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CANCER: PEI'S KILLING FIELDS

## 'Pesticides are what is killing our kids'

**Rural PEI is an unlikely hotbed of rare cancers, and one doctor has made it his mission to raise awareness about the potential health hazard posed by pesticides used on the region's potato farms. It's a controversial viewpoint, reports MARTIN MITTELSTAEDT, but it has spurred the province to launch a probe**

MARTIN MITTELSTAEDT

KENSINGTON, PEI -- The countryside surrounding this small community near the centre of Prince Edward Island is picture-postcard perfect. Neatly tended farm fields devoted to the island's famed potatoes are interspersed with clapboard homes, imagery seemingly taken straight from the pages of *Anne of Green Gables*.

It is perhaps because of the province's appearance as a bucolic rural idyll that Ron Matsusaki had the biggest shock of his professional career when he moved to the island three years ago. The affable 57-year-old doctor was taken aback by all the rare cancers he began noticing. The illnesses seemed more like what might be expected near a hazardous waste site.

"Nowhere, nowhere did I see cancer that in any way resembles the cancers that I saw when I came to PEI," Dr. Matsusaki said. "I was totally dumbfounded."

In short order after his arrival, he came across an osteosarcoma that led to the heart-wrenching death of a young girl, several lymphomas, an Ewing's sarcoma, and a number of myeloid leukemia cases, all among children. Brain cancers weren't sparing young and middle-aged adults either, with three of them last year.

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Perhaps because he arrived with the fresh eyes of a newcomer, Dr. Matsusaki was sufficiently alarmed that he started to speak out publicly about this rash of unusual cancers and his suspicion that the blame for them lies with one of the island's economic mainstays, potato farming, and its promiscuous use of pesticides.

This view -- that exposure to pesticides and other everyday environmental pollutants is a big source of the cancer epidemic sweeping Canada - is one of the most controversial subjects in cancer causation. It stands to reason that poisons used to kill bugs and weeds might pose a risk to people, but the research picture linking pesticides to cancer has been mixed.

Many studies, but not all, on the health of residents of farming areas have found associations between crop sprays and cancer. But this

research, known as epidemiology or the tracking of disease incidence, is considered less conclusive than the medical evidence on such well-known carcinogens as cigarette smoke, asbestos fibres and radon gas.

Researchers think that about 80 to 90 per cent of all cancers are due to environmental causes broadly defined to include lifestyle factors such as smoking and diet. It's far harder to tease out just how much is due to polluted air, water or food, or to radiation or workplace exposures to cancer-causing substances. One recent estimate of the impact of pollution placed the total cancers due to this factor at about 8 to 16 per cent.

At the high end of the range, this would suggest that about 25,000 people in Canada getting cancer this year might owe their misfortune to pollution.

Prince Edward Island would be a good place to shed more light on the health effects of agricultural chemicals because areas such as Kensington have some of the highest airborne concentrations of pesticides around farm fields in the world, and a sizable rural population literally living on the doorstep of the spraying.

After Dr. Matsusaki began to voice his concerns, the province decided to launch an investigation to check whether Islanders have recently been more afflicted by cancer than people elsewhere in Canada. The Department of Health is expected to make the new cancer review public late this year, says Dr. Linda Van Til, an epidemiologist with the PEI government.

In an e-mailed statement to The Globe, she said previous monitoring by the Canadian Cancer Society and the federal government has found cancer rates on the island are "slightly higher" than the national average, although she added that this may reflect the broader national trend of having more cancers in the East and lower rates in Western Canada.

It is possible the flurry of cancers observed by Dr. Matsusaki has been just an unlucky coincidence. Even with extremely rare cancers, there is always a small statistical probability that a few people living in close proximity to each other will develop them around the same time by chance.

Dr. Matsusaki, nicknamed "Dr. Ron," worked for two decades in the U.S. before returning in 2003 to his native Canada, where he had received his medical training. After a career at hospitals and clinics in Texas, Alabama and Indiana, he was convinced he'd seen everything a doctor might reasonably be expected to come across -- until he came to PEI.

On the island, he's working as an emergency-room physician and on-call doctor at the Western Hospital, a small 25-bed institution serving a farming community of about 14,000 people at the island's western tip. He says one of his first clues that something might be amiss were the two sarcomas, both bone-related cancers, discovered in children within a year of each other in this small population.

"That defies statistics," Dr. Matsusaki says. The cancers are exceedingly rare, and typically only three or four children out of a million would be diagnosed in Canada in a year with either one. The other cancers were also of the handful-out-of-every-million-children type.

Some of those who are living in the area where Dr. Matsusaki practices and have experienced cancer in their families are convinced that pest sprays are the only plausible explanation because there is little in the way of industrial releases of cancer-causing chemicals.

"I have no doubt about it. Pesticides are what is killing our kids," says Noralee Harper, a mother whose son Brett was diagnosed two years ago at age four with non-Hodgkin's lymphoma. She says there is so much cancer in PEI among children "it's scary."

Following treatments, Brett is doing fine and is a happy six-year-old in Grade 1. But Ms. Harper says that having a child undergo intensive chemotherapy was the most difficult thing she has experienced. "It was the worst thing I could ever imagine, watching Brett go through what he went through. It was a nightmare from beginning right through to the end."

In children, there is considered to be a link between pesticides and non-Hodgkin's lymphoma, along with kidney and brain cancer and leukemia, according to an authoritative review of the scientific literature on pesticide-related illnesses conducted by the Ontario College of Family Physicians in 2004.

Ms. Harper says her family was exposed to crop chemicals throughout the time Brett was a baby and toddler; they lived in a heavily farmed area along the Mill River "where you can't go a mile without seeing a potato field," she said. Their house was on a downhill slope next to a spud field, and she says residues from the spraying of potatoes frequently drifted into her home.

Based on worries about these exposures, the family moved to a house further away from potato cultivation, which accounts for about 90 per cent of all the pesticide used on the island.

That many Prince Edward Islanders experience extremely high pesticide levels compared to other people in Canada was demonstrated in a pair of scientific papers issued earlier this year by researchers at Environment Canada investigating "second-hand" pesticide exposures, a phenomenon similar to second-hand cigarette smoke.

Scientists from the agency have been monitoring agricultural regions for pesticides evaporating or blowing from farm fields into nearby areas. There are no standards in Canada for these airborne emissions and no assessments of the health impacts of chronic, long-term inhalation of the complex mix of insecticides, herbicides and fungicides emanating from farm fields.

Currently, only pesticide exposures in drinking water and food are regulated.

"You can't say that they're totally safe because you haven't done that evaluation," says William Ernst, an Environment Canada toxicologist based in Dartmouth, N.S., who worked on the research, commenting on airborne pesticides.

Here in Kensington, a PEI community surrounded by potato fields, one of the studies found the second-highest pesticide readings in the country. The area had extremely high levels of chlorothalonil, a fungicide widely used on the island, along with 16 other pesticides.

According to the second study, by Mr. Ernst, it is likely that practically the entire PEI population in summer is exposed to airborne pesticides. The use of chlorothalonil in particular is so widespread, its presence "in air is likely to be ubiquitous throughout the atmosphere of PEI during the potato-growing season," the study said. The researchers even reported traces of the fungus killer in the air at a remote monitoring site on a wharf jutting into Northumberland Strait, where there was almost no nearby potato cultivation.

Potatoes are a heavy user of chemicals, needing up to 19 sprays in a single growing season. Farmers often spray potatoes on a weekly basis, or even more frequently to try to prevent blight, the crop-ruining fungus that caused the Irish potato famine, as well as herbicides to kill the tops of the plants at the end of the growing season to make the underground tubers easier to harvest.

There is likely to be more pesticide exposure on the Island in recent years than there once was because potato acreage has expanded dramatically -- doubling since 1980 and up about 40 per cent since 1990, to meet the booming demand from French-fry makers.

Farmers insist that their sprays are safe because all crop chemicals used on the island are approved and regulated by Health Canada, according to Ivan Noonan, general manager of the Prince Edward Island Potato Board, a growers' association.

He says pesticides are part of modern farming, and opponents of spraying are being unrealistic. "We have some extremists who see the thing as everybody should have a cow, a chicken, a goat and a few potatoes and live like we did 150 years ago. That isn't going to happen."

But the idea that some Islanders are getting cancer as a byproduct of slaking the rising national demand for French fries is widely accepted in the area, although not all of those with cancer are convinced. Tom Rath, diagnosed three years ago with multiple myeloma, a blood-related cancer whose incidence is rising for unknown reasons, says "there are certainly lots of people that believe pesticides" are the cause of cancer, but he is keeping an open mind.

In his own case, he says: "I just looked for an explanation. I didn't find one."

If there is a link to pesticides, it would likely show up first in children because their rapid cell division makes them more sensitive to cancer-causing chemical exposures than adults.

Kathy Bigsby, a pediatric specialist at Charlottetown's Queen Elizabeth Hospital, has also been concerned about the elevated rate of cancer among children at the western part of the island where Dr. Matsusaki practices.

"We actually have had a clustering of cases of children with cancers of various types from that end of the island," she says.

But Dr. Bigsby says some medical experts believe the area previously had a relatively low rate, suggesting the current rash of cases may be an unlucky statistical blip.

Based on its population, about five or six children on all of PEI should be diagnosed with cancer a year, if its rate were at the national average. There is some evidence, albeit not scientific, that PEI's rate may be far, far higher. The Children's Wish Foundation, the charity that funds memorable experiences for extremely ill children, says the group on PEI has either granted or has pending 20 wishes this year for young cancer patients.

It's a statistic that has Ms. Harper fearful. She has become so worried that agriculture has turned PEI into a pollution hot spot that she is considering moving her family off island. "I don't think this is the right place to raise a family," she says.

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## **Cancers with suspected environmental links**

### **Childhood leukemia**

This cancer, the most common in children, is linked to the most ubiquitous of pollutants -- the invisible lines of force known as magnetic fields that surround all electrical-powered devices, from computers to light bulbs. Rates of the disease rose four-fold in the U.S. over the period electricity was introduced into common use from the 1920s to 1960s, but in recent years, there has been a small, annual increase. Canadian research has found children in homes with high rates of electromagnetic fields are two to four times more likely to develop the disease.

### **Testicular cancer in young men 20-44**

Rates have been rising sharply in Canada since the early 1980s, with men nearly twice as likely to develop the disease than a generation ago. It is the most common cancer in young men. Having an undescended testicle is a risk factor, but many researchers suspect the widespread public exposure to hormone-disrupting chemicals in many pesticides, drugs and plastics is also a factor.

**Thyroid cancer in young women 20-44**

Thyroid cancer has the most rapidly rising incidence rate among young Canadian women. Cancers are traditionally a disease of the old, and human genetics wouldn't have changed enough in the past generation to cause such a large increase. There are concerns the rise must be prompted by some new environmental factor, such as exposures to hormone-disrupting chemicals.

**Non-Hodgkins lymphoma in men and women aged 20-24**

Rates for both men and women have shot higher in past decades. Many researchers suspect exposure to pesticides, particularly those used to kill plants, is a factor.

*SOURCE: CANCER CARE ONTARIO: CANCER IN YOUNG ADULTS IN CANADA*

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