

# Arsenic Sensing in potable water

## Introduction

Assessment of Arsenic (As), one of lethal known poisons, is of global concerns because of its hazardous effect on human health, direct and indirect harmful effects on societal, environmental and economic sector worldwide. The allowable limit set by the Environmental Protection Agency (EPA) and WHO is 10ppb. Health impact due to consumption of water containing Arsenic includes Arsenicosis. The Arsenic sensing technology is based on fluorescence technique which uses turn-on” effect observed on modified C-dots on Arsenic binding. Further, the fluorescence signal has been quantified through suitable optics design and is processed using specially designed electro-optical embedded system. The amount of the Fluoride in the sample is then displayed on the LCD screen in PPM in less than 2-3 minutes’ time.



## Features

- Electrochemical and optical based sensing.
- Needs no reagent and rapid and accurate analysis.

## Specifications

- Technique : Fluorescence ‘Turn-On effect’ and Stripping Voltammetry
- Electrode : Au based working electrode
- Range : 10-50 ppb
- Accuracy :  $\pm 10$  percent of full scale
- Temperature : Room temperature

## Applications

To measure Arsenic level in potable water, municipal drinking water plants, industrial effluent release plants, sewage treatment plants.

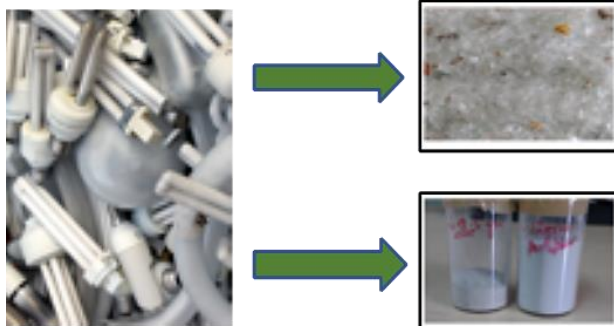
## Status

Lab prototype ready and limited field trials done.

# Recycling of Waste CFLs and Tubelights

## Introduction

Realizing the need of tools for the safe dismantling of used compact fluorescent lights (CFLs) and tubes, and a subsequent separation of glass and phosphor materials from them, following process technologies have been developed to benefit the Indian industry for recycling of waste:



- Bulb-Eater for safe dismantling

An in-house designed bulb-eater has been assembled. The developed bulb-eater costs significantly lesser than the similar existing devices and protects the workers/environment from mercury contamination.

- Process for separation of glass and Phosphor

A process has been developed to treat the waste CFLs and tubes through an easy and toxic chemical-free method so as to separate glass and phosphor power. The process know-how has been transferred to an Industry.

## Applications

In CFL and Fluorescent tubes, the glass is coated with a fluorescent material known as phosphor which is excited by mercury vapours inside the lamp. The recycling industries mainly do their business by separating the glass and phosphor components and selling them again to the interested parties. It is necessary to easily and cleanly separate the glass and phosphor component for an effective recycling.

## Status

Field tested ready and technology transferred to an Industry.