In 1964, two senior scientists at the National Cancer Institute, Wilhelm Hueper and W.C. Conway, wrote, "Cancers of all types and all causes display even under already existing conditions, all the characteristics of an epidemic in slow motion." The unfolding epidemic was being fueled, they said in 1964, by "increasing contamination of the human environment with chemical and physical carcinogens and with chemicals supporting and potentiating their action."[1,pg.43]

Their words were met with silence.

The World Health Organization (WHO) maintains and analyzes cancer mortality (death) data from 70 countries. WHO research shows that industrialized countries have far more cancers than countries with little industry (after adjusting for age and population size). One-half of all the world's cancers occur among people living in industrialized countries, even though such people are only one-fifth of the world's population.[1,pg.59] From these data, WHO has concluded that at least 80 percent of all cancer is attributable to environmental influences. [1,pg.60]

In the U.S., the cancer epidemic described by Hueper and Conway in 1964 has been progressing steadily. In 1950, 25 percent of adults in the U.S. could expect to get cancer during their lifetimes; today about 40 percent of us (38.3 percent of women, 48.2 percent of men) can expect to get cancer. Omitting lung cancer from the statistics, the incidence (occurrence) of cancer increased 35% in the U.S. between 1950 and 1991. If we include lung cancers, then cancer incidence increased 49.3% between 1950 and 1991.[1,pg.40]

Viewing the same phenomenon from another vantage point: white women born in the U.S. in the 1940s have experienced 30 percent more non-smoking-related cancers than did women of their grandmothers' generation (women born between 1888 and 1897). Among men, the differences are even sharper. White men born in the 1940s have more than twice as much non-tobacco-related cancer as their grandfathers did at the same age.[1,pg.45] (Historic data are missing for non-whites.)

In the U.S. today, in the age group 35 to 64, cancer is the number one killer. Because of this fact alone, one might expect that the nation would welcome a book by a qualified scientist examining all the lines of evidence linking cancer to chemical contamination of the environment AND OFFERING SOLUTIONS.

But one would be disappointed in that expectation. Sandra Steingraber's new book, LIVING DOWNSTREAM --AN ECOLOGIST LOOKS AT CANCER AND THE ENVIRONMENT, has been greeted with nearly total silence. Appearing under the imprint of an important house, Addison-Wesley, the book is a major publishing event --hard back, 270 pages, including 77 pages of references in small type at the back. At age 38, the author is an accomplished researcher, writer and teacher with a Ph.D. in biology from University of Michigan who has obviously spent years preparing the manuscript, visiting special libraries, interviewing cancer researchers, and applying her scientific training to the diverse evidence linking cancer to environmental contamination.

Furthermore, the book is beautifully written. Steingraber (who has previously published a volume of poetry, POST-DIAGNOSIS) has the rare gift of combining poignant, lyrical prose with scientific exactitude and clarity. She is among the rarest of scientists --those who see the extraordinary among the ordinary and who can write so well that her readers are transported effortlessly through the complexities of an arcane topic like cancer cell biology. Indeed, Steingraber displays an encyclopedic knowledge of cancer biology, yet she conveys it in terms than anyone can grasp and appreciate. Simultaneously, she is careful to note the limitations of scientific knowledge. She never oversteps the bounds of what is really known, what is suspected but unproven, and what is merely informed speculation.

By any measure, LIVING DOWNSTREAM is an extraordinary work --extraordinarily easy (even pleasurable) to read, extraordinarily thoughtful and even-handed (even gentle, generous and forgiving) in its treatment of a politically charged topic, and extraordinarily informative, thought-provoking, and useful.

Yet the book has been ignored. It appeared in May of this year, but a search this week of several hundred of the nation's newspapers (via the online Dow Jones News Service) reveals that Steingraber's book has been reviewed in only four places --in the Portland OREGONIAN, the CHICAGO TRIBUNE, USA TODAY, and deep within a "new science books" column in the WASHINGTON POST. In essence, the existence of this book has been blacked out by most of the nation's press. Like Wilhelm Hueper before her, Sandra Steingraber has (so far) been met with a stony silence.

The book is simultaneously a detective story --Steingraber investigating Tazewell County, Illinois, where she grew up, looking for clues to the rare bladder cancer that she herself contracted at age 20 --and a thorough scientific treatise (thankfully, one that is easy to read) on the relationship of cancer-causing chemicals to human and animal health.

Steingraber examines the following lines of evidence indicating that certain chemicals (and radiation) can cause cancer in living things:

** cancer in workers exposed to chemicals;
** studies of non-worker human populations exposed to chemicals out of ignorance or by accident or by misguided public policy (for example, studies of humans who contract cancers from exposure to chlorinated drinking water);
** cancer in immigrants who soon exhibit the cancer rates of their adopted countries, rather than the cancer rates of the place where they were born;
** maps showing more cancers in urban areas than in rural;
** maps showing more cancers in rural counties with heavy pesticide use vs. rural counties with low pesticide use;
** individual studies revealing cancer clusters near chemical factories and near particularly-polluted rivers, valleys, and dumps;
** rising rates of childhood cancer. The lifestyles of children have not changed much in 50 years; they do not smoke, drink alcohol, or hold stressful jobs, yet childhood cancers are steadily rising;
** cancer in fish and shellfish living in polluted bodies of water. In North America there are now liver tumor epizootics (the wildlife equivalent of epidemics) in 16 species of fish in at least 25 different fresh-and salt-water locations, each of which is chemically polluted. In contrast, liver cancer among members of the same species who inhabit nonpolluted waters is virtually nonexistent.
** many kinds of cancer that can be induced in laboratory animals by exposing them to certain chemicals;
** cellular studies indicating that certain chemicals can cause cell growth and division;
** studies showing that chemicals can damage the immune system and the endocrine system, promoting cancers.

Yet, despite the abundance of evidence, science can never prove beyond all doubt that the chemicalization of the human economy is responsible for a substantial fraction of the cancer epidemic we are experiencing. As Steingraber puts it, "Like the assembling of a prehistoric animal's skeleton, this careful piecing together of evidence can never furnish final or absolute answers. There will always be a few missing parts..."[1,pg.29] She then goes on to...
explain in detail why science can never provide proof positive when confronted by a problem as complex as environment and health.

However, the limitations of science do not render us helpless. In her introduction, Steingraber notes that, as she was writing the last pieces of the book in late 1996, the news broke that scientists had finally found the agent in cigarette smoke that causes lung cancer. Yet, she points out, she herself grew up protected from cigarette smoke by her parents and teachers, and by public policies that kept cigarette smoke out of restaurants, hospitals and many other public spaces -- actions taken and public policies created by people "who had the courage to act on partial evidence." The courage to act on partial evidence. This is a key concept. It underlies the principle of precautionary action.

Yet many scientists and policy makers exhibit a hushed complicity tantamount to cowardice, afraid to speak out about what they themselves believe to be true: that cancer is caused by exposure to carcinogens and that enormous suffering could be avoided if we would reduce our exposures to cancer-causing chemicals in air, water, and food.

Steingraber says again and again cancer cells are created, not born. Current science tells us that, at most, 5 to 10 percent of cancer is caused by defective inherited genes. This means that 90 to 95 percent of cancer is created by encounters with carcinogens during a person's lifetime. Yet the modern trend is to focus on the genetic causes of cancer. This deflects attention away from the preventable causes of cancer. As Steingraber says, "Shining the spotlight on inheritance focuses us on the one piece of the puzzle we can do absolutely nothing about."

She personalizes this as follows: "I had bladder cancer as a young adult. If I tell people this fact, they usually shake their heads. If I go on to mention that cancer runs in my family, they usually start to nod. SHE IS FROM ONE OF THOSE CANCER FAMILIES, I can almost hear them thinking. Sometimes I just leave it at that. But, if I am up for blank stares, I add that I am adopted and go on to describe a study of cancer among adoptees that found correlations within their adoptive families but not within their biological ones.... At this point, most people become very quiet.

"These silences remind me how unfamiliar many of us are with the notion that families share environments as well as chromosomes or with the concept that our genes work in communion with substances streaming in from the larger, ecological world. What runs in families does not necessarily run in blood. And our genes are less an inherited set of teacups enclosed in a cellular china cabinet that they are plates used in a busy diner. Cracks, chips, and scrapes accumulate. Accidents happen."

Steingraber says we will have to adopt a new way of thinking about chemicals. "This requires a human rights approach," she says. "Such an approach recognizes that the current system of regulating the use, release, and disposal of known and suspected carcinogens --rather than preventing their generation in the first place--is intolerable." Such a practice shows "reckless disregard for human life." And: "When carcinogens are deliberately or accidentally introduced into the environment, some number of vulnerable persons are consigned to death. The impossibility of tabulating an exact body count does not alter this fact."

We, being more blunt than Sandra Steingraber, draw from this that murder is murder even if the victim is anonymous. And scientists, risk assessors, and regulators who grease the wheels for such a system -- even if only by their complicit silence --have blood on their hands. They are the enablers of a system that profoundly violates the human rights of the thousands (or millions) whom it victimizes.

--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)


Descriptor terms: cancer; bladder cancer; sandra steingraber; chemicals & health; book reviews; living downstream; human rights; wilfred hueper; world health organization; carcinogens; aromatic amines; perchloroethylene; drinking water;