



Kansas City, MO, Spring 2025

ITRC PFAS Team Update April 2025

ITRC PFAS Team Leaders:

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What is the ITRC?





Who we are

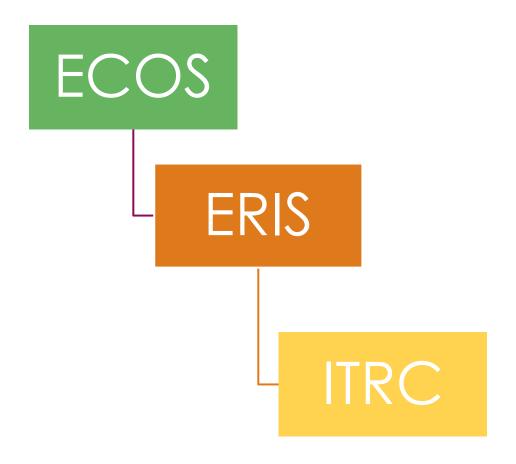
- ► ITRC is a program of the Environmental Research Institute of the States (ERIS)
- ▶ A national coalition focused on developing tools and strategies – documents, training materials - to reduce interstate barriers to the deployment of innovative environmental technologies.
- Membership from state, federal, tribal, and local agencies, private sector, academics and public stakeholders







Organization



Environmental Council of the States (ECOS)

The national nonprofit, nonpartisan 501(c)(6) association of state and territorial environmental agency leaders

https://www.ecos.org/

Environmental Research Institute of the States (ERIS)

 501(c)(3) education and research nonprofit corporation affiliated with ECOS

https://www.eristates.org/

Interstate Technology & Regulatory Council (ITRC)

Program of ERIS

https://itrcweb.org/



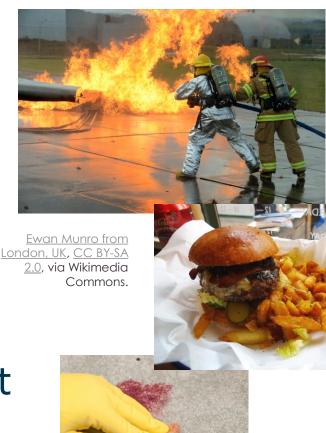




ITRC PFAS Team

 Producing concise technical resources for project managers – regulators, consultants, responsible parties, and stakeholders

 Why: State and federal environmental regulators and others need easily accessible information to aid them in evaluating risks and selecting appropriate response actions at PFAS release sites



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A1C Kyle Gese

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Technical Resources

ITRC PFAS Home Page:

https://pfas-1.itrcweb.org/

- Guidance Document
 - First published April 2020
 - **Updated December 2021**
 - Full Update September 2023
 - Small edits & reference additions November 2023 and May 2024
- Fact Sheets
- **Data Tables**
- Training Resources









PFAS - Per- and Polyfluoroalkyl Substances ENHANCED BY Google

PFAS Home Page

Welcome

Technical Resources for Addressing Environmental Releases of Per- and Polyfluoroalkyl Substances (PFAS)



PFAS Technical and Regulatory Guidance Document

The last full update of this document was September 2023.

← ONLINE DOCUMENT: On this web page, use the Table of Contents shown in the left-hand navigation column to select a specific section of interest. The last full update of this document was September 2023. Some references were updated in May 2024. For example, USEPA Method 1633 is no longer a draft method; the USEPA MCLs were finalized, and the USEPA PFAS Destruction and Disposal Guidance Version 2 was published.

2024-25: The PFAS Team is working on additional content for PFAS that will be linked to the existing material when

Additional resources developed by ITRC are linked below:

PFAS Fact Sheets

Links for the various ITRC PFAS fact sheets as PDF files.

Data Tables

Tables developed to provide additional data and information to support various PFAS topics.

Training Resources

Various webinars and videos archived for on demand viewing.

Full Guidance Document (PDF)

13 PFAS Fact Sheets

Naming Conventions

Regulations

History and Use

Fate and Transport and Physical and Chemical Properties

Sampling Precautions and Laboratory Analytical Methods

Site Characterization and Media-Specific Occurrence

Treatment Technologies and Methods

Aqueous Film-Forming Foam

Human and Ecological Health Effects and Risk Assessment

Risk Communication

Stakeholder Perspectives

Surface Water Quality

Biosolids

All updated September 2023

ITRC has developed a series of fact sheets

that summarizes recent science and emerging technologies regarding PFAS. The

information in this and other PFAS fact sheets is more fully described in the ITRC PFAS Technical and Regulatory Guidance

This fact sheet describes considerations for

managing PFAS impacts to surface water,

Regulatory approaches for developing surface water quality criteria and

Sampling and analysis considerations for including surface water foam

Document (Guidance Document) (https://pfas-1.itrcweb.org/).

by PFAS

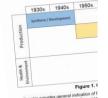
guidance values



1 Introduction

1 Introduction
This fact sheet provides a summary of the disco of PFAS, emergence of known health effects, a production/use, and environment impacts, Pf thousands of chemical may be a summary of the provided properties well as their potential in the hybrid properties well as their potential and the windows of their potential and the windows of their potential in the products have application in the summary of their products have application in made and expension of their products have application in made and expension of their products have application in made and expension of their products have application in made and expension of their products have application in their products and evident industries, as well a (such as capsule adoling, further, outdoor packaging) 2011; KEMIZ 2015 Referency (1) Standard and their pattern of the products of their pattern of their products and evidence in the products of their pattern of their products and evidence in the products are products and evidence in the products and evidence in the products and evidence in the products are products and evidence in the products and evidence in the products are products and evidence in the products and evidence in the products are products and evidence in the products and evidence in the products are products and evidence in the products and evidence in the products are products and evidence in the products and evidence in the products are products and evidence in the products are products and evidence in the products are products and evidence in the products and evidence in the products are products and evidence in

PFAS have followed a similar pattern of em PFAS have followed a similar patient of en withinked by many other anthropogenic env contaminants. Figure 1 provides a general emergence and awareness that includes c synthesis (development, 2) commercial pro concerns, 4) environmental detection, and



2 Discovery and Manufac PFAS chemistry was discovered in t PFAS chemistry was discovered in a industry have been manufactured with fluorotelomerization, have been (and chain fluorinated polymers, perfluori and Martin 2010; KEMI 2015 Retails by these processes. More than 600 associated final products.

Surface Water Quality Considerations for Per- and Polyfluoroalkyl Substances (PFAS)

1 Introduction

This fact sheet summarizes the emerging technical information available to support the development of regulatory criteria or guidance values to protect the beneficial uses of surface water (including as a drinking water source). This fact sheet also highlights considerations for sampling and analysis for surface water quality assessments for PFAS. The information in this fact sheet is based on Section 16 of the Guidance Document.

2 Regulatory Criteria and Beneficial Uses

Regulatory agencies may choose to develop and implement numeric surface water quality criteria (or guidance values) to protect the beneficial uses of surface water that may be negatively impacted by PFAS. The regulatory criteria selected for a water body are generally the most stringent of all of the values identified for each beneficial use for a water body. Surface water criteria do not consider analytical or treatment removal factors.

The Guidance Document focuses on the following beneficial use groupings that might be impacted by the presence of PFAS (see Section 16.1.1):

- · habitat for aquatic life and wildlife
- human consumption of aquatic organisms
- . human contact with water during recreation, considering exposure due to incidental ingestion and dermal contact with surface water, sediments, and potentially PFAS-containing foam agricultural supply, considering farming, horticulture, dairy operations, ranching, watering of livestock, and use fo
- irrigation of crops for consumption by humans or livestock (i.e., crop uptake), with potential human exposures through skin contact and inhalation of PFAS in irrigation water, as well as consumption of PFAS in livestock or crops contaminated by irrigation water
- · natural and artificial groundwater recharge, with considerations similar to those for drinking water and agricultura supply beneficial uses

In general, for PFAS, the two most relevant beneficial uses are drinking water use and consumption of aquatic organisms that may take up and bioaccumulate PFAS from the surface water into their tissue

To date, the U.S. Environmental Protection Agency (USEPA) has published draft surface water and biota tissue criteria protective of aquatic life for perfluorocctanoic acid (PFOA)(USEPA 2022 Ref#2300) and perfluorocctane sulfonic acid (PFOS)(USEPA 2022 Ref#2302). Currently, only a few states have formally established surface water criteria for PFAS that are protective of surface water uses. Available standards or criteria, where established by states, are presented in the Water and Soil Values Table posted on the fact sheets page (https://pfas-1.itrcweb.org/fact-sheets)

After the regulatory criteria are established for PFAS, existing regulatory mechanisms to maintain or reduce the concentrations in the water body to below the protective values can be implemented. These mechanisms include National Pollutant Discharge Elimination System (NPDES) discharge permit effluent limits for point sources, non-NPDES permits and best management practices for nonpoint sources, and assigned loadings from all sources to a water body through total maximum daily loads (TMDLs).







Data Tables

- •PFAS Environmental Media Values Table
- •Figure 2-5 PFAS Family Tree
- •Table 2-5 USEPA Analytes List PFAS Classifications
- •Table 3-1 AFFF Characteristics
- •Table 3-5 AFFF Transition to F3 Case Studies
- •Table 4-1 Physical and Chemical Properties
- •Table 5-1 Aquatic Organisms BCF-BAF
- •Table 5-2 Plants BCF-BAF
- PFAS Regulatory Programs Summary

Tables 11-2 to 11-5 Analytical Methods

- •Table 11-6 PFAS Data Usability
- •Table 12-1 Treatment Technologies
- •Figure 12-7 Integrated Water Treatment Flow Chart
- Risk Communication Social Factors Vision Board
- •Table 15-1 Water Treatment Case Studies
- •Tables 17-1 A-C for Air Occurrence
- •Tables 17-2 A-C for Soil, Sediments, and Biosolids Occurrence
- •Table 17-8 Toxicological Effects







Training Resources

- Training Resources page
 - https://pfas-1.itrcweb.org/pfas-training/
- Video modules
- Archived training on Clu In
 - https://clu-in.org/live/archive/
- Training statistics
 - Workshop attendance 2018-2020: 3050
 - Virtual Roundtables attendance 2020-2021: 2250
 - Online training attendance 2024: 3500







PFAS Update Team 2024 - 2025

- PFAS Priority Topics
- Develop new "Guidance on Applying Sorption-Based Technologies for Separation and Concentration of PFAS"
- New Case Studies
- Update Data Tables
- Presenting the Beyond the Basics Training online in 2025



Priority Topics

- Biosolids and Residuals Management
 - Land application
 - Uptake by plants/animals
- History, Use, Naming Conventions, Site Risk-Assessment
 - Semiconductor industry uses
 - Novel PFAS in use
 - Less-publicized sources
 - Less-studied PFAS
- Firefighting Foams
 - Characteristics of AFFF & FFF
 - Transition planning
- PFAS and Microplastics

- Human and Ecological Health Effects
 - Health effects of AFFF in drinking water
 - Health effects of ultra-short chain PFAS
 - Occupational exposures
 - Exposure from consumer products
 - Dermal uptake of PFAS
 - Risks to livestock
 - New information on PFAS as a class

Treatment Technologies

- Thermal treatment update
- Supercritical water oxidation
- Investigation-derived waste
- Treatment of sediment
- Biosolids treatment







Priority Topics

- Fate, Transport, Site
 Characterization and Surface Water
 - Marine environments
 - Particulate effects on surface water sampling
 - Vadose zone characterization and transport
 - Septic systems
 - Precursor transformation
 - GW partitioning, colloidal transport, GW-SW interactions
 - Updated information on source identification, differentiation, and forensics
 - Site characterization tools and techniques

- PFAS vapor intrusion fact sheet
- Sampling and Analysis
 - Leaching methods
 - Fish sampling
 - Ultra-short chain PFAS analysis
 - Consumer product testing
 - ISM for PFAS sampling
 - Concrete sampling and analysis
 - Field screening tools





Sorption-based Technologies Guidance

- Treatment Objectives
- Fixed-Bed Adsorbers
 - Technical Overview
 - Performance Evaluation
 - Fate of Spent Media and Treatment Residuals
- Foam Fractionation
 - Technical Overview
 - Performance Evaluation
 - Fate of PFAS-Containing Foams
- Resources for Decision-Making
- Barriers and Challenges





External Review Survey

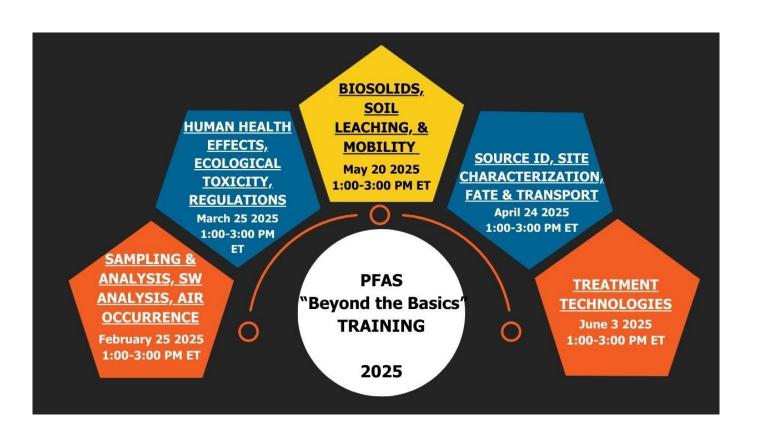
- Access the survey with the QR Code. The survey is to identify external reviewers.
- External Review: April 24 to June 10
- If you are willing and available to review any portion of the specific topics in our External Review, please indicate your interest using the survey.
- We don't expect any of our reviewers to review all the draft new material.

ITRC PFAS Team - Request for External Reviewers



Questions











ITRC PFAS Resources

ITRC PFAS: https://pfas-1.itrcweb.org/

Guidance Document

13 Fact Sheets

External Tables

PFAS Introductory Training

Clu-In Archive: https://www.clu-in.org/conf/itrc/PFAS-Introductory/

Other video resources

- Available through links on: <u>https://pfas-1.itrcweb.org</u>
- Quick Explainer Videos
- Longer PFAS Training Modules
- Archived Roundtable Sessions







Stay Updated on ITRC's Activities













