

# Keeping our beaches safe: New wireless sensor device rapidly detects *E. coli* in water samples

December 8 2011

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Fecal contamination of public beaches caused by sewage overflow is both dangerous for swimmers and costly for state and local economies. Current methods to detect *Escherichia coli*, a bacterium highly indicative of the presence of fecal matter in water, typically require 24-48 hours to produce a result. A new, accurate, and economical sensor-based device capable of measuring *E. coli* levels in water samples in less than 1-8 hours could serve as a valuable early warning tool and is described in an article in *Environmental Engineering Science*.

The article provides a detailed description of the autonomous, wireless, in-situ (AWISS), battery-powered device, which contains a prototype optical sensor that can measure changes in fluorescence intensity in a water sample. In the presence of *E. coli* bacteria an enzymatic reaction will cause an increase in fluorescence. The AWISS can detect high concentrations of bacteria in less than 1 hour and lower concentrations in less than 8 hours.

Jeffrey Talley (Johns Hopkins University, Baltimore, MD) and colleagues (Environmental Technology Solutions, Gilbert, AZ, and the U.S. Army Corps of Engineers, Vicksburg, MS), present the results of a 7-day [demonstration project](#) using the AWISS device. The detection system developed is able to collect and analyze a water sample every 6 hours and to employ [wireless transmission](#) to send the data collected to remote monitoring stations. The authors compare the effectiveness of

the AWISS to other *E. coli* detection methods currently approved by the U.S. [Environmental Protection Agency](#) (EPA).

"Pathogens in the aquatic environment pose significant human and ecological health risks. The work of Professor Talley and his colleagues in developing a remote sensing instrument to detect and transmit pathogen water quality information is a major advance in helping safeguard human health," says Domenico Grasso, PhD, Editor-in-Chief and Vice President for Research, Dean of the Graduate College, University of Vermont (Burlington).

**More information:** The article is available online at [http://www.liebertpub.com/mcontent/files/EES-2011-0148-Nijak\\_5P.pdf](http://www.liebertpub.com/mcontent/files/EES-2011-0148-Nijak_5P.pdf)

Provided by Mary Ann Liebert, Inc.

Citation: Keeping our beaches safe: New wireless sensor device rapidly detects *E. coli* in water samples (2011, December 8) retrieved 23 April 2024 from <https://phys.org/news/2011-12-beaches-safe-wireless-sensor-device.html>

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