Introduction to Silent Spring

Rachel Carson

1962

by Vice President Al Gore

1994

WRITING ABOUT *Silent Spring* is a humbling experience for an elected official, because Rachel Carson's landmark book offers undeniable proof that the power of an idea can be far greater than the power of politicians. In 1962, when *Silent Spring* was first published, "environment" was not even an entry in the vocabulary of public policy. In a few cities, especially Los Angeles, smog had become a cause of concern, albeit more because of its appearance than because of its threat to public health. Conservation — the precursor of environmentalism — had been mentioned during the 1960 Democratic and Republican conventions, but only in passing and almost entirely in the context of national parks and natural resources. And except for a few scattered entries in largely inaccessible scientific journals, there was virtually no public dialogue about the growing, invisible dangers of DDT and other pesticides and chemicals. *Silent Spring* came as a cry in the wilderness, a deeply felt, thoroughly researched, and brilliantly written argument that changed the course of history. Without this book, the environmental movement might have been long delayed or never have developed at all.

Not surprisingly, both the book and its author, who had once worked as a marine biologist for the Fish and Wildlife Service, met with considerable resistance from those who were profiting from pollution. Major chemical companies tried to suppress *Silent Spring*, and when excerpts appeared in *The New Yorker*, a chorus of voices immediately accused Carson of being hysterical and extremist — charges still heard today whenever anyone questions

those whose financial well-being depends on maintaining the environmental status quo. (Having been labeled "Ozone Man" during the 1992 campaign, a name that was probably not intended as a compliment but that I wore as a badge of honor, I am aware that raising these issues invariably inspires a fierce — and sometimes foolish — reaction.) By the time the book became widely available, the forces arrayed against its author were formidable.

The attack on Rachel Carson has been compared to the bitter assault on Charles Darwin when he published *The Origin of Species.* Moreover, because Carson was a woman, much of the criticism directed at her played on stereotypes of her sex. Calling her "hysterical" fit the bill exactly. *Time* magazine added the charge that she had used "emotion-fanning words." She was dismissed by others as "a priestess of nature." Her credibility as a scientist was attacked as well: opponents financed the production of propaganda that supposedly refuted her work. It was all part of an intense, well-financed negative campaign, not against a political candidate but against a book and its author.

Carson brought two decisive strengths to this battle: a scrupulous respect for the truth and a remarkable degree of personal courage. She had checked and rechecked every paragraph in *Silent Spring,* and the passing years have revealed that her warnings were, if anything, understated. And her courage, which matched her vision, went far beyond her willingness to disturb an entrenched and profitable industry. While writing *Silent Spring,* she endured a radical mastectomy and then radiation treatment. Two years after the book's publication, she died, of breast cancer. Ironically, new research points strongly to a link between this disease and exposure to toxic chemicals. So in a sense, Carson was literally writing for her life.

She was also writing against the grain of an orthodoxy rooted in the earliest days of the scientific revolution: that man (and of course this meant the male of our species) was properly the center and the master of all things, and that scientific history was primarily the story of his dominion — ultimately, it was hoped, to a nearly absolute state. When a woman dared to challenge this orthodoxy, one of its prominent defenders, Robert White Stevens, replied in terms that now sound not only arrogant but as quaint as the flat-earth theory: "The crux, the fulcrum over which the argument chiefly rests, is that Miss Carson maintains that the balance of nature is a major force in the survival of man, whereas the modern chemist, the modern biologist and scientist, believes that man is steadily controlling nature."

The very absurdity of that world view from today's perspective indicates how revolutionary Rachel Carson was. Assaults from corporate interests were to be expected, but even the American Medical Association weighed in on the chemical companies' side. The man who discovered the insecticidal properties of DDT had, after all, been awarded the Nobel Prize.

But *Silent Spring* could not be stifled. Solutions to the problems it raised weren't immediate, but the book itself achieved enormous popularity and broad public support. In addition to presenting a convincing case, Carson had won both financial independence and public credibility with two previous bestsellers, *The Sea Around Us* and *The Edge of the Sea.* Also, *Silent Spring* was published in the early years of a decade that was anything but silent, a decade when Americans were perhaps far readier than they had been to hear and heed the book's message. In a sense, the woman and the moment came together.

Eventually, both the government and the public became involved — not just those who read the book, but those who read the news or watched television. As sales of *Silent Spring* passed the half-million mark, *CBS Reports* scheduled an hour-long program about it, and the network went ahead with the broadcast even when two major corporate sponsors withdrew their support. President Kennedy discussed the book at a press conference and appointed a special panel to examine its conclusions. When the panel reported its findings, its paper was an indictment of corporate and

bureaucratic indifference and a validation of Carson's warnings about the potential hazards of pesticides. Soon thereafter, Congress began holding hearings and the first grassroots environmental organizations were formed.

Silent Spring planted the seeds of a new activism that has grown into one of the great popular forces of all time. When Rachel Carson died, in the spring of 1964, it was becoming clear that her voice would never be silenced. She had awakened not only our nation but the world. The publication of *Silent Spring* can properly be seen as the beginning of the modern environmental movement.

For me personally, *Silent Spring* had a profound impact. It was one of the books we read at home at my mother's insistence and then discussed around the dinner table. My sister and I didn't like every book that made it to that table, but our conversations about *Silent Spring* are a happy and vivid memory. Indeed, Rachel Carson was one of the reasons why I became so conscious of the environment and so involved with environmental issues. Her example inspired me to write *Earth in the Balance*, which, not coincidentally, was published by Houghton Mifflin, the company that stood by Carson through all the controversy and that has since earned a reputation for publishing many fine books about the environmental dangers facing our world. Her picture hangs on my office wall among those of the political leaders, the presidents and the prime ministers. It has been there for years — and it belongs there. Carson has had as much or more effect on me than any of them, and perhaps than all of them together.

Both a scientist and an idealist, Carson was also a loner who listened, something that those in places of power so often fail to do. *Silent Spring* was conceived when she received a letter from a woman named Olga Owens Huckins in Duxbury, Massachusetts, telling her that DDT was killing birds. Today, because Carson's work led to a ban on DDT, some of the species that were her special concern — eagles and peregrine falcons, for example — are no

longer at the edge of extinction. It may be that the human species, too, or at least countless human lives, will be saved because of the words she wrote.

No wonder the impact of *Silent Spring* has been compared to that of *Uncle Tom's Cabin*. Both rank among the rare books that have transformed our society. Yet there are important differences. Harriet Beecher Stowe dramatized an issue that was already on everyone's mind and at the center of a great public debate; she gave a human face to an already dominant national concern. The picture of slavery she drew moved the national conscience. As Abraham Lincoln said when he met her, at the height of the Civil War, "So you're the little lady who started this whole thing." In contrast, Rachel Carson warned of a danger that hardly anyone saw; she was trying to put an issue on the national agenda, not bear witness to one that was already there. In that sense, her achievement was harder won. Ironically, when she testified before Congress in 1963, Senator Abraham Ribicoff's welcome eerily echoed Lincoln's words of exactly a century before: "Miss Carson," he said, "you are the lady who started all this."

Another difference between the books goes to the heart of *Silent Spring*'s continuing relevance. Slavery could be, and was, ended in a few years, although it has taken another century and more to even begin to deal with its aftermath. But if slavery could be abolished with the stroke of a pen, chemical pollution could not. Despite the power of Carson's argument, despite actions like the banning of DDT in the United States, the environmental crisis has grown worse, not better. Perhaps the rate at which the disaster is increasing has been slowed, but that itself is a disturbing thought. Since the publication of *Silent Spring*, pesticide use on farms alone has doubled to 1.1 billion tons a year, and production of these dangerous chemicals has increased by 400 percent. We have banned certain pesticides at home, but we still produce them and export them to other countries. This not only involves a readiness to profit by selling others a hazard we will not accept for ourselves; it

also reflects an elemental failure to comprehend that the laws of science do not observe the boundaries of politics. Poisoning the food chain anywhere ultimately poisons the food chain everywhere.

In one of Carson's few speeches, and one of her last, to the Garden Club of America, she acknowledged that things could get worse before they got better: "These are large problems, and there is no easy solution." Yet she also warned that the longer we waited, the more risks we ran: "We are subjecting whole populations to exposure to chemicals which animal experiments have proved to be extremely poisonous and in many cases cumulative in their effect. These exposures now begin at or before birth and — unless we change our methods — will continue through the lifetime of those now living. No one knows what the results will be, because we have no previous experience to guide us." Since she made these remarks, we have unfortunately gained an abundance of experience, as rates of cancer and other diseases that may be related to pesticide use have soared. The difficulty is not that we have done nothing. We have done some important things, but we have not done nearly enough.

The Environmental Protection Agency was established in 1970, in large part because of the concerns and the consciousness that Rachel Carson had raised. Pesticide regulation and the Food Safety Inspection Service were moved to the new agency from the Agriculture Department, which naturally tended to see the advantages and not the dangers of using chemicals on crops. Since 1962, Congress has called for the establishment of review, registration, and information standards for pesticides — not once, but several times. But many of these standards have been ignored, postponed, and eroded. For example, when the Clinton-Gore administration took office, standards for protecting farm workers from pesticides were still not in place, even though the EPA had been "working on them" since the early 1970s. Broad-spectrum pesticides such as DDT have been replaced by narrow-spectrum pesticides of even

higher toxicity, which have not been adequately tested and present equal or even greater risks.

For the most part, hardliners within the pesticide industry have succeeded in delaying the implementation of protective measures called for in *Silent Spring*. It is astonishing to see the cosseting this industry has been accorded in Congress over the years. The statute that regulates pesticides, fungicides, and rodenticides sets far looser standards than those that regulate food and drugs, and Congress intentionally made them more difficult to enforce. In setting safe levels of a pesticide, the government takes into account not only its toxicity but also the economic benefit it provides. This dubious process pits increased agricultural production (which might be obtained otherwise) against potential increases in cancer and neurological disease. Moreover, the process for removing a hazardous pesticide from the market generally takes five to ten years. New pesticides, even if they are very toxic, can win approval if they work just marginally better than existing ones.

In my view, this is nothing more than the regulatory equivalent of "Been down so long it looks like up to me." The present system is a Faustian bargain — we get short-term gain at the expense of long-term tragedy. And there is reason to believe that the short term can be very short indeed. Many pesticides do not cause the total number of pests to decline; they may do so at first, but the pests eventually adapt by mutation and the chemicals become useless. Furthermore, we have focused research on pesticide effects on adults and not on children, who are especially vulnerable to these chemicals. We have examined each pesticide in isolation, but scientists generally have not yet researched combinations, which are the potentially far more perilous reality encountered in our fields and pastures and streams. Essentially, what we have inherited is a system of laws and loopholes, deadlines and delays, facades that barely disguise a wholesale failure of policy.

Rachel Carson showed that the excessive use of pesticides was inconsistent with basic values; that at their worst, they create what

she called "rivers of death," and at their best, they cause mild harm for relatively little long-term gain. Yet the honest conclusion is that in the twenty-two years since the publication of *Silent Spring*, the legal, regulatory, and political system has failed to respond adequately. Because Carson understood not only the environment but the very different world of politics, she anticipated one of the reasons for this failure. At a time when almost no one discussed the twin contaminations of special-interest money and influence, she referred in her Garden Club speech to the "advantage . . . given to those who seek to block remedial legislation." Foreshadowing the present debate about political reform, she even condemned the tax deduction for lobbying expenses that this administration has sought to repeal, pointing out that the deduction "means, to cite a specific example, that the chemical industry may now work at bargain rates to thwart future attempts at regulation. . . . The industry wishing to pursue its course without legal restraint is now actually subsidized in its efforts." In short, the problem of pesticides, which she brilliantly diagnosed, is perpetuated by the problem of politics, which she uncannily predicted. Cleaning up politics is essential to cleaning up pollution.

The years-long failure of one endeavor helps to explain the years-long failure of the other. The results are as undeniable as they are unacceptable. In 1992, 2.2 billion pounds of pesticides were used in this country — eight pounds for every man, woman, and child. Many of the pesticides in use are known to be quite carcinogenic; others work by poisoning the nervous and immune systems of insects, and perhaps of humans. Although we no longer have the doubtful benefits of one household product that Carson described — "We can polish our floors with a wax guaranteed to kill any insect that walks over it" — today pesticides are being used on more than 900,000 farms and in 69 million homes.

In 1988, the EPA reported that the ground water in thirty-two states was contaminated with seventy-four different agricultural chemicals, including one, the herbicide atrazine, that is classified

as a potential human carcinogen. Seventy million tons a year are used on cornfields in the Mississippi basin, and 1.5 million pounds of runoffs now flow into the drinking water of 20 million people. Atrazine is not removed by municipal water treatment; in springtime, the amount of atrazine in the water often exceeds the standards set by the Safe Drinking Water Act. In 1993, that was true for 25 percent of all the surface water in the entire Mississippi basin.

DDT and PCBs are virtually banned in the United States for other reasons, but pesticides that mimic the female hormone estrogen, which are close chemical cousins, are plentiful and are raising intense new concerns. Research from Scotland, Michigan, Germany, and elsewhere indicates that they lead to reduced fertility, testicular and breast cancer, and malformation of the genital organs. In the United States alone, as the tide of estrogen pesticides has crested in the past twenty years, the incidence of testicular cancer has risen by approximately 50 percent. The evidence also suggests that, for reasons not yet understood, there has recently been a worldwide drop in sperm counts of 50 percent. There is documented, irrefutable proof that these chemicals disrupt the reproductive capacity of wildlife. As three researchers concluded after reviewing the data for the *Journal of the Institute of Environmental Health Services*, "Today many wildlife populations are at risk." Many of these problems may be harbingers of vast and unpredictable changes in animal and human reproductive systems, but the pesticides' potentially harmful effects are not currently considered in regulatory risk assessment. A new administration proposal calls for this kind of review.

Defenders of these chemicals will no doubt provide the traditional responses: that studies using human subjects don't demonstrate a direct link between the chemicals and disease; that coincidence doesn't equal causality (although some coincidences strongly point to making a prudent instead of a reckless decision); and, the old standby, that tests on animals don't always, absolutely,

inescapably translate to the same results in the human species. Each of these answers recalls the kind of reflexive response that Rachel Carson's work elicited from the chemical industry and the university scientists it subsidized. She anticipated the response, and wrote in *Silent Spring* of a public "fed little tranquilizing pills of half-truths. We urgently need an end to these false assurances, to the sugarcoating of unpalatable facts."

In the 1980s, especially when James Watt was at the Interior Department and Ann Gorsuch was at the EPA, the environmental know-nothings reached the peak of their influence. Poisoning the environment was almost regarded as a sign of hard-nosed economic pragmatism. In the Gorsuch EPA, for example, integrated pest management (IPM), the alternative to chemical pesticides, was literally declared anathema. The EPA banned publications about it, and certification of IPM methods was outlawed.

The Clinton-Gore administration began with a different view, and with a firm determination to turn the tide of pesticide pollution. Our policy pursues three imperatives: tougher standards, reduced use, and broader use of alternative biological agents.

Obviously, a sensible approach to pesticide use has to balance dangers and benefits and take economic factors into account. But we also have to take the heavy weight of special interests off the scale and out of the equation. The standards have to be clear and demanding, and the testing has to be thorough and honest. For too long we have set tolerance levels for pesticide residues in children hundreds of times higher than they should be. What calculus of economic benefits can justify this? We have to test the effects of these chemicals on children, not just adults, and we have to test a range of varying combinations. We must test not just to limit fear, but to limit what we have to fear.

If a pesticide isn't needed or doesn't work in a given situation, then the presumption should be against use, not for it. The benefit should be real, not possible, transitory, or speculative.

Above all, we have to focus on the biological agents for which the industry and its political apologists have such intense hostility. In *Silent Spring*, Carson wrote of the "truly extraordinary array of alternatives to the chemical control of insects." The array is wider today, despite the indifference of too many public officials and the resistance of manufacturers. Why don't we push hard for the use of nontoxic substances?

Finally, we must begin to bridge the cultural divide between the pesticide-production and agricultural community on the one side and the public health community on the other. People in the two communities come from different backgrounds, go to different colleges, and have very different viewpoints. As long as they face each other across a gulf of suspicion and enmity, we will find it hard to change a system in which production and profit are tied to pollution. One way in which we can signal the end of that system — and begin to narrow the cultural divide — is by having the Agricultural Extension Service promote alternatives to chemical solutions. Another is by instituting formal, ongoing dialogue between those who produce our food and those who protect our health.

The Clinton-Gore administration's new policy regarding pesticides has many architects. Maybe the most important is a woman whose last official government service came in 1952, when she resigned from her mid-level civil service position so she could write full-time, not just on weekends and at night. In spirit, Rachel Carson sits in on all the important environmental meetings of this administration. We may not do everything she would want, all at once, but we are moving in the direction she indicated.

In 1992, a panel of distinguished Americans selected *Silent Spring* as the most influential book of the last fifty years. Across those years and through all the policy debates, this book continues to be the voice of reason breaking in on complacency. It brought environmental issues to the attention not just of industry and government; it brought them to the public, and put our democracy itself on the side of saving the Earth. More and more, consumer

power will work against pesticide pollution, even when government does not. Reducing pesticides in food is now becoming a marketing tool as well as a moral imperative. The government must act, but the people can also decide — and I am convinced that the people will no longer let the government do nothing, or do the wrong thing.

Rachel Carson's influence reaches beyond the boundaries of her specific concerns in *Silent Spring*. She brought us back to a fundamental idea lost to an amazing degree in modern civilization: the interconnection of human beings and the natural environment. This book was a shaft of light that for the first time illuminated what is arguably the most important issue of our era. In *Silent Spring*'s final pages, Carson described the choice before us in terms of Robert Frost's famous poem about the road "less traveled." Others have taken that road; few have taken the world along with them, as Carson did. Her work, the truth she brought to light, the science and research she inspired, stand not only as powerful arguments for limiting the use of pesticides but as powerful proof of the difference that one individual can make.