Californium | Bihar | 22 Aug 2024

Why in News?

Recently, police in Gopalganj, Bihar, seized **50 grams** of a substance believed to be **Californium,** a highly radioactive metal worth **Rs 850 crore.**

 However, initial tests by the Department of Atomic Energy (DAE) and Bhabha Atomic Research Centre (BARC) revealed no radioactivity.

Key Points

- About Californium:
 - Californium is named after the American state of California and the university.
 - It was first synthesized in 1950 by researchers at the University of California, Berkeley.
 - Californium is a **silvery-white synthetic radioactive metal** with the **atomic number 98** on the periodic table.
 - It is not found **naturally** and is produced through <u>nuclear reactions</u>. specifically by **bombarding curium** with helium ions.
 - **Curium** is a **hard metal** having an **atomic number** of **96** and symbol **Cm**. This metal is artificially produced in the nuclear reactors.
 - A helium ion is a positively charged atom of helium, typically denoted as **He+**. It is formed when a helium atom loses one or more of its electrons.
 - Properties:
 - Californium is highly radioactive and is both valuable and hazardous.
 - It belongs to the **actinide series** on the periodic table.
 - Notable isotopes include Cf-251, which is the most stable with a half-life of 898 years, as well as Cf-249 and Cf-250, which have shorter half-lives.

Radioactivity:

 It is the property of some unstable atoms (radionuclides) to spontaneously emit nuclear radiation, usually alpha particles or beta particles often accompanied by gamma-rays.

• Department of Atomic Energy:

- The **Department of Atomic Energy (DAE)** was set up under the direct charge of the **Prime Minister** through a **Presidential Order** on **August 3, 1954.**
- As per this order, all businesses of the Government of India, related to Atomic Energy and to the functions of the Central Government under the Atomic Energy Act, 1948 were directed to be transacted in the Department of Atomic Energy.

• Bhabha Atomic Research Centre (BARC):

- BARC is India's leading nuclear research facility that operates under the Department of Atomic Energy.
- As a multi-disciplinary research center, BARC is equipped with extensive infrastructure for advanced R&D, spanning the full range of nuclear science, engineering, and related fields.
- It also serves as the primary research support for the Nuclear Power Corporation of India (NPCIL), which manages all of India's nuclear reactors.

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