

2014 Clarke Prize Laureate

David Sedlak, Ph.D.

Professor, University of California, Berkeley

Co-Director, Berkeley Water Center

Deputy Director, National Science Foundation's Engineering Research Center on Re-Inventing the Nation's Urban Water Infrastructure (ReNUWIt)



Sedlak was selected as the 2014 recipient because of his pioneering research on advancing the way water resources and urban water infrastructure are managed, including implementing water reuse and reducing the discharge of emerging contaminants (such as pharmaceuticals and personal care products). His work has served as the foundation for major policy and technical initiatives to reduce the effects of these contaminants and protect public health.

Sedlak arrived at UC Berkeley in 1994. In 1996, he began studying wastewater-derived contaminants with a focus on natural and synthetic estrogens. His research on the presence of steroid estrogens in wastewater effluent raised concerns for public health and the aquatic environment, especially in situations when treated wastewater was reused or discharged to rivers in arid climates. From this study, he and his research group developed analytical techniques to detect these contaminants at low concentrations and also published one of the first papers on the topic.

In 2000, Sedlak made another breakthrough in wastewater-derived contaminant research working with his student, William Mitch, when they identified the source and fate of N-nitrosodimethylamine (NDMA), a carcinogen formed during the disinfection of wastewater. From their research, Sedlak and Mitch developed approaches for decreasing NDMA concentrations, quantifying the compounds that form NDMA, and adjusting the disinfection process. These approaches are now applied in efforts to control NDMA.

More recently, Sedlak focused his research on natural system processes, such as using engineered treatment wetlands to remove chemicals from wastewater-impacted waters. His research may change the way wetland treatment systems are enhanced and operated to eliminate micropollutants and improve water quality. As Deputy Director of ReNUWIt, a research center focused on advancing the way urban water is managed, he also has had the opportunity to lay the groundwork for improving water infrastructure, such as expanding water distribution systems, increasing planned water reuse, and reducing the amount of emerging contaminants released into the environment. Another notable achievement is Sedlak's newly published book, *Water 4.0: The Past, Present, and Future of The World's Most Vital Resource*, which discusses the evolution of the urban water system over the last two millennia and his perspective on the technologies and advancements needed to remake the system in the near future.

Currently, he serves as Associate Editor for both *Environmental Science & Technology* and *Water Research*, two prestigious journals in the scientific community. Sedlak also offers his expertise serving on an NWRI Expert Panel to advise the California Department of Public Health on scientific, technical, and public health issues regarding the development of uniform criteria and regulations for advanced treatment water reuse in California.