

dumping research is slated for reductions at EPA too.

● **Atmospheric research.** The Global Atmospheric Research Program, which develops climate and weather forecasting, would be cut by \$1 million; the Space Environment Service Center in Boulder, Colorado, would get \$3.1 million less; and weather modification programs would be trimmed by \$1.5 million.

Reductions are not as extensive at the Interior Department's U.S. Geological Survey. A budget analyst at the agency says that its entire R & D budget could be considered environmentally related. If so, the agency's environmental research funding would drop 8 percent, from \$161 million to \$148 million. The biggest chunk of the \$13 million reduction would result from termination of the agency's \$6.4-million Water Resources Research Institute, which provides funds to the states for water quality research and training.

Two Geological Survey programs concerned with research on the quality of coal and the effects of coal mining on water would be pruned by almost \$3.5 million. The reductions follow several recent actions by the Administration that, according to critics, benefit the coal industry. Last week, for example, a federal commission harshly criticized Interior for losing millions of dollars in the federal coal-leasing program. Other proposed cuts at the Geological Survey include a \$3-million reduction in the monitoring of volcanic hazards, a \$2-million cut in earthquake prediction, and a \$1.8-million drop in geothermal research. (These figures include administrative and research costs.)

One environmental program that would fare well under the President's budget is acid rain research, which is targeted for \$55.5 million, an increase from \$27.6 million. But critics have contended that the Administration is needlessly delaying regulatory action while awaiting research results. Even administrator William Ruckelshaus has tried twice to persuade Reagan to start regulating but was apparently overruled.

The Reagan Administration has attempted in various ways to repair the political damage resulting from the scandals that erupted during the tenure of Anne Burford as EPA administrator. The appointment of Ruckelshaus helped to improve the Administration's environmental image, and the promise of bigger budgets seemed to suggest a stronger commitment to the environment. But by saying one thing and doing another, Reagan may have failed to defuse a politically sensitive issue.—MARJORIE SUN

## A Major Retreat on the Yellow Rain Battlefront

One of the superpowers is beating a quiet retreat in the battle over Yellow Rain, the alleged Soviet biotoxin supposedly used against guerrillas in Afghanistan and tribesmen in Southeast Asia. The question is, who is retreating: the Soviet Union or the United States?

On 21 February the U.S. representative to the United Nations submitted a new Yellow Rain report, one of a series of recent bulletins. It says that last year the United States found less evidence of biotoxin warfare than at any time since 1981, when former Secretary of State Alexander Haig first accused the Soviets of violating the Geneva Convention and the 1972 ban on bioweapons.

"There appears to have been a diminution of attacks in Afghanistan," the report says "and a decrease in the lethality of attacks in Laos and Kampuchea. At the same time, however, there is evidence of continuing use in Laos and Kampuchea of an as yet unidentified, non-lethal agent or agents."

As the report explains, there was "strong evidence of several dozen chemical attacks in Afghanistan" in 1982, but only "several reports" in 1983. "Contrary to previous years, we have not yet been able to confirm these reports as valid." In Laos, the United States found there were just as many attacks as in the past. But there were only one-third as many agent-related illnesses and deaths as in 1982, leading to the conclusion that the "use of toxic agents has actually declined." In Kampuchea, the number of reported attacks grew by 50 percent, an artifact which the government attributes to better monitoring. But the number of poison-related deaths "appears to have decreased significantly from 1982 levels." At the same time, victims said they experienced "more short-term, incapacitating effects," which may be "indicative of the use of non-lethal incapacitating or riot control agents."

It is possible that the Soviets and their allies, embarrassed by the international fuss, have cut back (but not stopped) the use of biotoxin weapons. Alternatively, it is possible that the

United States has been embarrassed by its inability to come up with proof of the charges and is backing away from them.

The new U.S. report "sounds like a retreat to me," says Matthew Meselson, the Harvard biologist, expert in chemical weapons and best-known critic of the State Department. He recently won a MacArthur Foundation award of roughly \$250,000, which will permit him to follow up on his Yellow Rain investigations and launch an unrelated classical archeology project. In Meselson's view, the government erred seriously when it accused the Soviets of violating the biotoxin treaty but produced only sketchy evidence to support the charge. "I am now certain that the many different samples of Yellow Rain turned in by refugees are in fact the feces of honey bees," he says. He is less certain, but reasonably sure, that trichothecene toxins such as T-2 found in samples of human blood "are of natural occurrence" and are not man-made.

"One must make all sorts of special explanations" to link T-2 found in the blood samples with alleged chemical attacks, he says. The explanations strain belief because the half-life of T-2 in the bloodstream is 15 minutes, while the blood samples from Southeast Asia were collected in some cases weeks after alleged attacks. Further, to believe the T-2 in blood came from weapons rather than from natural sources such as food, one must ignore the autopsy of a Thai soldier named Chan Man. Several of his organs contained high levels of T-2, the highest occurring in his stomach and intestine. Because the soldier was reported to be healthy shortly before his death, and because the chemical attack that allegedly felled him occurred weeks before his death, Meselson argues, it makes sense to think the source of T-2 was proximate (moldy food) rather than remote (a cloud of poisonous Yellow Rain). The hypothesis is strengthened by the fact that the soldier's organs were also loaded with aflatoxin, a mycotoxin found in moldy food.

A State Department spokesman says that a decision has been made not to comment further on Meselson's critiques because rebuttals have been made before and "it just propagates back" to continue. Nevertheless, the

department insists that "the data demonstrate clearly" that banned biotoxin weapons are still being used.

—**ELIOT MARSHALL**

## OSTP Finally Gets a Deputy for Life Sciences

The Office of Science and Technology Policy (OSTP) has finally filled the long-vacant post of deputy director for life sciences and regulatory affairs. The new occupant is Bernadine H. Bulkley, a cardiologist on the faculty of Johns Hopkins University and director of the Johns Hopkins Coronary Care Unit. She is the current president of the American Federation for Clinical Research and a member of the board of the American Heart Association.

The previous occupant, Denis Prager, resigned almost a year ago and the post has been filled since then on an acting basis by other OSTP staff members. The life sciences have not fared as well as the physical sciences and engineering in the Administration's budget proposals, and the long-standing vacancy at OSTP has been regarded as evidence of a lack of interest in the White House in biomedical affairs.—**COLIN NORMAN**

## Interferon Patent Contest Kicks Off In Europe

What could become a nasty squabble over which companies gain patent rights to interferons made by gene splicing has begun. The initial contestants include Biogen and its large pharmaceutical partner Schering-Plough on one side and Genentech and Hoffmann-La Roche on the other. Both pairs of companies have been developing interferons as possible treatments for cancer and viral infections, but the European Patent Office has notified Biogen that it will receive a patent for alpha-interferon.

The patent, which is expected to be issued in several months, would grant Biogen exclusive commercial rights to the genetically engineered product in 11 European countries. Under the European patent system, the validity of a patent may be challenged during a 9-

month period following its issuance and Hoffmann-La Roche plans to challenge Biogen's rights. It will argue, in part, that the scientific literature shows Biogen scientists made a precursor to alpha-interferon, but the actual product was first made by genetic engineers at Genentech.

The breadth of the patent also will be disputed. Biogen has noted that the patent is to cover all alpha-interferons made by recombinant-DNA methods in bacteria, yeast, or animal cells. Disagreements over whether those different cell types produce the same or different products and over which research groups were first to succeed in using the different cells can be expected.—**JEFFREY L. FOX**

## France Boosts Industrial Research

*Paris.* The French Council of Ministers gave its approval last week to an ambitious plan developed by the Minister of Industry and Research, Laurent Fabius, aimed at giving a substantial boost to the nation's industrial research. At present, France spends only 1.2 percent of its gross national product on research related directly to industrial needs, compared to 1.8 percent in the United States and West Germany.

Fabius's proposals fall into three categories. The first are aimed at improving the research training of engineers, and will include a doubling in the number of government awards made to researchers working on topics of industrial interest, particularly to small and medium-sized firms.

The second set of measures are intended to strengthen the links between industry and the research community. An extra \$75 million, for example, will be made available for funding industrially oriented research projects through the government's basic research agencies.

Finally, various steps will be taken to orient the activities of other government departments toward industry's research needs. For example, a major portion of the funds of the newly created Energy Saving Agency will be devoted to projects such as increasing the energy efficiency of automobiles, while tax rules will be liberalized to

allow companies a faster write-off of research expenses.—**DAVID DICKSON**

## U.S. Officials Hail Progress in Chemical Weapons Talks

An apparent concession by the Soviet Union may have breathed some life into an international effort to negotiate a chemical weapons ban. The effort, which has been going on for 15 years under the auspices of the 40-nation Conference on Disarmament in Geneva, has repeatedly foundered on disagreements over treaty verification, with the United States demanding the right to inspect on a continuous basis Soviet chemical weapons destruction facilities, and the Soviets resisting this demand.

On 21 February, according to U.S. officials, Soviet ambassador Viktor Issraelyan said for the first time that his country would agree to the permanent presence of international inspectors at plants where chemical weapons will be destroyed. Previously, the Soviets had been willing to accept only occasional inspection. U.S. ambassador Louis Fields, his American counterpart, immediately hailed this as step forward that "creates the hope of progress." And President Reagan singled it out as "a good sign" in his nationally televised news conference on 22 February.

Arms control sources now say that these accolades may have been excessive, because—2 weeks after the Soviet ambassador's speech—they have yet to obtain an authoritative English language translation, and there is actually some uncertainty about whether he agreed to routine continuous inspection or merely listed it as one of several options to be used in special circumstances. The latter would only amount to a rhetorical flourish.

Nevertheless, the Administration has decided to put the best face on a new development in one of the few ongoing international arms control discussions. Later this spring, the Administration will unveil a new draft treaty, now being circulated for comment in Washington. But sources say that it will not contain any U.S. concessions on key verification issues.

—**R. JEFFREY SMITH**