

Portable Multi-use Automated Concentration System (PMACS) for Water Hazard Testing

Researchers at the University of South Florida have developed a system for concentrating hazardous particles, including bacteria, viruses, and toxins, from large volumes of water.

Clean water is important to a healthy environment and safe drinking water is necessary to protect public health. Awareness of biological and other threats to drinking water systems is critical to National security. Contamination of fruits and vegetables by dirty water and polluted recreational waters are also threats to public health that have caused serious disease outbreaks. Contaminated water in cooling towers, hot tubs and other water systems has been linked to Legionnaires' Disease.

The USF invention, the Portable Multi-use Automated Concentration System (PMACS) improves water monitoring. The PMACS measures 1 ft. by 1 ft. at the base, is 3 ft. high and weighs less than 50 lbs., including the collection module, recovery module and battery. Test water can be pumped into the concentrator filter or pushed through using pressure from a tap, making it useful for both field and on-line applications. Particles trapped in the filter are recovered and concentrated when the filter is back flushed with a recovery solution. This increases the number of hazardous particles in a sample. The resulting concentrated material can be analyzed using many different rapid and standard analytical methods. Rapid detection devices can also be linked to the concentrator so that concentration and detection are completely automated.

The PMACS is useful for monitoring drinking water distribution systems, recreational water, cooling tower water, food processing water and many other water types where there is a risk of contamination by hazardous particles, such as microorganisms or their toxins.

ADVANTAGES:

- **Automated, modular, single-person portable**
- **Uniquely suited to rapidly concentrate hazardous particles, including biologicals, from water**
- **Enables detection of low level targets**
- **Decreased time to detection**
- **Larger volume processing for more representative sample**

Water testing with automated concentrator



Field use of PMACS to test water in a groundwater well used as a source of drinking water.

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