



## Fukushima Water Issue

**For Prelims:** [Fukushima nuclear power plant](#), Neighbouring Countries of Japan, [Earthquake](#), [Tsunami](#), [International Atomic Energy Agency](#), [UN General Assembly](#), [UN Security Council](#)

**For Mains:** Impacts of Earthquake and Tsunami and Nuclear Waste Disposal

### Why in News?

Japan's plan to **release over 1 million tons of water, which is claimed to be treated but potentially radioactive**, from the [Fukushima nuclear power plant into the sea](#), has sparked strong opposition and anxiety among neighboring countries, **particularly South Korea**.



### What is the Fukushima Water Issue?

- **About:**
  - The **Fukushima Daiichi Nuclear power plant** suffered a **meltdown in 2011** after a massive [earthquake](#) and [tsunami](#), releasing large amounts of radioactive materials into the environment.
  - No deaths were initially attributed to the incident, although around **18,000 people lost their lives as a result of the earthquake and tsunami**.
  - Since then, **Japan has been storing the cooling water for nuclear fuel and rain and groundwater seeping** through the damaged reactor buildings in large tanks on site.
- **Recent Developments of the Issue:**
  - The water is treated using a filtering system called **Advanced Liquid Processing System (ALPS)**, which removes most of the radioactive elements **except for tritium**, a hydrogen isotope that is difficult to separate.
  - Japan says **it has no space to keep storing the water, and that releasing it into the**

sea.

- The [International Atomic Energy Agency \(IAEA\)](#) is assisting Japan to release the water into the sea.

**Note:** Tritium is radioactive and has a [half-life](#) of about 12.5 years.

▪ **Raised Concerns:**

- South Korea fears that the **water release will contaminate its waters, salt and seafood, affecting its [fishing industry](#) and public health.**
- The **increased demand for salt in South Korea has led to a nearly 27% price surge**, attributed to both stockpiling and external factors like **weather and lower production.**
- China has also criticized Japan's plan, questioned its transparency and expressed concerns about the **potential impact on the marine environment and global health.**

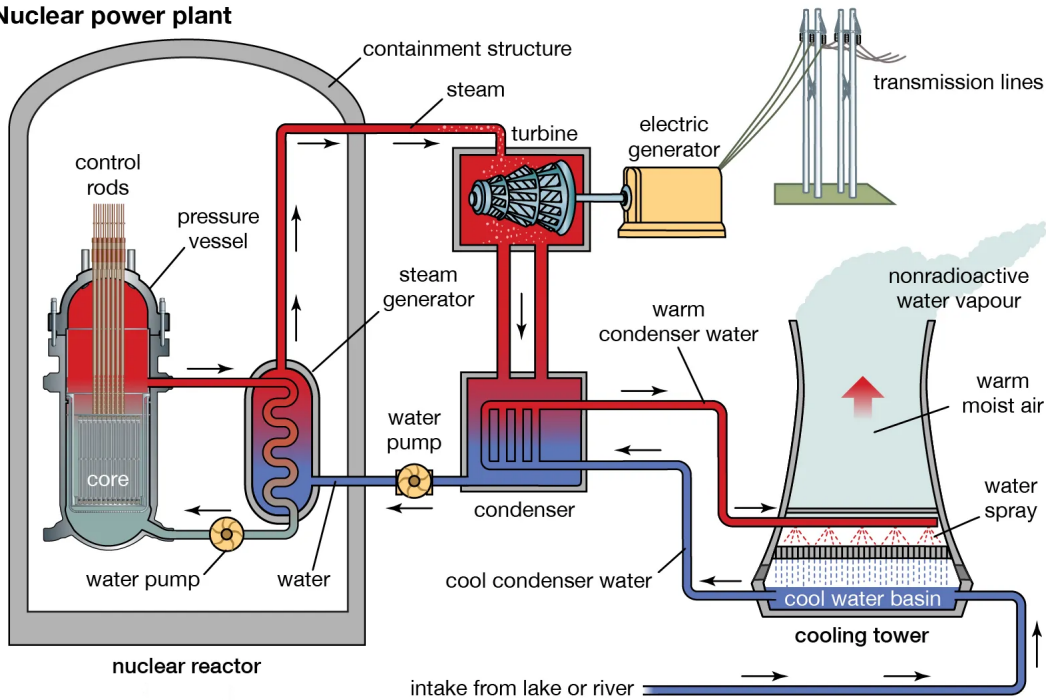
## What are the Other Major Nuclear Disasters of the World?

- **Chernobyl Disaster (1986):** One of the most well-known and severe nuclear disasters, the Chernobyl disaster took place in **Chernobyl Nuclear Power Plant in Ukraine.**
  - A **sudden power surge during a safety test led to a series of explosions and fires that destroyed the reactor core** and released large amounts of radioactive material into the atmosphere.
- **Three Mile Island Accident (1979):** This accident occurred in the **United States at the Three Mile Island Nuclear Generating Station in Pennsylvania.** A partial meltdown of the reactor's core resulted in the **release of radioactive gases.**
- **Kyshtym Disaster (1957):** It took place at the **Mayak Production Association in the Soviet Union (now Russia).**
  - It involved a **nuclear waste storage tank explosion**, releasing a significant amount of radioactive materials into the environment.

## What is a Nuclear Power Plant?

- Nuclear power plants are a **type of power plant that use the process of nuclear fission in order to generate electricity.**
  - In nuclear fission, **atoms are split apart to form smaller atoms, releasing energy.**
    - Fission takes place inside the reactor of a nuclear power plant. At the center of the reactor is the core, **which contains uranium fuel.**
- The **heat produced during nuclear fission in the reactor core is used to boil water into steam**, which turns the blades of a steam turbine.
  - As the turbine blades turn, they drive generators that make electricity.
- Nuclear plants cool the steam back into water in a separate structure at the power plant called a **cooling tower, or they use water from ponds, rivers, or the ocean.**
  - The cooled water is then reused to produce steam.

## Nuclear power plant



## International Atomic Energy Agency

- IAEA is an **intergovernmental organization** that seeks to promote the **peaceful use of nuclear energy and to inhibit its use for any military purpose, including nuclear weapons.**
- It was **established in 1957** as the world's **“Atoms for Peace”** organization within the United Nations family, and governed by its own founding treaty, the **Statute of the IAEA.**
- It **reports to both the [UN General Assembly](#) and the [UN Security Council](#)**, and is headquartered at the **UN Office at Vienna, Austria**
- In 2005, it was awarded the **[Nobel Peace Prize](#)** for their work for a safe and peaceful world.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Prelims

**Q1. The function of heavy water in a nuclear reactor is to (2011)**

- (a) Slow down the speed of neutrons
- (b) Increase the speed of neutrons
- (c) Cool down the reactor
- (d) Stop the nuclear reaction

**Ans: (a)**

### Mains

**Q. With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. (2018)**

[Source: IE](#)

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