

**RADIATION TECHNOLOGY FOR SEWAGE TREATMENT**

**Prelims:** Science & Technology- Newer Invention

**Mains:** GS-III- Science and Technology - developments and their applications and effects in everyday life Achievements of Indians in science & technology; indigenization of technology and developing new technology.

**Why in News?**

- ▶▶ Bhabha Atomic Research Centre (BARC) in collaboration with Amdavad Municipal Corporation (AMC), Ahmedabad has set up a Technology Demonstration Pilot Project “Sewage Sludge Hygienisation Plant” at Shahwadi, Ahmedabad

**Highlights:**

- ▶▶ Large amount of sewage sludge is produced in India every day. The sludge is infectious and can spread diseases. It also has essential micro and macro nutrients, especially carbon, useful for soil and crop production.
- ▶▶ Radiation Technology can be used to hygienise the sludge reliably and affordably and protect health and environment. Addition of useful microorganisms to the hygienised sludge can convert it to a value-added manure

**Radiation Technology:**

- ▶▶ Ionizing radiation emitted by radiation source such as Cobalt-60 interacts with the critical molecules like DNA, proteins and water present in the cell and result in the inactivation of microorganisms.
- ▶▶ As a result of Irradiation, besides pathogens, other unwanted constituents like weeds, chemicals, etc. are also degraded, making the sludge safer for use
- ▶▶ Based on microbiological inactivation, Radiation Technology is already established world over for sterilizing medical products, food safety and food preservation. Sludge hygienisation can be carried out in the similar manner

**Advantages of Radiation Technology:**

- ▶▶ Process is simple, economic, effective, reproducible and scalable.
- ▶▶ Easy to integrate with conventional sewage treatment facilities.
- ▶▶ Process is fully automatic to avoid manual handling of contaminated sludge.

- ▶▶ Based on the process of radiation sterilization which is well established world over and in India.
- ▶▶ Degrades chemical contaminants and makes sludge safer for use.

### **Benefits to The Farmers/People:**

- ▶▶ Increased crop yield – direct benefit to the farmers.
- ▶▶ Improved soil conditions – soil conservation & restoration.
- ▶▶ Reduced health risks associated with sludge, reduces costs of health care system.
- ▶▶ Reduced demand of water due to higher water holding capacity of the sludge.
- ▶▶ Radiation technology has sound scientific basis and is a practical technology to economically hygienise sewage sludge for agriculture application.
- ▶▶ The technology and radiation source both are available in our country. Irradiation facility can be utilised to treat whole city sludge at one place in a fully automatic process.
- ▶▶ The hygienised sludge can benefit farmers and protect environment and human health. The technology has high potential in contributing towards meeting the objectives of Clean India Mission (the Swachh Bharat mission).

