In an ironic twist of history and fate, a small community of the Native Dene people at Great Bear Lake in Canada's Northwest Territories unwittingly played a role in the creation of the first atomic bombs. The Dene were transporters of the uranium that was mined on their homeland and then sold to the United States where it was processed into the needed plutonium. By the 1990s, over half of the Dene transporters had died of cancer. After requesting a health study they learned that the high incidence of disease was due to their close and unprotected contact with the radioactive ore. Simultaneously, the community realized the role they played in the deaths of tens of thousands of innocent Japanese civilians.

The tragedy for the Dene community in the North is huge. Not only have they suffered from the ravages of cancer and other health problems, but Great Bear Lake and the surrounding region, including the fish and wildlife, are contaminated by radioactive tailings or “radwaste.” In addition, the community has suffered tremendous guilt due to their role in the devastation of Hiroshima and Nagasaki. This history and the Dene’s efforts to deal with the complex tragedy is documented in the film, Village of Widows, by Canadian director Peter Blow. The film provides an excellent illustration of the Dene’s efforts to win compensation from the Canadian government. It also documents their 1998 pilgrimage to Japan to apologize for the role they played in the detonation of those first atomic bombs.

This essay (part of a series entitled, Linking! Connecting Canadian History to the United States) explains how a tragic event in Canada’s North is related to a critical invention in United States history that ultimately changed the world. It should provide high school teachers with a simple and concise overview of the Dene in the Northwest Territories, the history of the uses of uranium and radium, and a backgrounder on how the atom bomb was created. By following the “Highway of the Atom” students can work their way across the map of Canada following the transport of uranium to its final destination while acquainting themselves with Canadian geography. Finally, the essay will illustrate just one of the many severe environmental problems in Canada’s sub-arctic and its affects on the First Nations.

Great Bear Lake and the Dene

Great Bear Lake is Canada’s largest lake and the eighth largest in the world. It sits on the Arctic Circle in the Northwest Territories. It is a full 200 miles across—greater than the distance from Seattle to Vancouver. The area surrounding Great Bear Lake is home to semi-nomadic people, the Dene, who still maintain a primarily subsistence culture by hunting, fishing and trapping. There is only one village on the southwest corner of the lake, Deline, where about 700 people live. Deline was settled in the 1930s when the first uranium mine was established at Great Bear Lake.

The Eldorado Mine in the 1930s

The early 20th century was a time of much excitement in Canada’s North—many prospectors from the “outside” were surveying lands in northern Canada in hopes of hitting another gold vein similar to the one found near Dawson Creek in the 1890s that kicked off the Klondike Gold Rush. Given this, when a Dene man found a dark and unusual looking rock near the shores of Great Bear Lake in the early 1930s, he took it to one of the white prospectors thinking it might be gold. The rock
was then passed on to a well-known gold-mine operator in Edmonton, Alberta—Gilbert Labine.

Labine realized that the rock contained something worth more than gold itself—uranium. He immediately flew up to Great Bear Lake staking his claim to the land on the eastern shore where he started Eldorado Mines. In just two years, Eldorado was the largest uranium mine in the world, supplying radium to medical science and industry.

In the late 1890s Marie Curie, a Polish woman living and working in Paris, discovered an element of uranium, radium, and its unusual qualities. With her husband, Pierre, they realized that this ore gave off intense rays which they called “radioactivity.” Soon after the Curies’ discovery medical science found a use for the radioactive quality of radium— to stop abnormal cell proliferation and shrink cancerous tumors. Uranium, which formerly had little worth, was suddenly of tremendous value to both science and medicine. Industry also utilized radium for its phosphorescent qualities such as on the hands of watches.

Given that radium is found in such small quantities in uranium (about 1 part radium to 3 million parts of uranium), extracting it was extremely costly making it worth $120,000 per gram. Needless to say, Eldorado Mines did extremely well and in no time Labine was making a fortune. Ironically, the Dene man who initially found the curious rock went to visit the mine in its first and second years of operation. Each time he was given ingredients for making bannock in payment for his discovery; flour, salt, etc. However, when he went to visit in the third year he was told that he had been paid enough and not to return.

**The Dangers of Radioactivity**

What scientists did not initially realize was that the same radioactive qualities that treated cancer also caused it. It did not take the doctors and scientists long to discover the hazards of working with radium as many of them began to develop skin cancer. In fact, Marie Curie herself died from leukemia as a result of her work. The dangers of radium were also detected in the watch factories where the young women laborers would lick the tips of their paint brushes to create a point in order to paint the narrow hands and tiny numbers. Over time they began to suffer from “radium jaw” or the loosening of the jaw and teeth.

Meanwhile, the Dene of Great Bear Lake were hauling uranium in porous burlap sacks. The dust would spill out and coat their clothing. “The dust coated you like flour,” said one Dene transporter, “it covered our clothes, our heads, our hands.” When the burlap sacks were too worn out to use, they were given to the women to sew into tents. Tragically, the dust was even used to fill sandboxes for the children. The Dene continued to work as transporters for the mine for the next 20-plus years with their families living just outside the mine in the village of Port Radium.

**From Shrinking Tumors to Atom Bombs**

Labine did very well for the first few years but then a combination of the Great Depression the and onslaught of World War II diminished research monies substantially. Eldorado Mines was struggling financially until another history-altering discovery in 1939 provided a new market for uranium. In 1939, German scientists discovered “nuclear fission,” the ability to artificially break apart the nucleus of the uranium atom to produce phenomenal amounts of energy, and the race to create the first atomic bomb began.

The United States was aggressive in that race but did not have its own uranium sources. President Roosevelt turned to Canadian Prime Minister Mackenzie King for assistance. In response, the Canadian government secretly purchased Eldorado Mines from Labine and became the chief supplier of uranium for the “Manhattan Project,” Roosevelt’s initiative to investigate the potential of making warheads from the split atom.
The Dene were now employees of the Canadian federal government. By this time the hazards of working with uranium were well documented and both the Canadian and United States governments were certainly aware of the effects of exposure to the ore. However, neither government informed the Dene. Radioactive dust was everywhere in the village and tailings were dumped into the lake and left exposed around the mine. And, the Dene men literally lived with the dust for days often using the sacks as pillows as they transported ore from Port Radium 1,200 miles to Fort McMurray in Alberta.

At Port Radium the “pitchblende,” or black rock containing uranium, was mined and the uranium extracted into what is called “yellowcake.” The “yellowcake” was loaded onto boats by the Dene and taken across the lake to the mouth of the Great Bear River where they reloaded it onto barges that were taken up the Great Bear River to the Mackenzie. The yellowcake was then barged up the Mackenzie to Fort McMurray in northern Alberta. This 1,200-mile transport route was known as the “Highway of the Atom.”

Less than a month after Trinity was detonated, shortly after 8:00 a.m. on August 6, the United States army dropped the atomic bomb “Little Boy” on the city of Hiroshima. At least 70,000 inhabitants were killed instantly and 90% of the city completely leveled. Three days later a second atomic bomb, code-named “Fatman,” was dropped on Nagasaki killing 35,000 civilians. On August 14, 1945 Japan surrendered and World War II came to an end. However, the need for uranium did not.

The Cold War and Uranium Mining

After World War II, Eldorado Mines continued to supply uranium for nuclear warhead proliferation during the Cold War - the ideological battle between democracy and communism lead by the United States and Russia. By the 1950s, there were 23 uranium mines in Canada and the ore was ranked as Canada’s fourth largest export after newspaper, wheat and lumber. The United States also began to mine its own uranium during the Cold War, operating hundreds of uranium mines throughout the Navajo Nation.

When the Cold War ended, so did the demand for uranium and many of the mines shut down. Eldorado closed in 1960 and the Dene laborers moved from Port Radium across the Lake to Deline. All that remains at Echo Bay today is a 5’ tall concrete cairn that tells of the history of the mine:

On May 16, 1930, Gilbert Labine discovered a vein containing silver and pitchblende near this site... The mine was the only source of radium outside of the Belgian Congo. Because of the high demand for radium for use in medical treatment, this source was of world significance... The Eldorado Mine was closed in 1940... re-opened in 1942 by Eldorado Mining and Refining Ltd... a federal crown company, to supply uranium for the Manhattan Project.

Health Issues in the North

The same year that Eldorado closed, the first aboriginal transporter, Old Man Ferdinand, died of cancer. Since that time, half of the men who worked as transporters and many of the women and children have died or suffered from the disease. In one horrible instance, a Deline man’s arm fell off when he attempted to start the motor of a boat. Finally, in the 1990s, the community requested a health study. Of course, the study connected the high incidence of cancer to the mine. For the first time the Dene found out what it was they had been mining all those years and simultaneously realized their role in the war. The community was in shock.
In response the Dene set up the Deline Uranium Committee. The Committee wrote an extensive report to the Canadian federal government requesting compensation for the devastation to their community. In the spring of 1998 a small delegation of Dene went to Ottawa to deliver a report to the Minister of Indian Affairs and Northern Development, Jane Stewart. In addition, the report addressed the serious environmental impact on the area due to the millions of tons of radioactive waste in the Great Bear Lake and surrounding area and demanded funds for clean-up.

The Dene were also struggling to find a way to heal from the tremendous guilt they felt. In 1998, the same year that the delegation went to Ottawa, a 6-person Dene contingent travelled to Hiroshima to make a public apology. "We want to express our sadness and compassion for the suffering that the uranium from Great Bear Lake has caused elsewhere," said Cindy Kenny-Gilday, first chair of the Deline Uranium Committee. The meeting of these two communities, on the 53rd anniversary of the bombing of Hiroshima, is touchingly documented in Village of Widows.

The effects of radiation are still not entirely understood but there is no doubt that exposure to radiation has a harmful effect on body tissue destroying the blood-forming tissue and thereby reducing the flow of blood to the cells. Even overexposure to the sun can cause radiation sickness or weakness, a loss of appetite and even vomiting. Genetic defeats and mutations are also passed on from mothers and can skip generations - we know this from the effects on the descendants of those who were exposed to radiation at Hiroshima, Nagasaki and Chernobyl.

The Dene continue to deal with loss and illness while they attempt to maintain a subsistence lifestyle in a northern environment severely contaminated with radioactive waste. "In my mind it's a war crime that has been well hidden," says Cindy Kenny-Gilday. "We [the Dene] were the first civilian victims of the war." While the issue is hardly confined to the "pristine" northern waters of Great Bear Lake, the experience of the Dene lend some insight into the health, environmental and spiritual tolls of the atomic age.

To receive a complete curriculum guide on this story (including an overhead map, news articles related to the issue, and the initial press release sent out by the Dene) and/or to borrow Village of Widows from the Canadian Studies Center Library, send your request to canada@u.washington.edu or call us at (206) 221-6374 with your name and address.

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Summary

People continue to suffer from the creation and detonation of the first atomic bombs. Rightly nicknamed, "genie in a bottle" radioactive uranium, once extracted, is dangerous for tens of thousands of years. As governments move to compensate those who have suffered health problems from exposure to radioactivity and to clean up "radwaste," new issues continue to surface. Even as the globe heads towards nuclear warhead non-proliferation, the problems of how to deal with the plutonium from the thousands of warheads already built remain astronomical.

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