

POETs for PFAS: Lessons Learned and Emerging Concerns from Monitoring >10,000 Private Drinking Water Wells

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Background/Objectives. Per- and polyfluoroalkyl substances (PFAS) are highly soluble and persistent contaminants that form large dilute plumes. These characteristics have resulted in large numbers of public and private drinking water wells with concentrations above U.S. Environmental Protection Agency (US EPA) Final Health Advisories (HAs) for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). Lower state thresholds and additional PFAS criteria results in even > numbers of wells above applicable criteria. US EPA lowered the PFOS/PFOA HAs and established new HAs for two additional PFAS (GenX and perfluorobutanesulfonic acid [PFBS]) and its plans to establish a federally mandated MCL for PFOS/PFOA will result in even > numbers of wells requiring treatment on newly discovered sites and require us to revisit treatment thresholds on existing sites. US EPA's plan to also designate certain PFAS as hazardous substances under CERCLA will mean that wastes generated from Point of Use Treatment Systems (POUTs) and Point of Entry Treatment Systems (POETs) on private wells may need to be managed as hazardous waste. POET and POUT treatment systems have principally relied upon granular activated carbon (GAC) and reverse osmosis (RO) to treat PFAS. But options for treating PFAS in private wells have increased dramatically (e.g., emergence of single use ion exchange [IX] resins) and now include several NSF International developed American National Standards for private drinking water PFAS treatment.

Approach/Activities. This presentation will provide lessons learned from the installation, management, and/or monitoring of >10,000 PFAS contaminated POETs and POUTs in the U.S., Canada, Europe, and Australia. We will address these and other questions:

- What concentration should trigger treatment?
- Should bottled water always be offered?
- Does PFAS adsorb (*i.e.*, stick) to and subsequently desorb from home water systems?
- What monitoring should be done following POET installation or even after municipal water is added?
- What analytes should be monitored and is biotransformation a concern?
- Is it important to be consistent across different sites?
- What are best practices when removing treatment equipment?

We will also discuss how answers to these questions can have reputational and financial impacts including increasing or decreasing the probability of litigation.

Results/Lessons Learned. Results/Lessons Learned. Case studies will be provided to show both positive and negative outcomes and the resulting impact on site-specific and portfolio procedures (*i.e.*, SOPs). The role and impact of social media, new PFAS and lowered drinking water criteria, and widespread litigation on best practice procedures will also be addressed. Emerging concerns will also be discussed along with potential remedies. A principal lesson learned, or better yet a reminder, is that these are treatment systems and each one is unique in some way. Therefore, a cookie-cutter approach to PFAS POETs/POUTs should always be avoided.