ORESOME RESOURCES
Minerals and Energy Education

Uranium fact sheet

Uranium is the source of nuclear energy source accounting for 14% of electricity generation worldwide.

What is Uranium?

Uranium is a very dense metallic element that occurs more abundantly than gold, silver and mercury in the Earth's crust.

Its radioactive decay provides the main source of heat inside the earth.

What is the history of Uranium?

Uranium was discovered in pitchblende in 1789 by the German chemist, Martin Heinrich Klaproth, but it was not until 1841 that French scientist, Eugene Péligot first isolated it in the metallic state. In 1896, the French physicist Antoine Becquerel discovered the radioactive properties of uranium, and in 1898 Marie and Pierre Curie carried out further pioneering work on atoms, radioactivity and uranium.

Is nuclear power used in Australia?

Australia does not have any nuclear power plants. It does, however, have a research reactor in Lucas Heights, Sydney, which is used to produce radioisotopes for medicine, agriculture, and industry.

What is uranium used for?

Uranium is the source for nuclear energy. In 2010, there were over 440 nuclear power reactors in operation in 30 countries, including several developing nations. They provide about 14% of the world's total electricity. 56 countries operate a total of about 250 research reactors and a further 180 nuclear reactors power some 140 ships and submarines.

Today, radioisotopes are used for medical diagnosis and treatment, to sterilise medical equipment, to kill bacteria in food, to produce disease and drought-resistant crops, to make commercial products such as the household smoke detector and to power ships & submarines.

How is uranium mined?

There are three different methods of uranium mining: open-cut mining, underground mining, and in situ leaching. In situ leaching involves circulating a chemical solution through the ground to dissolve the uranium in the orebody, then pumping the solution out and extracting the uranium from it. With in situ leach mining, mine workers are not in direct contact with the orebody. The amount of radiation exposure for mine workers is reduced. Straight-forward safety methods and procedures are used to minimise radiation exposure for open-cut and underground mine workers.

There are four operating mining sites in Australia, from which the uranium oxide concentrate (yellow-cake) is exported. These are: Olympic Dam, Beverley, Honeymoon (all in South Australia), and Ranger (in the Northern Territory).

Is Australian uranium used for nuclear weapons?

Uranium mined in Australia is not used to make nuclear weapons. Australia only sells to countries where there are arrangements in place, including verifiable international agreements, to ensure that it is used only for peaceful purposes. International supervision and auditing of material is routine.

Uranium comprises 57% of Australia's energy exports, in thermal terms.

The South Australian Chamber of Mines and Energy is acknowledged as the provider of this resource.