

Automated Ultrafiltration Device: Fact Sheet

BACKGROUND

Analysis of water for the presence of low levels of microorganisms requires concentrating a large volume sample (10 - 100 L). This large volume sample may be collected and transported to a laboratory for concentration, or concentrated in the field with cumbersome, yet delicate laboratory equipment. Additionally, the transportation and handling of a large volume of potentially contaminated water is a safety and logistical concern and concentration with delicate equipment in the field is challenging for first responders, utility, and lab personnel.

To address these issues, EPA, in partnership with the Department of Energy's Idaho National Laboratory (INL), developed a rugged and automated field deployable sample concentration (ultrafiltration) device. The device concentrates the bacteria, viruses, protozoans, and some toxins contained in a large sample into a small volume (<500 mL), often in under an hour.

BENEFITS

Use: The ultrafiltration device is durable, portable, easy to use, easy to clean up and fast. The device has a variety of applications such as routine sample monitoring.

Safety: Following concentration of the large volume, the smaller, concentrated sample can be more easily and safely transported to a laboratory.

Cost: Concentrating samples in the field can reduce sample transport costs (less volume being transported) and time (no need for packaging, loading and unloading associated with large volume samples).

COURSE DESCRIPTION

Seven training videos were developed which illustrate EPA's Automated Ultrafiltration Device covering the principles of ultrafiltration as a concentration procedure; the benefits of using the device; supply and reagent requirements; and preparation and operation procedures. The seven videos include:

- Automated Ultrafiltration Device, Part 1- 6
 - Automated Ultrafiltration Device, Part 1: Importance and Uses
 - Automated Ultrafiltration Device, Part 2: Benefits
 - Automated Ultrafiltration Device, Part 3: Getting Started
 - Automated Ultrafiltration Device, Part 4: Installation of Tubing Assemblies
 - Automated Ultrafiltration Device, Part 5: Operating and Troubleshooting
 - Automated Ultrafiltration Device, Part 6: Disassembly and Sample Shipping