U.S. Beginning to Act on Banned Pesticides

The U.S. State Department is edging away from its laissez-faire policy on the pesticide exports

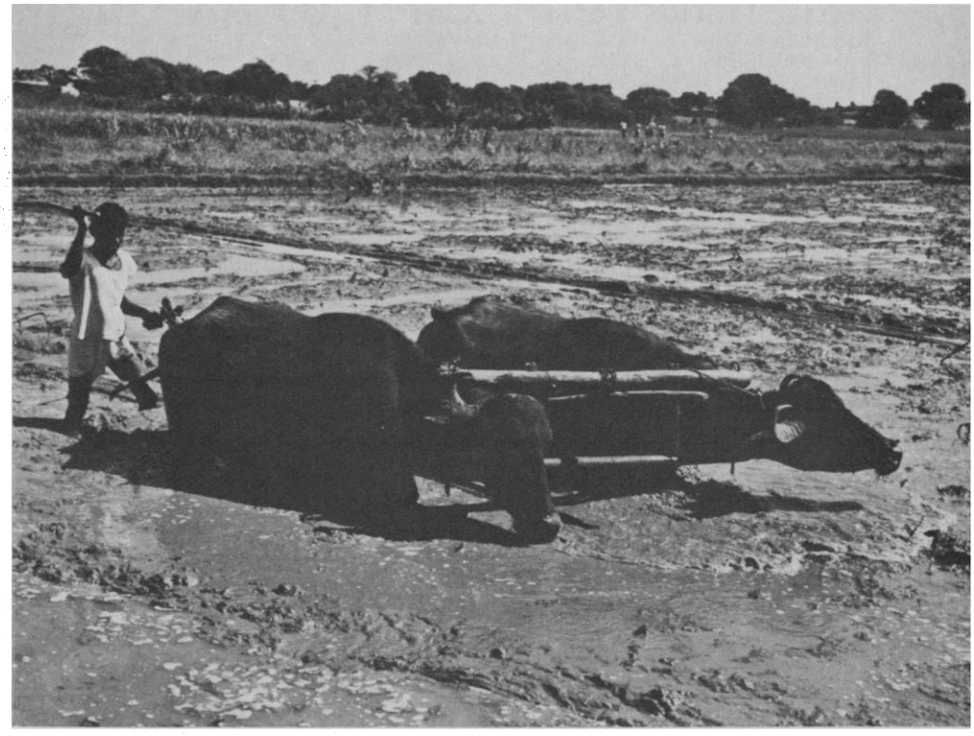
Samuel Gitonga, an agricultural official from Kenya, stated the charge most directly. Pesticide firms in the United States have been using the Third World as a dumping ground for pesticides judged unfit for domestic consumption, he suggested. This is seen by his nation as the responsibility of the U.S. government, not individual suppliers. "It is often irresistible for countries to continue sales," to the Third World after pesticides have been banned, he said. "Prices were lower and the supply was higher after DDT was banned by wealthy nations, so it increased in relative attraction. This is definitely a very real danger; I put it as an accusation, which if true, should be strongly condemned by the international community."

The occasion for Gitonga's remarks was an unusual international meeting sponsored by the U.S. State Department in Washington on 7 and 8 June. In attendance were representatives of 10 foreign governments and international organizations—including a visitor from China—as well as 55 Americans to listen to them. The State Department organized the meeting to ask for advice on what its role should be in what has become an increasingly delicate problem in relations with less-developed countries: the export from the United States of pesticides not approved for use here, and the consequences of decades of pesticide promotion in the name of heightened food production.

Provoked by growing concern among a few of the less-developed countries and among most of the domestic environmentalists over the deleterious effects of pesticide overuse, the State Department is taking an increasingly active role in commercial transactions between farmers in the Third World and American chemical corporations. Until recently, the department—through its affiliate, the Agency for International Development—vigorously promoted pesticide use, and paid for roughly $500 million worth of American chemicals since 1957. The department last year also opposed legislation to give more information to foreign purchasers of pesticides. Although given responsibility for transmitting registration cancellation decisions by the Environmental Protection Agency (EPA), the State Department rarely acted with much diligence. According to several foreign officials at the recent conference, the information it forwarded was brief and rarely understandable. Sometimes the individual consulates didn't forward anything at all. A General Accounting Office report last year noted that "an official at one embassy told us he did not routinely forward notifications on chemicals not registered in the host country because it may adversely affect U.S. exporting." Of 14 EPA pesticide cancellations or suspensions up to 1978, only five had been transmitted to foreign countries where the pesticides were in use.

The approach was not dissimilar from that taken by the U.S. Commerce Department, which 2 months ago circulated a proposed bill that would have removed even what few restrictions now exist on the export of banned products from the U.S.—all in the name of better trade and improving the balance of payments.

New winds are blowing through Foggy Bottom, however. Assistant Secretary for the Bureau of Oceans and International Environmental and Scientific Affairs, Thomas Pickering, told the assembled conferees that the department has recently placed a high priority on the resolution of the pesticide exports issue. The shift has in part been forced by Congress, which last year passed an export provision requiring that foreign purchasers sign a form acknowledging they have been sold an unapproved pesticide, and which also assigned the department a more vigorous role in answering the inquiries of foreign officials about regulatory decisions the U.S. has made. The law has yet to be implemented, and the conference was viewed as an opportunity for EPA and State Department officials to get advice on how to do so. The consensus was that the department should be on tap to answer inquiries and to prepare selected documents on EPA regulations. Industry representatives attacked the idea, suggesting that only offi-



Pesticide risks compete poorly with food shortages in the Third World; photo shows farming with water buffaloes, poisoned occasionally by pesticide overuse.

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cial federal documents be supplied; however, the foreign visitors noted that such documents are usually confusing or unreadable, and the State Department officials present appeared to accept the idea.

The shift in the State Department's attitude has also been prompted by a growing acceptance of partial U.S. responsibility for the unintended environmental and health consequences of the pesticide sales. American firms export 600 million pounds of pesticides each year, out of a total production of 1.6 billion pounds. Although the State Department no longer pays for a high proportion of the exports, past promotion is now regarded as having been excessive; also, department officials realize that the U.S. is uniquely suited to provide technical expertise that will minimize the harm of pesticide overuse.

Several harms have been caused by such promotion, according to participants at the conference. One has been hazardous contamination of the environment and of food, resulting most overtly in occasional mass poisonings in Africa or Latin America. The less-developed nations typically lack the capability to measure pesticide residues in food brought to market, but sporadic outside study has detected levels well above U.S. regulatory tolerances. DDT, for example, only one of many pesticides banned in the U.S. but used widely in the Third World, has been detected at high levels in beef, milk, seafood, and grains in Central America. A spot survey made by the Central American Research Institute—revealed at the meeting—turned up potentially toxic amounts* of two other pesticides, aldrin and lanate, in cabbage and tomatoes from the Caribbean.

Some of the banned pesticides have been reimported as residues on fruit and vegetables. The Food and Drug Administration, in a special survey last year, found residues of DDT, BHC (Benzohexachlorophene), lindane, dieldrin, and heptachlor on coffee beans (each is banned for most uses in the U.S.).

Though the monitoring appears to be scarce, the manifestations of pesticide overuse and misuse are widespread. Uncontrolled aerial spraying of crops in Columbia was attributed by that government last fall to have caused the deaths of thousands of animals, widespread population sickness, and the forced migration of peasant farmers. Similarly, in

*The amounts detected ranged up to 109 and 180 ppm, respectively; the U.S. tolerances are .01 and .2 ppm.

Lindbergh Letter to a Congressman Reflects

Charles A. Lindbergh, called the Lone Eagle for his historic solo flight across the Atlantic, was a public figure famous for protecting his privacy. Lindbergh nevertheless maintained an interest and behind-the-scenes involvement in public affairs and seems to have made at least a modest contribution to U.S. science policy.

After former Congressman and first director of the Office of Technology Emilio Q. Daddario assumed the chairmanship of the new House subcommittee on science, research and development in 1963, he sought to contact Lindbergh to invite him to join a small advisory panel for the subcommittee. After months of silence, Lindbergh telephoned. He declined to join the panel, but did come to Capitol Hill for a chat.

Daddario recalls that then and, particularly, in a subsequent conversation in 1970 Lindbergh voiced views which contributed to the idea of technology assessment of which Daddario was the main proponent in Congress.

*A letter written by Lindbergh in April 1970 was published later that year in committee hearings on science policy. That summer Lindbergh once again got in touch with Daddario and breakfasted with him at his home. Lindbergh at the time was particularly concerned about the fate of the Blue Whale and other endangered species and was reflecting on the effects of technology on evolution. The result of the second meeting was the letter below.**

SWITZERLAND, *July 1, 1970.*

HON. EMILIO Q. DADDARIO,
Chairman, Subcommittee on Science, Research and Development, Rayburn House Office Building, Washington, D.C.

DEAR CONGRESSMAN DADDARIO: I have been thinking a great deal about our correspondence, and about the breakfast table discussion at your home in Washington last month. I become constantly more impressed with the wisdom of your new approach to scientific research and development through consideration of its effect on the future welfare of mankind.

In the success of the ideas you advance here may lie, at least symbolically, the answer to whether our human species will continue to progress (even to exist) far into the future—whether we are the trunk or only an overspecialized branch of evolutionary life.

The critically important fact that man is beginning, vaguely, to realize in this 20th-century A.D. is that the impact of the human mind on life's evolution has been negative, and that major changes in his thought and action are essential. We see our surface-of-the-earth environment breaking down at the same time our genetic defects are increasing—both rapidly.

Our science and technology are at once responsible for the rapidity of breakdown and our realization that a breakdown is taking place. Speaking fundamentally, the human intellect is becoming aware of the vulnerabilities that accompany its power, that a crisis exists, and that to avoid self-destruction it must exercise control over its accumulating knowledge.

In this sense of humility impacting on intellectual arrogance, I find cause for hope. It is practically exemplified in the attempt you and your committee are making to estimate the effect of research and development projects on human welfare, and to relate your findings to the support these projects are given.

What you are trying to do, as I see it, and what man has not yet accomplished, is to relate intellectual action to human progress and evolution in the basic sense. Here, I think, it is necessary to bear in mind that life and awareness were developed by instinctive evolution working over

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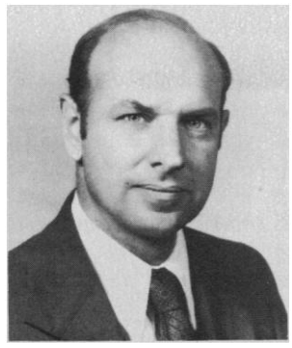
Egypt in 1976, 1000 water buffalo were found to have been fatally poisoned by the pesticide leptophos, which was manufactured then in the U.S. Incidents of human poisoning, with some fatalities, have occurred in Iraq, where 6500 people were poisoned in 1972 by methylmercury pesticide; in Pakistan, where 2900 people were poisoned in 1976 by the pesticide malathion; and in Sri Lanka, Nicaragua, Indonesia, and Malaysia. Overall, the World Health Organization estimates that 500,000 such cases occur annually, with a fatality rate of 1 percent.

Such fatal poisonings have also occurred in China, according to Chunming Chen, a visiting deputy director of the Chinese Institute of Health. "Carelessness in our pesticide use, and contamination of food or vegetable oils has caused some people to die in the past,"



Thomas Pickering

Chen said. "Now, every brigade has a plant protector." China produces most of its own pesticides, although it reportedly signed a recent agreement to import from some American chemical firms.

A third consequence of pesticide overuse is insect resistance, which in the case of mosquitoes has serious consequences for malaria control. Thought to be virtually wiped out in the 1960's by house-to-house spraying of DDT, malaria is now resurging in more than a dozen countries because so many species of the *Anopheles* mosquito—a malaria carrier—have become resistant to pesticides in wide use for both crops and insect disease control. As an example, an irrigation project currently funded by the World Bank in the Seyhan region of Turkey (near Adana) led to increased mosquito breeding, overuse of pesticides, insect resistance, and a local malaria epidemic. According to a recent World Bank report, "The remaining effective insecticides are few, and the need for quick, efficient measures (to prevent the spread of malaria) is critical for Turkey

Philosophical Approach to Science Policy

aeons, that the human mind impacted on this instinctive or "natural" evolution only a short time ago, and that the titanic problems we now face have been caused by a still much shorter period of intellectual domination. (I am tempted to say intellectual tyranny.)

Has our human intellect the wisdom to replace instinct or—since I think replacement is neither possible nor desirable—to work with it in basic evolutionary progress? We have no acceptable alternative to making the attempt. Ways must be found, through approaches such as you are planning, to give intellectual support to the fantastically complicated requirements for basic progress—requirements that are here obvious, and there so infinitely subtle that no mortal will ever be able to fully recognize and control them.

It seems to me essential for us to accept the fact that intellectual support of basic progress will necessitate reconsideration of long cherished ideals, laws, and customs. In guiding such reconsideration, we can lay down certain principles, one of them being that man must place more value on the human lifestream than on himself as an individual—realizing that he is only a temporary manifestation of that lifestream, that his salvation and immortality lie in it rather than in himself. Possibly this will involve an intellectual religion rooting into intuitive religions of the past. I do not think it will involve sacrifice when its full significance is understood.

Since all projects must relate to our environment, I believe your studies will quickly bring out the primary and pressing needs of protecting that environment both for our lifestream and for existing individuals. I do not see how adequate protection can be achieved other than by government supervision of natural resources, based on the proposition that each generation is their custodian for generations that will follow and that no one has a right to despoil or waste mankind's aeon-formed inheritance.

Such supervision will not be a curtailment of freedom but an emphasis of it, for we have reached a time when a framework of regulation is unavoidable if we are to maintain an environment in which the freedoms we have known are meaningful or can continue even to exist.

In hindsight, realizing the damage that has been done through our science and technology, I do not see how it could have been prevented except through laws, regulations, and accompanying education. It seems to me the same situation will apply to most future research and development projects. The study of probable effects may well indicate that support should be increased for one project and reduced or eliminated for another. I should think that major savings in talent and money could be made in this way. But I believe that sufficiently effective results can be achieved only by paralleling research and development programs with the laws, regulations, and education needed to turn the final results of these programs to the basic benefit of man.

Here we return to the ultimate question of whether the human intellect has enough wisdom to regulate its own creations, to use its science and technology for real rather than apparent progress. If it has, our future seems unlimited, with man's present-day awareness only an indication of what an immortal human lifestream may achieve. If it has not, then we may be close in time to our own extermination.

Let me say again that I believe you and your committee's approach to the problems involved gives cause for encouragement.

Sincerely,

CHARLES A. LINDBERGH

and the whole region." The 1979 annual report of the United Nations Environment Programme says that the insect resistance problem "could seriously and adversely affect the efficiency and economy of pest control operations on a global scale, with corresponding grave effects on both world health and world food production."

Much of the discussion centered on plans to minimize such overuse through integrated pest management, which involves a variety of pest control strategies such as pesticides, insect predators, and chemical hormones. Frank del Prado, an environmental official from Surinam (near Guyana), reported that "integrated or harmonized pest control is a beautiful expression, but with little or no skilled expertise, it is something we can forget at this moment." Participants at the conference agreed to develop training programs and assistance programs so that it becomes a more realistic alternative.

Several departing conferees criticized the conference for concluding, as most such conferences, only that more money, more study, and better coordination are needed to solve the problem—here, pesticide overuse. But the real progress lay in State's very willingness to hold the conference, and to promise continued attention.—R. JEFFREY SMITH

Scientists Organize for UNCSTD and After

Consultation on science and technology issues for UN meeting seen as step to broader involvement in work on development

A familiar complaint is that UN special meetings are so "politicized" as to minimize chances for real progress. That lament is being heard about the approaching UN Conference on Science and Technology for Development (UNCSTD), which comes as a kind of finale to a cycle of major UN meetings on global issues in the 1970's. However, UNCSTD, like earlier conferences on the environment, population, women, and human settlements, will, after all, be an intergovernmental conference and it is hardly surprising that the rules of that particular game will apply.

It is inevitable, therefore, that diplomats and other government officials will dominate the official proceedings in a way that will limit the influence of scientists and others with technical contributions to make, even if such people are members of official delegations.

For UNCSTD, however, scientists who have seen themselves as outsiders in the UN's political milieu, have made the most serious effort to date to organize in order to make an impact not only on the conference itself but, in the longer run, on problems of development.

In the past, the International Council of Scientific Unions (ICSU) and other "nongovernmental" international scientific organizations have provided scientific advice and cooperated with UN-based intergovernmental scientific agencies on specific programs. Generally, however, they have shied away from involvement in UN "political" activities. During preparations for UNCSTD, a group of international scientific organizations under the aegis of ICSU have taken on a consultative role similar to that played by nongovernmental organizations—so-called NGO's—which have regular ties with the UN.

Over the years, a system has developed under which NGO's interested in international issues can participate at least indirectly in the UN process. The system has been formalized to the point where such NGO's can achieve official recognition by the UN or its specialized agencies and gain the right, for example, to contribute papers or even have representatives on the floor when debates are in progress.

At major UN conferences in the 1970's the NGO's most visible activity has been in conducting alternative "forums" which coincided with the meetings. Although doubtless regarded as serving a safety-valve function by some UN officials, the forums have provided critiques of the main meetings and have not infrequently influenced the proceedings.

For UNCSTD in Vienna in late August, not one but two forums are planned. A now-traditional forum is scheduled to run during the 10 days of the meeting. Its agenda will reflect the broad range of social, economic, and technical issues that concern the NGO's.

This year, in addition, a 1-week colloquium known as Forum A will be held immediately preceding the conference and will focus much more narrowly on scientific and technical issues affecting development. This colloquium will be sponsored by ACAST (the UN Advisory Committee on the Application of Science and Technology). Scheduling of this separate meeting is taken to be evidence of a new serious interest by scientific organizations and individual scientists in development problems.

What sparked the scientists' effort initially was a widespread conviction that UNCSTD would concentrate on political and economic issues, such as the transfer of technology and regulation of the operations of multinational corporations (*Science*, 1 June). This impression was reinforced by comments by UNCSTD Secretary General Frank Joao da Costa early in the preparatory period. In some countries, scientists and other technical experts also felt they had little impact on the preparation of national papers which were to shape the conference agenda.

Those with experience in international scientific organizations assume that scientists from industrial countries and less developed countries (LDC's) can meet as colleagues and discuss problems of development without assuming the adversary roles cast for them in the so-called North-South dialogue.

On the whole, that seems to be how it worked when, at the invitation of ICSU, 19 international organizations representing scientific and engineering disciplines joined in an effort to contribute to preparations for UNCSTD. The specifics were left to a steering committee headed by Thomas F. Malone of Butler University, foreign secretary of the U.S. National Academy of Sciences.

Malone sees a double motivation among the scientists participating in the effort. First, they were concerned that a major conference on science and technology for development seemed likely to take place "with no informed science and technology input."

The second point is less clear but no less important, says Malone. He says he thinks "We are witnessing the addition of a new dimension to the scientists' traditional preoccupation with advancing

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