



Silent Snow

The unimaginable impact of toxic chemical use

By Marla Cone

(Eds Note. The following are excerpts from the presentation, "Pesticides and the Slow Poisoning of the Arctic," given by Marla Cone, author of the book Silent Snow, and environmental writer for the Los Angeles Times, to the 26th National Pesticide Forum, Reclaiming Our Health Future: Political Change to Protect the Next Generation, held at the University of California Berkeley, March 14-16, 2008.)

Thank you very much. If I may, I will take you on a journey, and this will be a tale of the survival of the fittest. For me, this journey started in the spring of 1997, and I was down in California's Imperial Valley, sitting in a pickup truck, the windows rolled up tightly, as tightly as they could be, for a crop duster was flying overhead, low over a field of vegetables, unleashing a trail of pesticides. I was researching a story about Native American tribes that were considering bans on aerial spraying. When I embarked on the trip, I told myself if any of the pesticide did manage to leak through that tight window, that it would do no harm. But at that moment, alone in that truck, in that field by myself, I was having second thoughts.

After all, I was five months pregnant, and I knew that the fetus I was carrying was the most vulnerable life form on earth. I knew about the dangers of pesticides and all the other chemicals that I had written about for years. But at that moment I saw a fly buzzing in the windshield. And I watched it, and I told myself: OK, if anything happens to that fly, I'm out of here. I didn't take my eyes off that fly. And I know it's naïve, obviously, we all know about the subtle and long-term effects and those types things about pesticides, but I didn't take my eyes off it as if the life of my unborn son had depended on it. For some reason, watching that fly calmed me that evening.

I now realize that fly was sort of my totem, my symbol of all of us that are exposed to chemicals against our will, all of us who are so highly exposed. That little fly was my canary in the mine. But there are other symbols, too, symbols that are far, far away from us, far away in the frozen north, way off in the Arctic. The Arctic people and animals are highly exposed to chemicals. And like that fly in the pickup truck, we are watching the people in the Arctic to see if they can survive.

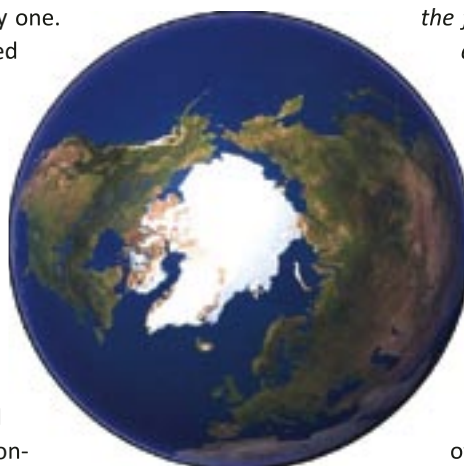


A few years ago, I was researching a story for the *Los Angeles Times* about immune-suppressing chemicals. I asked around to my sources. I said, who are the most exposed people on earth, because I really want to see if they are suffering any immune effects. I thought it would be the Great Lakes, or the Baltic, or some industrialized place like that, but what I learned was that it is a remote region I had never heard of, a place called Nunavik, which is in Arctic Canada. I was stunned. I thought, how can people who live in such a remote place and live such a traditional lifestyle— they’ve never heard of or used these chemicals. They have no use for pesticides, obviously, no use for PCBs or DDT, yet they carry extraordinary loads of some of the most hazardous chemicals on earth. That seemed to me the biggest environmental injustice that I had ever heard. The people and animals of the Arctic are the most highly exposed. I thought, this is a universal tale of contamination, and it’s a great location to do it. So, more than anything else on earth, I wanted to go and tell their tale.

Preparing for the Arctic...hopelessly

I am a woman of Los Angeles. I grew up in Illinois and I was used to cold, but then being in Los Angeles, I didn’t even own a parka. So, before I left, I went out to places like North Face and Patagonia and bought all this high tech gear, and boots from Canada that were rated to 50 below zero. I brought all this to the Arctic. The Inuit looked at me like I was crazy. They’re saying, what do you need all this stuff for? I realized then, what seems primitive to us is

really ingenious because they’re wearing sealskin. They don’t need polar fleece. They don’t need all these boots or anything else. I brought Powerbars along in case I couldn’t stomach the food of the Arctic. Of course, it was frozen! I mean, I couldn’t eat it. It was like this frozen hunk. I would bring trail mix, and the Inuit would look at me and say, “You would die if you ate that here. You can’t survive on that.” They found it pretty hilarious, the whole thing. Obviously, I wasn’t the only one. The explorers in the far north underestimated the ingeniousness of the Arctic people. They thought they could reinvent their sledges, so they tried to put them together with nails and high tech materials when really it turned out that just doing it with ropes made from seal skin and wood works best on the ice. Well, what works best in the Arctic is living a very traditional lifestyle, eating the native foods, and that’s why the Inuit people and the polar bears –the Inuit people share the top of the food chain with the polar bear– are the most con-



taminated people on earth.

My Journey North

I was in the village of Qaanaaq on the northern edge of Greenland [the northern most community on Earth], and there were huge icebergs jutting out in the sea and we traveled about 35 miles on a wood sledge. The team of 15 dogs, walking on ice so jagged that it would leave blood in their wake. We headed to the ocean to hunt narwhale. I was with the best narwhale hunters in northern Greenland, a few hundred miles from the North Pole. One day, the sledge stopped and the hunter that I was with, a man by the name of Mamarut, got out because he had seen a seal and he took his rifle and his blind and he walked out onto the ice. I got off the sledge with my camera and I was taking photos. One of those photos wound up to be the cover of my book, *Silent Snow*. As that happened, the dogs were so excited at the prospect of a seal dinner that they took off. And in a second, I was on that ice by myself. They were a little speck in the distance. All I could think of was, “What do I do now?” I figured they would come back, I didn’t think they’d leave me there, but I didn’t want to just stand there and wait. I remembered what Mamarut had said, “Only walk in his footprints, because that’s where the stable ice will be.” So that’s what I did, and I realized then that I would not have survived for even probably a couple hours out on that ice. I had no idea how to hunt a seal. I didn’t have a sledge. I didn’t have a team of dogs. I didn’t have any of their seal clothing. I didn’t even know where to walk without shattering the ice.

I’ll read a little paragraph from my book which I really like, because I really think it tells people the importance of the food and the marine mammals that the Arctic people eat.

Survival here means people live as marine mammals live: hunting as they do, wearing their skins, no factory-engineered fleece compares with the warmth of a sealskin parka or bear-skin pants; no motorboat sneaks up on a whale like a hand-made kayak lashed together with rope; no snowmobile flexes with the ice like a dog-pulled sledge crafted of driftwood; and most importantly of all, no imported food nourishes their bodies, warms their spirit, and strengthens their heart, like the flesh they slice from the flanks of a whale or a seal.

These people live in one of the most desolate places on earth. They are guardians to one of the last and greatest wilderness that we have.

Arctic Body Burden

What I found in my research is that the Inuit, especially in the northern part of Greenland and Russia, contain more hazardous chemicals in their bodies than any other people on earth. Some of these are

pesticides, including the organochlorine pesticides DDT, Myrex, and some of the other "Dirty Dozen" pesticides. Mercury and PCBs are probably the worst contaminants in them. Nearly everyone tested in Greenland and more than half the people tested in Arctic Canada exceed the amounts of PCB and mercury considered safe under international health guidelines.



There are no vegetarians in the Arctic. People mainly eat seal, whale and some fish. These men are butchering whale meat.

In Greenland, the concentrations are highest. They are so high that many Inuit women in Greenland in the 1980s had breast milk that contained so many chemicals that it literally could have been considered hazardous waste. Let me say that again. The breast milk of those Inuit women could have technically been considered hazardous waste because of the levels of chemicals in their bodies. More than 200 different compounds in their bodies --pesticides, PCBs, mercury, other heavy metals, flame retardants, substances found in Teflon and formerly in Scotchgard. These people are our lab rats. Basically, they're our guinea pigs. They are the involuntary subjects of our accidental human experiment.

The Grasshopper Effect

How does this happen? Well, we basically made the Arctic our toxic waste repository. What happens is basically a quirk of chemistry and biology. Many of these chemicals, especially the chlorinated ones, seek out cold climates, and they do something that scientists call "the grasshopper effect." They actually hop --they'll condense and then fall to the ground and condense and fall to the ground, all the way hopping north, until they finally wind up in the Arctic.

And then what happens is that they fall down in the ice, usually in the springtime right when the animals are gathering there, and they move up the food web from algae or plankton to tiny crustaceans then up to fish and then to seals and then, at the top of the food web, the polar bears and people. This is a web that casts out in many directions. The Arctic has a very long food web, so that's why the people and animals then end up so highly contaminated. They eat much further up on the food web than we do. There are no vegetarians in

the Arctic. There are no vegetables in the Arctic. There's no land in the Arctic. So you can see why they resort to eating seal and whale, with fish probably being the lowest thing they eat in the food web.

I would like to read something to you and have you think about when you think this was written. Many of you will probably recognize this.

"The most alarming of all man's assaults on the environment is the contamination of air, earth, rivers, and sea with dangerous and even lethal materials. In this now universal contamination of the environment, chemicals are the sinister and little-recognized partners of radiation in changing the very nature of the world, the very nature of its life."

Most people I read that to think that has recent roots. Does anybody know who wrote that? Does anybody recognize that? That's Rachel Carson. She wrote that back when I was in kindergarten. And it's still very much true today.

Hunting Trips

There are remote Norwegian islands that are a refuge for polar bears because that's where they den. Svalbard is sort of the nursery for polar bears. I went out with scientists who were tracking them to sample their blood and their fat for chemicals. They remove an old tooth from the bears -- an old, useless tooth, actually, molar -- to see how old they are. They tranquilize the mother bear and they leave the cubs -- the cubs are just very innocent, like little kittens. When they're born they're actually smaller than a kitten, and less than a pound. This is very hazardous, sometimes deadly work for these scientists. I was with a Norwegian team. They've been out there every spring sampling these polar bears for chemicals, looking for the various compounds, testing their hormones to see what kind of effects there are.



A woman sits with her children in Qaanaaq, Greenland, eating after a whale hunters return with meat.

I also joined a community in Barrow, Alaska, for a whole different style of hunting. They catch bowhead whales, which are about 50 tons apiece, and they feed an entire village for not just one meal, but many meals in the course of the year. To hunt a bowhead



Clockwise from top left: 1) An Inuit man in Qaanaaq, Greenland with his sledge dogs; 2) A scientist on remote Norwegian islands has tranquilized polar bears to examine them and study their toxic load; 3) Children of the Farow Islands, who consume whale meat and other mercury-laden foods, have IQs inversely proportional to their chemical contamination; 4) Whale hunters in Barrow, AK use harpoons to kill a bowhead whale.

whale, a 50 ton whale, there are seven men in a boat, and they row through slush. Boy, is that difficult. They move about ten feet every hour. When a whale is killed, there is such a huge celebration for the people of Barrow and the other communities along the north slope. They celebrate with a huge party. They create a trampoline from the whale shin. It's a school holiday, it's a city holiday, it's just an amazing time.

Since these are people of Alaska, you might say, they have other foods. Why do they need bowhead whales, why don't they leave those bowhead whales alone? But they don't really have other foods. They have some imported foods which aren't very healthy, that aren't good for them, and are very expensive. Whereas, the whale meat contains an amazing amount of iron and other nutrients, and fatty acids.

Most Tested Children on Earth

The children of the Faroe Islands, the northernmost part of North America where they hunt bowhead whale, are the most tested

group of children on earth. This girl (pictured above) lives in the Faroe Islands, where people had the highest mercury levels in the world a few years back. And so they've been testing the IQs of these children for 25 years now. Some of the children have been tested every year until they become teenagers. What they found were declines in their IQ, definitely related to the mercury in their bodies. They're seven years old when the testing begins. And you can see, they're not Inuit, they look Danish. This is not an Inuit population, but it still eats whale.

Conclusion

I'll conclude by saying that I think about that day out on the ice when I feared that Mamarut might leave me behind. I think about that day often. And I think about his advice, about how to survive. How his advice was that the ice is too precarious, he told me, so you only can walk where I walk. Walk in my footsteps. I took that very literally that day, but since then I take that very symbolically, too, because if we all walked in the Inuit's footsteps, the earth would be a safer place, I believe. Thank you.

Melting Glaciers, Source of Persistent Pollutants

Global warming responsible for releasing once frozen stores of persistent organic chemicals

New research shows that melting Antarctic glaciers are releasing once frozen stores of persistent organic chemicals, now banned in many parts of the world. Heidi Geisz, Ph.D., a marine biologist with the Virginia Institute of Marine Science, studying the fate and effect of organic contaminants in the Antarctic, has found that DDT concentrations in penguins has remained at the same levels as they were 30 years ago, when DDT was widely used.

Arctic animals, such as whales, seals and birds, have had a significant decline in their DDT levels during the past decades, while the more stationary Antarctic penguins have not. The study, "Melting Glaciers: A Probable Source of DDT to the Antarctic Marine Ecosystem," published in *Environmental Science and Technology*, identifies the melting snow and ice as the continued source of total DDT in this southern ecosystem. The release of DDT also means that other persistent organic pollutants (POPs), including PCBs and PBDEs (industrial chemicals that have been linked to health problems in humans) are also being released.

Dr. Geisz and her team sampled Adélie penguins and found similar DDT concentrations to those found when the penguins were sampled in a 1964 survey. She found that the ratio of DDT metabolites, p,p'-DDT to p,p'-DDE, declined over time. This shift indicates that the birds are exposed to the remnants of older DDT deposition. After examining glacial records, Dr. Geisz found a likely explanation for the high concentrations of DDT. During the 1950s and 60s, a time when DDT use peaked, the Antarctic glaciers swelled, potentially locking in chemicals like DDT. However, average winter temperatures on the Antarctic Peninsula have warmed 6 °C in the past 30 years, and glaciers now melt faster than they grow. They

estimate that DDT reenters the ecosystem at a rate of 1 to 4 kg per year.

DDT and other POPs follow atmospheric paths to the Antarctic and the Arctic and eventually are deposited there in snow and ice. Animals there sequester these contaminants in their fat. These toxic chemicals persist in the environment, bioaccumulate in the food web and are common contaminants in fish, livestock and poultry and other foods. Many human and animal populations now carry enough POPs in their bodies to cause subtle but serious health effects, including reproductive and developmental problems, cancer, and disruption of the immune system. Indigenous communities in the Arctic region carry alarmingly high levels of these contaminants.

However, Arctic and Antarctic communities are not the only ones at risk. The National Oceanic and Atmospheric Administration's (NOAA) 2007 report, *Southern California Coastal Marine Fish Contaminant Survey*, found that fish caught in southern California waters contain the world's highest-known DDT concentrations. These findings contradict the belief held by some scientists that DDT on the ocean floor has been breaking down into less toxic compounds and would soon disappear from marine life. Earlier this year, the National Park Service (NPS) released a report detailing high levels of DDT and other POPs contamination within park boundaries.

DDT and its metabolites have been identified by government agencies in the U.S. and abroad as agents that can cause cancer and nerve damage. DDT is also an endocrine disruptor that acts as an estrogen mimic and wreaks havoc on biological systems, with adverse health effects showing up later in life.

