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FACTSHEET: URANIUM

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Uranium

Uranium is a naturally occurring, radioactive element. It is common in nature, about 100 times more common than silver. Like silver and other metals, uranium is mined from the earth. The soil in most areas of the United States contains traces of uranium, but certain areas have concentrated deposits that are economical to mine. Rich deposits are found in the western United States. There, uranium is found in concentrations of 3 to 6 pounds per ton of ore.

Uranium ore is mined in much the same way as coal, either by surface or underground techniques. The mined ore is crushed and ground into a fine sand, and the uranium is removed from the ore. This process is called milling.

Natural uranium occurs as a mixture of atomic weights or isotopes. The most abundant form is uranium-238 (U-238), which makes up 99.3 percent of natural uranium. The remainder includes uranium-235 (U-235) and U-234. U-235 is the isotope that is useful as nuclear fuel for commercial powerplants.

Uses of Uranium

When uranium was discovered as a distinct element in 1789, it was more a laboratory curiosity than a useful mineral. As scientists studied the element, however, they realized that under precisely controlled conditions, uranium atoms could be split to produce energy.

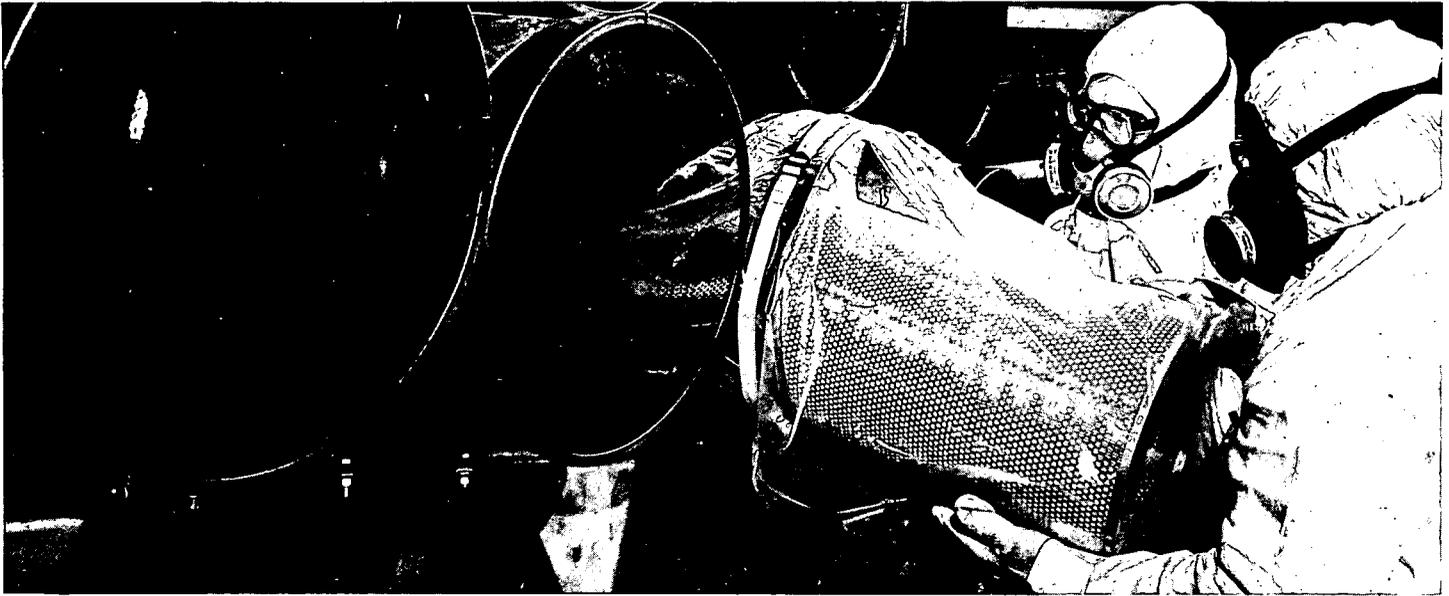
Today, uranium is widely used as fuel to generate electricity and in the production of medical isotopes. It is also used as a feed material to produce plutonium, a necessary material in nuclear weapons for the National defense program.



Uranium ore is mined by surface or underground mining techniques.

Uranium at FMPC

Operations at the Feed Materials Production Center (FMPC) involve the processing and handling of uranium metal and uranium compounds. Uranium can be depleted, which means it has a much smaller percentage



Protective clothing and equipment minimize the exposure of FMPC employees to uranium particles when air filters are changed.

of U-235 than the 0.7 percent found in natural uranium, or enriched, which means the U-235 content is greater than 0.7 percent.

FMPC previously processed both slightly enriched (usually about 1 percent U-235) and depleted uranium. Only depleted uranium is processed now. Both types have very low levels of radioactivity. This uranium is cast and machined at FMPC, then sent to other U.S. Department of Energy (DOE) facilities for use as feed materials in the National defense program. FMPC produces no explosive devices, weaponry, or highly radioactive products.

Uranium and Safety

The uranium at FMPC is both a slightly radioactive and chemically toxic material. Uranium can be either soluble or insoluble. The hazard it presents depends on which form it is in. Soluble uranium can be absorbed into the bloodstream if swallowed or inhaled. Eventually, it may be deposited in body tissues where it may stay for a month or more. Soluble uranium makes up less than 10 percent of the total uranium processed at FMPC.

Most of the uranium handled at FMPC is insoluble. Insoluble uranium is not readily absorbed into the bloodstream and passes quickly out of the body after it is ingested. Insoluble uranium usually poses little hazard of radiation exposure or chemical toxicity. If insoluble uranium is inhaled, the hazard is more serious. Insoluble uranium deposits in the lungs do not pass out of the body quickly and may damage lung tissue.

To detect the presence of radioactive materials anywhere in the body, including the lungs, employees are examined at the plant site in one of world's most advanced in vivo monitoring facilities. Precautionary measures are taken at FMPC to ensure maximum protection of the workers, the environment, and the surrounding community. These safety measures include continual environmental monitoring, regular inspections, and inventory control.

Since its discovery, uranium has been intensely studied, and today its qualities are well known and understood. Responsibly used, this element offers industry and National security an essential and valuable material.

