



Waste Management

Bruce Power is committed to minimizing the generation of radioactive and non-radioactive waste and has developed robust management programs that reduce its overall waste volume.

RADIOACTIVE WASTE

During routine operations, outages and Major Component Replacement work that upgrades and extends the life of the reactors, Bruce Power generates:

- **Low-level radioactive waste** consisting of miscellaneous industrial items (mops, rags, cloths, paper towels, clothing, floor sweepings and replaced system components) that have become contaminated with low levels of radioactivity during routine operating and maintenance activities.
- **Intermediate-level waste** that is more radioactive and consists primarily of ion exchange resins and filters used to purify reactor water systems, and reactor core components replaced during plant Life-Extension Programs.
- **High-level waste**, which is the used nuclear fuel. When used fuel bundles are removed from the reactor they are highly radioactive, contain long-lived radioactivity, and continue to generate some heat.

As an element of waste management planning, activities known to generate waste are assessed with an aim of eliminating waste where possible, and, if not possible, minimizing the volumes to be packaged, processed and directed into storage and eventual disposal.

Bruce Power manages and fully funds the storage and disposal of its radioactive waste in partnership with Ontario Power Generation (OPG). Since the 1970s, OPG has responsibly managed, transported, and processed all radioactive waste from Bruce A and Bruce B. Waste is currently stored by OPG on an interim basis until long-term disposal facilities are established.

Bruce Power has many different forms of waste, including:



Radioactive



Hazardous
(oils and chemicals)



Organic
(compost)



Recyclables
(glass, cardboard, plastic, paper, metal)



Conventional
(for items that are not radioactive, non-hazardous, and cannot be recycled or composted)

WHAT IS USED NUCLEAR FUEL?

Nuclear reactors in Canada are fueled by natural uranium. Uranium powder is formed into ceramic pellets and encased in “fuel pencils” made of a strong, corrosion-resistant metal called zircaloy. These pencils are assembled into a bundle the size and shape of a fireplace log.



Each fuel bundle can generate enough electricity to power up to 100 homes for a year. When removed from the reactor, the used nuclear fuel bundles are placed in deep water-filled pools within the stations to manage their residual heat and radioactivity, as water is an excellent shield for radiation.

Physically, a used fuel bundle looks the same as when it went into a reactor.

After about 10 years, the bundles are transferred from wet storage into large, cement-lined dry storage containers and moved to an on-site storage facility to be safely managed by OPG.



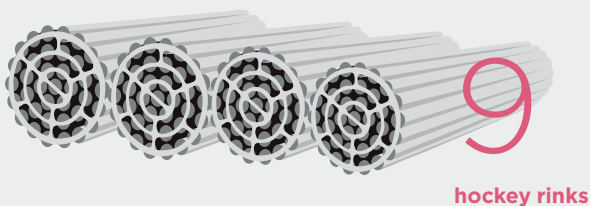
The nuclear industry is advancing long-term solutions for radioactive waste. Early and ongoing input from Indigenous peoples and Canadians is essential to plan radioactive waste projects in an open and transparent manner.

The Nuclear Waste Management Organization (NWMO) was established in accordance with the Nuclear Fuel Waste Act to design and implement Canada’s plan for the long-term management of used nuclear fuel. Since 2010, the NWMO has been engaged in a multi-year, community-driven process to identify a site where Canada’s used nuclear fuel can be safely contained and isolated in a deep geological repository, which will protect people and the environment for generations.

The site selection process is designed to ensure that the site selected is safe, secure, and has informed and willing hosts.

Bruce Power supports the NWMO in its activities to build an understanding of the proposed DGR, including the potential benefits and impacts to the host region.

DID YOU KNOW?



As of June 30, 2022, there were about **3.2 million used nuclear fuel bundles in Canada**. If stacked end-to-end like cordwood, they would **fit into a space the size of nine hockey rinks**, from the ice surface to the top of the boards. The amount of used nuclear fuel is minimal when you consider the incredible amount of carbon-free electricity generated by Canada’s nuclear industry since the 1960s.

ZERO

In accordance with the Canada’s Nuclear Fuel Waste Act, all costs for the permanent disposal of used nuclear fuel are fully funded by waste generators/ owners in a specific trust fund, ensuring no financial burden is left to future generations.



The Canadian Nuclear Safety Commission (CNSC) and the International Atomic Energy Agency (IAEA) monitors and inspects nuclear waste sites and waste management facilities to ensure compliance with national and international nuclear safety regulations.