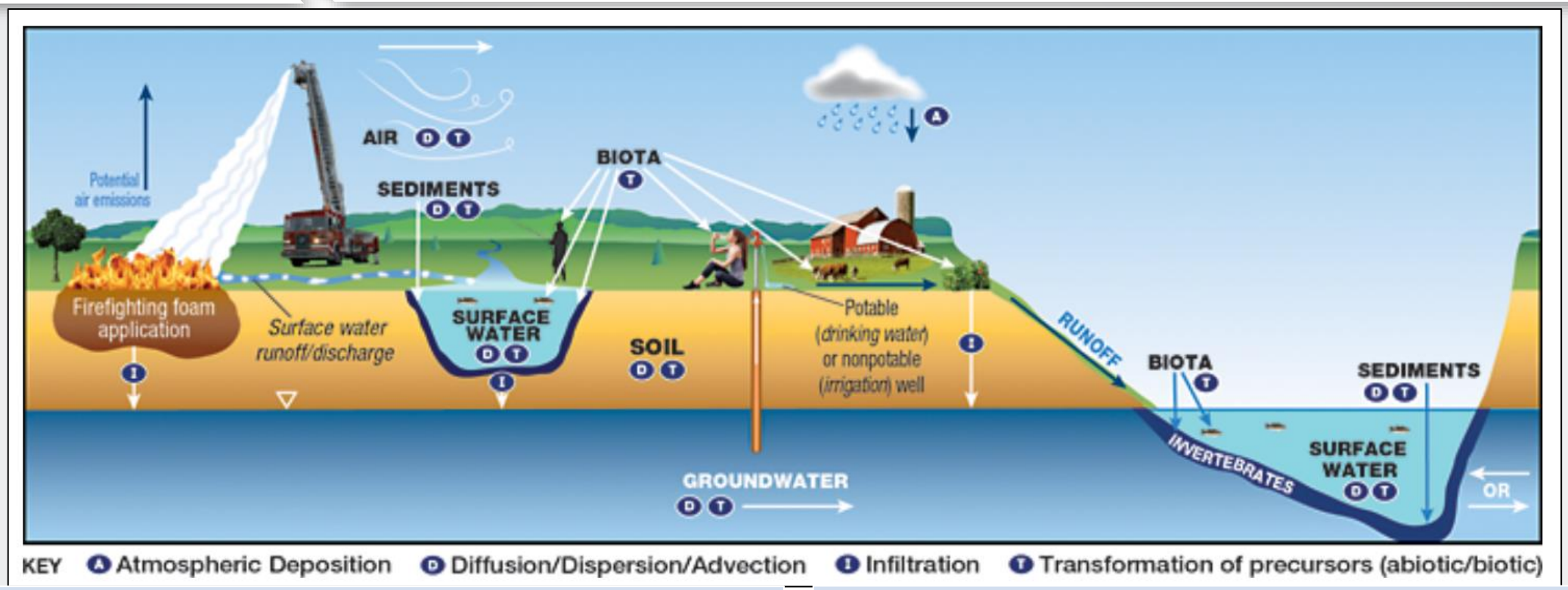
Source Characterization

Marc A. Mills
Center for Environmental Solutions and Emergency Response
Office of Research and Development

Executive Meeting | Board of Scientific Counselors
September 29-30, 2021

Source Characterization and Remediation



Site Characterization

- Fate of PFAS through natural systems and contaminated sites are not well characterized
- PFAS are found in air, soils, plants, biota, water, and sediments

Remediation

- All management approaches have residual streams that potentially re-release PFAS into the environment
- Managing at the source is optimal economically and environmentally

Source Characterization Actions and Goals

Data Gap: Knowledge to support remediation of PFAS-contaminated sites

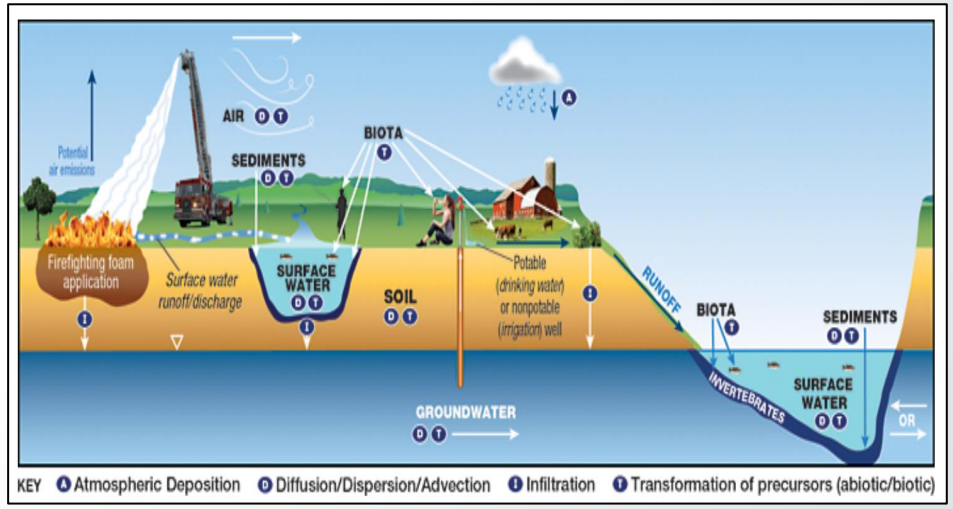
Actions:

- Characterize PFAS-contaminated sites, such as fire training/emergency response sites, manufacturing facilities, production facilities, and disposal sites
- Evaluate technologies for remediating PFAS-impacted soils, waters, and sediments
- Generate performance and cost data to develop models and provide tools to determine optimal treatment choices

Goals:

- Document successful site characterizations and remediation
- Groundwater remediation performance and cost models
- Improved models for PFAS transport in soils
- The ability to predict migration potential of PFAS via vapor intrusion

Impact: Responsible officials will have more information to make decisions to reduce risk from PFAS



Approach: Key Knowledge Gaps

Release

Surrounding Environmental Media

Leachate

Wastewater Treatment Plant (WWTP)

Transformation

Mitigation

Treatment

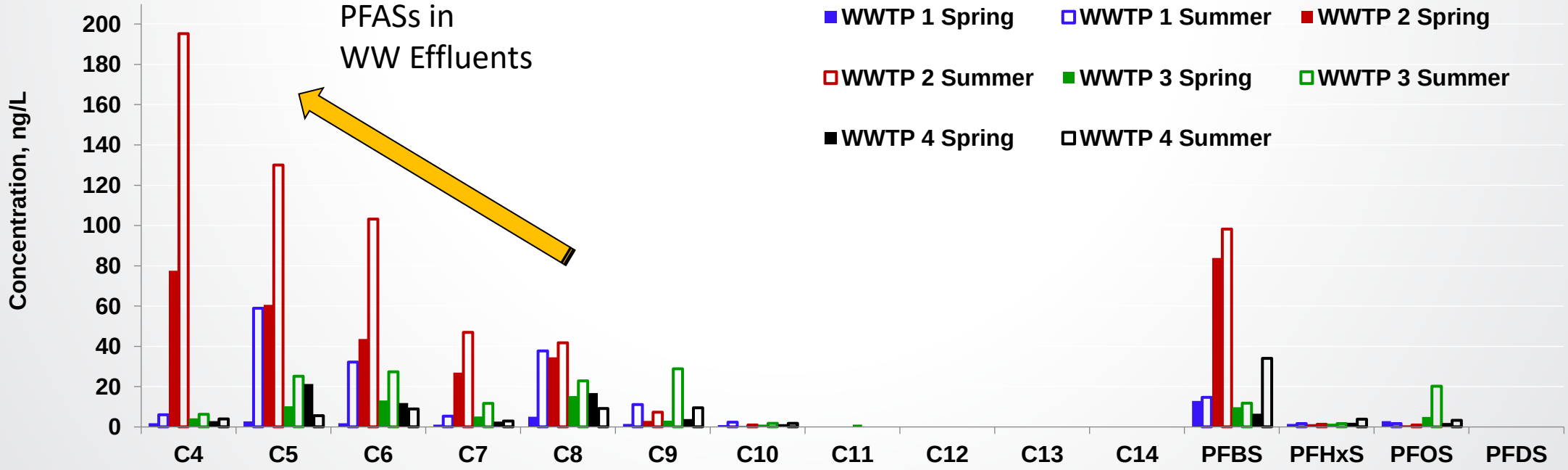
Containment

Changing Formulations and Changing Analytes

Formulations continue to change to meet consumer needs and regulatory drivers.

Changes include:

- Shorter carbon chain lengths (<C6) – no longer just C8 chemistry
- Use of polyfluorinated chemistries – not completely saturated with fluorine
- Use of alternative chemistries for linkages – more ether and oxetane linkages to polymer



Status of Site/Source Characterization Research

Projects to…

- Gain a better understanding of the environmental conditions in which PFAS may be stratified in the water column
- Development of sampling methods for assessing the stratification
- Evaluation and development of sampling methods and protocols for PFAS-containing foam on surface waters
- Evaluation of passive monitoring samplers for PFAS
- Occurrence of PFAS in the natural waters or foams

Contributors

Multiple States (including, but not limited to)

- Kentucky
- Michigan
- Minnesota
- Ohio
- Pennsylvania
- West Virginia
- Wisconsin

ORSANCO

USACE

USGS

Supported by Sustainable and Healthy Communities, Safe and Sustainable Water Research