

American Environmental Safety Council.

In the meantime, hazardous waste facilities can operate largely unfettered by EPA. The agency only requires facilities that handle more than 1000 kilograms per month to register with EPA.

A report published last September by the General Accounting Office (GAO) found the interim program highly deficient and concluded that hazardous waste facilities "may be endangering public health and the environment." The report said, for example, that the process of registration is inadequate because registration forms required no information on a company's plans for waste analysis, security systems, personnel training, site inspections, emergency plans, or record-keeping.

Furthermore, visits to 38 facilities revealed that most of them "did not meet the regulations and requirements" of compliance. The rules were largely administrative, not technical and therefore presumably more easy to follow. GAO inspectors found that companies even failed to keep logs of how much waste they handled.

The GAO report cited three examples of unnamed sites that violated state and federal regulations. One facility was annually dumping 4600 tons of chromium lead sludge directly into 40 acres of federally designated wetlands. The wetlands were bordered by a lake that fed into Lake Michigan. At another site, wastewater discharged directly onto the land contained phenol at concentrations 33 times higher than the federal safe drinking water standard. Other inspections revealed leaking drums, storage of incompatible wastes, and drums stored without a system to collect contaminated runoff. "EPA's enforcement actions have not been extensive," said the report.

It is against this backdrop that Gorsuch plans to cut the fiscal 1983 budget for enforcement by 45 percent from the 1981 level and place in limbo a comprehensive program to regulate hazardous waste. Part of her plan is to shift responsibility to the states, which now find themselves in a bind.

During the Carter Administration, many states enacted legislation that mandated their regulations would conform with or be no more stringent than federal standards. State legislators approved bills that were comparable to EPA policy because "they believed the federal system was adequate" and they wanted consistency with other states to remain competitive in order to attract industry, says Jon Steeler of the National Conference of State Legislators. Steeler says

that states are now being pressed by industry to relax their rules to conform with EPA.

The problems with disposal of hazardous waste are heightened further by difficulties concerning the quality of drinking water. A GAO report released in March says that enforcement by three EPA regional offices and the seven states it reviewed "ranged from none to minimal, followed no particular pattern, and were not as timely as they could or should have been." The agency's review did not examine whether the violations resulted in disease or death, but "the potential for such occurrences does exist," it says. The report recommended that EPA set specific guidelines that the states may use to establish better enforcement programs.

According to environmentalists, EPA needs to address the larger question of whether hazardous waste should be banned from landfills altogether and, instead, be treated or incinerated. Gary Dietrich, director of EPA's office of solid waste, points out that landfill disposal is only one-third to one-half the cost of other methods, so that industry has no incentive to opt for alternatives. Dietrich says the alternative methods will become more attractive only if there is a surcharge on landfill disposal or if EPA places a ban on certain materials from landfills. Of the two choices, the agency has the authority only to impose a ban. Dietrich says the agency will eventually move in that direction.

California is already developing a comprehensive plan to ban some substances from landfills and emphasize alternatives. A state government report released in February concluded that "land disposal of hazardous waste is a major source of air pollution, which is largely controllable." The report found high levels of hydrocarbons at major disposal sites and downwind as well. Tests at one dump site in West Covina indicated that it was the largest single emission source in the Los Angeles Basin, topping even a Chevron oil refinery in the area.

EPA, with all the changes in the past year, is a long way from developing a strong program governing hazardous waste. It has modified and delayed hazardous waste regulations, actions that primarily benefit industry. Gorsuch, at a recent press conference, said that the agency has an "unshakable environmental commitment." To interpret EPA's changes in hazardous waste regulations as an affirmation of this pledge takes considerable imagination.

—MARJORIE SUN

Jet Propulsion Lab Director to Resign

Surprising even his own staff, Bruce C. Murray announced on 2 April that he would soon step down as director of the Jet Propulsion Laboratory (JPL), the National Aeronautics and Space Administration's leading center for planetary research. Murray gave no specific date for his departure.

Murray, 50, who has headed JPL for 6 years, has been a vigorous proponent of solar system exploration by unmanned spacecraft. He has also been a frequent critic of recent cutbacks in the program's budget by NASA, the center's main contractor (*Science*, 29 January 1982, p. 459). As a result of the budget reductions, Murray recently committed JPL to a number of unclassified Department of Defense projects that will amount to about 30 percent of the center's work.

Murray announced his resignation almost casually at the end of his annual address at the center in Pasadena, California. He downplayed the problems in the planetary program, saying rather that JPL, with its new direction, needed another director. When Murray took the directorship in 1976, he had said he would stay for 5 years. He plans to take a 1-year sabbatical before returning to his professorship at the California Institute of Technology.—*M. Mitchell Waldrop*

Reagan Signs Order on Classification

On 2 April, President Reagan signed the third draft of a highly controversial classification order. The new executive order reverses a 30-year trend toward reducing classified information (*Science*, 26 February 1982, p. 1080). Among the key issues affecting scientists are:

- Basic research not clearly related to national security may not be classified. (No attempt is made to define "basic research.") In earlier drafts of the Reagan order, this stricture was absent. But, in limiting the classification of basic research, the Reagan Administration is merely restoring the provisions of the previous classifica-

tion order, signed by Jimmy Carter.

- Results of research supported by government grants may be classified. In the Carter order, government grantees could not have their work classified.

- The Carter order said that if there is doubt about whether to classify information, the government official responsible for classifying should not classify. The Reagan order says that if the person who has potentially sensitive information has any doubts about whether it should be classified, he should "safeguard the material" as though it were classified for 30 days, during which time government authorities will decide whether to classify. Thus the onus is put on the researcher to keep what he suspects may be sensitive information secret.—**Gina Kolata**

Health Coalition Backs Stronger Warning Labels

A coalition of major health associations recently endorsed legislation that would require stronger warning labels on cigarette packages. The group, including the American Cancer Society, the American Lung Association, and the American Heart Association, announced its support after the Reagan Administration in mid-March dropped its initial backing of the bills.

American Cancer Society president Robert Hutter wrote to President Reagan on 18 March, expressing "profound disappointment" over the about-face and urged him to reconsider. Hutter said recently at a Society meeting in Daytona Beach, Florida, that he had not received a response from the White House.

Legislation introduced in both the House and Senate would require cigarette manufacturers to vary warning labels on cigarette packs and also to disclose upon request the additives in their products. The labels, for example, might warn that smoking causes cancer or that pregnant women who smoke endanger the health of their babies.

Federal officials told a House subcommittee that the Administration supported the bills, but, 4 days later, said that the issue "is still being studied."—**Marjorie Sun**

Heroin, Morphine Found Comparable as Pain-Killer

At a time when private citizens and some federal legislators are pressing to legalize the use of heroin for cancer patients, there is mounting evidence that heroin is no more effective in treating cancer pain than morphine when injected. A scientist from Sloan-Kettering Institute for Cancer Research announced at an American Cancer Society meeting results that confirmed earlier findings by researchers at Georgetown University on the equivalence of the two drugs (*Science*, 10 April 1981, p. 145).

Robert F. Kaiko, a pharmacologist, said, "There is no reason to believe that heroin is any more effective than morphine or that heroin is capable of relieving pain to a greater degree than is morphine." Although twice as much morphine must be injected to achieve the same pain relief as with heroin, patient's mood improvement and side effects are "comparable," Kaiko said.

That heroin is twice as potent as morphine has been misconstrued to mean that heroin is a more effective analgesic. Last month, in his syndicated column, William F. Buckley, Jr., expressed support for the heroin legislation, citing the Georgetown study as evidence to buttress his argument. But Buckley misinterpreted the results, saying that "... patients rated heroin as two and one-half times more effective than morphine in bringing relief."

Kaiko commented, "There's mythology surrounding certain drugs," such as heroin, but "I hate to see people have the impression that heroin is unique. It is not unique and should be treated so."

Three bills that would legalize heroin for treating pain in cancer patients have been introduced in the House and Senate, but none have progressed very far. Kaiko and Georgetown researcher William Beaver concur that a few cancer patients may benefit from heroin. If it were legalized, it would "give a physician another arrow in the quiver," Kaiko said. On the other hand, he and Beaver say that it is not the lack of heroin that is a problem, but rather the failure of physicians and nurses to administer medication at doses that are adequate or

frequent enough. Kaiko also noted that some hospital pharmacies fail to stock the full range of narcotic medications available, possibly fearing theft.

Beaver said that an even greater problem is that pharmaceutical companies are reluctant to manufacture heroin. It would be a small profit item and, as a controlled substance, it would require burdensome paperwork ordered by the federal government. For now, Beaver said, "we don't have a convenient, organized way to provide heroin."—**Marjorie Sun**

Monsanto Awards \$4 Million Grant

Monsanto has awarded a \$4 million, 5-year grant to a researcher at Rockefeller University. The award, which was announced at a meeting of the American Chemical Society (ACS) in Las Vegas on 31 March, will support basic research in plant molecular biology under the direction of Nam-Hai Chau. The research concerns the structure and regulation of plant genes involved in photosynthesis and could have many potential applications to agriculture, a particular concern of Monsanto.

The agreement is the first large grant made by Monsanto since the company signed in 1975 a 12-year agreement with Harvard University that is expected to total more than \$25 million. The company took a lot of heat in that case for refusing to make public the financial details of the agreement and has decided this time to publish those details. Under the agreement, Rockefeller will retain ownership of all patents that may arise from the work, but Monsanto will receive an exclusive license to the patents with royalties to be negotiated later. The company may provide support to obtain the patents. ("After all," says F. Allen Heininger of Monsanto, "we have 55 patent attorneys for that purpose.") If the company does not take steps to commercialize an invention, the university may then license it to a third party. To protect patent rights, any proposed publications will be sent to Monsanto at least 30 days before submission to a journal.

—**Thomas H. Maugh II**