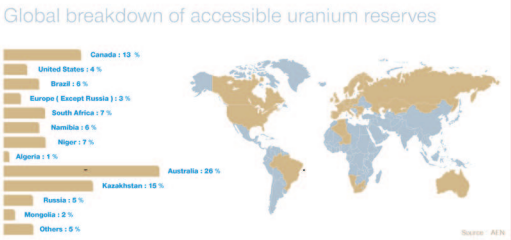
Four questions about uranium mining

WHERE IS URANIUM FOUND?

All over the world, but in differing concentrations.
On average, the earth's crust contains 3g of uranium per ton of rock (meaning a concentration of 0.0003%).
Currently, and in the years to come, the plan is to exploit reserves where the level of uranium ranges from 120g to 200kg per ton of rock (a concentration of between 0.012% and 20%).



HOW IS IT FOUND?

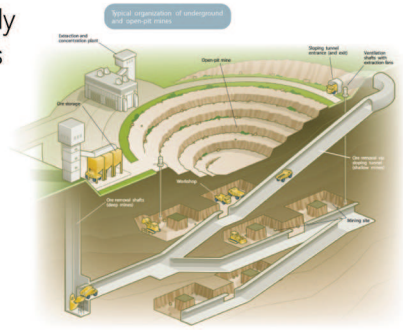
Through the rays it emits (due to its radioactivity) or through applying classic mining industry techniques, such as sampling, rock analysis or remote sensing.

Unlike other metals such as gold or copper, uranium is never found naturally in its raw, metallic state – it can only be found in the form of a chemical compound. After extraction, it needs to be concentrated and purified as an oxide before it becomes the main element in fuel for nuclear power plants.

HOW IS IT EXTRACTED?

Depending on the characteristics of the reserve (depth, geological layers, the concentration of uranium, etc.) and its surrounding environment, uranium can be extracted using 3 main techniques:

↘ **Open air mining**, when the reserves are relatively close to the earth's surface. This technique consists of digging a basin where layers of rock are successively removed to create terraces.
The ore containing the uranium is then separated in the basin and transported to a treatment centre.



This technique has the advantage of largely facilitating access to the ore, because the techniques and the equipment are similar to those used in a quarry.

↘ **Underground mining**, when the reserves are situated deep underground. This technique consists of creating several access routes (in the form of wells or tunnels) which are connected to a series of drifts. Such networks can cover many dozens of kilometers underground. They allow for, among other things, teams of workers and equipment to be transported, ore to be brought to the surface, the mine to be ventilated, and water to be evacuated.

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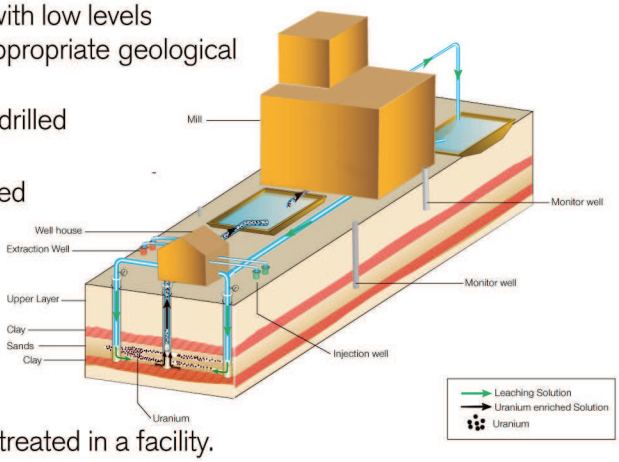
↘ **In situ leaching**, for reserves with low levels of uranium, and which have the appropriate geological characteristics.
First a dense network of wells is drilled to reach the ore.
Then a chemical solution is injected into some of the wells to dissolve the uranium before being pumped into other wells.
The advantage of this technique is that the ore doesn't have to be moved.
The uranium-rich solution is then treated in a facility.



HOW WE DECIDE TO MINE A RESERVE?

Before proceeding with a new mine, significant technical, economic and socio-environmental analyses are undertaken. Reserves are only exploited under certain conditions. Minerals must be present in sufficient quantities (often more than 15,000 to 20,000 tons of uranium, for new, isolated sites). Mining must also be technically feasible, and, after also factoring in the cost of treatment, cheaper than the price for which the uranium can be sold. If these 3 factors cannot be met, the reserve is left in its existing state.

The potential social and environmental consequences are clearly stated, put into context, and acknowledged within the socio-environmental impact analysis. This document is publicly presented to local populations, and needs to be validated by the authorities and representatives of local communities before exploitation begins.

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