

## A common language

**Acidity:** A chemical characteristic of a liquid that indicates how strongly it will react with other chemicals by donating a proton or accepting electrons. Examples of acidic liquids include vinegar, fruit juices and carbonated beverages.

**Alkalinity:** A chemical characteristic of a liquid that indicates how strongly it will react with other chemicals by donating electrons or accepting a proton. Examples of alkaline liquids include ammonia and detergents.

**Becquerel (Bq):** A measurement of the rate at which unstable atoms break down. One Bq equals one atomic breakdown per second. One Bq/L of radium<sup>226</sup> means that one atom of radium<sup>226</sup> in a litre of water breaks down each second.

**Canadian Nuclear Safety Commission (CNSC):** The federal agency responsible for regulating all nuclear facilities, including uranium tailings waste management operations.

**Dam:** A man-made structure engineered to hold tailings or water. Permeable dams are made of rock and sand to allow water--but not tailings--to pass through. Impermeable dams have clay centres surrounded by sand and rock. This prevents water from passing through.

**Effluent Treatment:** The addition of lime and barium chloride to surface water and seepage collected from tailings management areas. This process neutralizes acidity and removes metals and radionuclides. The water is later released to a settling pond, where treatment solids settle out and clear, treated water is discharged.

**Ontario Drinking Water Standards:** Ontario's Ministry of the Environment has established both health-related and aesthetic standards for drinking water. The maximum allowable concentration (MAC) is the amount of a given substance in water (usually measured in mg/L) that scientific studies have shown will protect human health. Aesthetic objective (AO) is the amount of a given substance in water that does not result in an unacceptable odour, colour or taste.

**pH:** A measure of the acidity and alkalinity of liquids. A pH of 7 is neutral. Any measure less than 7 shows increasing acidity. The pH of lakes and rivers normally varies from 6 to 8. Rainwater has a pH of 4.5 to 7.

**Provincial Water Quality Objective:** The amount of a given chemical in water (usually measured in mg/L) that scientific studies have shown does not harm aquatic life. The Ontario Ministry of the Environment sets these objectives for a variety of chemical elements to ensure the ecological health of our lakes and rivers.

**Radiation:** Energy that takes the form of waves or can be carried by energetic particles. Light and heat from the sun are common forms of radiation.

**Radionuclide:** All matter is composed of atoms. Unstable atoms that release energy when they break down to form new atoms are called radionuclides. The new atoms may be different elements or isotopes--different forms of the original atoms.

**Radium<sup>226</sup>:** A naturally occurring element created by the breakdown of uranium. Radium<sup>226</sup> was not removed during milling at Elliot Lake sites. There are only about 20 pounds of radium<sup>226</sup> in all of the 150 million tons of tailings in the Elliot Lake area.

**Settling Pond:** An area downstream of a treatment plant where treated water is discharged and where treatment solids settle to the bottom. Clear, treated water is released to the environment from settling ponds.

**Tailings:** Crushed rock the consistency of beach sand. Tailings are what remain when rock containing uranium (or other desirable minerals) is ground up and the uranium has been removed.

**Tailings Management Area (TMA):** An area used to permanently contain tailings. TMAs are generally located in natural rock basins. Dams are constructed in low-lying areas of TMAs to ensure containment of tailings.

**Treatment Solids:** Remaining material after water collected from the tailings management areas is treated with lime to neutralize acidity and remove metals and radionuclides.

**Uranium:** A naturally occurring element which, when purified and concentrated, is used as fuel to generate nuclear power. The amount of uranium in the rocks mined in the Elliot Lake area was 0.10 percent. Since 95 percent to 98 percent of the uranium was removed during milling, the amount remaining in the tailings is less than 0.005 percent, or the equivalent of half a teaspoon of sand in a 45-gallon drum.

**μSv:** The unit used to measure the amount of radiation absorbed by an object or living creature. The average Canadian receives 2,400 μSv of radiation annually from natural sources.