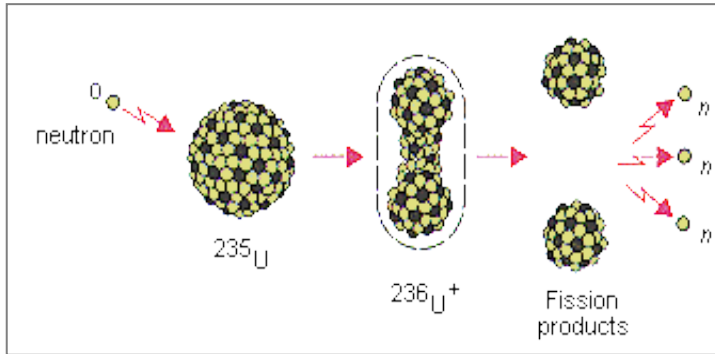


## Nuclear Fission vs. Nuclear Fusion

### Nuclear fission (splitting an atom into two new ones)

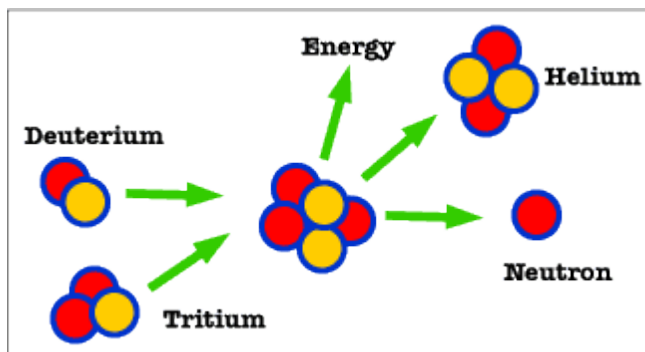


In nuclear fission reactions (also called radioactive decay), a neutron is aimed at the nucleus of a large, unstable atom, like uranium, thorium, or other radioactive elements. The extra mass of the neutron causes the radioactive nucleus to split apart, forming lighter elements, free neutrons, and great quantities of energy. This process causes convection currents that move Earth's tectonic plates, and generate earthquakes and volcanic eruptions.

#### ***Nuclear Fission:***

- Source of energy in the core of the Earth that produces heat from the decay of radioactive elements.
- Produces vast quantities of energy.
- Does not produce particulate air pollution like fossil fuels and coal.
- Involves the splitting of harmful radioactive elements.
- Loss of control leads to harmful radiation exposure.
- Produces a radioactive waste product that will need to be stored.

### Nuclear fusion (combining/fusing two atoms together into one new atom)



During fusion reactions, nuclei collide and fuse, eventually forming nuclei of heavier elements and producing *enormous* amounts of energy. Fusion of hydrogen to helium occurs in the sun and is the source for all external weather related events.

#### ***Nuclear Fusion:***

- Source of energy in the Sun that produces heat from the fusing of elements like hydrogen.
- Produces unsurpassed quantities of energy.
- Does not produce particulate air pollution like fossil fuels and coal.
- Does not produce a radioactive waste product that will need to be stored.
- Currently, we lack the technology to maintain reactions as a viable energy source.

**\*\*Write Fission or Fusion next to each of the descriptions below:\*\***

1. Generates a large volume of solid radioactive waste. \_\_\_\_\_
2. Occurs in the core of the Earth. \_\_\_\_\_
3. The reaction occurs only at extremely high temperatures. \_\_\_\_\_
4. Earth's source in *internal* energy. (volcanoes, plate motion, geothermal, etc.)  
\_\_\_\_\_
5. The products of this reaction are *not* radioactive. \_\_\_\_\_
6. Occurs only in the core of the Sun. \_\_\_\_\_
7. Earth's source of *external* energy (atmosphere, oceans, weather, plants, etc.).  
\_\_\_\_\_
8. Also called radioactive decay. \_\_\_\_\_
9. Responsible for providing heat for the convection in the interior of the Earth.  
\_\_\_\_\_
10. A potential power source but we lack the technology to maintain the reactions so we are  
unable to perform these reactions on Earth. \_\_\_\_\_
11. The one with a "u" in it. \_\_\_\_\_
12. The one with two "i's" in it. \_\_\_\_\_
13. The one that sounds like "fuse" \_\_\_\_\_
14. The one that almost rhymes with "split." \_\_\_\_\_
15. Creates enough energy for the whole Earth (inside and out) \_\_\_\_\_ and \_\_\_\_\_.
16. Which one you love the most now 😊. \_\_\_\_\_