Uranium mining explained

Like other minerals, uranium is typically mined using open-pit technology when the ore is close to the surface and underground mining when it is deeper down. Underground mining requires a high level of ventilation to lower the exposure of workers to radon gas. Radon is produced during the natural decay of uranium.

Globally, the concentration of uranium in the ore can vary from around a few hundred parts per million to up to 20%. From conventional mines, ore is transported to treatment plants or mills where the uranium is purified and concentrated as uranium oxide. As an alternative to open pit and underground mining and when the geology allows, groundwater with added chemicals can be pumped through the uranium deposit to dissolve the uranium in what are called in-situ leaching operations. By injecting alkaline solutions, such as those made with baking soda, or alternatively acidic solutions into the ore through pipes, miners separate uranium from the ore underground and pump the resulting solution back to the surface to recover the uranium.

Globally, close to 60 000 tonnes of uranium are produced annually. Australia, Canada and Kazakhstan are the top three producers and together account for close to two thirds of world uranium production.

— By Aabha Dixit

Rossing Uranium Mine, Namibia
(Photo: C. Brady/IAEA)