

G. Shay Fout, Research Microbiologist, in EPA's National Exposure Research Laboratory

Exposure Methods and Measurements Division

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Area of Expertise: Fout's research has aimed at improving the detection and measurement of human enteric viruses in water matrices, measuring virus occurrence in source, drinking, and recreational waters, and in the development of methods and measurement of exposure to waterborne viruses using biomarkers of exposure. More recently, he has led the Agency to include virus monitoring in its most recent Unregulated Contaminant Monitoring Rule and published a new EPA method for use during the monitoring period between 2013 and 2015. He has also recently been active in work on the fate and transport of viruses and indicators.

Select Publications:

Fout, G.S., J.L. Cashdollar, E.A. Varughese, S. U. Parshionikar, and A.C. Grimm. 2016. EPA Method 1615. Measurement of enterovirus and norovirus occurrence in water by culture and RT-qPCR. III. Collection of virus samples. *J. Vis. Exp.* 107: e52646.

Augustine, S.A., K.J. Simmons, T.N. Easton, S.M. Griffin, C.L. Curioso, L.J. Wymer, G.S. Fout, A.C. Grimm, K.H. Oshima, and A. Dufour. 2015. Statistical approaches to developing a multiplex immunoassay for determining human exposure to environmental pathogens. *J. Immunol. Methods* 425:1-9.

Ryu, H., J.L. Cashdollar, G.S. Fout, K.A. Schrantz, and S. Hayes. 2015. Applicability of integrated cell culture quantitative PCR (ICC-qPCR) for the detection of infectious adenovirus type 2 in UV disinfection studies. *J. Environ. Sci. Health A Tox. Hazard Subst. Environ. Eng.* 50:777-787.

Fout, G.S., J.L. Cashdollar, E.A. Varughese, S. U. Parshionikar, and A.C. Grimm. 2015. EPA Method 1615. Measurement of enterovirus and norovirus occurrence in water by culture and RT-qPCR. I. Collection of virus samples. *J. Vis. Exp.* 97: e52067.

Karim, M.R. G.S. Fout, C.H. Johnson, K.M. White, and S.U. Parshionikar. 2015. Propidium monoazide reverse transcriptase PCR and RT-qPCR for detecting infectious enterovirus and norovirus. *J. Virol. Methods* 219:51-61.

Korajkic, A., B.R. McMinn, O.C. Shanks, M. Sivaganesan, G.S. Fout, and N. J. Ashbolt. 2014. Biotic interactions and sunlight affect persistence of fecal indicator bacteria and microbial source tracking genetic markers in the upper Mississippi river. *Appl. Environ. Microbiol.* 80:3952-3961.

View more research publications by [Shay Fout](#).

Education:

- Ph.D. Microbiology and Biochemistry, Purdue University, 1980
- M.S. Microbiology and Biochemistry, Idaho State University, 1977
- B.S. Premedical Sciences, Boise College, 1968

Professional Experience:Honors and Awards:

- USEPA STAA Award, Level III, 2015
- USEPA STAA Award, Level III, 2013
- USEPA Office of Water Achievement in Science and Technology, 2012
- NERL Special Recognition Award, 2011
- USEPA STAA Award, Honorable Mention, 2011
- USEPA STAA Award, Level III, 2010