Shelf Stable Arsenic Detection Kit

Inventors: Tao Li, Endalkachew Sahle-Demessie

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TRL 3

Context

Arsenic is a carcinogen and general toxin. Arsenic pollution has been a global threat to human health and sustainable economic development for hundreds of years. Since the 19th century, millions of tons of arsenic have been generated through industrial activities such as mining, manufacturing, and fossil fuel use. These activities left sites with anthropogenic arsenic contamination throughout the world. Arsenic pollution poses a great environmental risk as ingestion of arsenic-contaminated groundwater can lead to serious poisoning incidents. In the U.S., mining areas with arsenic pollution issues have been designated as Superfund sites.

Summary

EPA researchers have invented a novel way to detect arsenic and other troubling pollutants found in many Superfund sites, landfills, and other polluted locations. The "Shelf Stable Arsenic Detection Kit," invented by Tao Li and Endalkachew Sahle-Demessie, detects arsenic pollutants as well as additional water contaminants, such as PFAS, mercury, and carbamate pesticides through electrochemical biosensors. This invention is easy-to-use, shelf stable, disposable, and highly portable for measuring pollutant concentrations in a wide variety of sites. This detection technology will be instrumental in monitoring and eliminating contaminants from polluted water sites as well as preventing the spread of contamination to water supplies.

Potential Applications
- Site Remediation
- Emergency Management
- Water Purification

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