

## Radiation Safety Measures

The Municipality of South Bruce and the Nuclear Waste Management Organization (NWMO) are conducting a range of studies to inform the community's willingness to host the NWMO Project. All studies are also being reviewed by peer reviewers who are subject matter experts in their field. The NWMO's preliminary study related to radiation safety was presented at the Community Liaison Committee (CLC) on September 7, 2023.

### Highlights

- The NWMO outlined the proactive measures it would take to ensure community and worker safety and environmental protection. This included sharing how siting, design, processes and monitoring would work during operations and after closure of the repository to ensure safety.
- The NWMO is confident that these measures would allow for a deep geological repository (DGR) at the South Bruce site that would provide safe long-term management of Canada's used nuclear fuel.
- A review by independent consultants for the Municipality, including the non-partisan, non-profit Radiation Safety Institute of Canada, agreed that the current conceptual design shows low risk of radiation exposure to the public – well below safety limits and negligible compared to natural background radiation in the environment. Further study will be needed once a site-specific design is completed.
- Canada has a history of safe performance at its nuclear facilities, where used nuclear fuel is currently stored. The science on radiation is well-established, with an understanding that people are exposed to low levels of radiation that occur naturally or through medical scans and other technology.
- The Project would be subject to federal oversight. This includes the Canadian Nuclear Safety Commission, and Health Canada, which each have authority related to nuclear energy. The Impact Assessment Agency of Canada reviews and approves projects based on review of environmental impacts and protection measures..

### Addressing Our Guiding Principles

The study addresses several of the community's 36 Guiding Principles to determine if the Project is right for South Bruce. They relate to whether the Project will be safe for people and the environment, specifically:

- 1.** The NWMO must demonstrate to the satisfaction of the Municipality that the Project will be subject to the highest standards of safety across its lifespan of construction, operation and into the distant future.
- 2.** The NWMO must demonstrate to the satisfaction of the Municipality that sufficient measures will be in place to ensure the natural environment will be protected, including the community's precious waters, land and air, throughout the Project's lifespan of construction, operation and into the distant future.

Learn more about the...

# Preliminary Radiological Safety Study

**Study By:** Arcadis **Peer Review Conducted By:** GHD and Radiation Safety Institute of Canada

## What was the scope and purpose of the study?

- To outline the various technologies, design, approaches and processes that the NWMO would use to ensure the safety of the community and workers, as well as the protection of the environment and infrastructure from the risk of radiation exposure.

## What did South Bruce's peer reviewers say?

- The peer review was conducted by GHD and the Radiation Safety Institute of Canada, a non-profit organization that promotes safety related to radiation exposure in the workplace and in homes, schools and the environment.
- Peer reviewers agreed that the NWMO's concept design would pose a very low radiological risk to the community and that radiation exposure to the public would be below regulatory limits, and likely to be negligible compared to natural background radiation.
- An additional radiological safety study will be needed once the site-specific conceptual design is completed.
- Additional studies will also be needed to understand the Municipality's capabilities and capacity to respond to potential radiation-related injuries and emergencies, and how the NWMO would be expected to support these services.

## What did we learn?

- Used nuclear fuel would arrive at the site starting in 2043. It would go directly to the Used Fuel Packaging Plant to be repackaged, sealed, and inspected for safe storage. It would then be placed in the underground repository.
- The NWMO will take a number of measures to prevent radiation exposure during operations, including:
  - Constructing thick concrete walls in the fuel handling areas.
  - Using automated fuel handling systems to avoid having people interact with the used fuel.
  - Using containers made of materials known to block emissions, like copper and bentonite clay.
  - Using filtered and monitored air handling systems.
  - Using dry decontamination and cleanup methods as well as a process water treatment system.
  - Using monitoring equipment and having shutdown capability.
- Long-term safety will be secured through the design of the DGR and other steps.
  - If located in South Bruce, the DGR would be built 660-metres deep in a stable layer of rock with low permeability. Clay barriers would further secure the fuel, which becomes less radioactive over time.
  - Before placement in the DGR, the used fuel bundles would be sealed into secure, copper-coated containers to prevent emissions.
  - All tunnels, boreholes and shafts would be sealed at closure and land use would be strictly controlled.
  - Through regulatory oversight, the DGR will be monitored on an ongoing basis.

### NWMO-led Study:

The NWMO's consultants conducted this study. South Bruce hired independent consultants to peer review the studies, and confirm the methodologies and findings.

## Stay Involved!

The studies play an important role in ensuring that we can make an informed decision about the Project. If you have questions or comments about the studies, they can be submitted through our community engagement tool: [www.southbruceswitchboard.ca](http://www.southbruceswitchboard.ca), or you contact the South Bruce Nuclear Exploration Team at the Municipal Office.