

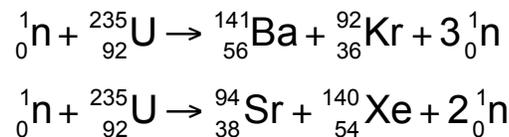
Modern Fission and Fusion

Fission – The splitting of an atom (nuclide) into two or more parts.

Fissile vs. Fissionable

A nuclide capable of undergoing fission after capturing a low-energy neutron is fissile. A nuclide capable of undergoing fission after capturing a high-energy neutron is fissionable. Fission produces excess neutrons that may allow for a sustained fission reaction, also known as a chain reaction. Nuclides that produce excess neutrons with sufficient energy to sustain a chain reaction are fissile materials. Nuclides that produce excess neutrons with insufficient energy to sustain a chain reaction are fissionable materials. An example of a fissile material is Uranium 235; a fissionable material is Uranium 238.

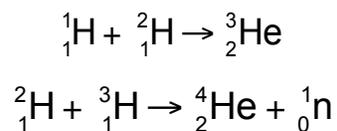
Two possible fission reactions for Uranium 235 are given below.



Question #1 - Barium 141 and Strontium 94 are both radioactive isotopes. Improper containment or accidental release of fission products has serious environmental and health concerns. Using your knowledge of chemistry and a periodic table (<http://www.webelements.com>), identify at least one environmental or health concern.

Fusion – The combining of two or more nuclei into a single nucleus.

Two possible fusion reactions are given below.



Question #2 – Identify any environmental or health concerns related to fusion.

Watch this short video on fission vs. fusion then answer the following questions.

http://www.bbc.co.uk/schools/gcsebitesize/science/add_edexcel/fission_fusion/fissionfusionact.shtml

Question #3 – What do nuclear fission and fusion both produce?

Question #4 – How many elements are fissile?

Question #5 – How is a fission reaction controlled?

Question #6 - Compare and contrast fission and fusion

Fission	Fusion