

Pesticides to Be Judged on Leachability

The Environmental Protection Agency (EPA) has proposed a plan to prevent pollution of ground water that would require some pesticides to be regulated more severely in areas with porous soils. The proposal would be complex to implement, for it would place more onus on state governments, and it is expected to be controversial among pesticide manufacturers.

About 50 to 60 pesticides, many of them suspected carcinogens, have been detected in the ground water of 30 states surveyed so far, according to EPA. The concentrations, for the most part, have been low, but authorities are worried about the contamination because underground aquifers are the main source of drinking water for more than half the country, especially for rural populations. As evidence has increased that the contamination is widespread, local, state, and federal officials have been debating how to control the use of agricultural chemicals.

The proposal to regulate pesticides according to their leaching potential is part of a long-awaited plan announced by EPA on 25 February. The plan describes in broad outline, rather than fine detail, how EPA intends to control ground-water contamination by pesticides. The comprehensive proposal is being circulated for comment during the next 4 months.

The agency would use the registration approval process as a screen. As in the past, EPA would weigh the risks and benefits of the pesticide in its decision to approve, including their potential to cause cancer and to persist in the environment. But it would now also factor in the chemical's leaching potential.

Manufacturers of new pesticides are already required to submit to EPA information from laboratory tests and mathematical models about their product's ability to percolate through different soil types. The results provide a qualitative picture of a chemical's ability to leach. Under its proposal, EPA would use the information to decide whether to ban a chemical in vulnerable areas, according to John Moore, EPA's assistant administrator for pesticides and toxic substances. One problem with this provision, and with the control of ground-water pollution in general, is that soil types can vary from farm to farm, not only county to county and state to state.

States would be encouraged to take the lead in refining the EPA's own analysis and "tailor the conditions of pesticide use to specific local ground-water protection needs," the EPA proposal says. But if a state government defaults on its responsibilities,

or if its territory is widely vulnerable to ground-water pollution by a particular pesticide, the chemical "won't be registered for use in that state," Moore said at a press conference.

The National Agricultural Chemicals Association is wary about this particular part of the proposal. "We'd be very concerned about banning or restricting the use of a pesticide based on lab data," says Thomas Gilding, the association's director of environmental affairs.

In another part of its plan, EPA proposed that the degree of protection placed on ground-water sources should be based on their current or potential use. A major bill

introduced by Senator Dave Durenberger (R-MN) on the same day that EPA's proposal was announced would protect all sources of ground water equally, setting a goal of no degradation for all of them. Opponents say this approach is unrealistic and too expensive.

The Durenberger bill is one of several pieces of legislation being debated in Congress that would regulate ground-water contamination, but is the one most supported by environmental groups. Both the Durenberger bill and the EPA proposal put a high premium on actions to prevent contamination because ground water is extremely difficult to clean up once it is contaminated. "Without prevention, we're doomed to repetitive failures," Moore said. ■

MARJORIE SUN

Locusts Find Prime Jumping-Off Place

Desert locust swarms first spotted on the Red Sea coast in early 1987 have caused rising concern as they moved all the way across Africa. The locusts found unusually favorable conditions in Mauritania and Western Sahara at the end of last year and could seriously threaten food crops in many areas of northern Africa if coming seasonal rains are good.

The migration has been tracked more closely than ever before by satellite and the information used to cue control efforts. These measures have been only partially successful, however, in part because the locusts passed through several areas where armed conflict deters control operations.

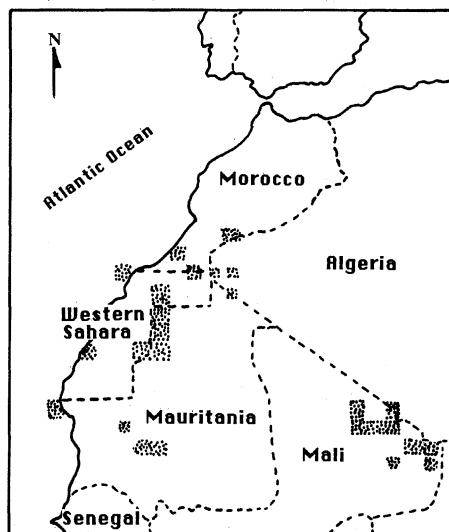
Testifying to the seriousness of the developing threat is a recent request for assistance

against the locusts from the Polisario rebels engaged in a conflict with Morocco over Saharan territories. The request was passed on by a Dutch nongovernmental organization to the United Nations Food and Agriculture Organization (FAO), which is coordinating an international locust reporting and control effort in the region.

At this point, FAO says that Algeria is in the most immediate danger from the locusts, but countries in the Sahel region south of the Sahara are also at risk. Jelle U. Hielkema, remote-sensing officer with the agricultural division of FAO, says that conditions so congenial to desert locusts are seen in West Africa only once every 20 to 30 years. The last major outbreak was in 1954 when Morocco suffered devastating losses to its citrus harvest, a main export crop.

The latest cycle began when swarms were reported forming in January 1987 in breeding areas near the Red Sea. Saudi Arabia mounted a massive and generally effective control effort, but other swarms apparently moved westward through Sudan and Ethiopia, both of which have areas in which fighting obstructs countermeasures. In May and June, significant signs of locusts were reported further inland in Chad, where hostilities also limited local control efforts.

Hielkema says that the locusts plus "residual" locusts then migrated into summer breeding grounds in northern Niger and Mali and another generation was produced. By October, the migration resumed into Mauritania and Western Sahara. These countries are, as Hielkema says, "as dry as anywhere in the world." But satellite imagery in November and December showed a large bloom of vegetation, indicating a "high-



Swarms. Shaded portions indicate areas where FAO reported desert locusts at start of the year.

Drawing by Holly Bishop

ly unusual situation," says Hielkema. Records for other years since 1980, when remote-sensing data for the area began to be regularly analyzed, showed "a blank picture."

The alarm caused Morocco to deploy some 200,000 troops to control the infestation in the southern part of the country in operations that Hielkema rates as "rather effective." Prospects, however, remain uncertain. Other observers say a key question is the numbers of locusts that overwintered in Mauritania and Western Sahara where control work is difficult because of the remoteness of breeding areas and the presence of the Polisario insurgents. Hielkema says that when things warm up, the locusts could move into Algeria. There is also concern that unusually late breeding of locusts in Mali and Niger last year could result in a significant threat to the northern Sahel this year.

The most serious recent locust upsurge occurred in Sub-Saharan Africa in 1986 (*Science*, 3 October 1986, p. 17). In West Africa, the threat came primarily from grasshoppers. Escalation into plague conditions was prevented by a combination of control measures and dry weather.

Devastating as grasshoppers can be, desert locusts (*Schistocerca gregaria*) are regarded as even more dangerous because of their capacity to migrate long distances in huge swarms and the unpredictability of their movements. Successful control requires that leads provided by satellite imagery be followed up with ground surveys of breeding areas by knowledgeable observers and, finally, that pesticide spraying be carried out before the insects grow to the hopper stage.

A major problem now is that regional control organizations in Africa were allowed to languish during a period of quiescence of the locust and grasshopper threat apparently caused by drought conditions in the region. The 1986 scare prompted foreign aid agencies to build better reporting systems like FAO's and to funnel money into national crop protection services in the region and into increased research. In the next few months, depending on the rains, these improvements may be put to the test.

A different sort of challenge is posed by the political trouble spots that by coincidence in Africa lie on desert locust migration routes. The Polisario appeal is a rare example of an offer to open the way to control operations in one such area. To say the least, however, it is awkward for an intergovernmental organization like FAO to negotiate with insurgents. Such arrangements in the past have proved fragile, and control problems are likely to persist in areas where political disputes have created de facto locust sanctuaries. ■ JOHN WALSH

AIDS Policy in the Making

For the past 6 months, the President's AIDS commission has gone out of its way to listen to almost anyone who had something to say about the epidemic. Many of the 350 witnesses were extremely critical of the Reagan Administration's response toward AIDS. Apparently, they were heard.

In a powerful suite of recommendations that erased doubts that the commission would challenge current policies, the chairman, retired Admiral James D. Watkins, called for an additional \$2 billion a year to be spent providing treatment for intravenous drug abusers, educating health care providers about AIDS, and pushing promising AIDS drugs through the regulatory pipeline. The money would come from federal, state, and local sources. Watkins conceded that there has not been a national policy for AIDS. "It is now being built," he said in a meeting with reporters on 24 February. Among the chairman's recommendations:

■ **Drug abuse:** Watkins proposed spending \$1.5 billion to stem the epidemic among drug users, and in turn, their sexual partners and their newborn children. This group has been the subject of great interest lately because it is here, among heterosexual drug abusers, that spread into the so-called general population is most likely (*Science*, 12 February, p. 717). But unlike the Administration's other war on drugs, Watkins's response would provide "treatment on demand" for all of the nation's estimated 1.1 million intravenous drug abusers, many of whom must wait as long as 6 months to get into either methadone maintenance or drug-free programs. To handle the case load, Watkins pushed for adding 32,000 drug abuse treatment specialists and developing 3,300 new drug treatment facilities. The effort should target 24 cities with large drug-abusing populations. "Anybody crying for help should get it," said Watkins. In addition, \$200 million should go toward research on drug abuse and immune suppression, as well as intravenous cocaine abuse, a relatively unstudied addiction compared to heroin use. Watkins also called for more drug education and outreach services.

■ **Health care:** Physicians and dentists were vigorously criticized by Watkins for refusing to care for persons with AIDS and for harboring misconceptions about the illness. The chairman recalled a meeting of the American Medical Association where doctors persisted in asking questions about bedbugs and mosquitoes transmitting AIDS, a possibility few—if any—researchers believe in. In addition to encouraging physicians to learn about the AIDS virus, Watkins advocated increased funding for medical care and support services for persons infected with the AIDS virus. He also called for scholarships, loans, and work-study options to encourage nurses and doctors to practice in impoverished inner-city areas where AIDS is endemic. Estimated cost for his health care recommendations: \$250 million.

■ **Drug development:** This is an area where the commission has come under the most fire from the gay community. At an early meeting of the commission in Washington, D.C., novelist and gay activist Larry Kramer gave an impassioned speech in which he pleaded: "Let us be your guinea pigs." Persons with AIDS are particularly frustrated that the only drug available to them is AZT. Watkins has responded by requesting that funds be made available to double the number of reviewers of AIDS-related products at the Food and Drug Administration (FDA), while another \$25 million should be provided to house additional new employees. The FDA should also release promising but still experimental drugs as quickly as possible. Watkins further called for immediate support for community-based sponsors of drug trials and for access to drug treatment for women, drug abusers, minorities, and people who harbor the AIDS virus but are asymptomatic. As for basic research as it applies to AIDS, the commission chairman said that a "Manhattan Project" approach to AIDS would not be wise. In its place, Watkins asked for more funds for investigator-initiated grants.

The full 13-member panel will discuss the chairman's recommendations, listen to public comment, and then forward their interim report to the President. A full report is due in June. Asked if the interim report will be used by presidential contenders to bash the Administration, Watkins replied that during an election year, such political digs are inevitable. But if all the presidential hopefuls adopt his report, "that's the kind of politics that I like," said Watkins. ■ WILLIAM BOOTH