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Competitive Exams Causes, sources and methods of radioactive pollution are important topics for

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Radioactive Pollution

Nuclear energy is a form of energy that's released by the splitting of atoms.

Since scientists have found a way to make use of the energy, it has also been used to generate electricity. Nuclear energy has been recognized as a clean energy because it doesn't release pollutants such as CO_2 to the atmosphere after its reaction that could damage our environment. It's also known that nuclear energy has reduced the amount of greenhouse gas emission, reducing emissions of CO_2 for about 500 million metric tons of carbon. Despite the advantage of nuclear as a clean energy, the big concern is the waste resulted from nuclear reaction, which is a form of pollution, called radioactivity. Radioactivity is a form of radiation a (form of energy that travels through space).

Some elements in this world are naturally radioactive while some others are made to be. Radioactivity is emitted when a radioactive element becomes unstable and begins to decay in the attempt to regain their molecular stability. When an element decays, it emits energy and small particles. If it's still radioactive, it will repeat the process, until it finally regains its molecular stability and stops decaying. The time that it takes for halfway of decaying process is called half-life, and this differs for each radioactive element.

It possibly takes up to 4.5 billion years (Uranium 238) and as short as 8 days (Iodine 131). This process constantly remains, not thermal factors such as pressure or temperature. This process is expressed in units called Becquerels. One Becquerel is equal to one disintegration of nuclei per second. There are commonly three types of radiation namely:

- Alpha particles, can be blocked by a piece of paper and human skin.
- Beta particles can penetrate through skin, which can be blocked by some pieces of glass and metal
- Gamma rays can penetrate easily to human skin and damage cells on its way through, reaching far, and can only be blocked by a very thick, strong, massive piece of concrete.

Sources and Methods

We can classify major sources that lead to radioactive pollution to the following categories

- nuclear power plants
- nuclear weapon transportation
- Disposal of nuclear waste
- uranium mining