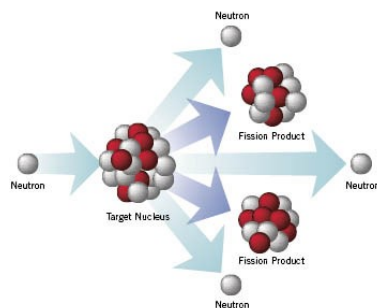


LO: Students will be able to describe fission and fusion.

DOL: Students will be able to correctly answer questions about fission and fusion at least 4/5 times.

Nuclear fission is a nuclear reaction or a radioactive decay process in which the nucleus of an atom splits into two or more smaller, lighter nuclei.

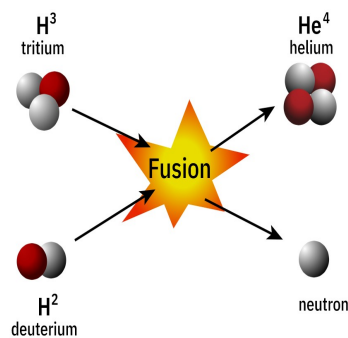


Enriched Uranium (U-235) is one of the few materials that can undergo **induced fission**. Instead of waiting more than 700 million years for uranium to naturally decay, the element can be broken down much faster if a neutron runs into its nucleus. The nucleus will absorb the neutron without hesitation, become unstable and split immediately.

U-235 is the fuel used in nuclear bombs. When one U-235 undergoes induced fission it splits releasing more neutrons (causing a chain reaction) and LOTS of energy.



Nuclear fusion is a reaction in which two or more atomic nuclei are combined to form one or more different atomic nuclei and subatomic particles.

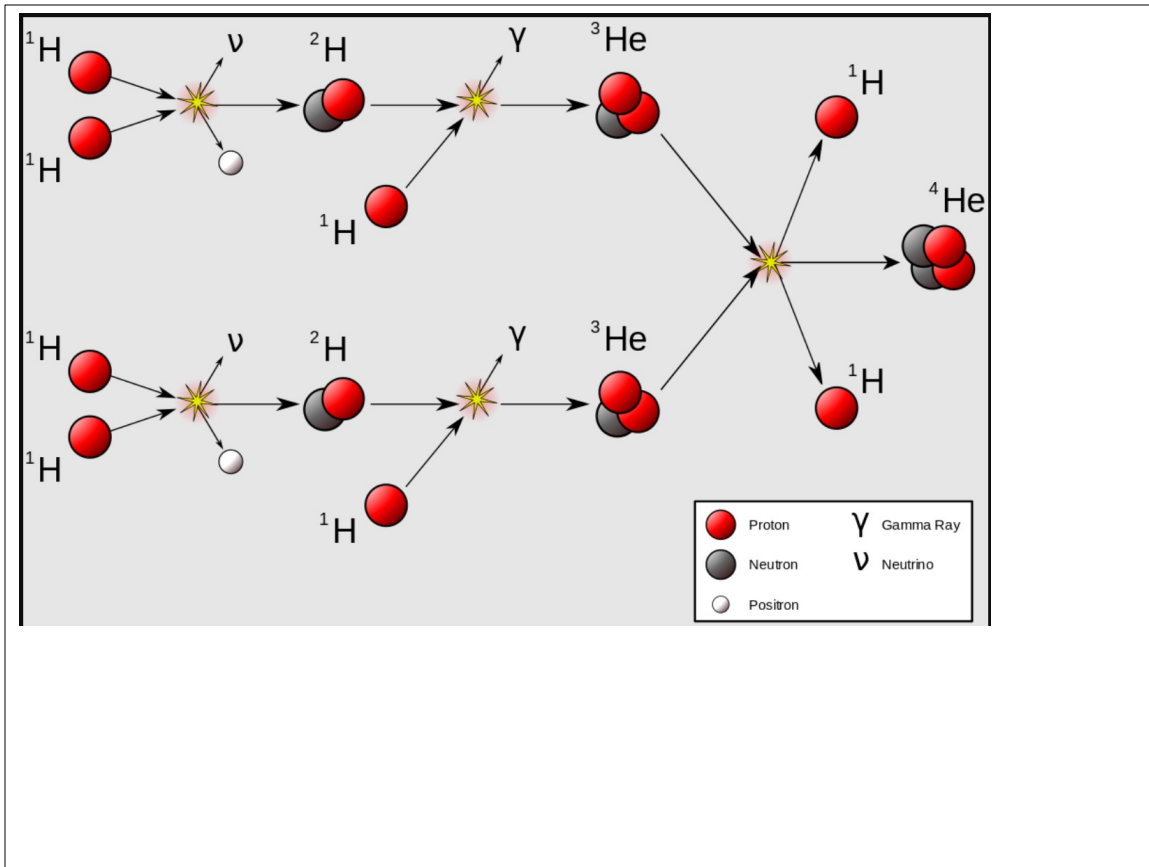


Fusion and the Sun:

The gravity of the Sun, which is almost 28 times that of Earth, "traps" hydrogen from its atmosphere and this hydrogen fuels the Sun's fusion reaction. At temperatures of 15 million degree Celcius in the Sun's core, hydrogen gas becomes plasma, the fourth state of matter. In a plasma, the negatively charged electrons in atoms are completely separated from the positively charged atomic nuclei.

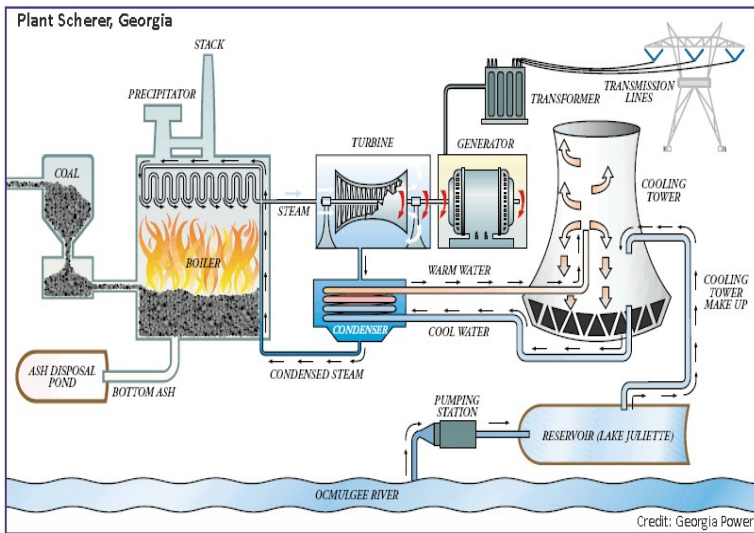
From hydrogen to helium in three steps

- 1) Two protons combine and one of them converts into a neutron to form a nucleus of the heavy isotope of hydrogen known as deuterium.
- 2) The deuterium nucleus combines with another proton to form the light helium isotope known as helium-3.
- 3) Two helium-3 nuclei combine to form helium-4, releasing two protons.



The total amount of energy released for each conversion of four hydrogen nuclei into a helium nucleus is about 10 million times more than is produced by the chemical reaction when hydrogen combines with oxygen to form water.

Coal Power:



Nuclear Power

