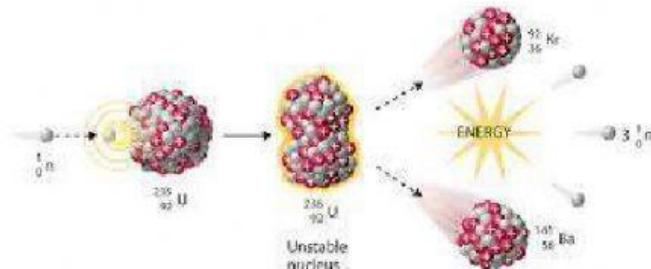




Nuclear Fission vs. Nuclear Fusion Reading Interactive Activity

Nuclear fission (Splitting an atom into two new ones releasing energy and neutrons)



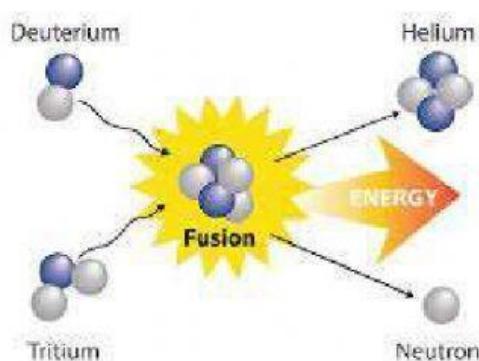
In nuclear fission reactions (also called radioactive decay), a neutron is aimed at the nucleus of a large, unstable atom, like uranium, thorium, plutonium or other radioactive elements. The extra mass of the neutron causes the radioactive nucleus to split apart, forming lighter elements, free neutrons, and great quantities of energy. This process causes convection currents that move Earth's tectonic plates, and generate earthquakes and volcanic eruptions. This process also produces radioactive waste that needs to be safely stored away from water and areas where earthquakes occur (Chernobyl, Ukraine).

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.

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Nuclear Fission

Nuclear Fusion

Directions: Read the article above to drag and drop the descriptions below to either fission or fusion.

We lack the technology to create this type of energy on Earth	Source of energy outside the earth	Nucleus splits apart releasing lighter elements, neutrons, and large amounts of energy
Energy produced from Uranium and Plutonium	Would produce an unlimited amount of clean energy	Lack of proper control leads to harmful radiation exposure that last for long time
Naturally occurs in the sun	Smaller nuclei collide and create larger element, releasing neutrons, and energy	Generates a lot of radioactive waste that
Creates earthquakes and volcanoes	Products of this reaction are not radioactive	Energy in Sun produced from fusion of Deuterium and Tritium
Produces large amounts of energy	Source of energy inside the earth	Caused the nuclear meltdown in Chernobyl, Ukraine
Source for all external weather-related events	Does not produce air pollution like fossil fuels and burning of coal does	Earth's source of external energy like the atmosphere, oceans, weather, plants
Also called radioactive decay		Provides heat inside the earth



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