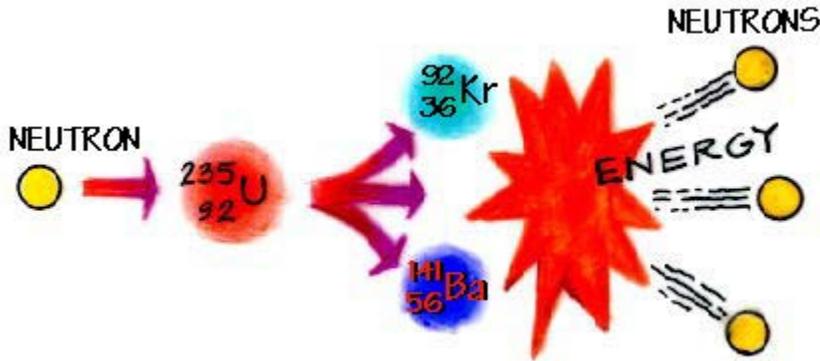


Nuclear Radiation Notes

Fission

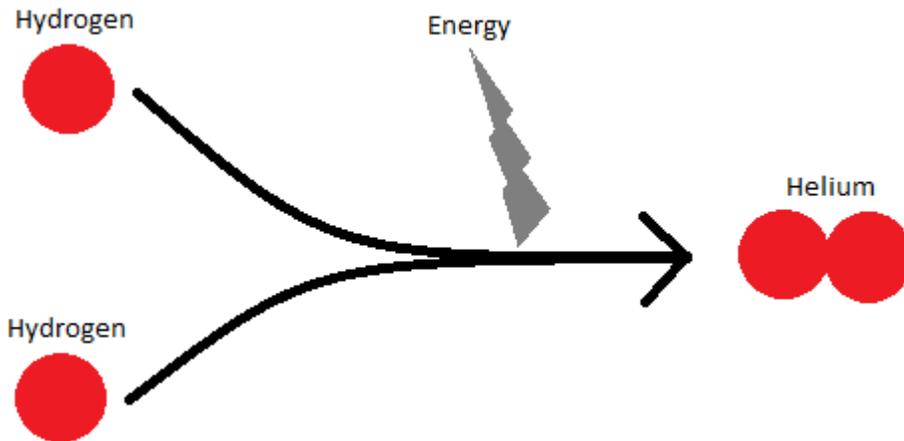
Nuclear **Fission** is the process by which a Uranium nucleus splits into two or more smaller fragments, releasing neutrons and large amounts of energy. These released neutrons then move away and split other Uranium atoms causing a **chain reaction** occur.



Examples of Nuclear Fission: Atomic Bombs & Nuclear Power Plants

Fusion

Nuclear **Fusion** is the process in which Hydrogen nuclei combine at extremely high temperatures, forming Helium Nuclei and releasing large amounts of energy. Because the two hydrogen atoms have a positive charge which causes them to repel each other, it takes extremely high temperatures and very fast speeds to get the hydrogen atoms to fuse together.



Examples of Nuclear Fusion: Hydrogen Bombs & Stars

Benefits of Nuclear Radiation

- Small radioactive sources are present in smoke alarms. They release nuclear radiation. If smoke is present in the air, the smoke particles reduce the flow of this radiation which sets off the alarm before dangerous levels of smoke build up.
- Nuclear radiation therapy is used to treat cancer. Certain tumors and cancers can be treated using controlled doses of nuclear radiation with minimal damage to the surrounding tissues.
- Radioactive tracers are used in agriculture, medicine and scientific research.
- Nuclear radiation can be used to generate electricity in nuclear power plants. Energy produced from fission is used to light the homes of millions of families

Dangers of Nuclear Radiation

- Excessive amounts of nuclear radiation can ionize living tissues. This ionization can cause your body's cells to die which can affect overall health.
- High concentrations of radioactive Radon gas can be dangerous.
- Radiation sickness results from exposure to high levels of nuclear radiation. This can cause cancer, hair loss, and bone loss.
- Nuclear Radiation can cause genetic mutations. This can lead to cell death and birth defects.
- Build-up and disposal of radioactive waste from nuclear power plants can cause environmental problems.