

Panel Member Bios

Christopher Knightes, Ph.D. (Panel Chair)

Environmental Engineer, U.S. Environmental Protection Agency

Dr. Knightes is a Research Environmental Engineer at the United States Environmental Protection Agency, Office of Research and Development, National Health & Environmental Effects Laboratory in Narragansett, Rhode Island. He has been with the agency for over 16 years studying fate and transport of environmental contaminants in surface waters and watersheds, particularly focused on understanding and incorporating governing processes in environmental models. His research has spanned a range of contaminants and projects including simulating metals in the Animas and San Juan Rivers, Colorado, from the Gold King Mine release; simulating historical mercury contamination from a superfund site in the Sudbury River and Great Meadows Wildlife Refuge, Massachusetts and possible remediation strategies; being the sole developer of SERAFM, a wildlife exposure screening level mercury tool; incorporating mercury dynamics in a watershed model (VELMA) to simulate mercury concentrations in headwater streams, South Carolina; and improving and developing the Water Quality Analysis Simulation Program (WASP8) to simulate nanomaterials, mercury, solids, and toxicants in surface waters and streams. Dr. Knightes modeled the response of a range of different aquatic ecosystems due to changes in mercury deposition as part of the benefits analysis for the release of the Clean Air Mercury Rule and served as the lead chapter author of the Chemical Mixing Chapter and co-author of the draft and final version of EPA's Hydraulic Fracturing Assessment. Dr. Knightes has received two gold medals and one silver medal for his work at USEPA. Dr. Knightes has his Ph.D. in Environmental Engineering and Water Resources from Princeton University, his M.S. in Environmental Health Engineering from Northwestern University, and his B.S. in Physics from the University of Rochester.

Brian Branfireun, Ph.D. (Lead Author)

Professor, Western University

Dr. Branfireun is involved in projects studying the hydrology, ecology and biogeochemistry of wetland-dominated environments from the Canadian sub-arctic to the sub-tropics of Mexico. Dr. Branfireun's research program is strongly field oriented, using the latest approaches to the measurement of environmental processes. He also directs a modern laboratory facility in the BIOTRON Institute for Experimental Climate Change Research at Western University for the study of speciated trace metals in the environment such as mercury and arsenic.

Carl Mitchell, Ph.D.

Associate Professor, University of Toronto

Dr. Carl Mitchell is an environmental scientist and Associate Professor in the Department of Physical and Environmental Sciences at the University of Toronto. He earned his PhD in Physical Geography from the University of Toronto in 2007. He directs an active research program at the intersection of the hydrological and biogeochemical sciences, with a focus on mercury cycling. He and his research group have published more than 50 peer-reviewed journal articles on topics such as mercury

methylation, mercury cycling in wetlands, and the development of passive sampling methods. Dr. Mitchell's latest projects include investigating how forestry practices impact mercury cycling in the boreal landscape and assessing the release of gaseous mercury from degrading permafrost in Canada's Arctic. He also currently serves the scientific community as Vice-President of the Canadian Geophysical Union.

Robert Mason, Ph.D.

Professor, University of Connecticut

Robert Mason is a professor in the Department of Marine Sciences at the University of Connecticut and has a joint appointment in Chemistry. He has been conducting mercury research for the last 30 years with a focus on atmospheric and aquatic mercury biogeochemistry and bioaccumulation at the base of the food chain. His studies have covered marine, coastal and freshwater ecosystems, examining the chemical transformations, with a focus on the factors influencing air-water and sediment-water exchange of all forms of mercury. Mason's research is aimed at understanding the factors influencing the bioavailability of mercury for methylation, and of methylmercury for bioaccumulation into organisms, and their sources and sinks in the environment. His research covers field studies, laboratory manipulation experiments and computer modeling. He is an author on more than 150 peer-reviewed papers and book chapters focused on mercury and is the author of a book on the environmental chemistry of metals. Mason has graduated more than 20 graduate students (13 PhD students). In addition to his academic pursuits, Mason has been involved in policy and has provided scientific advice and expertise to federal, state and local agencies and industry related to contamination and other mercury issues. He has been involved in producing technical reports for the United Nations Minamata Convention on Mercury and for other policy platforms.

Cynthia Gilmour, Ph.D.

Principle Investigator, Senior Scientist Smithsonian Environmental Research Center

Dr. Gilmour is a biogeochemist with extensive experience studying mercury transport and transformation at multiple scales (from the molecular to ecosystem level) and in laboratory and field settings. Her research group studies the biogeochemistry of mercury in the environment, with an emphasis on the microbial mercury methylation process in sediments and soils. Major research programs included studies of mercury in the Florida Everglades, Chesapeake Bay and the adjoining continental shelf, the METAALICUS whole-watershed mercury addition study at the Experimental Lakes Area in Ontario, recent field trials of activated carbon as a potential remediation tool for Hg-contaminated sediments and soils, and most recently development and testing of molecular tools to assess the distribution and activity of microbial Hg methylation genes (*hgcAB*) in nature. She has published more than 100 research papers in the subject area, including papers on the influence of sulfate on Hg methylation, the isolation and characterization of Hg-methylating microbes, and the bioavailability of Hg for microbial methylation. Her lab maintains an extensive collection of Hg-methylating microbes. Dr. Gilmour has served on a number of advisory boards including the EPA Science Advisory Board, the San Francisco Bay Mercury Studies Program, Chesapeake Bay Program's Scientific and Technical Advisory Board, and the technical committees for the International Conferences on Mercury as a Global Pollutant.