



**KAMARAJ IAS ACADEMY**  
Only IAS Academy by Grandson of "Per.uthalayar Kamarajar"

# IIT Bhubaneswar Develops Portable Device for Arsenic Detection in Water

Published On: 15-06-2026



Researchers at Indian Institute of Technology (IIT) Bhubaneswar have developed a portable, low-cost, and field-deployable device named "ArsenSafe" for rapid detection of arsenic contamination in drinking water.?

The device has been developed by the Sensors and Spectroscopy Research Group of the School of Electrical and Computer Sciences (SECS) and is aimed at addressing the growing public health challenge posed by arsenic-contaminated groundwater.

## Key Features of ArsenSafe

Portable and handheld device.

Low-cost and easy to use.

Enables rapid detection of arsenic in drinking water.

Suitable for field deployment in rural and remote areas.

Does not require sophisticated laboratory infrastructure.

Eliminates the need for chemical reagents.

## Technology Used:

ArsenSafe uses a Reduced Graphene Oxide (rGO)-based sensing system, which enables faster, more accurate, and cost-effective detection of arsenic contamination in water.

The technology makes arsenic testing more accessible, particularly in regions where laboratory facilities are limited.

## Kamaraj IAS Academy

Plot A P.127, AF block, 6 th street, 11th Main Rd, Shanthi Colony, Anna Nagar, Chennai, Tamil Nadu 600040  
Phone: 044 4353 9988 / 98403 94477 / Whatsapp : 09710729833

### **Startup Involvement:**

The device has been developed through Nano Semic Pvt. Ltd., a startup incubated at the Research and Entrepreneurship Park of IIT Bhubaneswar.

This collaboration highlights the role of academic institutions and startups in developing innovative solutions to address public health and environmental challenges.

### **About Arsenic Contamination:**

Arsenic is a naturally occurring toxic element found in groundwater in several regions of the world.

Chronic arsenic exposure can cause Arsenicosis, a serious health condition.

The World Health Organization (WHO) recommends a maximum arsenic concentration of 10 micrograms per litre (10 ppb) in drinking water.

Arsenic-Affected States in India

### **Major arsenic contamination has been reported in:**

West Bengal

Bihar

Uttar Pradesh

Assam

Jharkhand

Manipur

### **About IIT Bhubaneswar**

Established in 2008.

Located in Bhubaneswar, Odisha.

One of the second-generation IITs established by the Government of India.

Functions under the Ministry of Education.

### **About Reduced Graphene Oxide (rGO)**

A graphene-based nanomaterial widely used in sensors and electronics.

Known for high electrical conductivity and sensitivity.

Useful for detecting contaminants at very low concentrations.

### **Kamaraj IAS Academy**

Plot A P.127, AF block, 6 th street, 11th Main Rd, Shanthi Colony, Anna Nagar, Chennai, Tamil Nadu 600040

Phone: **044 4353 9988 / 98403 94477** / Whatsapp : **09710729833**

## **Related Government Initiatives:**

### **Jal Jeevan Mission:**

Launched in 2019.

Implemented by the Ministry of Jal Shakti.

Objective: Provide Functional Household Tap Connections (FHTCs) to all rural households.

### **Atal Bhujal Yojana (Atal Jal):**

Focuses on sustainable groundwater management.

Implemented in water-stressed regions across India.

## **Exam Focus Points (Quick Revision Notes):**

Institution ? IIT Bhubaneswar

Device Developed ? ArsenSafe

Purpose ? Detection of Arsenic in Drinking Water

Technology Used ? Reduced Graphene Oxide (rGO)-Based Sensor

Nature of Device ? Portable, Handheld, Field-Deployable

Startup Involved ? Nano Semic Pvt. Ltd.

Established Year of IIT Bhubaneswar ? 2008

Related Issue ? Groundwater Arsenic Contamination

Related Ministry ? Ministry of Education

Related Scheme ? Jal Jeevan Mission