



# What is radioactive waste?

Radioactive waste is any liquid, gas or solid that contains a radioactive nuclear substance and for which there is no foreseeable use.

There are **four classes** of radioactive waste in Canada.

Classes of radioactive waste are organized according to the containment and isolation required to ensure safety in the short and long term and take into consideration the risk to the health and safety of humans and the environment.

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	<p><b>Uranium mine and mill waste</b></p> <p>Includes tailings and waste rock generated by the mining and milling of uranium ore.</p>	<p><b>Low-level radioactive waste</b></p> <p>Is more radioactive than clearance levels and exemption quantities allow.</p>	<p><b>Intermediate-level radioactive waste</b></p> <p>Contains enough long-lived radionuclides to require isolation and containment.</p>	<p><b>High-level radioactive waste</b></p> <p>Is primarily used nuclear fuel, along with small amounts of waste that generate significant heat and radioactivity.</p>
<b>Where does it come from?</b>	From mining/milling ore into yellowcake.	Nuclear power plants, research reactors, test facilities, radioisotope manufacturers or users, uranium refining and conversion, and nuclear fuel fabrication.	Nuclear power plants, prototype and research reactors, test facilities, and radioisotope manufacturers and users.	Nuclear power plants, prototype and research reactors, and test facilities.
<b>What does it look like?</b>	Tailings have the consistency of fine sand and waste rock, which is simply gravel and broken up rock.	Used equipment, paper, cable, clothing, decommissioned parts, even mops.	Refurbishment waste, ion-exchange resins and some radioactive sources used in radiation therapy.	Used nuclear fuel that is still significantly radioactive.
<b>How is it stored in the interim?</b>	Tailings are placed back into the mined-out pit or tailing containment facilities. Waste rock is stored in piles on the surface.	Typically, long-lived low-level waste is stored above ground at licensed facilities in bins and bags.	Currently, this waste is stored in shielded above-ground or in-ground storage silos at licensed waste facilities.	Used fuel is stored at the reactor site in reinforced, leak-proof cooling pools for 7 to 10 years, and then can be transferred to dry storage in concrete canisters or silos.
<b>Who monitors it?</b>	CNSC inspectors monitor mine sites during operation and long after closure.	Low-level waste is monitored at licensed facilities that are inspected by the CNSC.	The CNSC inspects and licenses all intermediate waste management facilities.	The CNSC and the International Atomic Energy Agency monitor used nuclear fuel.
<b>How long will it be radioactive?</b>	Because the decay of natural uranium is so slow, it can take billions of years to reach the earth's normal background level of radiation.	Some short-lived waste can decay within hours or days and then be disposed of like regular waste. Longer-lived waste may need isolation for up to a few hundred years.	This waste generally contains long-lived radionuclides that require isolation beyond several hundred years (300 to 500 years).	The radioactivity of irradiated, used nuclear fuel starts high but decreases quickly (by 99% in the first 10 years). It then takes about 1 million years to decrease to the original level of natural uranium.

