Health Canada Santé Canada

Healthy Environments and Consumer Safety

Health Impact Assessment of Nuclear Facilities In Canada

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Canada

Outline

- Brief History
- Environmental Assessment in Canada
- Health Impact Assessment – Nuclear Facilities
- Case History

Nuclear Facilities

- **Uranium mining and milling operations,**
- Fuel fabrication facilities,
- Nuclear power and research reactors,
- Radioactive waste storage, and
- Disposal sites

Regulatory Framework

- Atomic Energy Control Act (Passed in 1946)
  - Administered by the Atomic Energy Control Board
- Nuclear Safety and Control Act (Passed in 1997)
  - Promulgated in 2000
  - Administered by the Canadian Nuclear Safety Commission

Current Environmental Assessment Regime

The Canadian Environmental Assessment Act states

All bodies subject to this act shall exercise their powers in a manner that protects the environment and **human health** and applies the precautionary principle

For Nuclear Facilities, the Act is triggered when a Federal Regulatory Authority takes any action for the purpose of enabling the project to be carried out

Environmental Assessment Process For Nuclear Facilities

- Proponent submits an application to the Commission
- Commission notifies other departments who might have an interest in the EA
- A registry is set up for the public to have access to the EA information
- Guidelines for the EA are drafted and sent to departments for review and approval

EA Process For Nuclear Facilities (cont.)

- Final guidelines are sent to the proponent to prepare an environmental impact statement
- The study is reviewed by departments
- An environmental assessment report is written, reviewed by departments, made available for public comment and then approved by the Commission
- License is issued and any mitigation and/or follow-up program implemented

Health and Environmental Assessment

- Health is defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

- Health impact assessments consider not only biophysical health, such as exposure to radiation, but also the psychological and social aspects of human health.

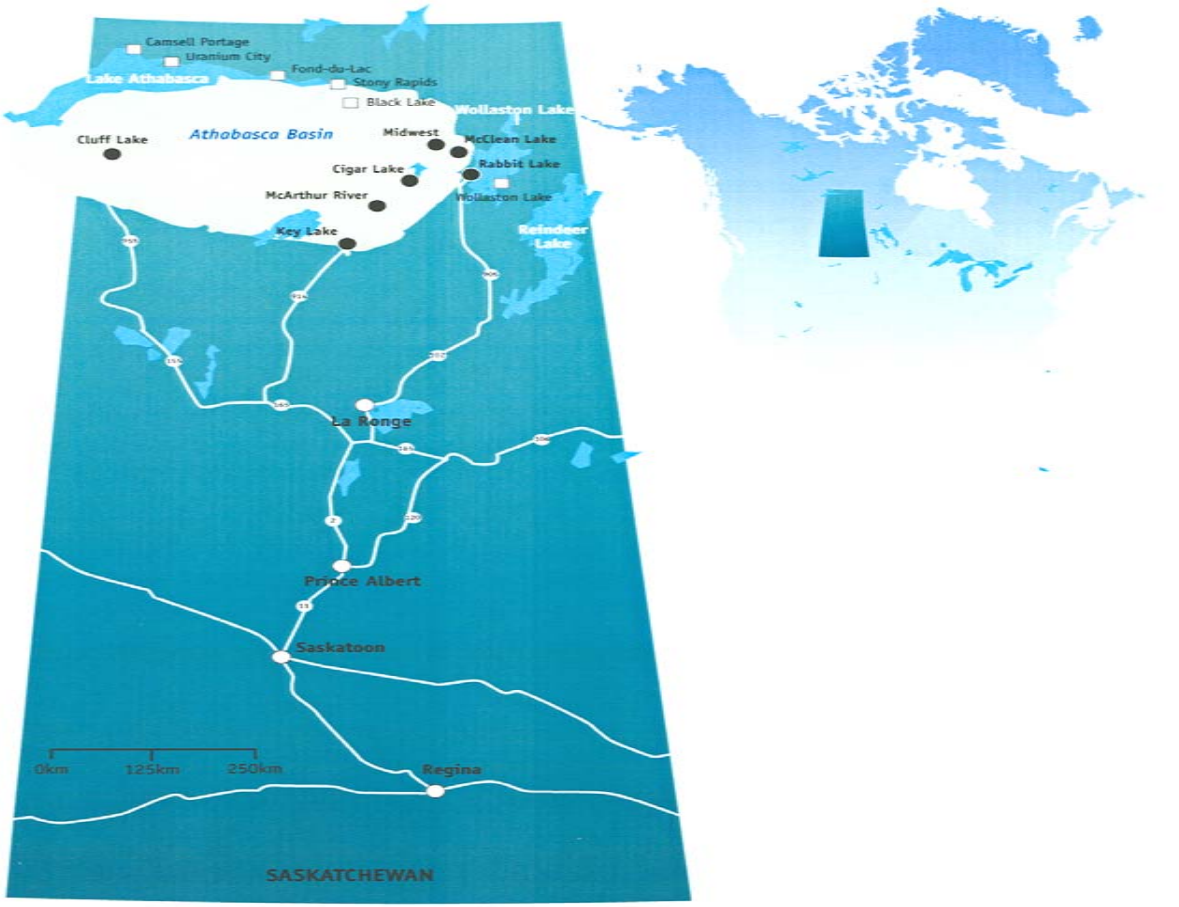
Role of Health Canada in EA

- Health Canada's mission is to help the people of Canada to maintain and improve their health
- Applies it's specialist or expert information or knowledge to protect human health
- Determinants of Health approach

Human Health Impact Assessments of Nuclear Facilities

- Human Health
  - Radiation Workers
    - 20 mSv per year
    - maximum of 50 mSv in any year over a five year period
  - Public
    - 1 mSv per year
- Food and Water
  - Food has no guidelines
  - Drinking Water Guidelines are based on 0.1 mSv/yr

Fig 1.2.1
MAP of SASKATCHEWAN



Case History Decommissioning Of Uranium Mine Tailings in Elliot Lake, Ontario

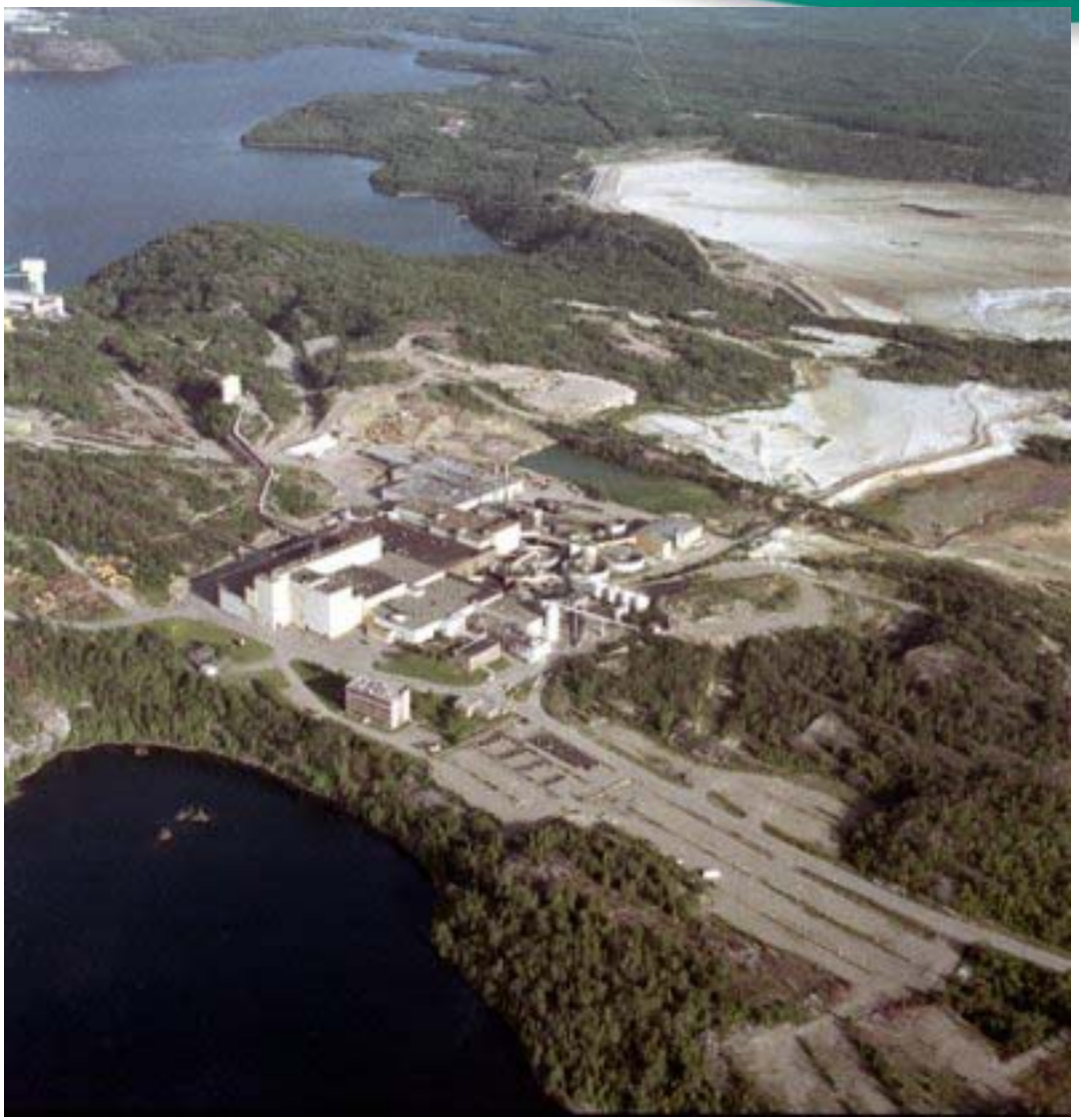
- Uranium mining at Elliot Lake continued from early 1950s to mid 1996. The main producers were;
  - Rio Algom Limited
    - Quirke Tailing Management Area (TMA) and Panel TMA
  - Denison Mines Limited
    - Denison TMA and Stanrock TMA

Decommissioning Options For Tailings Management Areas

- Wet Cover (Standing water on top)
- Dry Cover (Encourage Vegetation on top)
- Lake Disposal
- Underground Disposal in Mine Cavities

Options Chosen for Decommissioning

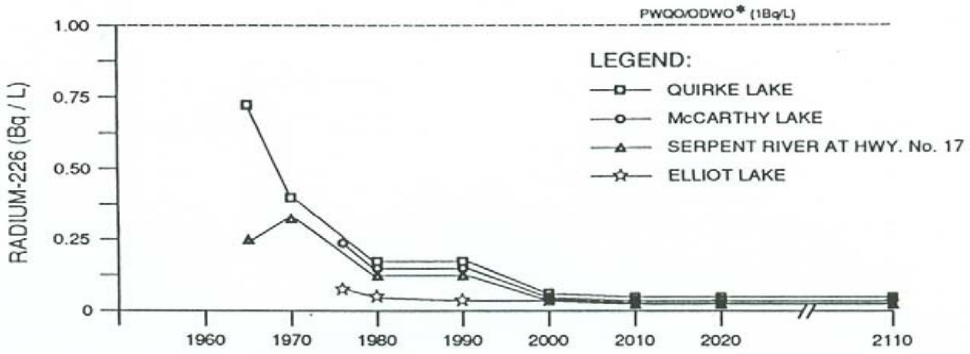
- Quirke TMA – Water Cover
- Panel TMA – Water Cover
- Denison TMA – Water Cover
- Stanrock TMA – In Situ Management Plan



Potential Exposure Upon Decommissioning

	Quirke & Panel (μSv/a)	Denison & Stanrock (μSv/a)
Exposure to Elliot Lake Residents	5	2.2
Casual Access for 200 Hours	13	13.2
Living at Quirke Lake	70	34.0

RADIUM-226 CONCENTRATIONS IN THE SERPENT RIVER WATERSHED



Conclusion

- Health impacts of decommissioning uranium mine tailings in the Elliot Lake district, Ontario, were minor, and were determined acceptable to Health Canada.

- The water quality in the Serpent River water- shed has significantly improved since the closing of the mines, and initiation of decommissioning.

http://www.hc-sc.gc.ca/hecs-sesc/ehas/index.htm

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