Nuclear *Explained*

Where Our Uranium Comes From – Basics

Uranium is the fuel most widely used by nuclear power plants for nuclear fission. In nuclear fission, energy is released when atoms are split apart to form smaller atoms. Nuclear power plants use the heat from nuclear fission to produce electricity.

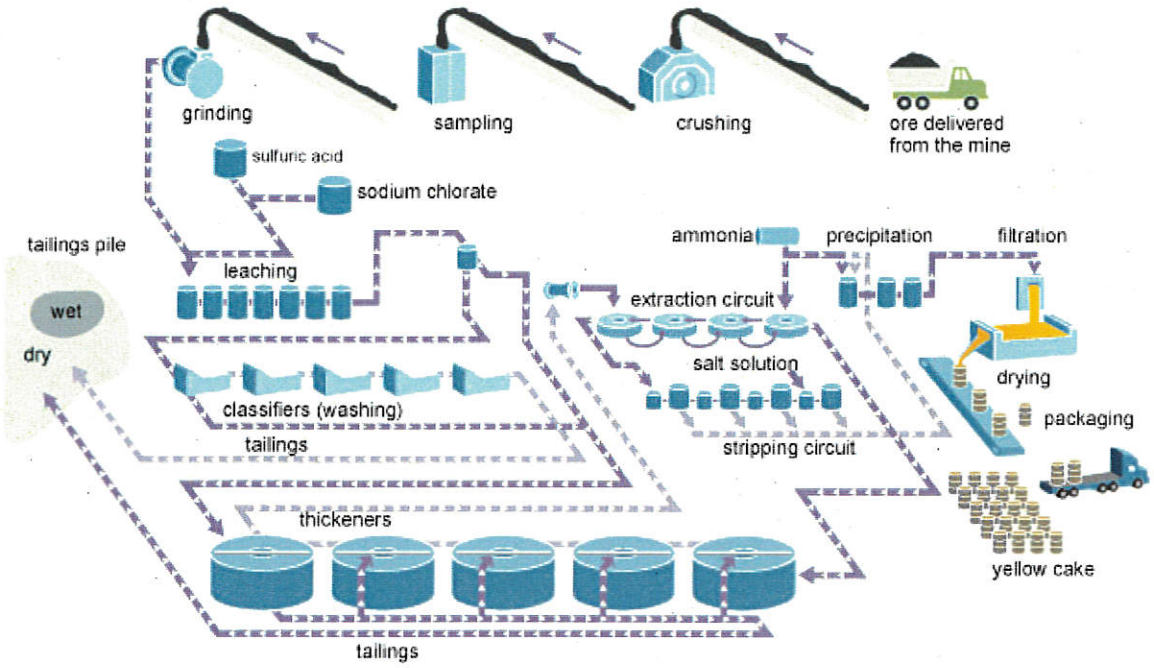
Uranium is a common metal, but it must be processed into a fuel

Uranium is a common metal found in rocks all over the world. Uranium occurs in combination with small amounts of other elements. Economically recoverable uranium deposits have been discovered primarily in the western United States, Australia, Canada, Central Asia, Africa, and South America.

Nuclear power plants use a certain type of uranium, U-235, as fuel because its atoms are easily split apart. Although uranium is about 100 times more common than silver, U-235 is relatively rare.

After uranium is mined, the U-235 must be extracted and processed before it can be used as a fuel. Mined uranium ore typically yields one to four pounds of uranium concentrate (U3O8 or *yellowcake*) per ton, or 0.05% to 0.20% yellowcake.

Typical conventional uranium mill



Source: U.S. Energy Information Administration (public domain)

The United States imports most of the uranium it uses as fuel

Owners and operators of U.S. nuclear power reactors purchased the equivalent of about 43 million pounds of uranium in 2017. About 7% of the uranium delivered to U.S. reactors in 2017 was produced in the United States and 93% came from other countries.

Sources and shares of U.S. purchases of uranium produced in foreign countries in 2017

- Canada–35%
- Australia–20%
- Russia–18%
- Kazakhstan–12%
- Uzbekistan–5%
- Hungary, Malawi, Namibia, Niger, South Africa, Ukraine, and unknown–10%