

# The facts on uranium concentrate

## What is uranium?

Uranium is an element like gold or lead. It is unique because its physical properties give it the potential to generate incredible amounts of energy. It is a common element found in most of the Earth's rock, soils, rivers and oceans. The soil of a typical Canadian backyard likely contains about half a pound of uranium. Trace amounts of it can be found in food and in your own body.



## What is uranium concentrate?

Uranium concentrate, commonly referred to as U<sub>3</sub>O<sub>8</sub>, is the product created when uranium ore has been mined and milled. The fine powder is packaged in steel drums and shipped to refineries for further processing to prepare it for use as fuel in nuclear reactors.

## What are the steps before uranium concentrate can be used in a nuclear reactor?

The concentrate needs to be refined further and converted to a pure, uranium dioxide powder. For most reactors, the uranium also needs to go through an enrichment stage. This is done using concentrate that has been converted to a gaseous form of uranium hexafluoride (UF<sub>6</sub>) for the enrichment process. Following enrichment, uranium is converted back to a solid uranium dioxide powder that is pressed into small pellets and put into fuel bundles placed inside reactors.

Once inside a reactor, the energy harnessed in a fuel bundle is released and used to generate electricity. For more information, see the nuclear fuel cycle animation at [http://www.cameco.com/uranium\\_101](http://www.cameco.com/uranium_101). In Canada, the chemical conversion occurs at Cameco facilities in Ontario – a refinery at Blind River and a conversion facility at Port Hope – where it is converted into the gaseous form - uranium hexafluoride (UF<sub>6</sub>) - for export to other countries for enrichment.

## Is uranium concentrate radioactive?

Radiation from uranium concentrate is quite low. The radiation risk associated with uranium concentrate is easily managed by simple steps such as limiting the time of direct exposure to the material. Workers who work with uranium concentrate typically use gloves and a respirator for protection.

## Is uranium concentrate dangerous?

Uranium concentrate is a stable form of uranium. It has a very low solubility and remains stable over a wide range of conditions. Uranium concentrate must be handled carefully like any other industrial chemical. Like other heavy metals, uranium is toxic and should not be inhaled or ingested.

## How is uranium concentrate handled?

Uranium concentrate is generally handled the same as other heavy metals such as lead. Respirators are worn when handling the material to avoid inhalation and ingestion.

## How do you clean up uranium concentrate?

Cleaning up uranium concentrate is similar to other industrial chemicals. The radiation and chemical risks are reduced by limiting the time of direct exposure and avoiding inhalation and ingestion.

