Nuclear Energy

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Who Discovered Nuclear Energy?

Enrico Fermi

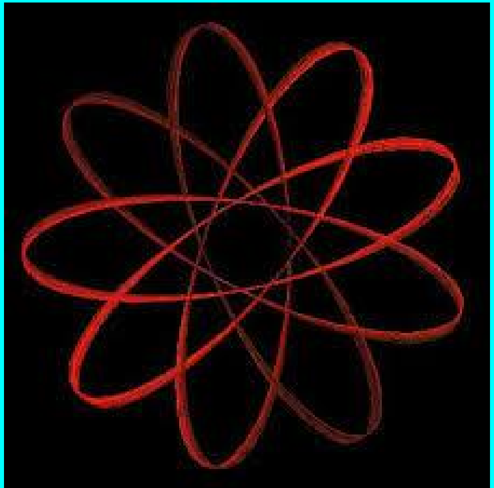
Related Topics.Carbon Offsetting History of Nuclear Energy Production. **Physicist Enrico Fermi** discovered the potential of nuclear fission in 1934, when he bombarded uranium atoms with neutrons and was surprised to discover that the products of this reaction were much lighter than uranium.

Common Misconceptions

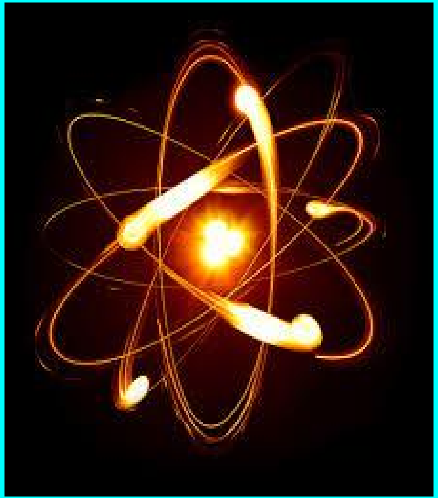
- It is only used in Atomic weaponry
- Most of our yearly radiation comes from a Nuclear power plant
- The white clouds billowing out of the stacks are actually steam, not smoke
- Atomic weaponry get their atomic power from the plants. They actually get it from specially modified uranium and plutonium.

Common Misconceptions cont’d

- Nuclear energy is the key to energy independence
- Technology can fix safety problems with Nuclear power plants. While it can help, it will never fix, solve the problem

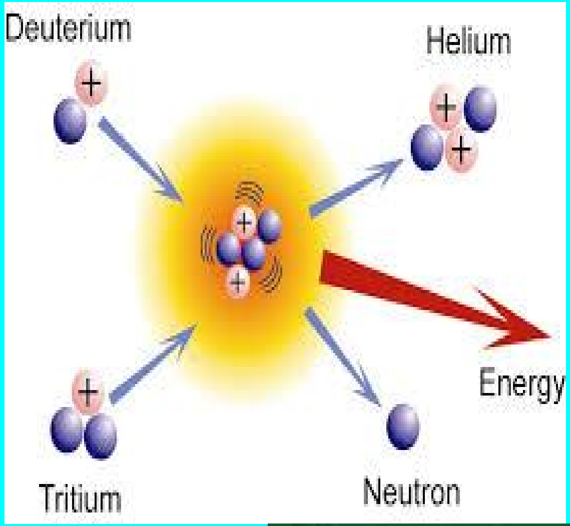


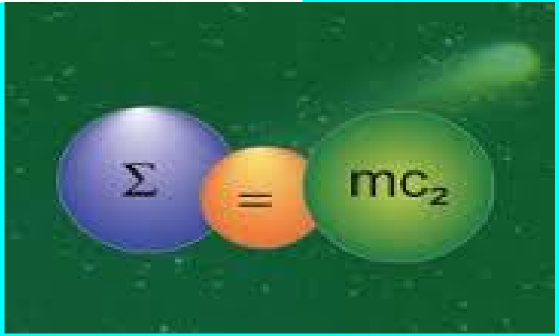
Nuclear power is the use of nuclear reactions that release nuclear energy to generate heat, which most frequently is then used in steam turbines to produce electricity in a nuclear power station. The term includes nuclear fission, nuclear decay and nuclear fusion. Presently, the nuclear fission of elements in the actinide series of the periodic table produce the vast majority of nuclear energy in the direct service of humankind, with nuclear decay processes, primarily in the form of geothermal energy, and radioisotope thermoelectric generators, in niche uses making up the rest.



where does the energy released in a fission reaction come from:

It is commonly explained that the energy comes from matter turning into energy (E=mc^2). But when one examines the reaction, there are the same number of particles at the end as at the beginning.If you were to weigh the particles in a particular atom (neutrons and protons), individually and then weigh them as a single atom, the weight of the atom is greater than the sum of its parts. The energy used to hold the particles together becomes mass. E=mc2 (squared) defines the mass differential between the two states.(https://www.quora.com)



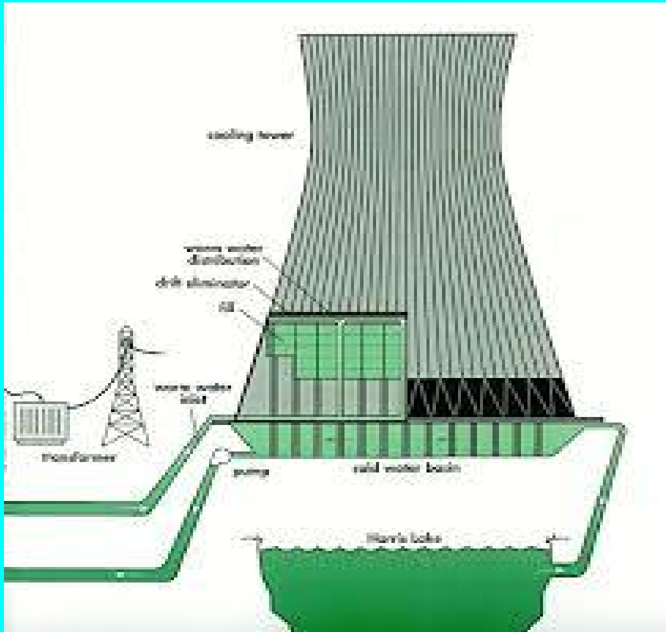


where do they store the waste:

Used nuclear fuel is in storage at the nation’s nuclear energy facilities. Most plants store used fuel in steel-lined, concrete pools filled with water, which acts as a natural barrier for radiation. The water also keeps the fuel cool while radiation decays. The water itself does not leave the used fuel pool.(www. ucsusa.org/...**water**.../**water**-energy-el)

Cooling towers

A cooling tower is a heat exchanger, inside of which heat is withdrawn from the water by contact between the water and the air. The heat transfer occurs through the heat exchange between air and water and through the evaporation of a small part of the water that needs to be cooled. This will allow to cool down to a temperature lower than the ambient temperature, which is an important advantage compared to dry coolers.



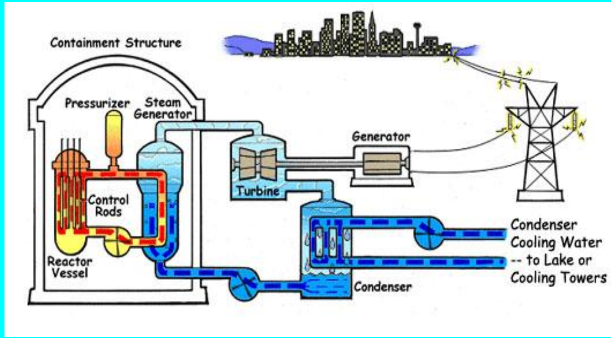
How Do Nuclear Plants Work?

In a nuclear-fueled power plant – much like a fossil-fueled power plant – water is turned into steam, which in turn drives turbine generators to produce electricity. The difference is the source of heat. At nuclear power plants, the heat to make the steam is created when uranium atoms split – called fission. There is no combustion in a nuclear reactor. Here's how the process works.

There are two types of nuclear reactors in the United States:

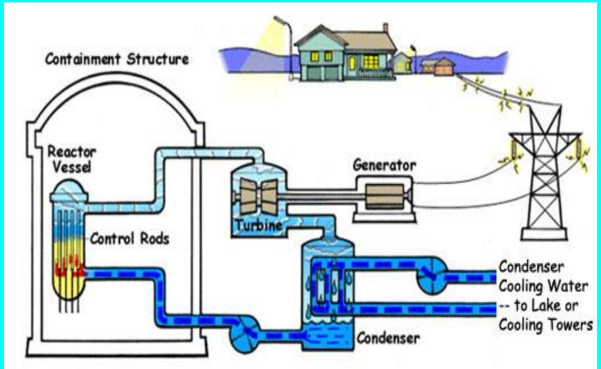
Pressurized Water Reactor

Pressurized Water Reactors (also known as PWRs) keep water under pressure so that it heats, but does not boil. This heated water is circulated through tubes in steam generators, allowing the water in the steam generators to turn to steam, which then turns the turbine generator. Water from the reactor and the water that is turned into steam are in separate systems and do not mix.



Boiling Water Reactor

In Boiling Water Reactors (also known as BWRs), the water heated by fission actually boils and turns into steam to turn the turbine generator. In both PWRs and BWRs, the steam is turned back into water and can be used again in the process.



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