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## 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 [nuclear reactions](#), 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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