

Q&A Question & Answer

Sandra Steingraber

A cancer survivor, the author and ecologist is an internationally recognized expert on environmental links to cancer. Steingraber, a Pekin native, wrote Living Downstream: A Scientist's Personal Investigation of Cancer and the Environment, which connected for the first time data on toxic releases and then-recent U.S. cancer registries. Her other works include Having Faith: An Ecologist's Journey to Motherhood, which discusses fetal toxicology and the environmental hazards that threaten infant development.

Steingraber served on President Bill Clinton's National Action Plan on Breast Cancer and, during international treaty negotiations in 1999, she briefed U.N. delegates in Geneva, Switzerland, on dioxin contamination of breast milk. That year, the Sierra Club dubbed Steingraber "the new Rachel Carson" and she has been named a Woman of the Year by Ms. Magazine.

An interdisciplinary distinguished visiting scholar at Ithaca College in New York, Steingraber most recently was a faculty member at Cornell University's Center for the Environment. She has a doctorate in biology from the University of Michigan, a master's in English from Illinois State University and has had visiting fellowships at such institutions as the University of Illinois and Radcliffe/Harvard.

She spoke with Projects Editor Beverley Scobell, who lives about a mile from the site of the Formosa chemical plant explosion in Illiopolis. This is an edited version of their conversation.

Q. You wrote recently about the chemical plant explosion in Illiopolis. Why is that compelling to you?

Central Illinois is my homeland. It's still my most beloved landscape. Any environmental disaster that happens in the place I grew up catches my

Photograph by Frank DiMeo, courtesy of Cornell University



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attention and affects me emotionally.

But other than the deep connection I feel with that part of the world, I think it's also a telling story. Formosa Plastics USA is part of a larger group that goes back to Formosa Plastics in Taiwan. They are the world's largest manufacturer of PVC, polyvinyl chloride, which is a very toxic chemical, from the point of its manufacture, including its use, all the way up to its disposal. The explosion in Illiopolis is a microcosm of a much larger international debate going on around this chemical. In fact, it's being phased out of use by the medical industry, as well as being shunned by architects and designers because of some its health and environmental problems.

The vinyl the Illiopolis plant made turned into floors. So what I'm interested in as a writer, as well as a biologist, is taking common objects in people's lives, like their floors they mop every week, and what I want them to see are incinerated workers and a contaminated community, to really make the connection between the objects we use and the places they come from.

The hope is, of course, in revealing those connections that we'll move toward something better. There is no reason why the Illiopolis plant couldn't be rebuilt to make linoleum floors. Linoleum is a hot material in building in Europe, and it's a hot item here, but

there are no U.S. manufacturers of linoleum flooring anymore.

Why not turn Illiopolis into the first domestic manufacturer of linoleum? People could be employed, and we wouldn't have to worry about 40,000 pounds every year of a known human carcinogen, namely vinyl chloride, contaminating Illiopolis for people to have kitchen floors. The people of Illiopolis are paying a needless price with their health so that other people can have kitchen floors when we can do it cheaper and better using other materials.

Q. I have raised two daughters within a mile of the Formosa plastics plant and now, as adults and scientists themselves, they worry about what they might be carrying in their bodies. What are the effects on people living that close to a plant that uses polyvinyl chloride in its manufacturing process?

You can't make PVC without releasing vinyl chloride, the raw ingredient from which polyvinyl chloride is made. It's a very volatile chemical, and it leaks out of the manufacturing plant and into the community at large.

Vinyl chloride is on a really short list of chemicals that are known human carcinogens, meaning we have absolutely no doubt that it causes cancer in humans. Other members on that list include tobacco smoke, asbestos, benzene — there's actually a pretty short list. A substance has to be really bad to be called a known human carcinogen, and vinyl chloride meets those qualifications.

We know that it causes cancer, and we know that vinyl chloride manufacturing plants release vinyl chloride routinely into the environment, and it goes beyond the fence line of the plant. We have evidence of that, not just in Illiopolis, but other vinyl chloride plants in Texas, Louisiana,

California and Pennsylvania. Vinyl chloride causes a form of liver cancer.

It also releases in its manufacture dioxin, which is also a known human carcinogen, and it's potent in vanishingly small quantities: parts per trillion. And besides causing cancer, dioxin has the ability to mimic some of the effects of our own hormones. In some cases it can act like an estrogen. In other cases, it blocks the estrogen, depending on where in the body, the uterus or the breasts. It can interfere with thyroid hormone.

Nobody makes dioxin on purpose, unlike vinyl chloride. It doesn't have any known use. But it gets made by accident during the manufacturing process of certain kinds of things, and PVC manufacturing is one that makes this by-product. Dioxin has a long half-life; it can last in human tissues for up to 50 years. It tends to be very fat soluble. That's why women are more at risk, because women tend to have more fat in our bodies than men do, and we have things like breasts, which have a lot of fat in them. So I think it's a women's issue, as well as a health issue for the whole community.

At the end of its life, say you want to remodel and you tear up that kitchen flooring, or take off the vinyl siding or throw away your vinyl blinds, there's no good way to dispose of vinyl. You can't recycle it. There's way too much chlorine in it. When PVC is made into consumer products, you have to add plasticizers because PVC by itself is very brittle. These plasticizers are called phthalates, and they themselves are toxic and suspected of causing cancer and are known endocrine disrupters.

Furthermore, when you dispose of these things in landfills, the phthalates come out and either evaporate into the surrounding air of the community near the landfill or contaminate groundwater. You can't safely landfill PVC. Nor can you burn it because, when you put it in an incinerator, it releases large amounts of dioxin and also large amounts of hydrochloric acid.

So here you have this product that kills workers, contaminates communities where it's manufactured, then when you're all done with it, you can't

safely get rid of it. And there's more interesting evidence to suggest that PVC, when it's in your home, contributes to respiratory distress. Part of that is because these phthalate plasticizers and other volatile gases are given off. You know the smell of a new PVC shower curtain. It actually contains a whole stew of chemicals that can contaminate the indoor air. There's pretty good evidence coming out of Europe that asthma in children can be exacerbated, if not caused, by PVC building materials in the home. So for all those reasons, designers and architects are really starting to look twice and looking for nontoxic substitutes for it.

Q: *Your book **Living Downstream** gives a sobering account of the dangers to people and animals from synthetic chemicals. Describe the educational journey that brought you to the writing of that book.*

I was diagnosed with bladder cancer in between my sophomore and junior years of college at Illinois Wesleyan. At the time, I was a pretty high-achieving biology major who had thought that my interests in creative writing were now behind me. I had made the decision that I was going to go into sciences rather than literature, which is my other big passion.

After I got out of the hospital, I started reading around the medical literature about the cancer I had. It didn't take long to learn it's considered a quintessential environmental cancer, meaning we know more about the links between the environment and bladder cancer than almost any kind of cancer.

Also, not knowing how long I was going to be healthy and able to continue going to college, I decided I wasn't willing to give up my other interests. So I started a career path — one I'm still on — of not choosing. I kind of alternate between poetry and biology.

While at Harvard [to do a poetry fellowship], I began to get compelled by some of the activist work, the women's cancer community, and took up the question of what caused my

own cancer: How are the environment and cancer related? So I began the four-year process of researching and writing *Living Downstream*.

The book came out in 1997 and I traveled around the world with it for about a year and a half. A lot of what I did was take the book to communities like Illiopolis, small towns where people had concerns about a manufacturing facility or an incinerator or whatever culture was practiced there.

So I sat down with a lot of Montana wheat farmers in a church basement on a Friday night to talk about the link between certain kinds of weed killers and certain kinds of lymphomas. I talked with native Alaskan women in northern Alaska about certain kinds of chemicals leaking from military bases and how they were contaminating the fish and how they were worried about their breast milk. I got to talk to some Irish sheep farmers about some of the insecticide chemicals they use that had contaminated their drinking water wells.

So I came away feeling like the question I was interested in personally was a question on a lot of people's minds right now: How is our health and the health of the environment interrelated?

It was really interesting for me as a biologist to look at the evidence. And I was interested as a creative writer to find a compelling way to write about the evidence, so that it wasn't just a research book, that I could tell a human story that people would read. As a cancer survivor I am very aware that behind every data point there is a human life.

Q: *Have you seen any changes, either for the better or worse, since you wrote **Living Downstream**?*

Oh yes, all kinds of changes for the better. It's a different world now than in 1997 when the book came out. Now, when I talk with people about the book, they are not hearing about it for the first time. They already know what the evidence is or they're already convinced. Now they want to know what can we do? How can we take action? □