

# **The U.S. Environmental Protection Agency (EPA) Workshop on Innovative Approaches for Detecting Microorganisms in Water**

June 18-20, 2007

U.S. Environmental Protection Agency  
Andrew W. Breidenbach Environmental Research Center  
26 W Martin Luther King Drive  
Cincinnati, OH

## **AGENDA**

### **Goals:**

- Provide a forum to discuss proposed solutions to the methodological challenges in the search for better methods of detection and assessment of waterborne microbial contaminants.
- Facilitate collaboration and cooperation among scientists and policy-makers from research entities, EPA, states, local agencies, and stakeholders.
- Formally kick off the start of research by the recently awarded Science To Achieve Results (STAR) grants. This workshop will provide a forum to facilitate information sharing and cultivation of collaborations between both the STAR grantees and scientists within EPA's Office of Research and Development, Office of Water, and the Regions. Summaries of the grantees' projects can be found at: [http://es.epa.gov/ncer/rfa/2005/2005\\_pathogens\\_drinking\\_water.html](http://es.epa.gov/ncer/rfa/2005/2005_pathogens_drinking_water.html)
- Assist EPA in identifying further research or technologies needed to address decisions and/or policy-making issues associated with the assessment of microorganisms in water.

### **Monday, June 18, 2007 (Auditorium)**

**Moderator:** Barbara Klieforth, EPA, Office of Research and Development (ORD)

**12:30 – 1:00 p.m. Registration**

1:00 – 1:15 p.m. ***Innovative Pathogen Detection in the Context of the National Program for Drinking Water Research***  
**Audrey Levine**, EPA, ORD, Drinking Water National Program Director

1:15 – 1:30 p.m. ***Regulatory Perspective From the U.S. EPA's Office of Water***  
**Phil Oshida**, EPA, Office of Water (OW), Office of Ground Water and Drinking Water (OGWDW), Standards and Risk Management Division (SRMD)

1:30 – 1:55 p.m. ***Use of Innovative Detection Methods for Detecting Contaminant Candidate List Pathogens***  
**James Sinclair**, EPA, OW, OGWDW, Technical Support Center (TSC)

1:55 – 2:20 p.m. ***LATE-PCR: Maximizing Detection Information From a Single Tube***  
**Kenneth Pierce**, Brandeis University

**2:20 – 2:45 p.m. Break**

**Monday, June 18, 2007** (Continued)

- 2:45 – 3:10 p.m.      *Advanced Oxidation Technologies and Nanotechnologies for Water Treatment: Fundamentals, Development, and Application in the Destruction of Microcystin LR*  
Dionysios Dionysiou, University of Cincinnati
- 3:10 – 3:35 p.m.      *Development of Gene Microarray Assays for Risk Assessments*  
Parke Rublee, University of North Carolina at Greensboro
- 3:35 – 4:00 p.m.      *Characterization of Naturally Occurring Amoeba-Resistant Bacteria*  
Anthony Farone, Middle Tennessee State University
- 4:00 – 4:25 p.m.      *Biofilm Sampling and Screening Techniques for Amoeba-Related Biofilm Pathogens*  
Nicholas Ashbolt, EPA, ORD, National Exposure Research Laboratory (NERL)
- 4:25 – 5:00 p.m.      *Overview of the U.S. EPA's Office of Research and Development and the Science To Achieve Results (STAR) Program*  
Barbara Klieforth, EPA, ORD, National Center for Environmental Research (NCER)
- 5:00 p.m.              **Adjourn**
- 6:00 p.m.              **Dinner at the Kingsgate Marriott**

**Tuesday, June 19, 2007** (Auditorium)

*Posters will be up all day and are attended during the hour-long afternoon break.*

*Moderators:* James Owens, EPA, ORD, NERL; and Sandhya Parshionikar, EPA, OW, OGWDW, TSC

- 8:30 – 9:00 a.m.      *Overview of Methods for Simultaneous Detection of Pathogens and Introduction to a Highly Multiplexed Nucleic Acid-Based Assay*  
R. Paul Schaudies, GenArraytion, Inc.
- 9:00 – 9:25 a.m.      *Robust Piezoelectric-Excited Millimeter-Sized Cantilever Sensors for Detecting Pathogens in Drinking Water at 1 Cell/Liter*  
Raj Mutharasan, Drexel University
- 9:25 – 9:50 a.m.      *Development and Evaluation of an Innovative System for the Concentration and Quantitative Detection of CCL Pathogens in Drinking Water*  
Saul Tzipori, Tufts University
- 9:50 – 10:05 a.m.      **Break**
- 10:05 – 10:30 a.m.      *Development of High-Throughput and Real-Time Methods for the Detection of Infectious Enteric Viruses*  
Yu-Chen Hwang, University of California at Riverside

**Tuesday, June 19, 2007** (Continued)

- 10:30 – 10:55 a.m.        *Development of a Universal Microbial Collector (UMC) for Enteric Pathogens in Water and Its Application for the Detection of Contaminant Candidate List Organisms in Water*  
Kelly Bright, University of Arizona
- 10:55 – 11:20 a.m.        *Timely Multi-Threat Biological, Chemical, and Nuclide Detection in Large Volume Water Samples*  
Paul Galambos, Sandia National Laboratories
- 11:20 a.m. – 12:30 p.m. Lunch** (in cafeteria)
- Moderators:** Sam Hayes, EPA, ORD, National Risk Management Research Laboratory (NRMRL); and Shay Fout, EPA, ORD, NERL
- 12:30 – 12:55 p.m.        *On-Chip PCR, Nanoparticles, and Virulence/Marker Genes for Simultaneous Detection of 20 Waterborne Pathogens*  
Syed Hashsham, Michigan State University
- 12:55 – 1:20 p.m.        *A Novel Molecular-Based Approach for Broad Detection of Viable Pathogens in Drinking Water*  
John Scott Meschke, University of Washington
- 1:20 – 1:45 p.m.        *Detecting Pathogens in Water by Ultrafiltration and Microarray Analysis*  
Anthea Lee, Metropolitan Water District of Southern California
- 1:45 – 2:05 p.m.        *Simultaneous Concentration and Real-Time Detection of Multiple Classes of Microbial Pathogens From Drinking Water*  
Otto (O.D.) Simmons III, University of North Carolina at Chapel Hill
- 2:05 – 3:05 p.m. Attend Poster Session**
- Moderators:** Nicole Brinkman, EPA, ORD, NERL; and Hiba Ernst, EPA, OW, OGWDW, TSC
- 3:05 – 3:30 p.m.        *Identification of Bacterial DNA Markers for the Detection of Human and Cattle Fecal Pollution*  
Orin Shanks, EPA, ORD, NRMRL, Water Supply and Water Resources Division (WSWRD)
- 3:30 – 3:55 p.m.        *Detection of Waterborne Pathogens Using Real-Time PCR and Biosensor Methods*  
Sangeetha Srinivasan, Michigan State University
- 3:55 – 4:20 p.m.        *Microarray Detection of Human Viruses From Community Wastewater Systems*  
Mark Wong, Michigan State University
- 4:20 – 4:45 p.m.        *Quantitative Assessment of Pathogens in Drinking Water*  
Kellogg Schwab, Johns Hopkins University

**Tuesday, June 19, 2007** (Continued)

4:45 – 5:10 p.m.            *Development of an Infectivity Assay for Noroviruses in Cells*  
**Timothy Straub**, Pacific Northwest National Laboratory

**5:10 p.m.**                    **Adjourn**

**Wednesday, June 20, 2007** (Rooms 120 and 126)

8:30 – 9:00 a.m.            *An Overview of Pathogen Research in the Microbiological and Chemical  
Exposure Assessment Research Division*  
**Ann Grimm**, EPA, ORD, NERL, Microbiological and Chemical Exposure  
Assessment Research Division (MCEARD)

9:00 – 11:40 a.m.        **Panel Discussion**  
*Co-Leads:* **Keya Sen**, EPA, OW, OGWDW, TSC; and **Ann Grimm**, EPA, ORD,  
NERL, MCEARD  
Panel of federal, commercial, and academic scientists

**11:40 a.m. – 1:00 p.m.**   **Lunch** (in cafeteria)

1:00 – 3:30 p.m.        **EPA Laboratories and Facilities Open House**

**3:30 p.m.**                    **Adjourn**