



Environmental Information

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A more comprehensive approach to control of agricultural pests, including biological controls, can help reduce dependence on unilateral use of pesticides, according to EPA Administrator Russell E. Train.

In a speech to the Weed Science Society of America, delivered in Washington, D. C. on February 4, Mr. Train also noted:

- EPA is interested in the potential of biological controls because the Agency has a mandate to reduce to a minimum any pesticide use that adversely affects or harms the environment or kills organisms not intended as targets for the chemical.
- EPA with the Department of Agriculture and the National Science Foundation is funding a \$20 million research program in Integrated Pest Management (IPM) techniques.
- The purpose of IPM is to control pests in a manner less likely to upset part of the ecosystem, recognizing that unilateral use of pesticides has led to pest resistance, secondary pest problems, and undesirable crop residues in air and soil resources.

The speech is attached for your information and use.

The Office of Public Affairs

REMARKS BY THE HONORABLE RUSSELL E. TRAIN
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PREPARED FOR DELIVERY BEFORE THE
WEED SCIENCE SOCIETY OF AMERICA
WASHINGTON, D.C.

HERBICIDES, ENERGY AND THE ENVIRONMENT

It is a pleasure to meet with the Weed Science Society today and to discuss the ways in which your activities can help insure a better and more abundant life for Americans and indeed all mankind.

I speak to you at a time of high achievement in the history of American agriculture.

No nation has come close to our production in quantity and quality of food and fiber. Last year, in spite of adverse weather conditions and fuel shortages, our exports of farm products totaled about \$22 billion, nearly a fourth of all our exports. We produced nearly 200 million tons of grain with only eight million persons engaged in farming, compared to 182 million tons by the Soviet Union using more than nine times our number of agricultural workers. Our food exports are a form of wealth just as important as gold or oil in today's economy. North America now controls a larger share of the world's exportable supplies of food grains than the Middle East does of oil.

The credit for this cornucopia can rightly be shared by the industry and professions which your membership represents. Without modern herbicides, the bountiful harvests by a relatively small number of American agricultural workers might well be impossible, for American farming has become a high-technology, energy-intensive industry, relying heavily on chemicals to control weeds. Indeed, this

very situation -- often involving calorie inputs in the form of energy which substantially exceed the calorie outputs in the form of food -- should give us pause and encourage a careful analysis of the true efficiencies which are involved.

Although herbicides represent only about one-fifth of the 34,000 pesticides registered with the Environmental Protection Agency, they are a rapidly growing sector of the market and account for about a third of all pesticide sales. As measured in dollar volume, they actually account for more than half the market, with sales exceeding \$600 million per year.

There are, of course, very good reasons for these sales figures. Without proper weed killers, as you know, the yields of our major cash crops could sharply decline. The U.S. Department of Agriculture estimates that, in spite of control measures, a third of the nation's potential harvest is sacrificed to weeds, insects and disease. In short, the humble weed continues to inhibit the productivity of American agriculture, whose continued health and growth is so essential to our own economic and human well-being and to the world's.

In connection with this, let me stress my view that President Ford's economic and energy programs as presented in his State of the Union Message represent a reasonable and comprehensive approach toward coping with our current problems. They promise to help restore consumer confidence and increase spending power while at the same time checking the outflow of dollars by increasing domestic energy supplies and curbing fuel imports. Congress will no doubt seek variations on the whole package, but prompt legislative action

is essential if we are to make progress in solving the very complex questions of the mid-1970s.

For developing countries, one of the most conspicuous exports of the United States in recent decades has been the so-called Green Revolution, developed by Norman Borlaug and others. The term embraces not only new varieties of high-yield seed but also heavier use of pesticides, water and fertilizer. The importance of the Green Revolution cannot be emphasized too much, for it is obvious that America's ability to ship food to other lands is now pressing the limits of our own resources. We must show other lands the way to self-sufficiency in agriculture. To quote an old Chinese proverb, "Give a man a fish and he can eat a meal, but teach a man to fish and he can eat a lifetime of meals."

The Green Revolution has brought about a transformation in traditional farming practices in other lands. Dramatic increases in grain production have occurred in many developing countries, despite the droughts of recent years.

But unfortunately there are two factors working against this revolution. One is the surge in world population, which is expected to double by the end of the century and which is consuming all the gains in food production. The other, equally serious, is the increase in petroleum prices by the oil-producing countries. Not only has this caused major increases in the cost of petroleum-derived fertilizer, but also is affecting the cost of irrigation which requires fuel for water pumps and the cost of distributing farm products.

I wish I could forecast for you how these problems will be

solved in the next few decades, without gloomy predictions of famine and further inflation. As the World Food Conference demonstrated in Rome last year, there are no easy answers. But we can discern trends, and some of the answers can be environmentally desirable.

The first premise we must accept is that the Green Revolution is the product of Western technology and cannot be transplanted in its entirety to the Third World. America and other industrialized nations practice energy-intensive farming, based partly on a shortage of labor and relatively high-cost labor. The developing nations, on the other hand, do have abundant and cheap labor which can replace the use of synthetic fertilizers, herbicides and costly machinery to a large extent. Taiwan and Japan are examples of this, where very high yields in crops are achieved by a far greater use of human labor. According to testimony before Congress last year, per acre production in the United States in 1972 averaged 3,185 pounds but in Taiwan was more than 3,300 and in Japan exceeded 4,600 pounds. To impose our whole system of energy-intensive machinery and chemicals on those cultures would not only price their farm goods out of sight but would drive farm workers off the land by depriving them of a livelihood. It would also introduce new environmental hazards because many of these countries now lack the governmental machinery to regulate the proper use of chemicals on the land.

Because farm machinery, chemical fertilizer and pesticides all depend upon abundant supplies of energy, the world-wide shortage and high prices of fuel make it obvious that emerging nations could not adopt American and European farm technology in

toto even if they wanted to. It has been calculated, for example, that if every country poured oil and fertilizer into its farm production the way Holland does, nearly all the world's available energy supply would have to be used for farming. So I see a continuation of the historic pattern in Asian and African countries of substituting human labor for many of the functions now performed by machinery and chemicals in the United States.

That does not mean the Green Revolution is a failure. It has produced many new varieties of grain that are more productive and resistant to natural enemies, and this trend can and should continue. Rather than rely solely on pesticides and machinery to protect crops, agriculture around the world must also pour more research into species of plants that are hardier and need less man-made protection against weeds and parasites. The energy crisis already is pushing us in this direction, and speaking as an environmentalist, I would add my personal encouragement to such plant research.

As you know, biological controls offer alternative ways of dealing with pests and weeds in our food production, and they have been introduced on a limited scale. One example was a joint project of the Atomic Energy Commission and the Department of Agriculture using radiation to sterilize males of a species of flies. The result was eradication of a serious parasite problem affecting cattle in southern areas of the United States. Research is now being jointly funded by EPA, the Department of Agriculture and the National Science Foundation in so-called integrated pest management techniques. The three agencies have committed more than \$20 million over a three year period in this effort.

Let me say that I would like to see EPA even more actively involved in this sort of program than it is at present. I believe it important that we not only be engaged in regulating the problems but also take a positive role in helping to develop solutions. In this connection, I am going to explore the opportunities for closer and more active cooperation in the area of herbicides with organizations such as yours and with other private and public agencies.

As you all are aware, Integrated Pest Management is an interdisciplinary approach, and includes appropriate combinations of pesticides, natural enemies, insect pathogens, and other methods. For example, you may be familiar with a beetle used in IPM to attack alligator weed. The purpose of IPM is to control pests in a manner less likely to upset part of the ecosystem. It does not ignore the progress made in chemicals or rule out their use. But it does recognize that the increased dependence on unilateral use of pesticides has led to pest resistance, secondary pest problems, undesirable crop residues in air and soil resources, and non-target effects. In response to these problems, it envisions a more comprehensive approach to control of pests. This Agency, as many of you know, contracted with the New York State Extension Service to conduct a study on the current status of IPM. We hope to publish its findings in the near future.

EPA, of course, has a mandate to reduce to a minimum any pesticide use that causes unreasonable adverse effects or harms the environment or kills organisms not intended as targets for the chemical. It is for this reason that we are interested in the potential of biological controls. Such an approach could

involve chemical odors which direct various insect activities, hormones affecting the maturing process of an insect, chemicals to sterilize insects, bacteria and virus controls, and cultivation of natural predatory insects. EPA, in fact, is now considering for registration one hormone insecticide, Altosid, which has been tested in 15 states under an experimental use permit, and we have the authority to issue other experimental use permits for such new activities.

I need not tell you that the public has undergone a change in attitude toward chemical pesticides and herbicides in recent years. The era has vanished when Americans would accept without question any new "wonder product" from the laboratories that promised to eradicate insects or weeds. The euphoric mood toward science in this country following World War II, when laboratories seemed to have been our salvation in so many areas, no longer prevails. We have seen disenchantment with long-lived chemicals that threaten our health. We have grown more sophisticated about the dangers of compounds that have been shipped to the marketplace without adequate testing on their side-effects.

The public has expressed a desire for stronger controls on the use of pesticides, and the development of more specific products, including weed killers. In his book, The Anguish of Change, pollster Louis Harris noted that in a survey taken in 1970, pesticides led the list of consumer goods that the public believed dangerous to use. Eighty-five percent of those questioned perceived pesticides as hazardous in home use, compared with only 56 percent worried about electric appliances and 48 percent concerned over food poisoning

from canned goods.

Congress recognized the danger of placing hazardous chemicals in the public's hands when it greatly strengthened the Federal Insecticide, Fungicide and Rodenticide Act in 1972. The major provisions of these new amendments not only extended EPA's jurisdiction over registration of pesticides but gave the Agency broad powers of enforcement. As you know, the law now requires pesticides shipped anywhere in the country to be registered. It provides penalties for misuse of pesticides. It requires them to be classified for general or restricted use, so that the most potentially hazardous products will not be available to the general public. And it gives EPA authority to inspect plants, halt sales, and regulate disposal of products whose registration has been cancelled.

In connection with this, EPA will be completing several new studies soon dealing with various aspects of pesticides. The first, dealing with herbicides, was commissioned by EPA three years ago and has been carried out by the Agency's Hazardous Material Advisory Committee under the direction of its Chairman, Dr. Emil Mrak, Chancellor Emeritus of the University of California at Davis. Leading scientists in the herbicide field have contributed to its sections on chemistry and analysis, environmental effects, health effects and applied uses, and the study will serve as a valuable background for our decisions. We anticipate this will be available to the public within the next two months.

Another study, "The Control of Pesticides Released to the Environment," is a report to Congress required by

the Federal Water Pollution Control Amendments of 1972. It is in response to the need to reduce the unnecessary use of energy and resources and the need to produce food at the lowest cost. It will identify sources of pesticides deemed unnecessary and will focus on reducing their employment through an integrated approach. We expect this to be available this spring. As many of you know, EPA also is working on a compendium of herbicides as a companion volume to others on pesticides. A plant physiologist has been working full-time on this effort since last July, and we hope to have the first increment published this spring. Meanwhile, a microfiche copy of this compendium is being distributed to you today, as I understand a number of you have been anxious to obtain it. We will be issuing public announcements on all these documents as they become available for distribution.

I might mention at this point that I recently announced the appointment of Guilford Thornton at EPA as my Consultant for Agricultural Affairs. Mr. Thornton has a very broad and useful fund of experience. He recently served as Commissioner of Agriculture for the State of Tennessee, has been a County Agent, a partner in an agriculture chemical equipment firm, an officer in two public water authorities, and is well known to many of you. I hope you will not hesitate to contact him when you need guidance

While it is our mandate to tighten up pesticide regulation and to encourage the reduction of all forms of pollution, including pesticides, in our environment, I do not wish to leave the impression that EPA is hostile to weed science and the general area of herbicides. We want to encourage the development of new pest control methods which are compatible with the environment. Because we are concerned with the quality of life, we obviously welcome

those advances in science, including new herbicides, that can bring more abundant and cheaper food and fiber to the world. But we are charged by Congress with the responsibility -- the very grave responsibility -- of protecting society from unwanted and dangerous side effects of modern technology. Among our duties, we are obliged under law to make sure that potential pesticide residues do not endanger the biosphere by traveling far from the site of their original application or by accumulating in the food chain.

Our role is to ensure that essential and environmentally acceptable pesticide tools are maintained, but that also the benefits of these tools are not at the price of an ecological disaster.

I would also like to mention that this Society has won the appreciation and admiration of EPA through your constructive suggestions and efforts. I understand that there are now plans underway for lecturers from the Society to visit with our Office of Water and Hazardous Materials people to discuss various topics of mutual interest. You are also involved in what we hope will be a joint effort to conduct a pesticides use survey. We are grateful for your thoughtful and helpful support, and trust that our fine relationship will continue in the days and years ahead.

I have indicated today how pesticides and herbicides can serve as an energy-saving instrument by eliminating needless tractor trips. "No-tillage" methods made possible by herbicides also reduce erosion and water pollution from sediment and particulate-borne nutrients. As a guiding philosophy in your laboratories, no better one can be adopted than the motto of the ancient Greek physicians: "First of all, do no harm."

Modern technology has not always been applied with wisdom. We have found to our chagrin that environmental costs can

accompany increases in food production. While nutrient input is essential for greater crop yields, we see fertilizers and pesticides drain from fields and into water supplies, causing unforeseen damage. We have seen how clearing of upland forests for crops in Bangladesh, Pakistan, and India have caused accelerated runoff and disastrous floods downstream. As Ibsen once wrote, "The woods have their revenge." It is indeed a broader problem for mankind than that. When we disturb life systems, all nature has its revenge.

But we know that with intelligent and restrained use of our scientific knowledge, nature can also be transformed into a benign and productive ally. We have the resources and the intelligence to avoid the nightmare of the Sorcerer's Apprentice, to prevent technology from running out of control. That is our objective at the Environmental Protection Agency, and I believe it is a worthy and necessary one. That is the environmentalist's view of the very important field of endeavor you represent here today.



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