April 5, 2019; 12:00-1:00pm

Public Presentation

"Overview of In Situ and Ex Situ Technologies in Development for the Treatment of Per- and Polyfluoroalkyl Substances" By Erika Houtz, Ph.D., PE

Byron Sher Auditorium (second floor)

CalEPA Building

1001 I St, Sacramento, CA 95814

Register: Please register for this event at https://www.eventbrite.com/e/overview-of-treatment-technologies-for-per-and-polyfluoroalkyl-substances-tickets-59342836020

Webcast: Event will be live webcast during the event: https://video.calepa.ca.gov/

Note: Please arrive at least 20 minutes prior to the event to register as a visitor on the first floor (I.D. required). The presentation will be held on the second floor which may be accessed by stairs or elevator.

Abstract: Per- and polyfluoroalkyl substances (PFASs) comprise a diverse class of contaminants, which include PFOS (perfluorooctane sulfonate) and PFOA (perfluorooctanoic acid). PFASs are not amenable to bioremediation or conventional chemical treatment, and this limits *in situ* remediation options. PFAS are relatively ubiquitous in the environment at low concentrations, but source areas exhibit higher PFAS concentrations. While the USEPA Health Advisory Limit of 70 nanograms per liter for the summation of PFOA and PFOS is not a maximum contaminant level (MCL), to be protective of potential beneficial reuse aquifers, PFAS groundwater plumes emanating from source zones will require some form of active management. The use of conventional sorbents, such as granular activated carbon (GAC) and anion exchange (AIX) resins, to address PFASs in water have become a "de facto" interim measure in response to immediate needs for PFAS removal from drinking water. Challenges of more comprehensive PFAS treatment in drinking water may also be addressed using technologies such as reverse osmosis or nano-filtration. Extending these technologies to extracted groundwater for remediation purposes, which have various degrees of geochemical and co-contaminant competition, often requires a treatment train, combining conventional sorbents and engineered filtration with more innovative and emerging remediation solutions for PFASs. These emerging solutions include many types of technologies to address source zones, mitigate mass flux in aquifers, or address PFASs in extracted water to improve the efficiency of conventional drinking water treatment technologies. There are new flocculation technologies, novel AIX resins, new engineered sorptive media, electrochemical oxidation, electrocoagulation, sonolysis, and advanced oxidation processes combined with advanced reductive processes. Remediation technologies for PFAS source zones in soil are primarily limited to excavation with onsite or offsite incineration and *in situ* soil stabilization. For *in situ* soil stabilization to be considered viable, ongoing research and development is being conducted to evaluate the longevity of fixation amidst circumneutral pH and biotransformation, which may enhance PFAS dissolution. Remediation of PFAS source zones and the associated groundwater plumes presently requires multiple technologies to protect human health in a cost-conscious manner. An investment in research and development to explore new technologies is part of a key initiative for groundwater preservation and

protection of human health. The technologies discussed here will be presented, and their applicability/readiness to the remediation market will be assessed.