

Fuel Cycle Process and Description Cards

<p>Exploration</p>	<p>The amount of ^{235}U in natural UF_6 is too low (compared with the amount of ^{238}U) for a nuclear chain reaction. Different technologies are used to raise the concentration of ^{235}U in the UF_6.</p>
<p>Mining</p>	<p>A deposit of uranium is found and evaluated for possible use. It will be in one of two forms (or <i>isotopes</i>) ^{238}U or ^{235}U. Only ^{235}U will be used directly in the nuclear reactor.</p>
<p>Milling</p>	<p>Used fuel still contains material that can be quantities of radioactive materials that can be chemically separated and recovered. (This is allowed in Europe and Japan, but illegal in the United States.)</p>
<p>Enrichment</p>	<p>After the nuclear reaction is over, the used fuel is kept at the reactor site or in a facility in a different area.</p>
<p>Fabrication</p>	<p>After extraction, the uranium is ground into fine particles and treated with chemicals to form "uranium hexafluoride".</p>

Reaction	Inside the reactor the uranium undergoes <i>fission</i> : splitting into two new atoms. This is caused by neutrons hitting and being absorbed by the uranium molecules.
Post-reaction Storage	Used fuel must be safely disposed of and isolated until the radioactivity has reached safe levels.
Reprocessing	Uranium ore is extracted by conventional mining in open pits.
Waste Disposal	For use as nuclear fuel, enriched UF ₆ is converted into uranium dioxide (UO ₂) powder. This powder is then turned into small pellets.