

The history of an important federal report on U.S. pesticide policy shows how it was influenced by publication of Rachel Carson's Silent Spring and concurrent public and political reaction to the book. The case provides interesting examples of communication among scientists, government policy makers, politicians, federal agencies, and industry.

Responding to Silent Spring

*Scientists, Popular Science Communication, and
Environmental Policy in the Kennedy Years*

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*In 1962, when Rachel Carson published *Silent Spring*, a critical account of the consequences of excessive uses of pesticides, it evoked a strong, sympathetic public reaction. Many people have since credited the publication as the beginning of the modern environmental movement, even comparing its impact to that of Harriet Stowe's *Uncle Tom's Cabin* or Charles Darwin's *Origin of Species* (Brooks 1972, 293; Graham 1970, 3). The initial reception of the book by the scientific community, the chemical industry, and some agricultural officials in the Kennedy administration was not so positive, however. And, at the time, it was not at all clear that the book would ever result in any significant change of federal policy on the use of pesticides, one*

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of Carson's chief concerns. For example, the U.S. Department of Agriculture (USDA)—the federal agency most responsible for the regulation and use of pesticides—regarded the controversy over the book as a “public relations problem” and set out to “contain the damage” (Lear 1992, 152).

The tone changed dramatically a year later when the President's Science Advisory Committee (PSAC) sent President John Kennedy its eagerly awaited report on the “Use of Pesticides.” It was universally greeted as a vindication of Rachel Carson and became a harbinger to change in federal policy. While recognizing the indispensable role of pesticides in modern agriculture, the PSAC report reaffirmed Carson's warnings about the harmful effects of persistent pesticide use and called for tighter governmental controls to protect the environment and human health. Kennedy ordered federal agencies to follow up on the recommendations in the report, and Congress held hearings on the subject. Rachel Carson herself, who had appeared as a witness before the PSAC panel that drafted the report, was clearly heartened by the report, which she regarded as one of the most important government documents in many years. “I think no one can read this report and retain a shred of complacency about our situation,” she wrote shortly after the release of the report in May 1963 (Brooks 1972, 306).

The making and reception of the PSAC report, often mentioned but not explained in accounts of events following *Silent Spring*, raise fascinating questions about the relations of science and environment in this early stage of the modern environmental movement, such as how a scientific group like PSAC, until then best known for its roles in shaping nuclear and space policy, emerged apparently overnight as environmental experts and did so with great effectiveness. This article focuses, however, on another aspect of the history of the PSAC report: how such government reports were constructed and, especially, how that process responds to many different types of input, including such popular science writing as *Silent Spring*.

PSAC, FCST, and Pesticide Policy

In 1962, PSAC was not well known for participation in environmental policy making. President Dwight Eisenhower had established the committee in response to the Soviet launching of *Sputnik* in 1957, and the group of mostly physical scientists and electrical engineers had concentrated on advising the government on building the American space program and on achieving nuclear arms control agreements with the Soviet Union (Divine 1993; Wang 1994). Indeed, nuclear and space issues so dominated the agenda of the eighteen-member committee, always chaired by the President's science

adviser, that several biologists resigned after only a brief time with the group (Kistiakowsky 1976, 83, 146, 361).

Yet, PSAC had not completely ignored environmental and health issues. In late 1959 and early 1960, it conducted an investigation into the problem of the contamination of food supplies by pesticides in the wake of a highly publicized "cranberry crisis" in November 1959 when the Food and Drug Administration (FDA) found trace amounts of an herbicide in cranberries, and a frightened public refused to buy cranberries for Thanksgiving and Christmas. George Kistiakowsky, a Harvard chemist who worked as Eisenhower's science adviser and who was PSAC chairman in this period, appointed a PSAC panel to examine how the government should deal with such problems in the future. In particular, the panel (composed of mostly biologists and physicians) were asked to advise the government on the implementation of the Delaney amendment, which prohibited the use in food of any substance, however small in amount, if larger doses of the same substance had been shown to cause cancer in animals.¹ The FDA had used this authority to recall the cranberries, but many scientists thought that a zero tolerance policy, if carried to extremes, would be difficult to enforce because it was sometimes impossible to establish carcinogenicity of chemicals at very low levels (Kistiakowsky 1976, 208-10).

The so-called cranberry panel recommended a moderate position: the law should be interpreted with a "rule of reason," adopting the language of Justice Earl Warren in interpreting certain congressional statutes.² Specifically, the panel recommended that the secretary of the Department of Health, Education, and Welfare (HEW), who had received much criticism from cranberry growers, agribusiness, and their congressional supporters, appoint a science advisory board to advise him on food additives. It also suggested that laws be revised to allow HEW discretion in implementations of the Delaney amendment, and, of course, further research on the whole issue of carcinogenic food additives (Kistiakowsky 1976). Presaging the pesticide debate in the 1960s, the USDA and HEW fought fiercely over the content of the report, especially over the control of policy making in this area (Kistiakowsky 1976, 327). Interestingly, most of the PSAC members who were liberal in political orientation and who were nonspecialists on the topic were more sympathetic to the HEW's position than the panel members (Kistiakowsky 1976, 256). For all the wrangling behind the scene, however, the PSAC report on food additives had little direct effect because Arthur Flemming, who was secretary of HEW at the time, never established the recommended board, and the debate over the Delaney amendment continued until 1996 when it was finally changed (Hanson 1996).

Despite its failings, the PSAC investigation of food additives established the office of the presidential science adviser and PSAC as the site within the White House to handle environmental issues through the late 1960s. PSAC's ventures outside of space and nuclear policies were further aided by Kistiakowsky's creation of a Life Science Panel within the committee in 1959. The panel examined the USDA's research programs and found that the agency was deficient in basic research and was isolated from university research (Kistiakowsky 1976, 283).³ Kistiakowsky was also actively involved in the Federal Radiation Council, an interagency group set up to discuss policies on protection from radiation, especially that caused by the making and testing of nuclear weapons (Kistiakowsky 1976, 27, 62, 325-26).

When John F. Kennedy became President, he appointed Jerome Wiesner, an electrical engineer from MIT, to succeed Kistiakowsky in 1961 as science adviser. By tradition, PSAC members also elected him chairman of the committee. One year later, the White House unit that used to serve the science adviser and PSAC was formally established as the Office of Science and Technology (OST). By 1962, the OST had two health specialists on its staff: James Hartgering and Peter S. Bing, both physicians.⁴

Personal chemistry, along with historical background and institutional setup, made Wiesner the logical person to take on a White House review of federal pesticide use policy after *Silent Spring* triggered a national debate on the subject. Well known for his advocacy of arms control, Wiesner enjoyed a close working relationship with Kennedy. Both strove to end radioactive fallout by achieving a nuclear test ban treaty with the Soviet Union (Schlesinger 1965, 455). Indeed, comparison with the radiation fallout was a recurring theme throughout the debate over pesticide policy and may have indirectly helped Wiesner and his colleagues in PSAC establish their claim of expertise in this area (see Lutts 1985 for discussion of the pesticide-fallout connection).

Kennedy expected much from his science advisers. Recognizing that most policy decisions were political in nature, not to be "confided to computers" or solved by experts, Kennedy nevertheless looked to science for a sound basis of policy making. Appearing before the National Academy of Sciences in April 1961, the President talked about the difficulties that elected officials faced in many areas, including agricultural policy: "For those of us who are not expert and yet must be called upon to make decisions . . . we must turn, in the last resort, to objective, disinterested scientists who bring a strong sense of public responsibility and public obligation" (quoted in Wiesner 1965, 3-12).

Wiesner played as many as four official roles in the Kennedy administration. In addition to being the President's science adviser, OST director, and PSAC chairman, Wiesner also chaired the Federal Council of Science and

Technology (FCST), an interagency group of high-level officials from federal agencies with significant scientific and technological components. The FCST attempted to coordinate programs that cut across departmental lines. It was at this forum in July 1962 that an HEW official, Boisefeuillet Jones, first suggested the need for an interagency review of federal policy on chemicals in the environment as a response to *Silent Spring*.⁵

FCST Responds to Silent Spring

Following Jones's suggestion and in preparation for a PSAC study on pesticides, Wiesner appointed an ad hoc FCST panel, chaired by Jones, to review federal activities with regard to the use and regulation of pesticides, and gather data on pesticide use outside the federal government, which accounted for 95 percent of all such use. PSAC, especially its Life Science Panel, was to evaluate such data and take "a much deeper look into this whole problem."⁶ On 30 July 1962, Wiesner convened the first meeting of the FCST group. In contrast to the "contain the damage" strategy adopted by USDA, Wiesner made it clear in his opening statement that the federal agencies should take real actions to understand and control the effects of pesticide use, including both direct effects on plants and animals and long-term effects in the environment. The group, which included representatives from the Department of Interior and HEW as well as USDA, agreed that "in light of the enlarging and justifiable national concern, no government agency should minimize this problem."⁷

It soon became clear that there was no organized interagency effort to predict and control the environmental changes caused by pesticides. There was a Federal Pest Control Review Board composed of midlevel technical administrators from several departments, but it was so weak and so dominated by the USDA that its chairman, Robert Anderson of the Public Health Service, had declined the invitation to conduct the new review. There was also a Committee on Pest Control and Wildlife Relationships in the National Academy of Sciences-National Research Council (NAS-NRC). It was, however, dominated by proponents of pesticide use and had produced reports in 1962-1963 which had easily served as a common reference point for hostile reviewers of Rachel Carson (Graham 1970, 36-47; Boffey 1975, 199-226).⁸ In a way, the recognized flaws of these two players in the pesticide policy landscape facilitated the smooth entrance of PSAC into the fray.

The discussions at the first FCST group meeting also revealed the inadequacy of federal efforts in the regulation of pesticides. What little research went on in the USDA and HEW was mainly concentrated on the direct effects

of pesticides on humans and animals, not on pesticides' ecological impact. Roger Revelle, an eminent oceanographer who was then serving as science adviser to Secretary of Interior Stewart Udall, lamented the fact that the Department of Interior's studies of wildlife protection were both inadequate and biased toward species popular with sportsmen. Its Fish and Wildlife Service, where Rachel Carson used to work as a marine biologist, simply did not have regulatory power; instead, it had to rely on the states for this function.⁹ The Department of Commerce found little in its programs that dealt with pesticide control but expressed its concern about the impact of the national debate on the pesticide chemical industry.¹⁰

Nevertheless, by the time reporters asked President Kennedy at a 29 August 1962 press conference about his response to the pesticide debate, he could answer that his administration was already working on it "since Miss Carson's book" (Graham 1970, 51).¹¹ Two days later, *The New York Times* disclosed that the FCST was conducting the investigation. Soon thereafter, the OST began to receive, alongside the voluminous mail from concerned public, letters from chemical companies which attacked Rachel Carson and urged Wiesner to consult with pro-pesticide scientists. "In our opinion," one official of the American Cyanamid Company wrote, "the main problem is Miss Carson."¹²

The Life Science Panel and Silent Spring

From the beginning, PSAC's Life Science Panel exhibited much more sympathy to Rachel Carson's positions than had scientists in the chemical industry or the USDA. The chairman of the panel was Colin M. MacLeod, a pioneer in molecular biology, a professor of medicine at New York University, and a member of PSAC. His panel included such prominent scientists as James Watson of Harvard University, who had just received the Nobel Prize in physiology and medicine. In contrast to the NAS-NRC panel or the Federal Pest Control Review Board, however, most of the PSAC panel members were not pesticide specialists; none of them was from a land-grant institution. This fact later led critics to question the panel's expertise, but it undoubtedly made it easier for panel members to act more independently from the chemical industry or the USDA.¹³ James G. Horsfall, director of the Connecticut Agricultural Experiment Station and one member of the panel who had extensive experience with the use and regulation of pesticides and who might be expected to speak for the agricultural interests, actually believed that the decision to spray chemicals for pest control lay with the communities affected.¹⁴ As the reports from federal agencies came in, chairman MacLeod

became convinced that “the magnitude of this problem is going to require a distinct reorientation on the part of many.”¹⁵

By the end of the summer of 1962, the FCST group had gathered enough data about the federal pesticide programs for the PSAC panel to plunge into work evaluating them. On 1 October 1962, the panel met with the FCST group to go over the data. Led by Wiesner, the group broadened the investigation from the direct effects on human health to the impact on the national economy—the poisoning of fish and crabs, for example—and wildlife. The next day, the PSAC panel met with Jones to pose further questions for the agencies about the history of pesticides, the reasons for different actions of common pesticides on different species, the synergistic action of two pesticides combined, the role of the federal government in the control of pesticide use outside of the federal government, and a host of other questions relating to the chemical and ecological aspects of pesticides.¹⁶

The large volume of data thus extracted from the federal agencies was examined along with information from other sources such as the World Health Organization, American Medical Association, and the British government. The panel also invited and received testimony from industry representatives, including the Manufacturing Chemists’ Association.¹⁷

Soon, the project widened beyond the staff’s original conception, as Peter Bing reported to a former OST staff member in late October 1962:

As you might expect Jim [Hartgering] and I, trying to get our toes wet in the pesticide problem, have both managed to be pushed off the brink. While floundering in the soup, Jim got the superb idea of bringing in a man [John L. Buckley] from the Department of Interior to spend three months working through this whole problem. Although we have nearly completed a review of Federal pesticides programs, these constitute only 5% of the total chemicals applied in this country each year, and the picture becomes increasingly complicated technically the more we look at it.¹⁸

The choice of an Interior scientist obviously did not please pesticide proponents, but the USDA apparently did not object.

The PSAC panel invited Rachel Carson for an informal meeting to discuss her concerns. It was, as she wrote a friend, “not a command performance, but just come if I’d like to” (Rachel Carson to Dorothy Freeman, quoted in Freeman 1995, 429). Believing that “perhaps it’s a chance to straighten out some thinking,” she met with the panel for nearly one day on 26 January 1963, impressing the panel members as being more moderate and sensible than they expected from reading some of the more dramatic passages in her book (Primack and von Hippel 1974, 43). On her part, Carson was pleased with the seriousness with which the White House had regarded the investi-

gation. President Kennedy, she learned from friends in government, “often asked about the progress of the Committee and urged speed in getting out the report” (Graham 1970, 76).

Two weeks after its meeting with Rachel Carson, the PSAC panel finished the first (and very controversial) draft of its report, dated 8 February 1963. In broad outline, the draft recognized the indispensable role of pesticides in modern agriculture and public health, but devoted most of the text to the dangers that excessive use of pesticides posed for human beings, fish and wildlife, and the environment. Although it did not make any formal recommendations, it called for close coordination between all federal agencies in the use and regulation of pesticides.¹⁹ In a letter to a friend, Rachel Carson described the intense reactions that trickled to her:

This morning I had a fascinating phone call from a man on the Republican Policy Committee of the Senate. He wanted to know whether I had seen the original draft of the report of the President’s pesticide committee. Of course I haven’t. His group has heard that this draft was so “hot” that enormous pressure has been brought on the committee, especially by two senators, and also by industry, etc., and that in consequence they have watered it down considerably. I told him I hoped he was misinformed, but if not, I hoped they could be instrumental in bringing out the original report . . . Now isn’t that interesting? (Rachel Carson to Dorothy Freeman, quoted in Freeman 1995, 447-48)

Agency Reaction to the PSAC Report

To the list of people who complained bitterly about the February draft, Carson could have added the USDA and the FDA. The USDA took the draft report so seriously that it established a task force to deal with the matter. Secretary of Agriculture Orville Freeman, when forwarding the task force’s comments to Wiesner, wrote a separate “personal” note pleading for caution in this “very sensitive area.” “Should this be handled improperly, and by that I don’t suggest we do other than be factual,” Freeman wrote, “I can assure you we could have a negative effect which would make the cranberry fiasco and the problem with strontium and iodine fade into complete insignificance.”²⁰

What riled the USDA and other critics most was the tone of the draft report and its assessments of the hazards of pesticides. The USDA criticized the imbalance of the report—only three paragraphs were devoted to the benefits of pesticides in a forty-page report focusing on their hazards—as misleading and dangerous to its functions, although it was aware of the PSAC panel’s explicit expectation that the USDA would prepare a case for the pesticides to be included in the final report. The department’s task force on the PSAC panel

report warned that, in its present form, the report “could profoundly damage U.S. agriculture” and “lead to a breakdown of public confidence in control programs, pesticide use, research scientists and their findings, governmental regulations of pesticides, and the safety and wholesomeness of our food supply.”²¹ One USDA official thought the report was biased because it “singles out agriculture as a miscreant, the pesticide industry as culpable, and in effect, leaves the health and wildlife agencies blameless.” He urged that PSAC hear more pesticide scientists, especially from the USDA, and have its report reviewed by the NAS-NRC committee on food protection.²² The Manufacturing Chemists’ Association also sent Wiesner a list of scientists it favored as potential witnesses.²³

The two other major players, the HEW and the Department of Interior, also submitted reactions. The HEW found the report dissatisfying, but for a different reason than had USDA. One HEW official feared that the report in the draft form, if released, would “cast doubt on the safety of our food supply and governmental health protection measures,” which were the department’s mandates. He wanted the panel merely to recommend more research on the health effects of pesticides and to clarify each agency’s role in the pesticide area.²⁴ As can be expected, the Department of Interior was much more enthusiastic about the draft report. Donald L. McKernan, director of the Bureau of Commercial Fisheries of the Fish and Wildlife Service, called the report “well done,” although he did express concern that the documentation of pesticide residues in food fish (which he questioned) might expose the fishing industry to a possible “cranberry scare.” He recommended only restricted distribution of the report.²⁵

At least one prominent agricultural scientist outside the government who had access to the draft report saw in it too much parallel with Rachel Carson’s *Silent Spring*. Robert L. Metcalf of the University of California, Riverside, offered, at the request of A. M. Boyce, dean of the university’s College of Agriculture and a consultant to the PSAC staff, scathing comments on the draft. “This document suffers from the overemotional and biased approach which has characterized the *Silent Spring* and other inflammatory writings on this subject. . . . It seems to me this tenor of writing is not in keeping with the dignity of the President’s Science Advisory Committee.”²⁶

PSAC Rewrites the Draft

Clashes continued when the PSAC panel met in early March to rewrite the report in light of comments from the agencies, and also to meet with USDA and HEW scientists to clarify some disturbing new findings about the

hazards of dieldrin, a pesticide ten times more toxic than DDT. At a conference on dieldrin on 8 March 1963, Wiesner and the panel members questioned whether the new data from Great Britain, which indicated for the first time the presence of dieldrin in human fat tissues, made it necessary for the USDA to withdraw registration of the pesticide. The suggestion met with strong resistance from the USDA and FDA officials, who conceded that dieldrin caused tumors but contended that “we need more data before we can decide whether dieldrin tumors are cancerous or not.” Even if the USDA withdrew registration, as B. T. Shaw, director of the USDA’s Agricultural Research Service, pointed out, the manufacturer could still market the product as one registered under protest, an incredible loophole in the law that the USDA was just beginning to ask Congress to change (with encouragement from the PSAC panel).²⁷ If a product was registered under protest, the manufacturer could take the USDA to court to prove that the product was unsafe. “We would not have evidence to back up our case,” Shaw feared. Wiesner was incredulous:

Wiesner: You are saying we should maintain the status quo?

Shaw: I am subject to the judgment of the group [PSAC panel].

Wiesner: This is a peculiar approach to the subject. We are protecting agriculture, but then we pollute the environment with the same chemical.²⁸

These exchanges made the PSAC panel members feel far from reassured about the safeguards on pesticides. On 11 March, they wrote Wiesner to express their concern:

The tolerance level of certain very stable [i.e., long-lasting] chlorinated hydrocarbons may be too high and may conceivably result in a health hazard to the general public. . . . We guess that a significant fraction of the American people is being exposed to dieldrin at the tolerance level. . . . FDA has classified the liver adenoma as benign and thus has not felt that the Delaney amendment relating to cancer-producing chemicals is applicable. However, the distinction between benign and malignant is not always clearcut. We are concerned that farther studies may show these tumors to be malignant.²⁹

In other words, the meeting with the USDA experts did not allay, but rather heightened, the panel members’ concern about pesticide use.

The battle over the PSAC report intensified as the panel neared completion of a final draft in March 1963. By mid-March, the panel had finished rewriting the report. On 19 March, the President’s Science Advisory Committee approved the new draft with minor changes. The USDA was furious that the revised version went to the full PSAC committee without its clearance and asked Wiesner to hold on any action on the report pending USDA

review.³⁰ In the meantime, Elmer Staats, deputy director of the Bureau of the Budget, also cautioned Wiesner that “because of the high degree of sensitivity on this subject I believe we should arrange to get comments from the agencies directly concerned before the report gets ‘frozen.’”³¹ The White House should not commit itself to making the report public, he suggested, and definitely should not make public any budgetary estimates that might tie the administration’s hands.³²

The PSAC panel tried to accommodate the USDA’s criticisms without giving in on principles. It added more materials on the benefits of pesticide use, making a case for its essential role in modern society “in as strong a way as possible,” although the space devoted to this section still constituted less than 20% of the whole report.³³ It also incorporated many specific points made in critical reviews by various agencies.³⁴

The USDA considered the revised draft “a great improvement” but was clearly still not satisfied. One of its major worries, which was shared by the FDA, was the report’s implication of the threat to the safety of the nation’s food supplies. They dreaded both the symbolism and the substance of a PSAC report critical of their programs. “I am deeply concerned,” Secretary Freeman pointed out to Wiesner, “by the possible public impact of a report on this subject from the highest official source.”³⁵ He wanted an explicit statement in the report to assure the public about the safety of the American food supply. Aside from domestic reactions, the USDA was afraid that the Europeans would seize the report as justification for an import barrier.³⁶ In response, the panel agreed to state that food intended for interstate and foreign commerce had very low levels of pesticide residues, due to FDA regulation. But the panel refused to guarantee this for food items marketed within their state of origin due to lax regulation or to make an unequivocal statement that the food of the nation was safe.³⁷

The PSAC panel also refused the USDA’s request to remove the only passage in the report where they paid a quiet but warm tribute to Rachel Carson’s work: “Public literature and the experiences of Panel members indicated that, until the publication of *Silent Spring* by Rachel Carson, people were generally unaware of the toxicity of pesticides.” The USDA objected to the mention of Carson’s book because “such a reference to a commercially available publication is inappropriate in a scientific report.” As Hartgering reported to Wiesner, the panel did debate “at some length” before it decided to include such a reference in the report. “It is noted that it is included under the recommendations on the need to increase public awareness [of the pesticide problem]. The Panel members felt that it would be a deliberate slight if they did not make reference to the book.”³⁸

One federal official who had no objection to praise of Carson in the PSAC report was Secretary of Interior Stewart Udall. In contrast, again, to the critical reactions of the USDA and HEW in this last stage of reviews, the Department of Interior continued to applaud the PSAC panel's work. In a letter to Wiesner, Udall called the revised draft report a "factual, unbiased treatment of the pesticide problem." He was disappointed, however, that no mention was made of the role his department should play in the evaluation of effects of pesticides on fish and wildlife. He wanted the final report to highlight the Department of Interior's role in this respect.³⁹

Pressure from the Media

As the tension built inside the government over the negotiation of the content of the PSAC report, the CBS television network broadcast on 13 April 1963 a prime-time special in its popular *CBS Reports* series on "The *Silent Spring* of Rachel Carson," which dramatically intensified the public debate. President Kennedy was likely among the millions of viewers that night, having been alerted by Wiesner earlier that day.⁴⁰ Both Secretary Freeman and James Hartgering appeared on the program, but the most memorable parts of the show featured a debate between a quiet but firm Rachel Carson and a white-coated and strident Robert White-Stevens, a scientist at American Cyanamid Company, who prophesied a return to the dark ages if Carson's warning was heeded. Judging by the overwhelming number of favorable letters received by CBS and Carson, it became increasingly difficult to defend pesticides by evoking the authority of the expert. As Lear (1993, 23-48) observed, "The show amounted to nothing less than a second printing of *Silent Spring*."

PSAC Report Released

After eight months of intensive investigation and all the revisions and compromises, the President's Science Advisory Committee report, *Use of Pesticides*, was finally completed and delivered to President Kennedy, who released it on 15 May 1963. The twenty-three-page document included a general introduction summarizing the panel's assessment of the problem and sections on "Gains," "Hazards," "Pest Control without Chemicals," "Role of the Government in Pesticide Regulation," and "Recommendations." While recognizing that "the use of pesticides must be continued" for food production and control of diseases, the report focused on the unknown hazards of

pesticides, especially in low dosages, and emphasized, as did Carson, that the pesticide problem was only one of many that threatened the environment. The panel pointed out that the problems admitted no easy technological fix:

It [the panel] can suggest ways of avoiding or lessening the hazards, but in the end society must decide, and to do so it must obtain adequate information on which to base its judgments. The decision is an uncomfortable one which can never be final but must be constantly in flux as circumstances change and knowledge increases. (President's Science Advisory Committee [PSAC] 1963, 2)

The body of the report explained the classes of compounds used in pesticides, their distribution and persistence in the environment, and their biological effects on man and animals. It discussed biological controls as an alternative to chemical pesticides, and, most important, made proposals for the USDA, HEW, and the Department of Interior to strengthen pesticide regulation. While lauding the measures that ensured the "efficacy" of pesticides, the panel deplored that "decisions on safety are not as well based as those on efficacy despite recent improvements" (PSAC 1963, 17). The panel blamed the domination of the USDA, with potential conflict of interests, and the weak or nonexistent roles of the HEW and the Department of Interior in the regulatory process for this outcome. To correct this problem, the panel urged more openness in the procedure:

The Panel believes that all data used as a basis for granting registration and establishing tolerances should be published, thus allowing the hypotheses and the validity and reliability of the data to be subjected to critical review by the public and the scientific community. (PSAC 1963, 17)

It called for a stronger role for the HEW:

The FDA has responsibility only for setting tolerance for pesticides which remains on foods. Decisions on all the other uses of these compounds and registration for all other compounds are the responsibility of USDA. Thus the Department of Agriculture regulatory staff evaluates and approves uses that bring pesticides into intimate contact with people, such as mothproofing of clothes and blankets, and applications to households, lawns and gardens. The Panel believes that decisions on registrations, clearly related to health, should be the responsibility of the Department of Health, Education, and Welfare. (PSAC 1963, 17)

It also pressed for the protection of fish and wildlife by their inclusion under existing federal pesticide laws and thus an end to the exclusion of the Department of Interior in pesticide regulation:

Concurrent registration procedures are primarily intended to protect people and domestic animals from damage by pesticides. The protection of fish and wildlife resources will require affirmation of this intent by Congress. Following such action by the Congress, the Panel believes the Secretary of Interior should actively participate in review of all registrations that may affect fish and wildlife. (PSAC 1963, 18)

The PSAC report also advocated federal research and public education programs on the effects of pesticides. To make the federal pesticide programs "models of correct practice" for national guidance, the panel suggested that "evaluation of the associated hazards" as an intrinsic part of these undertakings (PSAC 1963, 19). Deploing the fact that "approximately \$20 million were allocated to pest control programs in 1962, but no funds were provided for concurrent field studies on the environment," the report advocated that "every large-scale operation be followed by a complete report which would appear in the public literature" (PSAC 1963, 19, 22). Citing the ignorance of the public on hazards of pesticides before Rachel Carson's *Silent Spring*, the report recommended that "the appropriate Federal departments and agencies initiate programs of public education describing the use and toxic nature of pesticides" (PSAC 1963, 23).

Most controversial to the USDA and to pesticide proponents were the panel's proposed changes in federal pesticide policy. Echoing Carson, the panel called for the eventual elimination of persistent pesticides such as DDT and the termination of insect eradication programs, which it called unrealistic (PSAC 1963, 18, 20). Pesticide proponents at the USDA and elsewhere, however, argued that long-lasting poisons were indispensable for certain applications and that such use actually helped reduce the amount of pesticides used. They also contended that eradication worked in some regions and likewise helped reduce pesticide use. What they failed to consider were the harmful effects both approaches had for fish and wildlife.⁴¹

Reaction to the Report

Outside the circle of entrenched pesticide advocates, the PSAC panel report was universally greeted as a powerful affirmation of Rachel Carson's message in *Silent Spring*. "Rachel Carson Stands Vindicated" appeared as a headline in *The Christian Science Monitor* the day after the report was issued. Eric Sevareid, the newscaster who had narrated the CBS documentary, called the report "*prima facie* evidence" that Carson had achieved her goal to "build a fire under the Government."⁴² Interestingly, as Graham (1970, 79) pointed out, scientific publications such as *Science* and *Chemical and Engineering*

News, which had both published negative reviews of Carson's book, now joined the popular press in applauding the report. What gave particular weight to the report was, of course, Kennedy's brief but crucial statement that "I have already requested the responsible agencies to implement the recommendations in this report, including the preparation of legislative and technical proposals which I shall submit to the Congress" (PSAC 1963, iii). In a way, the report marked the closure of argument in the first phase of intra-administration debate over pesticide policy, although even those recommendations in the PSAC report were subject to different interpretations.⁴³

In Congress, Senator Abraham Ribicoff, a Democrat from Connecticut who had been secretary of HEW early in the Kennedy administration, saw to it that his former Cabinet colleagues followed the President's instruction. With good timing, he opened a series of Senate hearings on interagency coordination on the pesticide problem the day after the White House released the PSAC pesticide report. In his hands, the Wiesner report, as Ribicoff called it, became a reference point; he frequently quoted from the document and asked officials from the USDA, HEW, and the Department of Interior about how they were following up on the recommendations. As the first witness at the hearings, Wiesner made headlines with his claim that because of the rapid increase in the use of chemicals such as pesticides, they presented potentially a much greater danger than radioactive fallout from nuclear weapons testing (Pesticide danger 1963, 13; U.S. Senate, Committee on Government Operations 1964a, 62).

Secretaries from the three departments concerned gave largely positive responses to the PSAC report in their testimony. As in private, Secretary Udall gave the most enthusiastic public evaluation of the PSAC report. His main concern was that the various agencies would carry out its recommendations. He was especially eager to see implemented the report's recommendations that the protection from pesticides should be extended to fish and wildlife and that the Department of Interior should be part of the registration process. He complained that in the past, USDA had excluded fish and wildlife from the protection from pesticides and thus also the role of the Department of Interior (U.S. Senate, Committee on Government Operations 1964a, 69-82). In his testimony, Secretary Freeman welcomed the PSAC report, crediting it, along with Carson's *Silent Spring*, as contributing to public awareness of the hazards of pesticides. He also promised to collaborate with the Department of Interior to work out a satisfactory registration process. Although the USDA disagreed with the PSAC report on the desirability of eradication programs, Freeman endorsed most other recommendations, including the abolition of protest registration, expanded public education, and increased basic research

on biological control (U.S. Senate, Committee on Government Operations 1964a, 84-124).

The agricultural chemical industry greeted the PSAC report with mixed reactions. It welcomed PSAC's recommendation for expanded educational and research efforts. The big manufacturers even supported PSAC's call to eliminate registration under protest because, with their enormous research resources and intimate connections with the USDA, they were confident that their products could pass the registration process without resorting to antagonistic steps. The industry as a whole disliked, however, the PSAC report's call for tighter governmental control and regulation of pesticides, regarding it as unnecessary. PSAC's recommendation of phasing out a pesticide if a less poisonous one could do the job raised the possibility that the federal government would meddle in the marketplace, arbitrarily picking one pesticide producer against another (U.S. Senate, Committee on Government Operations 1964a, 327).

Rachel Carson testified at the Ribicoff hearings, elaborating on her case against unrestrained use of pesticides and giving her support to the PSAC recommendations. She especially endorsed PSAC's call to eliminate persistent pesticides eventually, to improve medical education and research related to pesticides, and to bring the Department of Interior into the pesticide registration process (U.S. Senate, Committee on Government Operations 1964a, 216-19). Two days later, she testified before the Senate Committee on Commerce and called for establishment of an independent commission within the Executive Office of the President to set pesticides policy. "Conflict of interest should be eliminated completely," she said, perhaps by excluding members from the government or the chemical industry. "The Commission," she suggested, "should be made up of citizens of high professional competence in such fields as medicine, genetics, biology, and conservation." Many later saw in this suggestion the seed for the Environmental Protection Agency (Hynes 1989, 45). Carson's positive experience with the PSAC pesticide panel certainly contributed to the idea.

The Ribicoff hearings brought to light the division in the scientific community over the effects of pesticides and what to do about them. Although Carson and several other scientists gave strong support to the PSAC report, a number of agricultural scientists and public health officials disagreed with PSAC on the danger of pesticides and the desirability of the elimination of persistent pesticides. Emil M. Mrak, chancellor of the University of California at Davis and professor of food science, for example, said the PSAC statement that pesticides were "affecting biological systems in nature and may eventually affect human health" was "contrary to the present body of scientific knowledge" (U.S. Senate, Committee on Government Operations

1964c, 947; also see the testimony of William J. Darby, U.S. Senate, Committee on Government Operations 1964b, 659). Everyone agreed, however, with PSAC's recommendations for increased public education and research on the hazards of pesticides. Federal agencies, including the USDA and the Public Health Service, already began to use the PSAC report to justify their requests for increased research budgets.⁴⁴

The environmental expertise of PSAC and its pesticide panel again came under question in the Ribicoff hearings. Several agricultural scientists, working in industrial and academic settings, criticized the panel for lack of expertise on the subject and for failure to consult with those best qualified in their view. Such experts as industrial chemists, however, were certainly "in no better position to evaluate the toxicological effects because of their industrial background," as Peter Bing answered one chemical company executive.⁴⁵ He implied that although PSAC panel members might not be experts on pest control, they were probably as qualified as any on the problem of the hazards of pesticides. Their study represented, perhaps for the first time, a synthesis of state-of-the-art research findings on the pesticide problem from different agencies and sources, generating new knowledge in the process.

Conclusion

The PSAC report on pesticides achieved only a few far-reaching changes in federal pesticide policy. It helped to eliminate protest registration, reduce the dosage of and eventually ban the use of DDT and several other chemicals in the United States, increase research and education on the hazards of pesticides, and bring about a stronger Federal Committee on Pest Control to replace the older and weaker Federal Pest Control Review Board.⁴⁶ According to Consumer Union, the PSAC report also helped focus attention on the hazards of household pesticides (The public needs 1963, 321-27). Although respectable, this list of achievements was not as impressive as Rachel Carson or other environmentalists might have liked. As Shirley A. Briggs, Carson's fellow crusader against excessive pesticide use and later executive director of the Rachel Carson Council, has stated, the volume of pesticides produced and used has increased every year since *Silent Spring* and the PSAC report (Briggs 1990, 54-60).

In retrospect, the real contribution of the PSAC report was probably its critical role in changing public and official opinion of the environmental problems discussed in Rachel Carson's *Silent Spring*. By the weight of its proximity to presidential power and by its scientific prestige, the PSAC group helped to certify the seriousness of Carson's seemingly radical claims of envi-

ronmental cataclysms. Along with the public, the government and the scientific establishment now had to pay close attention to environmental problems. Furthermore, with its balanced treatment of the issue based on compromise among the various interests involved, the PSAC report offered an early example of what Jasanoff (1990, 250) called the “negotiated model of regulatory science,” a process that admits scientific uncertainties but still encourages policy making to be guided by dynamic research and by conservative assessment of potential risks. And, as a case study in how official scientific and technical reports are constructed, it also offers some interesting examples of the roles that can be played by the mass media and by popular science.

Notes

1. In 1996, the Delaney amendment was finally revised to a more realistic form for effective enforcement (see Hanson 1996).

2. The President’s Science Advisory Committee, *The Report of the Panel on Food Additives*, White House release, in folder Public Statements (3), Office of the Special Assistant for Science and Technology records, I. alphabetic series, box 14, White House Office files, Dwight D. Eisenhower Library, Abilene, KS, 9 May 1960.

3. What the department called basic research was really, in the view of the panel, applied research. George Kistiakowsky memorandum for the President, in folder Life Science (3), White House Office files, Office of the Special Assistant for Science and Technology records, I. alphabetic series, box 11, Dwight D. Eisenhower Library, Abilene, KS, 9 May 1960; Kistiakowsky memorandum, *Meeting with the President*, in folder Meeting with the President, White House Office files, Office of the Special Assistant for Science and Technology records, I. alphabetic series, box 12, Dwight D. Eisenhower Library, Abilene, KS, 9 May 1960.

4. Jerome Wiesner to John F. Kennedy, in folder Office of Science and Technology, 1962, box 85, Department and Agencies series, President’s Office file, John F. Kennedy Library, Boston, MA, 21 March 1962. Also see Library of Congress (1967).

5. Edward Wenk, Jr., *Background Memorandum Concerning Agenda for July 24, 1962 Meeting* [of the FCST], in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 18 July 1962.

6. *Minutes of Meeting Held 3pm, 30 July 1962 on Pesticides*, in folder Life Sciences—Pesticides, 1 August 1962; Peter S. Bing to A. M. Boyce, both in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 9 August 1962.

7. *Minutes of Meeting Held 3pm, 30 July 1962 on Pesticides*, in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 August 1962.

8. Just as many PSAC panel members were not PSAC members, the NAS-NRC panel members were not necessarily members of the academy.

9. *Minutes of Meeting Held 3pm, 30 July 1962 on Pesticides*, in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 August 1962.

10. Merrill B. Wallenstein to Peter Bing, in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 29 August 1962.

11. See also *For Possible Use at Press Conference—August 29, 1962*, in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 29 August 1962.

12. Thomas H. Jukes to Jerome Wiesner, 31 August 1962; Thomas H. Jukes to James B. Hartgering, both in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 22 October 1962.

13. See, for example, Raymond P. Seven of Morton Chemical Company to John Kennedy (12 June 1963) and Senator Jack Miller to Jerome Wiesner (12 July 1963), in folder FG 726 President's Science Advisory Committee, box 264, White House Central files, John F. Kennedy Library, Boston, MA.

14. James G. Horsfall to James Hartgering, in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 23 July 1962.

15. Colin M. MacLeod to Alexander Hollaender, in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 12 September 1962.

16. *Minutes of the Pesticides Meeting with the Life Sciences Panel*, in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 October 1962.

17. Peter S. Bing to Raymond P. Seven, in folder FG 726 President's Science Advisory Committee, box 264, White House Central files, John F. Kennedy Library, Boston, MA, 28 June 1963. Much of the materials used during the PSAC study of pesticides were later furnished to Congress and published at the request of Senator Abraham Ribicoff. See U.S. Senate, Committee on Government Operations (1965).

18. Peter S. Bing to Robert N. Kreidler, in folder Life Sciences—Pesticides, box 152, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 22 October 1962.

19. David Z. Beckler memo for PSAC members, and attached *Life Sciences Panel Working Paper on Pesticides*, in folder Pesticides, OST Reports, vol. 1, 1 April 1963, box 251, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 8 February 1963.

20. Orville L. Freeman to Jerome Wiesner, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 March 1963.

21. *Comments of the USDA Task Force on the Life Sciences Panel Working Paper on Pesticides*, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 27 February 1963.

22. T. C. Byers to Orville Freeman, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 28 February 1963.

23. J. E. Hull to Jerome Wiesner, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 29 March 1963.

24. William H. Stewart to James Hartgering, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 5 March 1963.

25. Donald L. McKernan to commissioner of Fish and Wildlife Service of the Department of Interior, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 March 1963.

26. A. M. Metcalf to James Hartgering, and attached R. L. Metcalf, *Comments on Life Sciences Panel Working Paper on Pesticides*, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 5 March 1963.

27. James Hartgering to R. C. McGregor of the Bureau of Budget, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 4 March 1963.

28. *Pesticides Meeting Notes*, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 7-8 March 1963. The quotations are from page 11 of the notes of the 8 March 1963 meeting. Although Shaw implied here that he would follow PSAC panel suggestions, elsewhere (page 2 of the 8 March 1963 meeting notes) he made it clear that he had conditions: "We are always subject to the recommendations of scientific advisors. We wish to recognize any valid statements which are made by you people with the firm understanding that they will be reviewed by our scientific staff."

29. [PSAC] Life Sciences Panel to Jerome Wiesner, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 11 March 1963.

30. Roger A. Barnes, assistant to the secretary of agriculture, to Jerome Wiesner, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 19 March 1963.

31. Elmer Staats to Jerome Wiesner, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 8 March 1963.

32. Elmer Staats to Jerome Wiesner, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 8 March 1963.

33. James Hartgering to panel members, in folder Life Sciences—Pesticides 1962-1963, box 253, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 5 April 1963.

34. James Hartgering to Jerome Wiesner, in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 8 May 1963.

35. Orville Freeman to Jerome Wiesner, in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 May 1963.

36. Orville Freeman to Jerome Wiesner, and attached *Comments Relating to Proposed Changes in the Document "The Use of Pesticides,"* in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 May 1963; *Comments on "The Use of Pesticides,"* by the HEW, in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 May 1963.

37. James Hartgering to Jerome Wiesner, in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 8 May 1963.

38. *Comments Relating to Proposed Changes in the Document "The Use of Pesticides,"* in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 1 May 1963; and James Hartgering to Jerome Wiesner, in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 8 May 1963. Also see PSAC (1963, 23).

39. Stewart L. Udall to Jerome Wiesner, in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 26 April 1963.

40. "Fred Friendly has done a documentary film on pesticide problems, reviewing much of the ground that Rachel Carson covered in her book, *Silent Spring*. It will be shown at 7:30 tonight (Wednesday) on Channel 2." Jerome Wiesner memorandum for the President, in (Staff memorandum) folder Wiesner, Jerome B., 1963, box 67, series President's Office files, John F. Kennedy Library, Boston, MA, 3 April 1963.

41. See, for example, Secretary Freeman's testimony in U.S. Senate, Committee on Government Operations (1964a, 117-18) and testimony of William J. Darby in U.S. Senate, Committee on Government Operations (1964b, 659).

42. Quoted in Graham (1970, 79).

43. Indeed, many pesticide proponents, focusing and perhaps reading the portion on the benefits of pesticides, found in the report a "lack of alarm" (Aroused spring 1963, 81).

44. For USDA's expanded educational activities on pesticides, see U.S. Senate, Committee on Government Operations (1963b, 723). For PHS's request for a budget increase, see U.S. Senate, Committee on Government Operations (1965, 1000, app. V). For USDA, see Orville Freeman to Kermit Gordon, director of the Bureau of Budget, in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD, 18 June 1963.

45. See, for example, U.S. Senate, Committee on Government Operations (1964a, 303-4) and U.S. Senate, Committee on Government Operations (1964c, 910-11). Also see Peter S. Bing to Raymond P. Seven, folder FG 726 President's Science Advisory Committee, box 264, White House Central files, John F. Kennedy Library, Boston, MA, 28 June 1963.

46. See agency reports on the implementation of the PSAC report, in folder Life Sciences—Pesticides, box 252, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD; and folder Pesticide Budget, box 254, Records of the Office of Science and Technology (RG 359), National Archives, College Park, MD. USDA reduced the dosage of DDT from one pound per acre to one-half pound per acre in response to Carson and PSAC (Dunlap 1981; U.S. Senate, Committee on Government Operations 1965, 1011, app. V). On the formation of the Federal Committee, see U.S. Senate, Committee on Government Operations (1965, 1025, app. V).

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