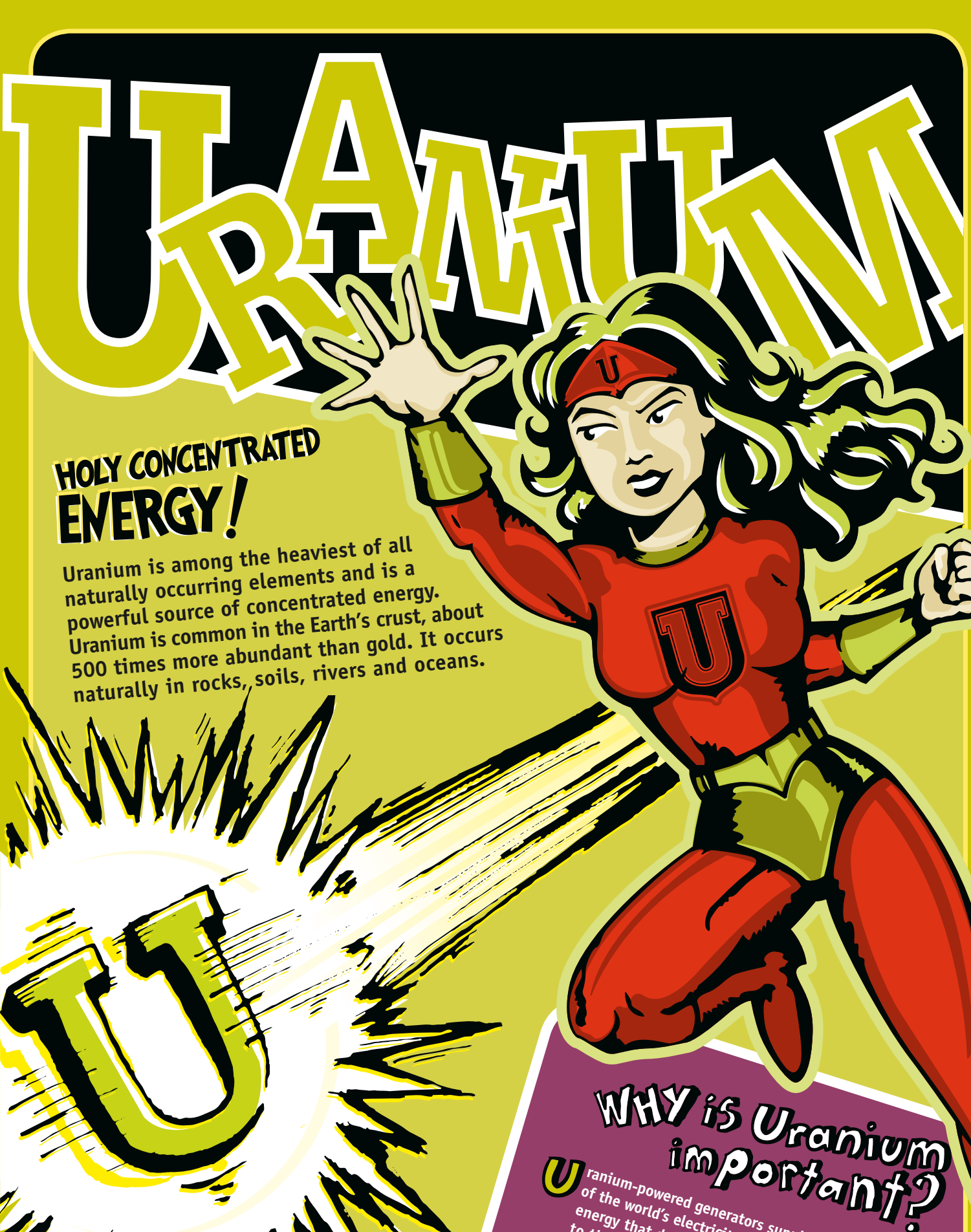
URANIUM

HOLY CONCENTRATED ENERGY!

Uranium is among the heaviest of all naturally occurring elements and is a powerful source of concentrated energy. Uranium is common in the Earth's crust, about 500 times more abundant than gold. It occurs naturally in rocks, soils, rivers and oceans.



WHY is Uranium important?

Uranium-powered generators supply nearly 11% of the world's electricity. As a major source of energy that doesn't contribute greenhouse gases to the atmosphere, nuclear is vital to the planet's growing energy needs.

Uranium also plays an important part in the technologies that provide us with food, water and good health. It's used:

- to diagnose and treat diseases like cancer
- to preserve food by controlling the ripening of stored fruits and vegetables
- to produce disease- and weather-resistant crops
- to analyze pollutants in the environment
- to power marine vessels

Did You Know?

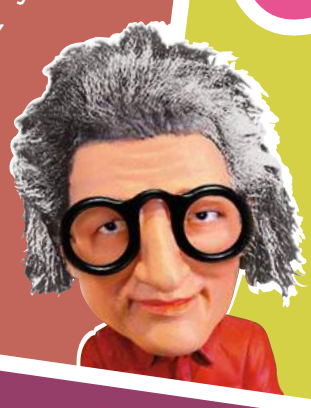
- **Uranium is formed when stars explode!** The uranium we mine today was formed in a supernova about **6.6 billion years ago.**
- Uranium was discovered in 1789 by Martin Klaproth, a German chemist, in the mineral called pitchblende. **It is named after the planet Uranus,** which had been discovered eight years earlier.
- Radioactive decay of uranium is the **main source of heat inside the Earth,** causing convection that leads to continental drift.
- **Nuclear generates 11% of global electricity.**
- A nuclear power station that can supply **energy for 1 million people** requires about 74 kg of fuel a day – an amount that would fit in a small suitcase!
- **Uranium's melting point is 1,132 degrees Celsius.**
- **35% of the world's greenhouse gas emissions** come from burning fossil fuels for electricity. Switching to **nuclear power would cut these emissions to 14%.**
- **Saskatchewan has the world's highest-grade uranium mines.**

Science!

Uranium occurs in slightly differing forms known as *isotopes*. These isotopes differ in the number of particles (neutrons) in their nuclei. The most common isotopes are uranium 238 (U^{-238}) and uranium 235 (U^{-235}).

When the nucleus of a U^{-235} atom splits in two (fission), it releases energy in the form of heat. It also expels two or three neutrons from its nucleus, which can cause other U^{-235} atoms in their vicinity to split. When this happens over and over again, many millions of times, a very large amount of heat is produced from a relatively small amount of uranium.

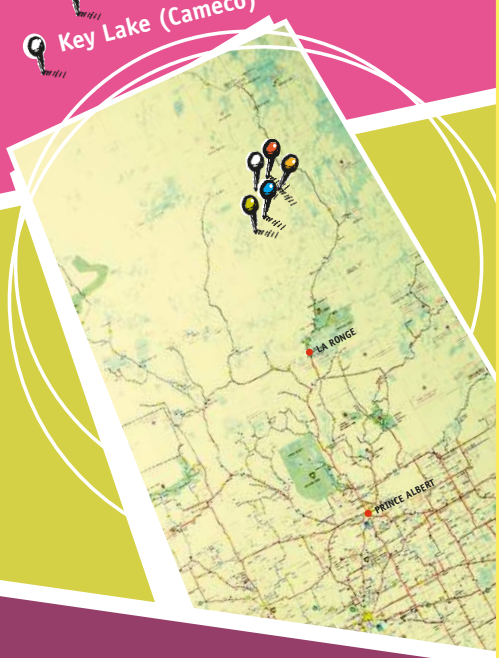
This "burning" of uranium is what occurs in a nuclear reactor. The chain reaction is controlled by neutron-absorbing rods that can be inserted or withdrawn to set the reactor's power level.



Where to find a mine!

Canada's share of the world's uranium resources is about 8%, but it produces 15% of the world's mined uranium. Canada's active uranium mining and milling operations are:

- McArthur River (Cameco)
- Rabbit Lake (Cameco)
- McClean Lake (Orano)
- Cigar Lake (Cameco)
- Key Lake (Cameco)



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Keywords

Fission: a splitting of an atom's nucleus which is accompanied by the release of heat and radiation.

Isotopes: different forms of the same chemical element that are distinguished by the number of neutrons in their nuclei.

Radioactive Decay: the breakdown of radioactive material over a period of time.