ACME Nouvelle-Écosse
Association canadienne des médecins pour l'environnement
CAPE Nova Scotia
Canadian Association of Physicians for the Environment

"Safe Uranium Mining?" Nova Scotia Physicians Respond to Industry Claims

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Does the uranium ban make us less safe?

Proponents of uranium mining, such as the Mining Association of Nova Scotia (MANS), would have us believe we need more uranium exploration to understand the location of uranium deposits in Nova Scotia,[1] precisely because uranium and the carcinogenic radioactive gas it emits, radon, are so dangerous—present as they are in some drinking water and in some homes in Nova Scotia.[2]

In fact, the government of Nova Scotia knows a great deal about the uranium deposits in the province, and has published numerous reports and maps in recent years detailing both uranium and radon risks. Large multinational companies did extensive exploration for uranium in Nova Scotia in the 1970s and 1980s.[3] The recent requests for proposals issued by Nova Scotia's Department of Natural Resources (DNR) for uranium exploration in East Dalhousie, Millet Brook, and Louisville,[4] and numerous DNR reports, show there is already a great deal known about uranium deposits in the province.

The ban on uranium exploration and mining was not a ban on research and data collection, as MANS would have us believe. Rather, it was a crucially important ban on activities that would disturb uranium deposits, which could very well increase the already dangerous levels of uranium in drilled wells in Nova Scotia.

Can uranium exploration and mining be done safely?

Mineral exploration and mining activities that disturb the land can change groundwater flow and cause fissures that mobilize uranium and release large amounts of radon.[5] Radon gas can travel hundreds of kilometres in the air, emitting radioactive particles as it moves. When ingested or inhaled, these can damage DNA and human cells, potentially leading to cancer.[6] The decay chain continues to produce new radioactive products that can enter water, crops, trees, soil, animals, and humans.[7]

It is not possible to take uranium out of the ground without bringing to the surface other radioactive materials, including radium, a "notorious killer."[8] Uranium mines have tended to be in remote, sparsely populated areas, often on Indigenous lands. As with other extractive industries, this has led to "sacrifice zones," with a lack of proper health monitoring of nearby populations. As a result, often the remote populations impacted by uranium mining have not been properly studied.[9] [10]

Will there be strict regulations to protect our health?

In Nova Scotia, underground mineral deposits belong to the province, not landowners. Anyone with an exploration licence can access private land to explore for minerals, including uranium. If a landowner

refuses access, the Mineral Resources Act gives the Minister of Natural Resources the authority to overrule the property owner, and grant the exploration licence-holder access.[11] If exploration leads to a mine proposal, and the landowner refuses to sell to the mining company, the Minister can order the land expropriated, as happened in 2013.[12]

Anyone who has taken out a mineral exploration licence in Nova Scotia can simply register with DNR to undertake extremely disruptive exploration activities using powerful machines. This includes drilling, test pits, trenching, and even the excavation of up to 100 tonnes of ore-bearing materials. When the exploration is for uranium, this means unearthing massive amounts of chemically toxic and radioactive material, without any environmental or health impact assessment.

DNR is solely responsible for mineral exploration. There are few regulations for this, and DNR is conflicted as a regulator because of its role working with industry to promote uranium exploration.

The federal government's impact assessment and regulatory framework for uranium mining is required only if a mine is planned. So far, no uranium mines have been proposed in Nova Scotia, but mining is the obvious goal of uranium exploration.

The Nova Scotia Registry of Claims ("NovaROC") map shows that there has been a flurry of new exploration licences granted since the province said it was lifting the ban on uranium exploration and mining. The door has been opened for widespread uranium exploration in Nova Scotia.

It's important to remember that while some of the risks to human health and the environment can be reduced through strict regulation and technologies, they cannot be eliminated.[13]

It's going okay in Saskatchewan, isn't it?

There are only two uranium mines in operation in Canada.[14] Both are in Saskatchewan. The Mining Association of Nova Scotia claims that Saskatchewan shows us uranium mining can be done "safely and environmentally responsibly."[15] Its claim is not supported by medical or scientific evidence.

There are many reasons why it's unwise to compare Nova Scotia to Saskatchewan when it comes to mining uranium. Saskatchewan is nearly 12 times the size of Nova Scotia, with a population density of just two people per square kilometre (km^2).[16] The Saskatchewan mines are located more than 600 km from any towns or cities.[17] Nova Scotia, by contrast, is the second most densely populated province in Canada, with 18.4 persons per km^2. Uranium mines in Nova Scotia would be situated much closer to towns and rural communities.

Furthermore, Nova Scotia's average annual precipitation is more than three times that of northern Saskatchewan.[18] This is especially important to know as uranium is highly soluble in water, making exploration and mining riskier in areas with high precipitation.

Physicians have anecdotal evidence of health problems in Indigenous communities that appear to relate to uranium exposure in northern Saskatchewan. Yet there has never been an independent health study undertaken in the region to monitor for health problems associated with uranium, including cancer and kidney disease.[19]

What is Canada's Nuclear Safety Commission (CNSC)?

Canada's Nuclear Safety Commission (CNSC) reports to Natural Resources Canada, which promotes uranium mining. It does not report to Health Canada or Environment and Climate Change Canada, both of which are far better placed to study and protect human and environmental health.[20] The Canadian Environmental Law Association has criticized the CNSC for its implicit conflict of interest and the lack of transparency and consultation in its regulatory oversight.[21] [22] Medical professionals have noted that CNSC health standards are set by physicists and those involved in the industry, "based on financial and technological convenience," and not by healthcare professionals and researchers committed to public health and safety.[23]

The Canadian Nuclear Safety Commission claims that there are no "significant impacts to the health" of people who live around uranium mines and mills.[24] CNSC provides no sources for this claim. In contrast, a detailed report from the U.S. National Research Council finds that "Uranium mining and processing are associated with a wide range of potential adverse human health risks," which can also extend to the "general population."[25]

Is Nova Scotia's uranium a valuable untapped resource?

Uranium concentration in northern Saskatchewan deposits is very high, while the concentration in Nova Scotia is very low, according to the 1995 McCleave Report.[26] This means very large amounts of uranium-bearing ore would have to be unearthed in Nova Scotia to recover minuscule amounts of uranium, producing a great deal of radioactive waste or mine tailings that require care and maintenance in perpetuity. When uranium is extracted from the ore body, 85% of the radioactivity remains in the waste or tailings.[27] These waste sites have to be monitored and maintained "virtually forever,"[28] as uranium tailings remain radioactive for 100,000 years.[29] This is the case regardless of the method of mining involved – open pit, underground, or in situ leaching.

Is in situ leaching better for the environment?

In situ leaching is a process of injecting solvents into the earth to dissolve the uranium.[30] The solution is then pumped to the surface, where the uranium is extracted. In situ leaching leaves less waste rock and tailings than open pit or underground mining, but is very dangerous because there is a high risk that the chemical solvents will spread underground and contaminate groundwater.

Doesn't uranium save lives?

Proponents of uranium mining and nuclear energy make many claims that are either misleading or just false. One is that uranium has to be mined because it "saves lives," given that it is used in smoke detectors. The tiny amount needed for smoke detectors is retrieved from existing nuclear waste,[31] which is, unfortunately, very abundant.

Do we need uranium mining for medical isotopes?

When the Nova Scotia government announced that it had added uranium to its list of "critical minerals" and was lifting the decades-long ban on uranium exploration and mining, it claimed the heavy metal was needed for medical applications.[32] The government was repeating an industry argument that we need to mine uranium for medical isotopes used in diagnostic tests. This claim is misleading; medical isotopes are produced in research reactors that don't require uranium, and are most safely made in devices called cyclotrons.[33]

Won't it help us address climate change?

Contrary to industry claims, nuclear power is not going to be a significant contributor to addressing climate change.[34] Wind, solar, and batteries are much less expensive and faster to develop than nuclear power facilities, which take many years and immense amounts of money to build.[35] Commercial small modular nuclear reactors (SMRs) are still in the early stages of development,[36] and their technology is as of yet unproven.[37]

The push for nuclear power comes from the nuclear industry—which also involves military applications—trying to renew and revive itself, as detailed in the 2024 academic book, *Dirty Secrets of Nuclear Power in an Era of Climate Change*.[38] The International Energy Agency forecasts minimal future growth in nuclear energy, compared with massive growth in far safer renewable solar and wind energy.[39]

Is there a shortage of uranium?

No, there is no shortage of uranium in Canada, and no need for a new source in a province as small and densely populated as Nova Scotia.[40] ◆

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For more information contact:
ns@cape.ca or media@cape.ca

Endnotes

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2 Potential for Radon in Indoor Air, Nova Scotia

3 A Background Summary for the Uranium Inquiry, Nova Scotia

4 Uranium exploration: request for proposals, Nova Scotia

5 Dr. Gordon Edwards, president and co-founder Canadian Coalition for Nuclear Responsibility

6 Bill 6 submission-Dr. Nancy Covington, CAPE NS

7 Uranium mining and health - PMC

8 Dr. Gordon Edwards

9 Dr. Dale Dewar, physician who has worked in northern Saskatchewan serving a population of Cree, Metis and Dene peoples, member CAPE and International Committee of the Society of Rural Physicians of Canada, former Executive Director of Physicians for Global Survival.

10 Uranium mining and health - PMC

11 Mineral Resources Act

12 EXPROPRIATION: VESTING ORDERS | CanLII Connects

13 Potential Human Health Effects of Uranium Mining, Processing, and Reclamation

14 Uranium in Canada

15 Take the "no" out of Nova Scotia, MANS

16 Population and dwelling counts: Canada, provinces and territories

17 Uranium mines and mills

18 Average annual precipitation, by ecoprovince, 1979 to 2016

19 Dr. Dale Dewar

20 Dr. Nancy Covington, retired family physician, CAPE Nova Scotia, board member International Physicians for the Prevention of Nuclear War Canada.

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28 Dr. Doug Brugge, professor and chair of the Department of Public Health Sciences at the University of Connecticut, with more than three decades of professional experience working with uranium mining and contamination. Co-author of 2024 academic book, Dirty secrets of nuclear power in an era of climate change.

29 The health dangers of uranium mining and jurisdictional questions

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