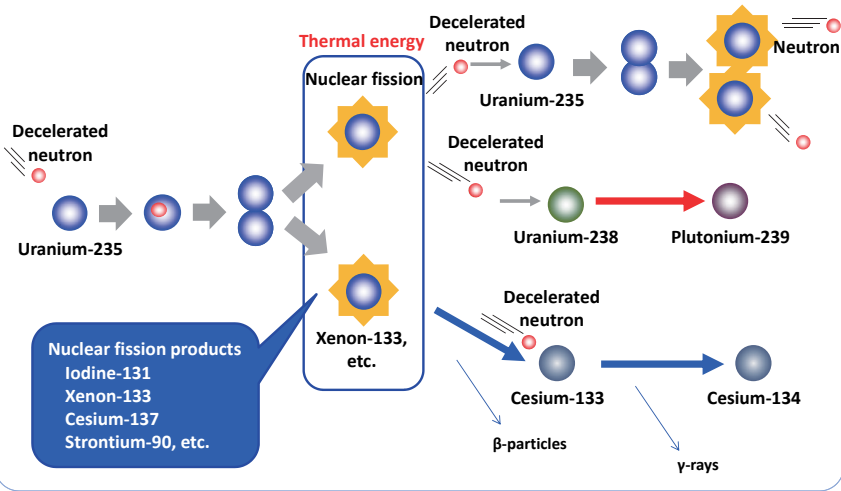


Light-water nuclear reactor and generation of nuclear fission products



The light-water nuclear reactor is currently the most widely used type of reactor around the world (also used at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS). Bombarding enriched uranium fuel (Uranium-235: 3-5%; Uranium-238: 95-97%) with neutrons results in nuclear fission. Radioactive nuclear fission products such as Iodine-131, Cesium-137, and Strontium-90 are created in this process. When Uranium-238 is bombarded with neutrons, Plutonium-239 is created.

Cesium-134 is not created directly from the nuclear fission of Uranium-235. Through beta disintegration, Xenon-133 and the like, which are nuclear fission products, disintegrate into Cesium-133, and Cesium-133 then turns into Cesium-134 as decelerated neutrons are trapped.

As long as the reactor is working properly, these products remain in nuclear fuel rods and do not leak out of the reactor.

Nuclear facilities are equipped with a variety of mechanisms for preventing leakage of radioactive materials, but if they all stop functioning properly, radioactive leaks will occur.

Included in this reference material on March 31, 2013

Updated on March 31, 2016