Handheld Uranium Detection Device

A portable method to quantify trace levels of uranium in water

Quantifying the amount of radioactive contamination can be a challenging process during environmental and security management. There are several ways to detect radioactive materials such as uranium, but the most common way is by measuring high-energy radioactive decay products. This method works well in high concentration solutions, but fails at low concentration levels in soil or water. Decreased sensitivity by this method occurs since signals are weak and attenuated, therefore making it difficult to measure outside a laboratory.

The technology

As an alternative to current techniques, researchers at VCU have developed a novel method and device to measure low concentration levels of uranium in water. This device is portable, therefore allowing measurements to occur on-site. It has a greater sensitivity than current techniques where uranium is tested from a single sample directly from a water source. Since the hand-held device is an all-in-one system, results occur within seconds to provide concentration ranges of uranium.

Benefits

» Greater sensitivity: measuring trace amounts of uranyl in water
» Rapid detection (within seconds)
» Portable feature allows detection to occur on-site

Applications

» Environmental monitoring
» Defense and security
» Nuclear waste management

Patent status:
Patent pending: U.S. and foreign rights are available.

License status:
This technology is available for licensing to industry for further development and commercialization.

Category:
Engineering, Devices & Methods

VCU Tech #:
16-028

Investigators:
Gary Tepper, Ph.D.
Brandon Dodd

External Resources:
US 2019/0120808 A1
Dodd, B. M., et al. (2017)
Dodd, B. M., et al. (2016)

Contact us about this technology
Koffi Egbeto, MS
Licensing Associate
egbetok@vcu.edu
(804) 827-2213

Figure 1. a) Schematic of flow system; b) internal geometry of the silica trainer