agency has not yet decided *how* to exercise its power to set "general" radiation standards, much less whether it *has* the power to control emissions. He says that the AEC's proposed new curbs on radioactive wastes seem satisfactory and that the AEC has promised to amend them as EPA may require. Assuming command of radioactive emissions control "is not yet necessary,"

Denney says. "But if we decide we need the authority we'll damn well get it."

Given this array of real and potential pressures bearing on the AEC, reporters at the briefing wondered the obvious, and commission officials firmly denied it: The AEC's hand had not been forced, and its new guidelines were not a response to critics, most notably two of the commission's employees, John Gofman and Arthur Tamplin, who have asked for tighter controls on radioactive emissions (*Science*, 28 August 1970). Harold L. Price, the AEC's director of regulation, said that the guidelines had been under study for about 3 years and were being proposed now only in order to apply numbers to a policy, adopted last December by the commission, of keeping emissions and exposures as low as practicable. "We started this exercise before the Gofman-Tamplin controversy started . . . . Although we are taking action in a controversial area, as far as I am concerned, we are not reacting to anybody." Price then added that the new rules were formulated after experience with large new reactors showed that the regulations were technically feasible.

Price said that all but 2 or 3 of the 22 power reactors now operating in the United States already emit less than about 1 percent of the radioactive wastes that they are allowed to release. He said that the resulting exposures to persons living near power reactors—with two or three exceptions—are already well below the proposed new ceiling of about 5 millirems. Price identified those not conforming as the Pacific Gas and Electric Company's Humboldt Bay reactor, near Eureka, California, and Commonwealth Edison's Dresden 1 reactor and possibly its Dresden 2 reactor, both near Chicago. But he stressed that radiation doses to individuals living near these reactors—while ranging up to 25 millirems a year—are still far below the 500-millirem threshold considered the danger zone, by federal radiation standards.

Commission figures show that in past years the Humboldt Bay plant has released as much as 900,000 curies of radioactive noble gases (57 percent of the maximum allowed for that plant) in 1 year. Price said that PG & E and Comm Ed have been notified that their emissions "could be lower." He said the commission would allow nonconforming plants 3 years to make the necessary improvements, but that the

AEC would consider taking action against a utility only if radiation dosages at its plant boundary exceeded the proposed 5-millirem level by "four to eight times." In extreme cases, the AEC could impose fines on a utility or suspend its reactor operating license.

If the EPA is satisfied with these policies, a number of the AEC's critics predictably are not. "It is a step in the right direction," Tamplin, at the Lawrence Radiation Laboratory in Livermore, California, concedes. But he and Gofman urge a "drastic reduction by at least a factor of 10 or preferably to zero" of exposures from reactor emissions. Anthony Z. Roisman, a Washington attorney who has represented the Sierra Club in reactor licensing interventions, says that the commission's new rules will not foreclose opposition to reactors on grounds of radioactive pollution. But he believes they will force

environmental groups to pick at more subtle points, such as potential hazards of specific isotopes. The result, Roisman says, may be to discourage a number of smaller citizens' groups from tangling with the AEC and utilities over plans for atomic power plants.

The commission was careful to point out, and its critics were quick to observe, that the proposed standards do not apply to reactors cooled by anything besides ordinary water. Thus, the nation's three experimental breeder reactors (*Science*, 11 June) are exempted, as are fuel and isotope processing plants and waste disposal sites.

AEC officials do not expect reactors cooled by gas or liquid metal, as the breeders are, to pose any serious difficulties in meeting the new standards. But the nation's one nuclear fuel reprocessing plant in operation at West Valley, New York (two are under con-

struction elsewhere) appears to be more of a problem. Emissions from the plant, which is owned by the Getty and Skelly oil companies, last year included 14 curies of strontium-90 released in waste water and 1 million curies of krypton-85 vented to the atmosphere. Although these figures amounted to only a fraction of permitted releases, they still far exceed the emissions of PG & E's Humboldt Bay plant—the "dirtiest" of the nation's power reactors.

In reply to a question, AEC's Price said radiation exposures to persons near the West Valley plant boundary "might be" higher than exposures possible near power reactor plants. He said that the commission was considering amending its regulations to minimize emissions from reprocessing plants, but that the technical feasibility of doing so has not been established.

—ROBERT GILLETTE

## ROTC: Education Groups' Reforms Stress Flexibility, Fuller Funding

Six major higher education associations invited the press on June 4 to a Washington meeting to learn about Reserve Officer Training Corps reforms that they were urging on Congress and the Defense Department. The meeting, held in the glassy new National Center for Higher Education, could not have contrasted more sharply with the anti-ROTC upheavals at campuses a year earlier. As the two dozen middle-aged men gathered in leather chairs around a polished oval table, no onlooker would have guessed that the issue under discussion had led to an estimated \$1.3 million in property damage in 297 "violent incidents" (as counted by the Defense Department) during the 1969-70 academic year.

The reforms proposed by the education groups reflect some of the criticisms aimed at ROTC by dissident students and faculty. But the goal of these reformers was precisely the opposite of the goal of those who had sought to drive officer training from the campuses. The associations were anxious to strengthen the position of university-based officer production so that an important source of civilian influence on

the officer corps will not be lost. The expulsion of ROTC from some institutions and the declining enrollments across the nation spurred their efforts to reform the program.

In essence, the proposed changes would provide a larger role for the university in ROTC programs, greater flexibility in policies at individual campuses, and fuller federal funding of the programs. Carlisle Runge, who presided at the news conference, described the objectives of the reforms. Runge, a former assistant secretary of defense for manpower and now a professor of law at the university of Wisconsin, predicted that adoption of the proposals would lead to a better reception of ROTC in academic institutions, better relations between the Department of Defense and these institutions, and higher morale and enrollment of students in the programs.

Most of the proposed reforms were not new, and the Defense Department has already begun to implement some of them. But Larry Gladieux, a spokesman for the Association of American Universities, said many universities had complained that the services were fol-

lowing a policy of "divide and conquer." Gladieux indicated that the joint effort of the associations at this time reflected a concern that the options available to some universities should be available to all.

The first reform proposed by the education groups was to change ROTC's name. The "broad mission" of the Reserve Officer Training Corps would be more accurately reflected by calling it the "Army (or Navy or Air Force) Officer Education Program." Dale Corson, president of Cornell University and representative of the Association of American Universities, explained that the university programs reflected a desire for an officer corps that is highly educated, as distinct from trained. He added that the universities were not "looking down" on the service academies, where the emphasis in recent years has shifted to broader education.

The more substantive proposals urged that the academic status of ROTC, the academic title of each unit's commanding officer, and the credit granted for particular courses be determined in accordance with each university's procedures for its other programs. Universities were asked to establish a standing committee with general responsibility for all facets of the program and to provide for periodic evaluation.

Maximum use of civilian faculty in the ROTC curriculum was urged, and the military were asked to explore ways