

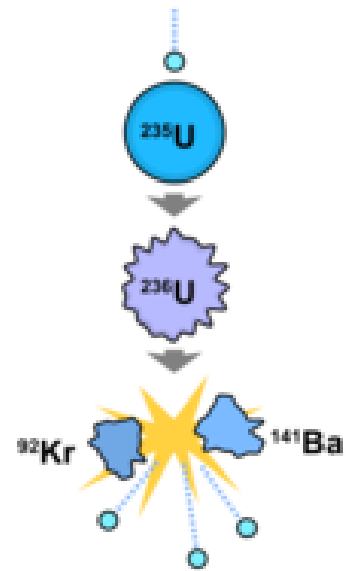
Nuclear Power

Nuclear Energy

- When the nucleus of an atom is split, it releases a huge amount of energy called **nuclear energy**
 - Scientists and engineers have learned to split nuclei and to control the release of energy
- Nuclear Energy Use
 - Nuclear power plants use uranium, which is mined, processed, and then concentrated into fuel rods
 - When uranium atoms in the fuel rods are hit by other extremely tiny particles, they split apart
 - The number of tiny particles allowed to hit the fuel rods needs to be controlled, or they would cause a dangerous explosion
 - The energy from a nuclear power plant heats water, which creates steam and causes a turbine to spin
 - The spinning turbine turns a generator, which in turn produces electricity
- Consequences of Nuclear Power: Nuclear power is clean and does not pollute the air, but the use of nuclear energy does create other environmental problems
 - Process of splitting atoms creates radioactive waste, which remains dangerous for thousands or hundreds of thousands of years
 - As yet, there is no long-term solution for storing this waste
- The development of nuclear power plants has been on hold for three decades because of catastrophic accidents (e.g. Three Mile Island and Chernobyl)
- Nuclear power appeared to be making a comeback as society looked for alternatives to fossil fuels
 - However, the 2011 disaster at the Fukushima Daiichi Nuclear Power Plant in Japan may have resulted in a new fear of nuclear power
- Nuclear power is a controversial subject and the future of nuclear power is murky

Connections

Nuclear fusion, or the conjoining of two nuclei, can also harness a great deal of energy and is considered another form of nuclear power.



When struck by a tiny particle, Uranium-235 breaks apart and releases energy.



Nuclear power plants like this one provide France with almost 80% of its electricity.

Concept Check

- How is nuclear energy generated?
- Since the waste from nuclear power plants is dangerous for up to hundreds of thousands of years, how do you think it should be safeguarded?
- Do you think that the nuclear disaster in Japan in 2011 should affect how nations develop or choose not to develop their nuclear resources? What about nations that are not near a subduction zone?

