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# Cd *Clusterf\*ck* Cadmium

In New Brunswick, cancer clusters. One unlucky town has ovarian cancer rates 200 percent higher than the national average.

In another region, you're more likely to get brain cancer.

Each cluster has one thing in common: heavy industry.

Inside the radical fight to kill the economy and save lives

by Catherine McIntyre



■ INKA MILEWSKI CRUSADES AGAINST IRRESPONSIBLE DEVELOPMENT

■ BELLEDUNE SMELTER IN 1968





SCALE: 1 KM

**BELLEDUNE 1953**



SCALE: 1 KM

**FERTILIZER PLANT**

**SCHOOL**

**BELLEDUNE 1972**



**SMELTER/ACID  
PLANT COMPLEX**



■ INKA MILEWSKI'S SOIL SAMPLES REVEAL BELLEDUNE'S TOXIC HISTORY

**“We would have to change our entire economic structure to deal with this scourge of cancer”**



■ IN BELLEDUNE, THE FERTILIZER PLANT'S SMOKE STACK CAN BE SEEN FROM THE SCHOOL

**WITH A SMALL PLASTIC TOTE IN ONE HAND** and a trowel in the other, Inka Milewski walks alone into the open field behind the spruce-lined schoolyard. Six kilometres away, there is a smelter, and a single smoke-stack peeks up above the tree line. The eggy, persistent smell of sulfur is faint—at least today. It's October 12, 2003. Milewski knows there are secrets buried here, in the yard behind New Brunswick's Belledune Elementary School. They have been festering since the late '60s, and now, at last, she is ready to dig them up.

Milewski works until sundown, scraping soil samples from three schoolyards and 25 properties into 39 sterile glass jars. Each sample is meticulously collected and labeled. She refuses to let improper sampling be grounds for the inevitable criticism from the New Brunswick government and industrial companies. Milewski packs everything into a cardboard box and FedEx-es it off for testing. Three weeks later, results confirm what she suspected; there are high levels of lead, cadmium and arsenic and in the soil—heavy metals all known to cause cancer.

As a New Brunswick-based marine biologist living in the Miramichi, 58-year-old Milewski has always studied health at the community level. In the beginning, she worked with marine ecosystems, examining eelgrass environments and salmon farms, linking environmental factors to community health. But then, she started hearing the same ominous worries. Things like: “We have high rates of cancer in our community” and “10 people on my street have died of cancer.” Such chilling comments prompted the first round of sampling in Belledune. Since then, she's shifted her focus to health risks in human communities, and last spring she published a study named, “Identifying At-Risk Communities for Action on Cancer Prevention.”

Gathering data from 14 local communities, Milewski found that different areas were prone to different types and amounts of cancer. In Upper Miramichi, for example, brain cancer in women was 50 percent higher than the provincial average. And in Dalhousie, ovarian cancer was more than 200 percent higher. Factors like socio-economic status and smoking behavior were consistent and could not explain the different cancer patterns. But there was one factor that *did* vary between communities: industry. Areas with lots of cancer also happened to be those with lots of industrial activity, and men in those areas were particularly vulnerable. While it wasn't proof, the evidence was scary enough. Certain industries in New Brunswick were causing people to get sick, and in a very predictable way.

Milewski's more recent report makes several recommendations to help address cancer rates at the community level. Based on her results, she calls for the New Brunswick government to stop industries from releasing known carcinogens. Shortly after the study was released, Milewski sent letters to the minister of health and minister of environment offering to discuss her findings and recommendations. She also sent letters to all 14 mayors in the province. Then she waited to hear back. And waited.

In many ways, curing cancer, rather than preventing it, is considered the epitome of scientific success—a goal motivated by the depressing fact that 46 percent of men and 41 percent of women will get cancer in their lifetimes, and one out of four of them will die from it. Milewski argues this approach is deeply misguided. She says it prevents us from asking the bigger question: why? What is it about a person's lifestyle in her community that causes her to get cancer?—food? location? environment? Together with other researchers, Milewski is part of a growing faction that believes such money and resources

would be better spent addressing “cancer hot spots.” To them, shifting focus to disease rates at the community level just makes sense: Studies consistently show that factors in a person’s neighbourhood are directly linked to that person’s health. If you can identify the factors, the theory goes, you can thwart the disease and illness linked to those factors—not just cancer, but other industry-spurred illnesses like lead poisoning and cardiovascular sickness.

This line of thinking is wildly controversial—and largely unpopular—in small industrial economies like New Brunswick’s. Once disease is linked to a specific industry, the community faces a dilemma: prevent cancer or preserve the economy. As Milewski puts it: “We would have to change our entire economic [structure] to deal with this scourge of cancer.”

**BELLEDUNE**—so-called for its “pretty dunes”—doesn’t live up to its name anymore. The transition from pristine coastal hamlet to industrial town began in 1961 with a \$50 million complex that would include a mine, a concentrating mill, a lead smelter, and an acid plant. It was set to create two thousand jobs and appease New Brunswickers eager to domesticate the mineral and forest industries then controlled by foreign (mostly American) companies. The complex would also release five metals into the surrounding environment: copper, zinc, silver, cadmium, and lead.

The province made legal exceptions for the company in charge of the project. It was allowed to expropriate and rezone public land as it pleased. It could divert streams and rivers, and was immune to “nuisance prosecution,” eliminating a 200-year-old common law that allowed citizens to protect themselves, their properties, and communities from damages such as noise, odours, and industrial pollution. When citizens challenged the concessions, the province assured they had no reason to be afraid of a “puff of smoke.” At a public interest meeting, K.C. Irving of the Irving empire (and an investor in the smelter) said that although the smoke from the smelter may be “a little unpleasant” sometimes, “the nuisance clause was necessary to avoid petty interference with operations.”

A year into the smelter’s operations, the first rumors of lead poisoning started circulating. By year’s end, 33 of 450 workers were relocated from the smelter due to high levels of lead in their blood. Another 32 workers were given warnings. More and more miners appealed to the Workers’ Compensation Board and still, the smelting company would not look into pollution problems in and around the facility. In 1968, the Steelworkers Union requested a federal investigation. By 1972, compensation claims for lead poisoning were higher in New Brunswick than all mining communities in Canada combined.

A similar story was unfolding in Belledune’s Bay of Chaleur. In 1969, the new chemical fertilizer plant was producing 4,600 tonnes of gypsum (calcium sulfate) by-product per day. At the time, there were no markets for the product. The only solution seemed to be to dump it in the ocean or landfills. The province couldn’t afford to give up an acre of land to gypsum each day; into the bay it went. Two years later, a toxicity test showed gypsum was killing fish. A 1985 Environment Canada study found acutely lethal effects on amphipods and lobster larvae. When the fertilizer plant had to cut costs later that year, however, it ignored the study and instead changed the manufacturing process in a way that boosted gypsum output. It eventually shut down in 1996, after years of unfulfilled promises to fix its gypsum conundrum.

Since then, the government has made small concessions. It has

cleaned private properties and improved ventilation systems in factories. And as a result, chemical emissions have declined in New Brunswick—about 85 percent since the data was first recorded annually in 1975. Lead emissions have decreased from 2,270 kilograms per day in 1968 to 7,784 kilograms per year in 2011. And zinc emissions, once 41,000 kilograms per year, are down to 1,200 kilograms. It’s easy to see these numbers as encouraging, but Milewski says these scant reductions are not enough. You could say they’re a bit like putting a Band-Aid on a gunshot wound.

**CANCER CLUSTERS.** That’s what it does. Mutant cells replicate in a host and cluster together. Cancer clusters in the body, forming tumours that start out too small to notice, then grow, then spread. Cancer clusters in communities, too. It’s not something we like to talk about. Industries and governments especially prefer to weigh all other options before declaring a particular cause of cancer. As a result, cancer clusters are often ignored until they are too big, or too obvious, which, usually, is too late.

Researchers like Milewski believe this wait-and-see method can only result in more death. If we truly want to cut cancer rates, she argues, we must adopt a precautionary approach: one that identifies cancer patterns and avoids suspected causes of disease. For her, evidence, rather than proof, is enough. Milewski is realistic about what it will take to push governments into action, however. It will take a significant shock, such as a meteoric rise in youth and twentysomething cancer rates. “As people run out of excuses for why the rates of cancer are going up,” she says, “they’ll start looking to industrial and environmental sources.”

In West Salem, Oregon, this is already happening. Since 2010, seven young people—all from middle school and high school—have been diagnosed with osteosarcoma. The rare bone cancer typically affects 800 people per year across the United States. In West Salem, with a population of 19,000, the diagnosis rate should be about one case per generation.

The public health division of the Oregon Health Authority is calling the situation in West Salem a “cancer cluster”—a confirmed and unusually high number of a particular type of cancer in a small geographic area. It’s a similar situation to what Milewski identified in communities across New Brunswick. But in Oregon, the government is addressing the surge in cancer in a systematic way.

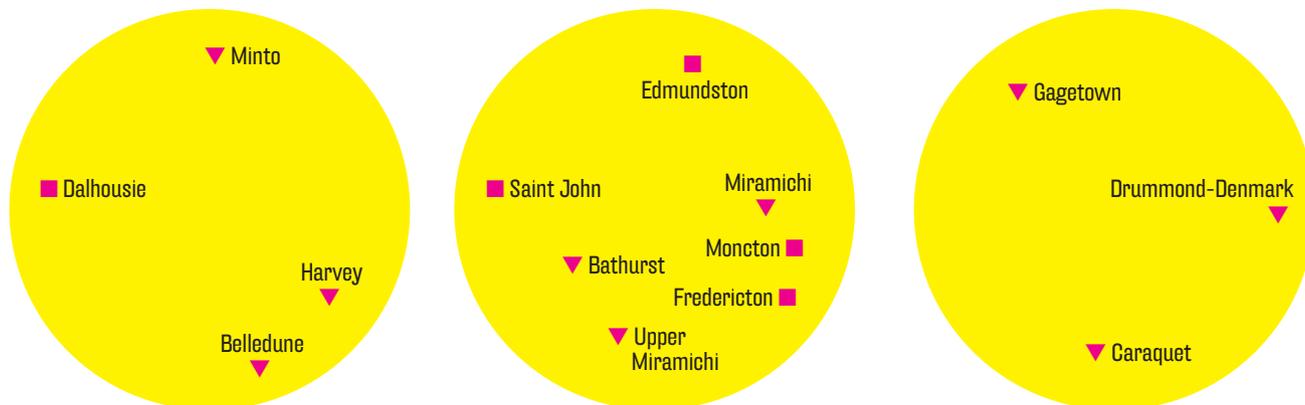
The investigation of cancer clusters usually stems from public concerns, says state epidemiologist Dr. Katrina Hedberg. Community members send a query to the state cancer registry if they suspect some toxin in their environment is causing cancer. The Public Health Division then investigates the concern and offers the community information about the cancer: what the risk factors are, expected disease rates, and so on. “Then we put the responsibility back on the public,” says Dr. Hedberg. “We say ‘tell us the people you know and in what time frame they were diagnosed.’”

If a cancer cluster is identified, the Environmental Protection Agency (EPA), which is responsible for cleaning up the environment, jumps in to investigate. Right now, the EPA is testing West Salem for carcinogens known to be linked to osteosarcoma.

West Salem is a relatively new neighbourhood in the larger Salem community. One possible factor the EPA is investigating is whether the houses and parks were built on land that was previously contaminated by industrial activity. But little is known about

## Similarities in male age-unadjusted cancer incidence rates among 14 urban (■) and rural (▼) New Brunswick communities\*

\* Circles around communities represent the three significant groups formed by hierarchical clustering analysis



Cluster analysis of six common cancer types among males in 14 New Brunswick communities found that Belledune, Dalhousie, Minto, and Harvey had statistically significant higher overall rates of cancer while men in Gagetown, Drummond-Denmark, and Caraquet had the lowest overall cancer rates.

# *cancer clusters*

**“I was working with citizens who, for decades, had been kept in the dark. They were about to get the answers they were looking for”**



■ A RESIDENTIAL STREET IN BELLEDUNE WITH A SMOKE STACK VISIBLE IN THE BACKGROUND

what causes osteosarcoma. “At the end of the day, we may not be able to prove that one type of industry caused the cancer,” says Ben Duncan, of OPAL Environmental Justice Oregon and chair of the Oregon Environmental Justice Task Force. “It’s very hard to make that connection.” And a lack of scientific evidence isn’t the only barrier. Duncan goes on, “To say this is a causal link costs a lot of money. I hate to say there’s politics tied up in this, but,” he pauses, then concedes, “it’s rife with politics.”

**MILEWSKI FLIPS THROUGH** the marked-up pages of *Silent Spring*. She’s lost track of how many times she’s read the book. But every time she does, she’s drawn to this one passage: a letter, dated 1958. It’s from a housewife in Illinois writing about the recent void of songbirds in her yard. DDT, she suspects, is killing them off—the then new chemical was used to preserve elm trees along the road. At the time, DDT was considered safe for human exposure. We now know it attacks the plasma membrane of cells, kills small organism, and is suspected to cause cancer in humans.

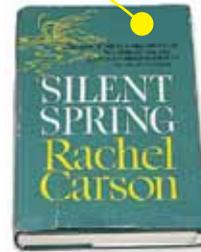
“I think a lot about her,” Milewski says referring to the book’s author, **Rachel Carson**. Carson was a biologist and writer during the late ’40s–’60s. She had a mission against the post-war chemical revolution and doubted its promise for a brighter tomorrow. “I’ve thought a lot about her,” Milewski continues, “I found myself 10 years ago doing work that was completely out of my comfort [zone], out of my capabilities, but I was compelled to do it. I couldn’t say no. Somebody needed to step up.”

Like Milewski, Carson’s marine biology career led her to conservationism. She devoted the latter part of her life to writing for the public. Although she was from Springdale, Pennsylvania, Carson wrote extensively on the Miramichi Valley in New Brunswick. Her writing took off just after WWII, at a time when New Brunswick was battling the spruce budworm’s threat to the lumber industry. The budworm was eating away at old trees, priming the forest for natural burns, and creating ideal conditions for germination. But what’s good for the forest is not always good for industry, and New Brunswick was quickly losing large lumber to this hungry little pest.

With the war over, fighter planes and mass amounts of chemicals were available for commercial use. In 1952, New Brunswick launched the most rigorous aerial-spraying program the world—to this day—has ever seen. They used DDT to fend off spruce budworm. And it worked. But each year the budworm came back, and each year the forests were sprayed.

Carson’s work, particularly *Silent Spring*, inspired the creation of the U.S. Environmental Protection Agency and influenced the eventual ban on DDT. By the time New Brunswick’s aerial spraying program ended in 1990, at least 220 million pounds of pesticides had rained over New Brunswick forests. Today, Upper Miramichi has high rates of non-Hodgkin’s lymphoma, ovarian and brain cancers—all known to be linked to pesticide exposure.

As a woman scientist during Cold War times, Carson had to fight for all the respect she had. She was the subject of a Monsanto parody published in the company’s magazine, and the National Agricultural Chemical Association launched a \$250,000 distortion campaign against her. After publishing *Silent Spring*, a *Time* magazine article called her “unfair, one-sided, and hysterically overemphatic.” In her final years, Carson retreated to her home in Silver Spring, Maryland where she died of cancer in 1964.



**“As people run out of excuses for why the rates of cancer are going up, they’ll start looking to industrial and environmental sources”**

82

**Pb**

**Lead**

207.2

Top photo courtesy Connections Productions (Moncton)



29

Cadmium levels in Belledune lobster were 80 times above Canadian Food and Drug Directorate standards in 1979.

Cu  
Cooper

**MILEWSKI AND HER HUSBAND**, Ben Baldwin, live on 100 acres of farmland in the Miramichi. The property was a land grant from King George IV in 1828 and has been in Baldwin's family ever since. Milewski's time is split between working here, in her home office, and out in the field. Back in 2003, she was on the road a lot—at least three days a week. She'd be up at 6 a.m. and home by midnight, making the hour and forty minute drive to and from Belledune at dusk and dawn. "They were long days," says Milewski. "Also very rewarding days because something was going to happen. I was working with citizens who, for decades, had been kept in the dark. They were about to get the answers they were looking for."

That year, the provincial government was set to approve a toxic waste incinerator in Belledune. The incinerator would be the latest "smokestack industry" in the 1,700-person town. The government and the company leading the project, Bennett Environmental, were reciting the same rhetoric that came with each new industrial development: chemical emissions from the facility would pose little, if any, health risks to the community. And of course, the development would create "millions of dollars and thousands of jobs."

Peggy Gordon was skeptical. Gordon, a nurse working in long-term care, lived in Winnipeg for most of Belledune's developing years. When she moved back to Belledune in 1995, she heard grumblings from residents apprehensive of yet more industrial development. Together, with a group of six women, she launched an objection against Bennett Environmental's building permit, arguing the development would lower residents' property values. "We were concerned about what [the incinerator] would do to our health," says Gordon. "But property values brought the issue out in the open. It rings in people's ears better than health issues."

Some women had stories about their fathers or brothers getting sick, not just from cancer but respiratory illnesses and heart disease. The women suspected the area's industries were the culprit, but also knew they needed help to prove it. They contacted the Conservation Council of New Brunswick and Milewski agreed to look at Bennett's public health and environmental assessment—a 900-page report, muddled with jargon and invalid methodology that underestimated the exposure to chemical emissions. Milewski now looks back at this moment as the launch point of her side-step into the realm of cancer research, and community health.

Milewski determined that Bennett failed to accurately consider its incinerator's environmental and health impact and completely ignored the decades of built-up toxins from Belledune's chemical industries. Instead, Bennett imagined the incinerator would exist in a vacuum. It was as if its emissions would be the first to pollute the air, land, and waters of Belledune. Such models of risk were all hypothetical; Milewski wanted to look at the community's actual cancer rates—how industry might already be affecting Belledune's population. She began to collect all existing environmental monitoring data for the area. Thousands of pages poured in, all of them revealing an astounding level of contamination in the area. And here the province was, about to carry on Belledune's toxic industrial legacy.

With Milewski's help, Gordon and the citizen group mobilized against Bennett. They engaged hundreds of people around the Bay of Chaleur, from Belledune to Grand-Riviere, Que. to the Gaspé Peninsula in Nova Scotia. As one mega group, they rallied 2,500 protesters, organized a petition—more than 50,000 signatures strong—and presented it at the legislature in Fredericton. Bennett fought back, and launched a

defamation suit against Milewski, her organization, and her colleague. Milewski says she wasn't particularly concerned about the lawsuit: she believed it was meant to silence her, and, of course, it couldn't. (After three years, Bennett dropped the lawsuit.)

Milewski made the history of Belledune's industrial contamination public for the first time in a 2006 report called "Dying for Development: the Legacy of Lead in Belledune." Although the Bennett toxic waste incinerator was approved and built, it never received an operating permit. "The citizens," says Milewski, "were quite successful in preventing the plant from operating."

**ROGER LEBLANC** worked in New Brunswick's Bathurst zinc mines for 17 years. When he was 51, he got sick from lead exposure and stopped working. That was in 1996. He hasn't been healthy since. Initially, lead gets into a person's bloodstream and poisons the body that way. You may have pains in your abdomen, or persistent headaches, or symptoms of anemia. Then the lead settles in your bones and goes dormant for a while—your symptoms soften and may even go away. But as you age, your bones decay, and as they decay lead leaches back out into your blood and you are re-victimized. The slow, constant release of lead continues in tandem with the slow, constant decay of your bones. Your mind and body eventually succumb to the poison which, inevitably, kills you.

A decade after he had stopped working, LeBlanc read Milewski's report, "Dying for Development." He was in a battle for workers' compensation and his advocate knew nothing about lead poisoning or its link with zinc mining. When the compensation board told him the high levels of lead in his blood didn't amount to an "industrial disease," he couldn't refute it. Over and over, the board rejected his request—maybe, they suggested, toxins had entered his blood from paint on old cars or hunting wild game with lead bullets. Milewski's report convinced him he was suffering, deteriorating—like so many others in his community—because of those years of zinc exposure. With new hope, LeBlanc reached out to Milewski.

"I may not be a lawyer," says Milewski, "but hey—what the heck! Sometimes you have to do the heavy lifting. I thought, 'I'll just read about it. I'll figure it out.'" After 157 chelation sessions—hopeless attempts to rid his body of lead—LeBlanc had no money left for legal aid. Milewski volunteered to help him get compensation for his treatments in 2010, the year of his first appeal. That's how she found herself sitting in the courthouse, right beside LeBlanc. Like with so many others in the province, Milewski's been his advocate ever since. This time, she's up against six lawyers representing the Workplace Health, Safety and Compensation Commission and Xstrata Canada Corp. LeBlanc's final appeal was heard in March 2013. "Maybe I'm just fearless," she says about the trial "or maybe I'm foolish." Certainly, she's been called both. For now she waits, with patience, for the court's ruling. **THIS**