

ECOLOGICAL INTUITION

Are we really safe here? The government says yes. But a central Illinois native looks to her roots to illustrate hazards in a chemically altered environment. And after measuring 'folklore' about scientific scrutiny, our reviewer puts his faith in hunches

LIVING DOWNSTREAM BY SANDRA STEINGRABER
PUBLISHED BY VINTAGE BOOKS, 1998

Review essay by Robert Kuhn McGregor

Time lies heavy in an Illinois wintertime. Treasured moments, walking frozen fields swathed in parka and scarves, do little to lift the spirit. Nor do captured memories: the rose-tinted silhouette of a sharp-shinned hawk against a January sky, the track of a determined fox dragging its tail across a frozen pond. As I tramp through frost and mud, the remains of corn stalks rustle in a bitter wind. All the while, the same dreary questions nag at the back of the mind. Am I really safe here? What am I breathing, tracking home on my boots?

The question, I readily admit, is not altogether a rational one. Nor is my behavior at those ill-improved moments I spend lying before the almighty television, yelling in vain at the screen. New pesticides, new fertilizers, new additives; the litany seems endless. Guaranteed to kill plants/worms/bugs more effectively, produce more corn, more soybeans. Have these products been tested? I demand to know. I mean really tested, over long periods of time, to equally guarantee that they kill only a narrow and selected range of nature, rather than indiscriminately endangering everything, including ourselves? Of course not, comes the answer from the

rational side of my brain. This is America. This is Progress. We cannot wait 30 years to test something, to see what its effects will be. We must fight the insect enemy *right now*.

The rational brain also admits the scientific evaluation of the agricultural chemical track record is at best ambiguous. All the old killers — arsenic (in general use in Illinois through World War II), DDT, Chlordane — are admitted threats to life generally; they are now outlawed for use in the United States. Scientific studies of the newer ones are generally unsatisfactory. There is some indication they may be agents in the greater incidence of cancers; yet so many remain unconvinced. Most cancers are the result of smoking tobacco or dietary imbalances, they argue cogently. So, rationally, I am not sure. But irrationally — let us call it intuitively — I am certain that our restless pollution of the environment is endangering our health and well-being. Call it a hunch.

When not slogging through snow-encrusted fields or yelling at the television, I have spent the dark days of winter reading *Living Downstream*, a “personal investigation of cancer and

the environment” written by Sandra Steingraber. This is not exactly light pleasure reading. Steingraber, a native of Pekin, Ill., is a scientist, a plant ecologist trained at the University of Michigan. She is also a cancer victim, diagnosed with bladder cancer in her early 20s. Since Steingraber eats healthy and does not smoke, her cancer is not easily explained away by chemical apologists. Her book, a lengthy and exacting inquiry into the environmental causes of cancer, is punctuated by tales of her experiences and those of friends now dead. Cancer is a living horror in these pages, not merely a statistical presence in some population study.

I suppose Steingraber's own battle with cancer will make her appear biased on the issue in the eyes of many. Clearly she senses this, harkening back to the experiences of her role model, Rachel Carson. Like Steingraber, Carson wrote a scientifically impeccable indictment of the misuse and overuse of chemicals in the environment while suffering from cancer. Unlike Steingraber, Rachel Carson died not long after *Silent Spring* appeared, a victim of breast cancer. Spokesmen from the chemical industries labeled her a hysterical woman



Illinois is nearly 80 percent farmland, and millions of pounds of synthetic pesticides are used on it each year.

who would turn the world over to the insects. They whispered that her book was a woman's sad attempt to expiate the anger over her own cancer. Fortunately, more perceptive heads to some degree prevailed — a presidential commission sustained the charges wrought in *Silent Spring*. The "Age of Ecology" was born, and Congress even passed a few environmental protection laws.

It was not enough. As Steingraber relentlessly documents, the laws passed in response to threats exposed by Rachel Carson are altogether inadequate and cosmetic. We have outlawed DDT and Chlordane (for

use, but not for manufacture), but we have no adequate safeguards to evaluate the newer generations of chemicals. We are far more subtle than in Carson's time, but we still dump chemicals on anything that grows, either to kill it or supposedly protect it from something else that will. We now use twice as much chemical pesticide as we used in 1962, the year *Silent Spring* was published. Leaving aside for the moment that there may be more efficient and economic ways to improve our crop yields, let us address the fact that we simply do not know what the effects of this stuff are. In the meantime, the incidence of cancer

in the United States has tripled since World War II. It is very difficult to blame that much cancer on demography and smoking.

Sandra Steingraber illustrates best the mind-set accompanying the proliferation of chemical use since 1945 by noting that these were the byproducts of war. Like radiation — the other major suspect in the search for the environmental causes of cancer — synthetic organic chemicals were originally the products of the ongoing search for new forms of weaponry. These chemicals were explored into existence in the hopes of finding a newer, more efficient

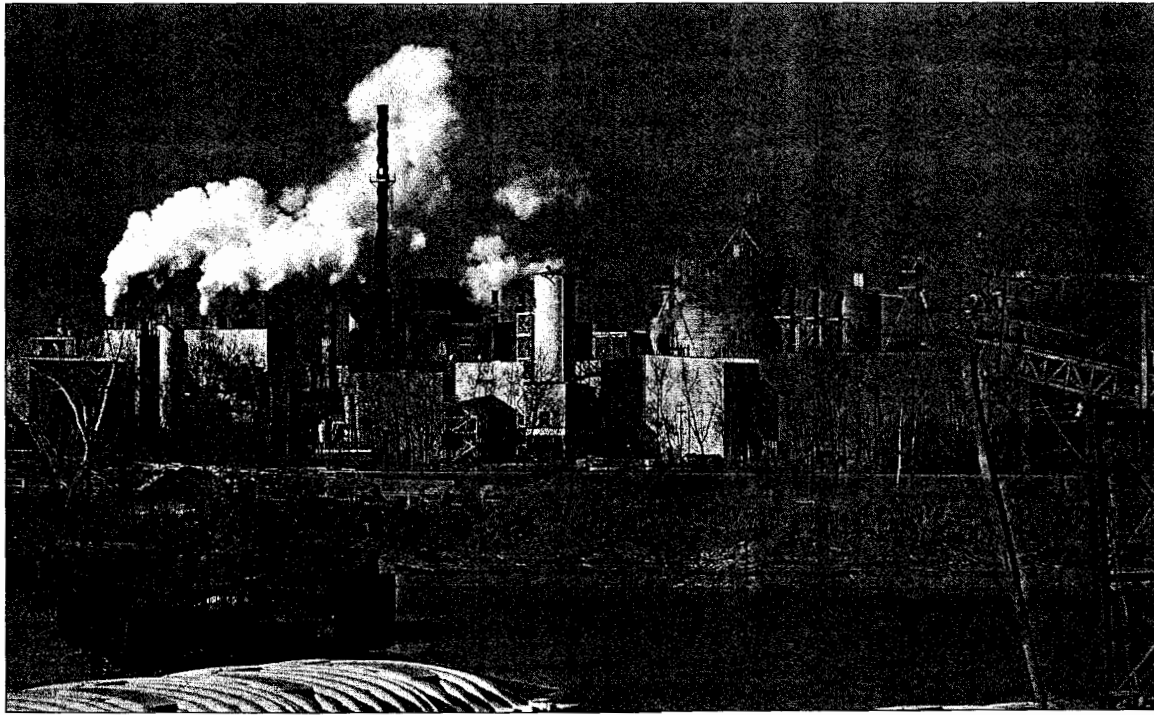
from *Living Downstream*

There are individuals who claim, as a form of dismissal, that links between cancer and environmental contamination are unproven and unprovable. There are others who believe that placing people in harm's way is wrong — whether the exact mechanisms by which this harm is inflicted can be precisely deciphered or not. At the very least, they argue, we are obliged to investigate, however imperfect our scientific tool: With the right to know comes the duty to inquire.

Happily, the latter perspective is gaining esteem as many leading cancer researchers acknowledge the need

for an "upstream" focus. As explained at a recent international conference, this image comes from a fable about a village along a river. The residents who live here, according to the parable, began noticing increasing numbers of drowning people caught in the river's swift current and so went to work inventing ever more elaborate technologies to resuscitate them. So preoccupied were these heroic villagers with rescue and treatment that they never thought to look upstream to see who was pushing the victims in.

Sandra Steingraber



In one year, industries “legally released more than 100 million pounds of toxic chemicals into the environment.”

nerve gas — to kill people. DDT did not have enough deleterious effects on the human nervous system (at least immediately) to qualify for spraying on the enemy. But it sure killed bugs. Most of them, anyway. The survivors came back stronger than ever, as sure a confirmation of Darwin’s theory of natural selection as we are ever going to find.

Agricultural chemicals are the weak sisters of nerve gasses. Their development resulted from the search for weapons; it was with a warlike mentality that we first deployed them. Minor agricultural pests suddenly became fearsome public enemies; harmless and often pretty little weeds became the bane of roadside ditches. We declared war on flowers. To our everlasting shame, we won.

We convince ourselves that this chemical warfare kills only weeds and bugs, only certain kinds of weeds and bugs, and those weeds and bugs alone. Is chemistry really that selective? Only if we maintain the utter fantasy that we are biologically different from other life forms can we believe that these chemicals will not in some way affect us. Acknowledging reality, recognizing the enmeshed and central place of humani-

ty in the web of all life, we have every reason to be concerned.

Living Downstream draws special attention to the unintended consequences of our warfare mentality. In war, immediate and demonstrable results are all that matters; kill the proclaimed enemy first, assess the damages to ourselves afterward. Rushing chemicals from the laboratories to the fields, we made household names of substances now regarded as dangerous. Benzene, once a common additive in gasoline, cleaning products and pesticides, is now recognized as a cause of leukemia and a possible source of myeloma. And it is everywhere: in lakes, ponds, reservoirs, underground rivers, a “ubiquitous pollutant,” writes Steingraber. Thirty years ago, no one saw benzene as harmful, so everyone armed themselves with the stuff.

Even when we do recognize the possible dangers of one chemical or another, we do not take the necessary steps to remove them from our environment. The national government and several states maintain lists of known and suspected carcinogens, lists that are appallingly long. But that is all they do. Known carcinogens are not outlawed; we allow anyone and

everyone to breathe and imbibe them every day. Every now and again the public gets in an uproar over some chemical or another; a few years ago it was alar and apples, in more recent years atrazine levels in drinking water. Little do we realize that this is merely the tip of the iceberg.

Tests for toxicity are of course made individually. How much atrazine before a rat gets to feeling puny? Our real life exposures are not limited, however, to any one chemical. Following Steingraber’s careful argument, we realize that we are, over our long life spans, exposed to dozens of chemicals in bewildering combinations. The effect of each may be negligible in itself, but the cumulative effect of all is far more likely to be devastating. It is also, scientifically speaking, virtually impossible to determine. When experts say that there is no scientific evidence that such and such a substance causes cancer, they are speaking the literal truth. But this is only because science has not found an acceptably controlled experiment that can test the hypothesis. Lack of scientific proof that something is harmful does not imply its opposite, that the stuff is harmless. It means only that it is not

testable. Science is a very narrow and careful way of doing business.

Science is also expensive. For lack of funding, many products never undergo proper scrutiny. Government support for such work is pathetically inadequate, which is not surprising considering how much industry pours into political campaign coffers. University research is no better off; again, much of the cash comes from private sources — industrial sources.

Steingraber reports the results of two major studies positively linking high cancer rates to chemical pollution problems, one on Long Island, the other on Cape Cod. What is important was that these studies got done only because the residents were rich, highly influential and suspicious. They forced private and public researchers to undertake honest and expensive analyses, which bore out the residents' suspicions. Their environment was in some demonstrable way poisoning them. Apparently you have to be wealthy to prove cancer agents are in your backyard.

Steingraber discusses an additional study, performed (sort of) by the Tazewell County Health Department at the Normandale subdivision near Pekin. An awful lot of people in Normandale had contracted cancer, enough to make residents there suspicious of Dead Lake, a long-used industrial dump site. The health people did a demographic analysis of the population in the context of the county as a whole, and concluded that cancer incidence was not unusually high. They never went to Normandale, never tested the lake, never examined any of the cancer patients, never looked at any potential cause and effect relationship. Normandale was normal, scientifically speaking. Unfortunately, the good people there had neither power nor influence equal to that of Cape Cod folks. Their study went no further.

We uphold science as our savior and our protector, little understanding that science is only as effective as we determine it to be. No money equals no studies equals no determinations of danger. Therefore, in the

folklore of our times, we must be safe. We drink atrazine, rub benzene on our skin, eat arsenic laid down in 1939. We are safe, though. Science has not proved we are not.

I live on the environs of agricultural country. Each year at plowing and planting, when rumors of wholesale spraying drift across the landscape, my neighbors exchange uneasy jokes about gas masks, holding our breaths, glowing in the dark. These same neighbors employ companies to spray much the same chemicals on their own lawns, envisioning a utopia of monocultural greenery. They are a little nervous, some of them. They warn their neighbors with little white and yellow flags, they keep their dogs away for a day or two. Intuitively, they realize that this spraying is not an unmitigated blessing. Danger lurks. People die. Cancer is a nasty death.

Last year, despite the lack of unimpeachable scientific evidence, a jury in Taylorville awarded millions of dollars to families who had lost young children to neuroblastoma. The odds against so many deaths from so rare a disease in a single place were extraordinarily high. Surely the culprit was the abandoned coal gasification plant in the neighborhood — residues of coal tar are known carcinogens. Not proven scientifically, said city and state officials. Science did not matter to the jury. They decided for the families. The 12 jurors knew, knew intuitively, what science could not tell them: The environment had killed these children.

We live in a world of paradox. In one very large sense, we are fabulously successful, the recipients of an incredible bounty derived from the land and from our industry. We are also victims, prisoners of a cavalier attitude toward our own house — our physical environment. In little more than a century, we have dumped, slopped, sprayed, buried, expelled an unconscionable array of manufactured substances on our own nest. We eat, drink and breathe these poisons every day. The success and the victimization go hand in hand; we believe, true or not, we could not have accomplished one

Minor agricultural pests suddenly became fearsome public enemies; harmless and often pretty little weeds became the bane of roadside ditches. We declared war on flowers. To our everlasting shame, we won.

without the other. Certainly they are inextricable now. Enjoy the plenty, accept the ever-growing cancer rates as the price we pay.

Can we do better than this? At times, Sandra Steingraber seems to believe we can. Public health efforts can be strengthened, pesticides better investigated and regulated, newer, more environmentally healthful methodologies employed to grow and protect better corn and soybeans. "From the right to know and the duty to inquire flow the obligation to act," she argues. An epilogue provides specific instructions for exercising the right to know. Mostly, though, she is disquietingly pessimistic. Our capacity to accept, however grudgingly, a dangerous environment seems to outweigh our determination to make it better.

Very soon, spring will blossom in central Illinois. Surviving songbirds will sing a cheery counterpoise to the din of progress; permitted flowers will bravely cling to roadside ditches. Farmers will renew their yearly ritual of planting the region's bounty: corn and soybeans. Chemicals, of course, are now an ingrained and inevitable part of the ritual. My government — state and federal — tells me I am perfectly safe. My intuition urges me to keep the windows closed. □

Robert Kuhn McGregor is an environmental historian at the University of Illinois at Springfield. He is the author of A Wider View of the Universe: Henry Thoreau's Study of Nature.