

# The Battle Over Persistent Pesticides: From Rachel Carson to the Environmental Defense Fund

*"The worst residue problem we have to face today is the residue of public opinion left by Rachel Carson's 'Silent Spring'."*

—Representative Jamie Whitten (D.-Miss.), chairman of the House Appropriations Subcommittee on Agriculture and a pesticide enthusiast, during the March 1968 Department of Agriculture appropriations hearings.<sup>1</sup>

Rachel Carson's *Silent Spring*, published in 1962, dramatically portrayed the ecological damage and potential long-term human health hazards that were resulting from indiscriminate use of persistent pesticides like DDT, which linger on in the environment for years after they are used. In Chapter 3 we saw how, as a result of the furor over Miss Carson's book, the President's Science Advisory Committee was assigned to reexamine the evidence. This report concluded that there was an urgent need for studies of pesticide hazards, and that the evidence was already sufficiently strong on persistent pesticides that most uses of such pesticides should be curtailed immediately.

Many of the research recommendations of the PSAC panel on the use of pesticides were implemented and have resulted in a much better—although still

rather limited—understanding of the effects of pesticides on man and his environment. The report had little impact on government regulation of pesticides, however.

Symbolic of the lack of government *action* (as distinct from sponsorship of studies) was the nonimplementation of the PSAC panel's recommendation (renewed in another PSAC report two years later<sup>2</sup>) to restrict the use of DDT and other persistent insecticides to the control of disease vectors. (The use of persistent pesticides for this purpose in the United States was vanishingly small.) The banning of DDT became the focus of a continuing battle in which the chemical companies, the Agriculture Department, and the political representatives of agriculture on the one side confronted a loose grouping of public interest groups, ranging from the "bird watcher" Audubon Society to the scientist-dominated Environmental Defense Fund, on the other. A steady stream of environmental disasters—ranging from the almost annual appearance of millions of pesticide-killed fish floating on the Mississippi<sup>3</sup> to the identification of new bird species whose populations were declining as a result of the use of DDT<sup>4</sup>—continued to mobilize public opinion behind the "anti-DDT" groups.

The supporters of persistent pesticides continued to have the dominant influence within the government, however. This may be seen, for example, in the Congressional relations of the opposing sides. While the anti-DDT forces had as active allies a few Congressmen such as Senator Abraham Ribicoff (D-Conn.) and Representative Fountain, the committees which these Congressmen chaired had no power over federal pesticide policies. They could only provide national forums for the critics of federal pesticide policies.

The pro-pesticide forces, on the other hand, could claim the support of the Congressmen from cotton-belt states who were the chairmen of the key House and Senate Appropriations and Agriculture Committees and subcommittees. Perhaps the most dedicated supporter of pesticides among these was Representative Jamie Whitten (D.) of Mississippi, chairman of the House Appropriations Subcommittee on Agriculture and author of the book *That We May Live* (1966). (This book, largely researched by the Agriculture Department,<sup>5</sup> was the answer of the pro-pesticide forces to *Silent Spring*. Its publication was subsidized by three pesticide manufacturers.<sup>6</sup>) Whitten, by virtue of his strategic position and the leverage given by Congress to committee chairmen, has been able to cut or increase items in the Agriculture Department's budget almost by fiat. In fact, his power to bring the Agriculture Department around to his way of thinking has caused some to dub him "the real Secretary of Agriculture."<sup>7</sup>

## *The Environmental Defense Fund*

While the anti-DDT forces were being held at bay in Washington, some groups decided to confront local and state governments with the issue. Independent scientists first became seriously involved as a result of a court suit filed in the

spring of 1966 against the Suffolk County (Long Island) Mosquito Control Commission by lawyer Victor Yannacone on behalf of his wife. The commission's DDT spraying program, it seems, had resulted in a fish kill in a local lake, and Mrs. Yannacone was seeking a court injunction banning the commission from further use of DDT.

To document the case against DDT, Yannacone recruited scientists from the local branch of the State University of New York at Stony Brook and from the Atomic Energy Commission's Brookhaven National Laboratory. These scientists presented the mounting evidence of both short-term and long-term devastation of many forms of wildlife resulting from massive DDT spraying programs. The National Audubon Society provided financial support.

The suit was ultimately decided on legal rather than technical grounds. The courts decided that the setting of regulations on pesticide use was a legislative rather than a judicial responsibility, and the Yannacones lost. The case had received such extensive press coverage, however, that both the public and the Suffolk County government had made up their minds about DDT. The County Board of Supervisors went on record as opposing the use of the pesticide, and the Mosquito Control Commission then announced that it would stop using DDT.<sup>8</sup> (Winning by force of public opinion what has been lost in the courts is a phenomenon which we will encounter frequently in our case studies of the activities of public interest groups.)

Following the Suffolk County case, Yannacone and his scientist allies decided to continue their legal battle against the excessive use of persistent pesticides. They set up the Environmental Defense Fund (EDF) and took the pesticides to court in Michigan. Frank Graham tells in *Since Silent Spring* how they fared:

In 1967 [the EDF] filed suit in western Michigan to restrain nine municipalities from using DDT for Dutch elm disease control. Again, EDF lost in court but attained its objective. The Cooperative Extension Service of Michigan State University withdrew its statewide recommendation of DDT for this program and recommended instead sanitation methods coupled with the supplementary use of methoxychlor [a nonpersistent pesticide].

Encouraged by this success, EDF expanded its court action to include another 47 Michigan municipalities. By 1968, 50 of the 56 municipalities planning to use DDT had consented to the court orders which compelled them to use alternate methods of control. At the same time, an EDF suit temporarily averted a planned application of three tons of dieldrin [a persistent pesticide related to DDT] over Michigan's Berrien County for the control of Japanese beetles. Charles Wurster [an assistant professor of biological sciences at the State University of New York at Stony Brook, and head of the EDF's scientific advisory committee] testified that from 10 to 80 birds and mammals, up to the size of cats and even sheep, would be killed for every beetle killed in this program. Though the Michigan and United States Departments of Agriculture eventually went ahead and sprayed 3,000 acres with dieldrin for what they admitted amounted to only about a single beetle per acre, EDF moved the country closer to a sane pesticide policy. The widespread publicity given both

court actions publicized the strong scientific case against the persistent pesticides and publicly discredited the spray programs.<sup>9</sup>

In its suit to stop Michigan's dieldrin spraying program, the EDF was joined by the state Department of Conservation. "This showdown has been coming for a long time," said one Conservation Department official. Referring to the state Agriculture Department he said, "They call us 'bird lovers.'"<sup>10</sup>

In late 1968 the focus of EDF legal activities moved to Wisconsin. In October, the Citizen's Natural Resources Association of Wisconsin (a group of scientists and laymen) and the Wisconsin Izaak Walton League filed petitions with Wisconsin's Department of Natural Resources requesting a ruling as to whether DDT should be defined as a pollutant according to Wisconsin state law. (According to the Wisconsin statute, a pollutant is a substance "contaminating or rendering unclean or impure the waters of the state, or making the same injurious to public health, harmful for commercial or recreational use, or deleterious to fish, bird, or plant life."<sup>11</sup>) The Wisconsin Department of Natural Resources responded to the petitions it had received by setting up hearings to determine whether DDT should be considered a pollutant. EDF's lawyer, Victor Yannacone, and the head of EDF's scientific advisory committee, Charles Wurster, organized the presentation of the case against DDT (including local expert witnesses). The Task Force for DDT, organized by six of the chemical companies manufacturing DDT, presented the defense. The hearings, which lasted almost six months and produced more than 2,500 pages of testimony, constituted something of a national forum for the debate over DDT.

A year after completion of the testimony, on May 21, 1970, Hearing Examiner Maurice Van Susteren issued his finding:

DDT, including one or more of its metabolites in any concentration or in combination with other chemicals at any level within any tolerances, or in any amounts, is harmful to humans and found to be of public health significance. No concentrations, levels, tolerances, or amounts can be established. Chemical properties and characteristics of DDT enable it to be stored or accumulated in the human body and in each trophic level of various food chains, particularly the aquatic, which provides food for human consumption. Its ingestion and dosage therefore cannot be controlled and consequently its storage is uncontrolled. Minute amounts of the chemical, while not producing observable clinical effects, do have biochemical, pharmacological, and neurophysiological effects of public health significance. . . . Feeding tests, laboratory experiments and environmental studies establish that DDT or one or more of its analogs is harmful to raptors [birds of prey such as eagles and falcons] and waterfowl by interfering with their reproductive process and in other birds by having a direct neurophysiological effect.

Feeding tests or experiments and environmental studies establish that DDT at chronic low levels is harmful to fish by reducing their resistance to stress.

DDT and its analogs are therefore environmental pollutants within the definitions of Sections 144.01 (11) and 144.30 (9), Wisconsin Statutes.<sup>12</sup>

By the time Van Susteren announced this conclusion, however, events had forced action in both Wisconsin and the neighboring state of Michigan: First, in 1968 700,000 young coho salmon which were to be used to stock Lake Michigan died in Michigan state government hatcheries—apparently of DDT poisoning.<sup>13</sup> Then in March and April of 1969, 28,000 pounds of frozen Lake Michigan coho salmon were seized in Michigan by the Food and Drug Administration (FDA) because their fat was found to contain levels of DDT greater than legally allowed for meat (standards had not previously been set for fish).<sup>14</sup> Suddenly Michigan saw DDT as a threat to the \$100 million spent annually in the state by visiting sport fishermen.<sup>15</sup>

Responding to these shocks, in mid-April the Michigan Agricultural Commission voted to ban sales of DDT in the state.<sup>16</sup> In July, the Wisconsin State Assembly, following suit, decided not to await Van Susteren's finding on DDT and voted 90-0 to ban DDT usage in the state in all but emergency situations.<sup>17</sup>

### *The Agriculture Department in Trouble Over Pesticides*

By late 1969 the triumphs of the anti-DDT forces in the Midwest had given them enough momentum to carry their campaign back to Washington. At the same time, other events conspired to weaken the credibility of U.S. Department of Agriculture (USDA) pesticide regulation.

In September 1968 the General Accounting Office (GAO), Congress's watchdog agency, had issued a devastating report on USDA enforcement of pesticide regulations. The GAO found the enforcement to be virtually nonexistent. In 1966, for example, out of 2,751 samples of pesticides which were tested and reviewed by the Agricultural Research Service (ARS), the pesticide regulatory arm of the USDA, 750 were found to violate the law—including 562 major violations. The ARS took action in only 106 of these cases to confiscate illegal shipments, however, and even in these cases it did not bother to track down all shipments. The GAO learned that, even though "repeated major violations of the law were cited by the agency, . . . shippers did not take satisfactory action to correct violations or ignored ARS notifications that prosecution was being contemplated."<sup>18</sup> Moreover, the ARS had not referred a single case to the Justice Department for prosecution in thirteen years! Dr. R. J. Anderson, acting administrator of the ARS, when asked to comment on the obvious contempt with which the industry was treating the pesticide laws, said: "We believe that cooperative action by a manufacturer in recalling defective or hazardous products is the most efficient and effective means for removing such products from channels of trade."<sup>19</sup>

In February 1969, as a result of a second investigation, the GAO reported that the USDA was apparently not honoring the spirit of agreements which had

been made in 1964 in the revamping of pesticide-registration procedures which followed the recommendations of the 1963 PSAC report. According to this agreement, the USDA was required to seek advice from the Public Health Service, an agency of the Department of Health, Education, and Welfare, on possible health hazards before registering a pesticide for use.<sup>20</sup> The GAO presented a case history in which this advice had been ignored. According to the summary:

We found the Agricultural Research Service registered lindane pellets for use in vaporizing devices on a continuous basis in certain commercial and industrial establishments—such as restaurants and other food handling establishments—even though there had been long-term [almost sixteen years] opposition to this practice by the Public Health Service and Food and Drug Administration, Department of Health, Education, and Welfare, as well as other Federal, State, and private organizations.<sup>21</sup>

In May and June of 1969, Representative Fountain held hearings of his Subcommittee on Intergovernmental Relations of the House Government Operations Committee to examine the manner in which the USDA was discharging its responsibilities for pesticide regulation. The Fountain subcommittee found that the lindane case was fairly typical of the USDA's responsiveness to advice about pesticide safety. In 1969 alone, at least 185 pesticides had been registered over PHS objections.<sup>22</sup> In the same vein, a Ralph Nader group later found that, of 5,052 recommendations made in 1969 by the Food and Drug Administration to the USDA for labeling changes which would encourage safer use of various pesticides, *none* were accepted.<sup>23</sup>

### *The Government Moves Against DDT (or So It Appears)*

At the same time that the credibility of the USDA as a protector of the public health was being destroyed, new information indicating that DDT might be a serious human health hazard became public. In May 1969 HEW's National Cancer Institute released a report on an experiment in which it was found that DDT causes cancer in mice. During the following months decisions were made in two more states not to wait any longer for federal action against DDT: in June the New York State Pesticide Control Board asked the state legislature to curb the use of DDT in the state,<sup>24</sup> and in July the California State Senate voted to ban DDT in that state.<sup>25</sup> Arizona had already in January banned the use of DDT for a year.<sup>26</sup> In the light of these state decisions, the USDA's position on DDT was becoming increasingly untenable.

In July 1969, the USDA made its first moves to decrease the use of DDT in its own programs. It tied the announcement to the release of a National Academy of Sciences' National Research Council (NAS-NRC) advisory report. The report echoed the 1963 PSAC report on pesticides in recommending that

"more effective steps be taken to reduce the unneeded and inadvertent release of persistent pesticides into the environment."<sup>27</sup> Backed up by this recommendation, the USDA announced that it was temporarily suspending its programs for spraying persistent pesticides at airports and in the national forests. This announcement was followed by another in August, in which the USDA made public its intention to stop using persistent pesticides in two federal-state insect-control programs and to drastically reduce their use in another.<sup>28</sup> The USDA was still unwilling to make the politically dangerous decision to limit the use of DDT in agriculture, however. Nearly two-thirds of the remaining DDT use in the United States was on cotton—and, as we have noted, the cotton growers were well-represented in Congress by Representative Whitten and the other Southern Congressmen. At least one powerful Congressman, Senator James Eastland (D.) of Mississippi, is a major cotton grower himself. (Actually, according to the 1972 *Almanac of American Politics*, Senator Eastland was receiving about \$160,000 annually for *not* growing cotton.<sup>29</sup>)

In October 1969, the Environmental Defense Fund and four other conservation groups with which it had become allied (the Sierra Club, the National Audubon Society, the West Michigan Environmental Action Council, and the Izaak Walton League of America) petitioned Secretary of Agriculture Clifford Hardin to suspend all registered uses of DDT.<sup>30</sup> Their petition went unanswered.

The tide of national and international opinion continued to turn against DDT and the USDA position continued to erode, however. In October, California took action to cut the use of DDT in the state by about one-half,<sup>31</sup> and in early November the Canadian government—which also found itself under pressure as a result of the actions of several provincial governments which had limited the use of DDT—announced restrictions which would cut the use of DDT in that country by an estimated 90 percent.<sup>32</sup> Sweden had already banned the use of DDT.

On November 12, 1969, the federal government made a new move. Department of Health, Education, and Welfare (HEW) Secretary Robert Finch announced that, following the recommendation of his Commission on Pesticides and the Human Environment (the Mrak Commission), the government had decided to phase out all "nonessential" uses of DDT over a period of two years.<sup>33</sup> He gave no details.

A week after Finch's announcement, Secretary of Agriculture Hardin issued notices of cancellation of registration for almost all uses of DDT and announced that its use would be almost completely halted by the end of 1971. Simultaneously, the White House announced that the use of other persistent pesticides would be curbed beginning March 1970.<sup>34</sup> These announcements were quite dramatic and made headlines all over the country. It took a little more time for their misleading nature to become apparent.

The USDA had not canceled the registration for use of DDT on cotton, which accounted for two-thirds of its use. Furthermore, the USDA had chosen to "cancel" rather than "suspend" those uses which its order did affect—meaning that manufacturers who appealed the order could continue to sell DDT for the

canceled purposes until the appeal was settled. And the appeal process could only have been designed by pesticide industry lawyers;<sup>35</sup> it guaranteed that the appeal could take years to settle. Manufacturers could first ask for the appointment of a special committee of experts to advise Secretary Hardin on whether cancellation was appropriate; if they were dissatisfied with this advice, they could then ask for a public hearing on the matter; and, if they were dissatisfied with the recommendations which came out of the hearing, they could then go to court.<sup>36</sup> Not surprisingly, the manufacturers appealed.

### *The Environmental Defense Fund Takes the USDA to Court*

The EDF and the other conservation groups which had petitioned Hardin to ban DDT were, of course, dissatisfied with the actions which had been taken. At the end of December 1969 they filed suit in the Washington, D.C., U.S. Court of Appeals to have the USDA ordered to *suspend* all the registered uses of DDT.<sup>37</sup> In contrast to cancellation, suspension of registration would have the effect of banning interstate sales of DDT during the appeals process.

Six months later, on May 29, 1970, the Court of Appeals acted on the petition which the environmental groups had filed and ordered Secretary of Agriculture Hardin to suspend the registration of DDT within thirty days or to give reasons for what Chief Judge Bazelon termed "his silent but effective refusal to suspend the registration of DDT." Judge Bazelon dismissed the USDA's cancellation orders as "a few feeble gestures."<sup>38</sup> Hardin responded to Judge Bazelon's order by stating that, in his judgment, DDT did not constitute an imminent hazard to human health, to fish and wildlife, or to the environment, that DDT had essential uses, and that suitable substitutes could not be found for all of these.<sup>39</sup>

### *The Environmental Protection Agency Takes Over*

The USDA was ultimately saved from ever having to cancel or suspend the use of DDT on cotton by President Nixon's creation of the Environmental Protection Agency (EPA). This new agency took over the responsibility for pesticide regulation from the USDA in December 1970.<sup>40</sup>

One of the first orders of business for the head of the new agency, William D. Ruckelshaus, was settling the DDT matter. At the beginning of January 1971, the Court of Appeals—responding again to a petition from the Environmental Defense Fund—ordered the EPA to cancel the registration of *all* products containing DDT and to consider whether the information available to the agency warranted the immediate suspension of registration of these products. The

opinion by Chief Judge Bazelon held that cancellation proceedings should be commenced whenever the registration of a pesticide raises "any substantial question of safety," that the secretary of Agriculture had acknowledged that such a question existed in the case of DDT, and that "the statutory scheme contemplates that these questions will be explored in the full light of a public hearing [if requested by a manufacturer], not resolved behind closed doors."<sup>41</sup> A week later the EPA complied with the order to cancel. The manufacturers, of course, immediately appealed the cancellation decision.

Thus, eight years after President Kennedy had ordered the USDA to implement the PSAC recommendation to phase out DDT, the first step had been taken against its major use—on cotton. And the responsibility for this step was taken not by the USDA or its successor agency, the EPA, but by a federal court.

Two months after the cancellation decision, the EPA issued a statement detailing its reasons for not suspending the use of DDT. Perhaps the most substantial reason given was that

precipitous removal of DDT from interstate commerce would force wide-spread resort to highly toxic alternatives in pest control on certain crops. The wide-spread poisonings, both fatal and non-fatal, which may reasonably be projected present an intolerable short-term health hazard.<sup>42</sup>

Although suspension of registration of DDT after eight years would not have been regarded as "precipitous" by many observers, the EPA had raised a legitimate concern. Four fatal poisonings had resulted, for example, when tobacco farmers had switched from the relatively nontoxic DDT to ethyl parathion, a relative of the nerve poisons developed for use in chemical warfare. But in the case of cotton, which accounted by 1970 for 86% of the remaining uses of DDT, the likely substitute, methyl parathion, was already being used mixed with the DDT.<sup>43</sup>

At the end of April 1970, EPA Administrator William D. Ruckelshaus appointed an advisory committee on DDT from a list of nominees provided by the National Academy of Sciences (in accordance with the provisions of the 1947 Federal Insecticide, Fungicide, and Rodenticide Act). Several months later, his DDT advisory committee returned with its report. The committee found that "the evidence to date clearly shows that DDT induces hepatomas and suggests it may be carcinogenic" and that

DDT and its derivatives are serious environmental pollutants and present a substantial threat to the quality of the human environment through widespread damage to some nontarget organisms. There is, therefore, an imminent hazard to human welfare in terms of maintaining healthy desirable flora and fauna in man's environment.<sup>44</sup>

In spite of these findings, the committee did not recommend immediate suspension of the use of DDT, giving as their reason that, even

if one accepts that an eventual health hazard is a possibility, it must be recognized that very little can be done at this time. The world burden of DDT is

to a rapidly phased cessation of DDT usage would probably make no significant difference in human exposure levels.<sup>45</sup>

The committee's first recommendation was, therefore:

Reduce the use of DDT in the U.S. at the accelerated rate of the past few years with the goal of virtual elimination of any significant additions to the environment.<sup>46</sup>

(The annual domestic use of DDT had declined from a peak of about 70 million pounds in the 1950s and early 1960s to an estimated 12 million pounds in 1970.<sup>47</sup>

Immediately following the release by the EPA of the DDT Advisory Committee's report in September, the Court of Appeals once again ordered the EPA to consider the suspension of all uses of DDT.<sup>48</sup> The cancellation process had already entered its second phase, however: August 17 marked the opening of the hearings which had been requested by some of the manufacturers of DDT, and the EPA decided that it would be "bad policy" to suspend the use of DDT before the hearing process was completed.<sup>49</sup>

It soon became apparent from the conduct of the hearings, however, that both the EPA and the hearing examiner, Civil Service Commission attorney Edmund M. Sweeney, had made up their minds on the issue—and had come to opposite conclusions. The EPA joined with the Environmental Defense Fund to advocate the banning of DDT, while Sweeney's sympathies seemed to be with the pesticide manufacturers, who were joined by the USDA in the defense of DDT. According to *Science* magazine, Sweeney on occasion became quite abusive toward testifying scientists and at one point revealed the extent of his ignorance regarding the proper presentation of scientific evidence by insisting that a scientist answer all technical questions by replying "yes," "no," or "I don't know."<sup>50</sup> Finally, in April 1972, after hearing testimony for seven months, Sweeney announced his conclusion: DDT use did not pose hazards of cancer or birth defects to man and did not "have a deleterious effect on fresh water fish, estuarine organisms, wild birds or other wildlife." He therefore recommended to the EPA that the decision to cancel the registration of DDT be reversed.<sup>51</sup>

Thus, after nearly two years, the cancellation process had neared its end. All that remained was for EPA Administrator Ruckelshaus to make his decision. Speculation abounded regarding the political pressures brought to bear on him. One source inside the EPA's enforcement branch suggested that the fact that most DDT was being used on cotton meant that the decision would be influenced by the Nixon administration's "southern strategy": "This decision is too important to expect the White House to leave it entirely up to the agency."<sup>52</sup> Others, of course, speculated as to what Representative Whitten would do to the EPA budget (over which his subcommittee also had authority) if DDT were canceled. At the same time, the delay in the federal actions on DDT had become rather embarrassing. The states of Washington, Maryland, Wisconsin, and Vermont had joined California, New York, and Michigan in restricting the use of DDT—in most cases by banning its use.<sup>53</sup> And Secretary of the Interior

Walter Hickel had banned the use of DDT on the 500,000 acres of federal land under his control.<sup>54</sup> Internationally, Japan and the Soviet Union<sup>55</sup> had joined Canada, Cyprus, Hungary, Norway, and Sweden in essentially banning the use of DDT.

It came as a welcome surprise to those whom the regulatory history of DDT had taught to be cynical, when finally, on June 14, 1972, Ruckelshaus announced the banning of further DDT use (with some minor exceptions) effective by the end of 1972. The pesticide manufacturers responded by taking the issue to federal court in New Orleans, to which the EDF responded by filing a suit in Washington, D.C., asking that the ban be ruled effective immediately.<sup>56</sup> Both suits were ultimately rejected by the District of Columbia Court of Appeals.<sup>57</sup>

### *The Significance of the Banning of DDT*

The results of the ten-year campaign to ban DDT are open to a range of possible assessments. At one extreme we have the possibility that the campaign against DDT resulted in its being phased out only slightly faster than it would have been as a result of other, natural causes, the most important of these being the widespread development of insect strains resistant to DDT.<sup>58</sup> (The cover of the June 1972 issue of *Environment* magazine showed a large painting of a mosquito with the caption: "As a result of spraying programs, the only thing which will kill this malaria-bearing mosquito is a brick.")

At the other extreme, some consider the banning of DDT as the first step in a worldwide stampede toward the banning of all chemical pesticides. Norman E. Borlaug, winner of the 1970 Nobel Peace Prize for his development of high-yield strains of wheat, expressed this view in November 1971:

DDT is only the first of the dominos. But it is the toughest of all to knock out because of its excellent contribution and safety record. As soon as DDT is successfully banned, there will be a push for the banning of all the chlorinated hydrocarbons, and then, in order, the organic phosphates and carbamate insecticides. Once the task is finished on insecticides they will attack the weed killers and eventually the fungicides.

If the use of pesticides in the U.S.A. were completely banned, crop losses would probably soar to 50 percent and food prices would increase fourfold to fivefold. Who then would provide for the food needs of the low-income groups? Certainly not the privileged environmentalists.<sup>59</sup>

Borlaug testified also to the effectiveness of Rachel Carson's book:

The current vicious, hysterical propaganda campaign against the use of agricultural chemicals, being promoted today by fear-provoking, irresponsible environmentalists, had its genesis in the best-selling, half-science-half-fiction novel *Silent Spring* published in 1962.<sup>60</sup>

And regarding the effectiveness of the environmental groups who had led the campaign against DDT, Borlaug said:

Although the collective membership of these organizations is perhaps less than 150,000, their superb organization and tactics make them an extremely effective force in lobbying for legislation and for brainwashing the public.<sup>61</sup>

Borlaug was obviously upset.

Both these extreme views are probably off the mark. What is clear is that the pesticide manufacturers no longer have unchallenged control over the federal pesticide-regulation machinery. Conversely, the public interest groups have become a force to be reckoned with. By 1971, five years after Yannacone sued the Suffolk County Mosquito Control Commission, the Environmental Defense Fund had grown into a national organization involved in more than a hundred court cases, running the gamut from air pollution to water-resource litigation, with some 32,000 dues-paying supporters and a pool of 700 scientists available as expert witnesses.<sup>62</sup> And the EPA will now respond to reasonable requests from environmental groups without a court order. (Thus, for example, in response to a simple petition from the Environmental Defense Fund, the EPA in March 1971 issued cancellation notices for two more persistent pesticides, aldrin and dieldrin.<sup>63</sup>) At the same time, the record so far hardly supports the view that the environmentalists will soon banish all chemical pesticides. Indeed, some 900 more pesticidal chemicals would have to go through the tortuous cancellation process before Borlaug's nightmare could come true.<sup>64</sup> Even the most hardened environmentalists quail at the thought of such a project.

The story of the struggle over DDT has much to teach those contemplating involvement in efforts to bring about responsible federal policies for technology. Among these is the effectiveness of a well-written book. More than ten years after its publication *Silent Spring* remains a classic influential statement of the case for restraint and care in the use of pesticides—and, by analogy, of technology in general. We have also seen the important options offered to reformers by our federal form of government. Often it is easier to obtain a hearing and mobilize a constituency at a local or state level—on what is really a national issue—than it is to take the issue to the federal government directly. Finally, the Environmental Defense Fund represents an inspirational example of some of the possibilities when scientists and lawyers join forces in the public interest.

### NOTES

1. Quoted in James Singer, "DDT Debate Warms Up Again: Should the Government Restrict Its Use?", *National Journal*, November 1, 1969, p. 34.

2. U.S., Executive Office of the President, Office of Science and Technology, *Restoring*

the *Quality of the Environment*, Report of the President's Science Advisory Committee (Washington, D.C.: Government Printing Office, November 1965).

3. See e.g. Frank Graham, Jr., *Since Silent Spring* (Boston: Houghton-Mifflin Co., 1970), Chapter 7: "Miss Carson's 'Nightmares' Unfold."

4. For a brief summary of the information on the ecological impacts of DDT and other chlorinated hydrocarbons see, National Academy of Sciences, Committee on Oceanography, *Chlorinated Hydrocarbons in the Marine Environment* (Washington, D.C.: National Academy of Sciences, 1971), pp. 8-14. See also U.S., Department of Health, Education, and Welfare, *Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health* (Washington, D.C.: Government Printing Office, December 1969), pp. 206-213.

5. Singer, "DDT Debate Warms Up Again: Should the Government Restrict its Use?," p. 34.

6. E. W. Kenworthy, "Full DDT Ban is Refused Pending Review of Safety," *New York Times*, March 19, 1971, p. 1.

7. See e.g. Nick Kotz, "Jamie Whitten: the Permanent Secretary of Agriculture," *Washington Monthly*, October 1969, p. 6.

8. Francis X. Clines, "Suit to Ban DDT in Suffolk County is Dismissed," *New York Times*, December 2, 1967, p. 79.

9. Frank Graham, *Since Silent Spring*, pp. 228-229.

10. Quoted in Jerry M. Flint, "Pesticide Fought in Michigan Suit," *New York Times*, November 12, 1967, p. 19.

11. Quoted in the book on the Wisconsin hearings by Harmon Henkin, Marin Merta, and James Staples, *The Environment, the Establishment, and the Law* (Boston: Houghton Mifflin, 1971), p. vii. See also Luther J. Carter, "DDT: the Critics Attempt to Ban Its Use in Wisconsin," *Science* 163 (1969): 548.

12. Henkin et al., *The Environment, the Establishment, and the Law*, pp. 205-206.

13. See, e.g. Hal Higdon, "Obituary of DDT in Michigan," *New York Times Magazine*, July 6, 1969, p. 36.

14. *Ibid.*, p. 6.

15. *Ibid.*, p. 36.

16. *New York Times*, April 17, 1969, p. 1.

17. *New York Times*, July 17, 1969, p. 50.

18. U.S. Congress, General Accounting Office, Report to Congress on "Need to Improve Regulatory Enforcement Procedures Involving Pesticides" (B-133192, Sept. 10, 1968). Quote is from summary of the report.

19. Quoted in *New York Times*, September 17, 1968, p. 24.

20. U.S. Congress, House, Committee on Government Operations Report, *Deficiencies in the Administration of Federal Insecticide, Fungicide, and Rodenticide Act*, 91st Cong., 1st Session, November 1969, p. 35. See also James Singer, "Recommended DDT Ban May Widen HEW and Interior Regulatory Power," *National Journal*, November 15, 1969, p. 122.

21. U.S. Congress, General Accounting Office, Report to Congress on "Need to Resolve Questions of Safety Involving Certain Registered Uses of Lindane Pesticide Pellets," GAO Report No. B-133192 (Washington, D.C.: GAO, February 20, 1969).

22. *Deficiencies in the Administration of Federal Insecticide, Fungicide, and Rodenticide Act*, p. 35. It is not clear that this number obtained from the USDA is accurate. The Congressional committee notes on p. 36 that "USDA figures showed more products registered over HEW objections in some years than the number of objections actually made."

23. James Turner, *The Chemical Feast, The Ralph Nader Study Group Report on the Food and Drug Administration* (New York: Grossman, 1970), p. 146.

24. *New York Times*, June 17, 1969, p. 42.

26. *Ibid.*, April 18, 1969, p. 86.

27. National Academy of Sciences, *Report of Committee on Persistent Pesticides, Division of Biology and Agriculture to U.S. Department of Agriculture* (Washington, D.C.: NAS, May 1969), p. 29.

28. *New York Times*, August 16, 1969, p. 27.

29. Michael Barone, Grant Ujitusa, and Douglas Matthews, *Almanac of American Politics* (Boston: Gambit, 1972), p. 417.

30. *New York Times*, November 1, 1969, p. 30.

31. *Ibid.*, October 29, 1969, p. 25.

32. *Ibid.*, November 4, 1969, p. 10.

33. *Ibid.*, November 13, 1969, p. 1. We have already discussed the origin of the Mrak Commission in Chapter 6.

34. *Ibid.*, November 21, 1969, p. 1.

35. For a discussion of the influence of pesticide industry lobbyists over the development of pesticide control legislation see *Congressional Quarterly Weekly Report*, October 14, 1972, pp. 2637, 2638.

36. The law which laid out this procedure was the Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (7 U.S.C. 135). On October 21, 1972, this act was amended by the Federal Environmental Pesticide Control Act of 1972 (Public Law 92-516). Among the changes is one which should shorten the cancellation procedure somewhat. Instead of having an advisory committee report and then a public hearing, under the new law, the manufacturers can request a hearing and at any point during the proceeding the hearing officer can request that a committee be set up by the National Academy of Sciences to resolve specific "questions of scientific fact." This committee is given a maximum of 60 days within which to report back.

37. *New York Times*, June 1, 1970, p. 20.

38. Environmental Defense Fund v. Hardin, 428 F. 2d 1093 (C.A. D.C. 1970). See also Jamie Heard, "Chemical Industry, Farmers Fear Pending Pesticide Control Shift," *National Journal*, July 4, 1970, p. 1430.

39. *New York Times*, June 30, 1970, p. 33.

40. *New York Times*, June 6, 1970, p. 21.

41. Environmental Defense Fund v. Ruckelshaus, 439 F.2d 584 (1971) (C.A.D.C. 1971), pp. 593, 594. See also *New York Times*, January 8, 1971, p. 1.

42. U.S., Environmental Protection Agency, *Reasons Underlying the Registration Decisions Concerning Products Containing DDT, 2,4,5-T, Aldrin, and Dieldrin*, (March 18, 1971), p. 16.

43. U.S., Environmental Protection Agency, *Opinion of the Administrator (Consolidated DDT Hearings)*, June 2, 1972, pp. 2, 19, 37.

44. U.S., Environmental Protection Agency, *Report of the DDT Advisory Committee*, September 9, 1971, pp. 28, 43.

45. *Ibid.*, p. 28.

46. *Ibid.*, p. 41.

47. For a plot of U.S. DDT production and estimated domestic use through 1969 see *Ibid.*, p. 6. Estimated domestic usage in 1970 and a break-down by major uses are given in *Opinion of the Administrator (Consolidated DDT Hearings)*, pp. 2, 3.

48. *New York Times*, September 23, 1971, p. 32.

49. *New York Times*, August 6, 1971, p. 37; October 26, 1971, p. 28.

50. Robert Gillette, "DDT: in Field and Courtroom a Persistent Pesticide Lives On," *Science* 174 (1971): 1108.

51. U.S., Environmental Protection Agency, *Consolidated DDT Hearing: Hearing Examiner's Recommended Findings, Conclusions, and Orders*, April 25, 1972, pp. 93, 94. See also *New York Times*, April 26, 1972, p. 9.

52. Quoted in Gillette, "DDT: in Field and Courtroom a Persistent Pesticide Lives On," p. 1108.

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53. *New York Times*, December 30, 1969, p. 14; January 4, 1970, p. 29; February 2, 1970, p. 27.
54. *New York Times*, June 18, 1970, p. 35.
55. *Time*, April 12, 1971, p. 45; *New York Times*, May 14, 1970, p. 6.
56. Robert Gillette, "DDT: Its Days are Numbered, Except Perhaps in Pepper Fields," *Science* 176 (1972): 1313.
57. *EDF et. al v. EPA etc.*, D.C. Cir. Op. 72-1548 etc. (6 suits), December 18, 1973.
58. "Decreasing Use of Organochlorines is Result of Insect Resistance, New Chemicals," *Chemical and Engineering News*, August 9, 1971, p. 17.
59. Quoted in the *New York Times*, November 21, 1971, Section IV, p. 13.
60. *Ibid.*
61. *Ibid.*
62. Gillette, "DDT: Its Days Are Numbered," p. 1314.
63. See, for example, Charles F. Wurster, "Aldrin and Dieldrin," *Environment*, October 1971, p. 33.
64. In 1969 there were 900 pesticidal chemicals registered for use in the United States. See, e.g., the *Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health*, p. 46.

CHAPTER 11

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## Matthew Meselson and the United States Policy on Chemical and Biological Warfare

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Matthew Meselson is a slight, soft-spoken professor of biochemistry at Harvard who often seems to be occupying the calm at the center of a hurricane of activity. The scene which greeted one of the authors on an afternoon visit to his laboratory during the spring of 1973 was typical: Meselson's graduate students had congregated for wine, cheese, discussion, and laughter in a room next to his office. One door farther down his secretary—long-haired, bearded, and very efficient—was typing. And Meselson himself was working at a table in his office with a student, Robert Baughman, putting the final touches on a paper between telephone interruptions. Meselson apologized sincerely for the fact that he was still finishing up and invited the visitor to look around the office for a few minutes.

The office had the usual academic complement of bookshelves, but their contents were not restricted to books and journals relating to Meselson's professional interests in molecular biology: there were also loose-leaf binders of press clippings, Congressional hearings, reports, and other material on his second great concern of recent years—chemical and biological warfare (CBW). Around the office there was also considerable evidence of Meselson's effort to pull together the final report of the Herbicide Assessment Commission (HAC) sponsored by the 120,000 member American Association for the Advancement of Science. Meselson had led the HAC on a fact-finding trip to South Vietnam in the summer of 1970.