

Perfluorinated Compounds

Resources for Identifying and Managing PFCs

Perfluorinated Compounds (PFCs) are a group of persistent organic chemicals that have been used in industrial and consumer product applications for their nonstick properties. As industry understanding of PFCs continues to grow, regulatory agencies and industry researchers have developed tools for assessing, measuring, and treating PFCs in water to prevent human health implications. PFCs are very stable in aqueous solutions and are not easily removed through conventional water treatment. As a result, advanced treatment processes may be necessary to prevent PFCs from reaching consumers. Several helpful guides have been assembled to assist water utility staff with addressing PFCs. Additional resources include but are not limited to:

U.S. Environmental Protection Agency (EPA) Resources:

- EPA's Health Advisories for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS): www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos
- EPA's Perfluorooctanoic Acid (PFOA) and Other Perfluorinated Chemicals (PFCs) resource page: www.epa.gov/chemical-research/research-perfluorooctanoic-acid-pfoa-and-other-perfluorinated-chemicals-pfcs
- EPA's Third Unregulated Contaminant Monitoring Rule: www.epa.gov/dwuicmr/third-unregulated-contaminant-monitoring-rule

Analytical Methods for Measuring PFCs:

- EPA Method 537 Rev. 1.1. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS): www.epa.gov/water-research/epa-drinking-water-research-methods
- List of Laboratories Approved by EPA for the Third Unregulated Contaminant Monitoring Rule (UCMR 3): www.epa.gov/dwuicmr/list-laboratories-approved-epa-third-unregulated-contaminant-monitoring-rule-ucmr-3
- ISO 25101:2009 - Water quality - Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) - Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry: www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=42742
- ASTM D7979 - 15e1 - Standard Test Method for Determination of Perfluorinated Compounds in Water, Sludge, Influent, Effluent and Wastewater by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS): www.astm.org/Standards/D7979.htm

Research Reporting on PFCs:

- Water Research Foundation Report #4322 – Treatment Mitigation Strategies for Poly- and Perfluorinated Chemicals: www.waterrf.org/Pages/Projects.aspx?PID=4322
- Water Research Foundation Report #4344 – Removal of Perfluoroalkyl Substances by PAC Adsorption and Anion Exchange: www.waterrf.org/Pages/Projects.aspx?PID=4344
- New Jersey Drinking Water Quality Institute – Recommendation on Perfluorinated Compound Treatment Options for Drinking Water Report: www.nj.gov/dep/watersupply/pdf/pfna-pfc-treatment.pdf

Treatment & Decision Making Guides for PFCs

- State of Minnesota – Minnesota Department of Health - Performance Evaluation Removal of Perfluorochemicals (PFC's) with Point-of-Use (POU) Water Treatment Devices: <http://www.health.state.mn.us/divs/eh/wells/waterquality/poudevicefinal.pdf>
- Remediation of Perfluorinated Alkyl Chemicals at a Former Fire-Fighting Training Area: www.esaa.org/wp-content/uploads/2015/06/08-Paper-34.pdf
- ESTCP – DOD's Environmental Research Programs - Remediation of Perfluoroalkyl Contaminated Aquifers using an In Situ Two-Layer Barrier: Laboratory Batch and Column Study: [https://serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Emerging-Issues/ER-2127/ER-2127/\(language\)/eng-US](https://serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Emerging-Issues/ER-2127/ER-2127/(language)/eng-US)

Additional Resources on PFCs

- American Water Works Association's DrinkTap General Resource on Drinking Water: www.drinktap.org/water-info/whats-in-my-water/perfluorinated-compounds.aspx
- Center for Disease Control and Prevention – PFOA Fact Sheet: www.cdc.gov/biomonitoring/PFOA_FactSheet.html
- National Institute of Environmental Health Services PFC Fact Sheet: www.niehs.nih.gov/health/materials/perfluorinated_chemicals_508.pdf

