



## **Exploration, Exploitation and Excess: The Adverse Affects of Mining Uranium**

### **What is Uranium?**

The heaviest naturally occurring mineral, uranium is a very unstable material; gradually breaking apart or decaying at the atomic level. As uranium decays it creates massive bursts of energy, otherwise known as atomic radiation. This process also produces a number of other forms of radio active by-products, both in solid and gas form.

### **Where is Uranium in Canada and What are its Uses?**

Uranium is found throughout Canada and is typically concentrated, underground, in hard rock and sandstone. Uranium has been mined and utilized as energy for electricity, weapons, and military submarines and at times in the production of radioisotopes for medicine and scientific research. However, it is worthy to note, that radioisotopes can be artificially produced and do not require uranium for their production.

### **What is Canada's Involvement in the Uranium Industry?**

Canada began mining uranium in the North West Territories during the Second World War when the American demand for uranium developed as result of their production of the atom bomb. Purchasing Eldorado Mining and Refining Company the Canadian government turned the company into a crown corporation: Eldorado Nuclear Inc. The corporation would mine and process uranium used in the creation of American atom bombs.

Uranium is mined in the Northwest Territories, Northern Saskatchewan, and Ontario. Significant deposits of uranium have been discovered in Nova Scotia, British Columbia and Labrador; however, as a result of strong public opposition and inquiry, mining of uranium has been banned in these provinces.

Saskatchewan is currently the uranium capital of the world and Canada is one of the world's biggest producers of uranium, producing 25% of the mined uranium in the world.<sup>1</sup>

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<sup>1</sup> Australian Uranium Association

## Is Uranium Dangerous?

Yes. During a provincial inquiry into the matter of uranium mining, the Nova Scotia Department of Health and Environment stated that potential hazards exist at four stages of uranium exploitation: mining, milling, departure from the mill and the management of tailings (excess).

It was also expressed that exploration could also pose a threat to the environment and human health as harmful materials could be exposed to rainfall, moving groundwater and aquifers. There is also the potential for the release of radon, a radioactive gas, into the air.

## What are the Health Risks?

Radon poses a significant and immediate threat to human health due to its life cycle and its ability to travel great distances in a short amount of time. As uranium is mined, large amounts of the radioactive gas is released into the air. In less than four days the gas has decayed and attached to dust particles which are inhaled into lungs or deposited on vegetation, soil and water.

The affects are twofold. In the first place there has been a history of a monstrously high incidence of lung cancer, fibrosis of the lungs and a number of other lung diseases in those associated with the production of the mineral. Secondly, as radioactive fallout is deposited on vegetation, soil and water it makes its way, eventually, up the food chain and into humans.

The human body is defenseless against the by-products of uranium. Radioactive material is absorbed and stored in muscles, organs and bones. Overtime, as a result of radioactive decay, living cells are damaged. This results in a weakening of the body's ability to fight infectious diseases and also increases the risk of cancers and genetic disorders.

## What Affects will a Uranium Mine Have On the Environment?

There are five main environmental risks associated with uranium:

1. The release of radon gas and its ability to travel great distances, depositing radioactive solids.
2. The spread of radio-active dust particles that span to water and plants, eventually making its way into fish, animals and humans.
3. Pollution of ground water by radio-active materials.
4. Pollution of surface and ground water by chemicals.
5. The risk of all of the above by poorly stored tailings.

## The *LONG* Term:

A significant concern highlighted during the Nova Scotia inquiry is the issue of the solid waste that follows the production and processing of Uranium, commonly known as tailings.

Although uranium is considered a massive force in the production of energy, it is relatively inefficient. Of the uranium mined only 1% of the material is actually used in a nuclear reactor. 14% becomes the waste of the reactor and 85% of it goes out in the tailings. These ratios, coupled with the chemicals used in the extraction of uranium, pose a significant threat to the environment. A form of energy thought to be cost efficient appears to come at quite a weighty price.<sup>2</sup>

The tailings of uranium processing not only pose a threat in volume alone; but, also as a result of their life span: "the decay of uranium takes place over a long period of time, thousands of more times than any one civilization for which we have history."<sup>3</sup>

The storage of such decaying uranium tailings is a concern that poses many important questions: will storage units remain intact; withstand natural disasters; withstand the volatile decay? The life span of the material in question deems these questions unanswerable.

In a report published in 1985, after 44 public meetings, the inspection of areas of exploration and a thorough inquiry into the prospect of mining uranium, the province of Nova Scotia stated that it "accepted the argument that it would be improper to permit exploration for uranium but withhold the right to mine what has been found, at least until a re-determination is made during 1990."<sup>4</sup>

Today, according to the government of Nova Scotia website, there is still "currently a moratorium on Uranium Exploration in Nova Scotia."<sup>5</sup>

Prepared by the Conservation Council of New Brunswick – June 2007

## Relevant Links:

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- 2 Nova Scotia (NS) Inquiry
  - 3 NS Inquiry
  - 4 NS Inquiry
  - 5 Government of Nova Scotia

Inter-Church Uranium Committee Educational Co-operative  
[www.icucec.org](http://www.icucec.org)

Canadian Coalition for Nuclear Responsibility

[www.ccnr.org/nfb\\_uranium\\_0.html](http://www.ccnr.org/nfb_uranium_0.html)

### **Helpful Contacts:**

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