



American Fuel & Petrochemical Manufacturers Spring Environmental Committee Meeting

Overview of Potential Fire Fighting Foam-Related PFAS Issues

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PFAS Specifics

- “**PFAS**” means a per- or poly-fluoroalkyl substance; over 3,000 (4,500?) related compounds!
- PFAS includes (but is not limited to) PFOA, PFOS:
 - “**PFOA**” = perfluorooctanoic acid (CAS# 335-6t-1)
 - “**PFOS**” = perfluorooctane sulfonate (CAS# 1763-23-1)
- Long-chain (mostly phased out) vs. short-chain
- PFAS are found in humans and the environment at “background” levels ranging from 2.5-10 ppt
- 1 PPT = six inches between Earth and Sun (93M miles)

PFAS Sources

- PFAS have been used extensively, mostly because of their surfactant properties:
 - Carpets/Fabrics water resistance
 - Leather products
 - Textiles
 - Paper/cardboard packaging (including for food)
 - **Firefighting foams (AFFF)**
 - Cookware non-stick coating
 - Electroplating (fume suppressant, de-mister, wetting agent)
 - Paints/coatings

Aqueous Film-Forming Foam and Refineries

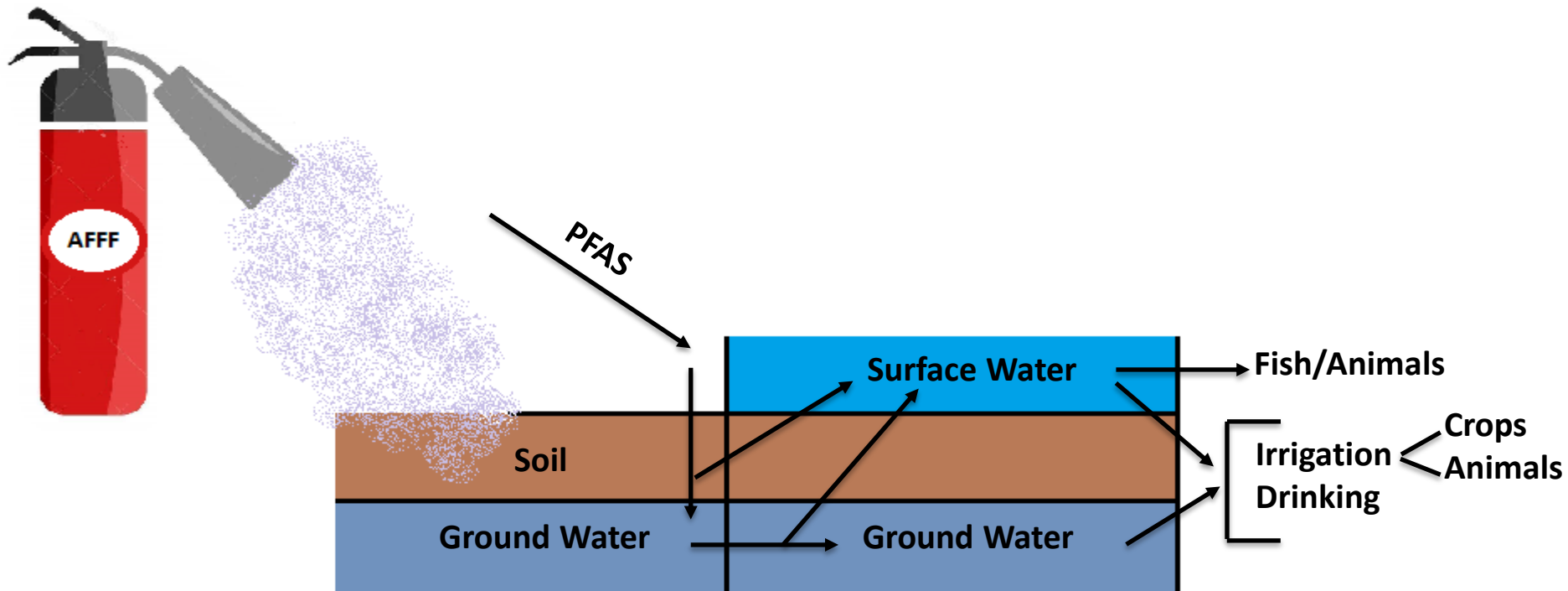
- AFFF is highly effective foam for fighting (and even preventing) high-hazard, flammable liquid fires
- AFFF combines hydrocarbon foaming agents with fluorinated surfactants
- When mixed with water, AFFF spreads across the surface of hydrocarbon fuel:
 - extinguishes flame
 - forms a vapor barrier between the fuel and atmospheric oxygen to prevent re-ignition
- Generally, the most effective AFFF formulations must contain PFAS:
 - DOD Military Specification (MilSpec) requires PFAS

PFAS = “Emerging” Contaminants

- An “emerging contaminant” is a substance or compound about which toxicity to human health or the environment has recently been determined or recognized
- Thus greater awareness that the substance or compound is (or can be) a “contaminant” with potentially “emerging” regulations as such
- Prior examples: MTBE, PCBs, Chromium, Mercury, 1,4-Dioxane, VOCs, Methylene Chloride, etc.
- Distinguish TSCA/REACH: regulating emerging *chemicals*

AFFF PFAS Human Ingestion Exposure Pathways

Simple graphic:



U.S. EPA PFAS Action Plan

- **Maximum Contaminant Level (MCL)**
 - EPA is moving forward with the regulatory process for evaluating MCLs under the Safe Drinking Water Act (SDWA) for PFOA and PFOS, and gathering info to ID if additional PFAS compounds should be regulated
- **Unregulated Contaminant Monitoring Rule (UCMR)**
 - EPA will include PFAS in the next UCMR monitoring cycle. EPA uses the UCMR to collect data for contaminants that are suspected to be present in drinking water and do not have health-based SDWA stds
- **Hazardous Substance**
 - EPA is pursuing designating PFOA/PFOS as CERCLA hazardous substances, clearing CERCLA statutory cleanup cost recovery
- **Cleanup Levels**
 - In addition to designation as CERCLA hazardous substances, EPA will develop interim groundwater cleanup recommendations for use at CERCLA sites and at federal-led RCRA corrective action sites

U.S. EPA PFAS Action Plan

- Toxic Release Inventory (TRI)
 - EPA is considering adding PFAS chemicals to the TRI reporting
- Toxic Substances Control Act (TSCA)
 - EPA will use TSCA’s New Chemicals Program authority to evaluate new uses of PFAS, including following up on its 2015 Significant New Use Rulemaking for certain long-chain PFAS
- Closing Data Gaps
 - EPA will continue research in 3 main areas: human health and ecological effects, fate and transport, and remediation technology
- Continued Enforcement
 - EPA will continue to enforce cleanups using the PFOA plus PFOS 70 ppt health advisory limit and to support state enforcement actions
- Risk Communication
 - EPA is developing a “risk communication toolbox” that government partners can use with the public

ATSDR Study

- ATSDR Study (6/21/2018 *Federal Register*)
 - Adverse health effects may include liver damage, high cholesterol, thyroid disease, asthma, decreased fertility, etc.;
 - Major exposure pathways include food and water ingestion, dust/particulate inhalation, etc.;
 - Bioaccumulative and persistent;
 - ATSDR findings are not health effects standards or cleanup criteria

PFAS Litigation

- 75+ AFFF suits against foam manufacturers, responsible parties and the U.S., from 8 federal courts, were consolidated by the multidistrict litigation panel and sent to the US Dist. Ct. for SC
 - NY + OH have attempted to keep cases in those states
- Does not include (at least 9) non-AFFF suits
 - Wolverine Leather (waste); Hoosick Falls (airborne); Decatur, AL (industrial discharges); etc.
- AFFF manufacturers likely to assert government contractor defenses in many cases

Litigation Issues

- AFFF “end users” are caught in the middle
 - “Responsible Party” if contamination originated from their property
 - May have actions against AFFF manufacturers (suppliers) and/or U.S. (required use)
 - Common law type liabilities: public nuisance (including under RCRA); wrongful death; property damage (diminution in property value); trespass; products liability (failure to warn); natural resources damages, etc.

Federal Legislation

- H.R. 535 and S. _____
- Bipartisan bills to not only list PFOA and PFOS as “hazardous substances” under CERCLA, but to list all PFAS as hazardous substances under CERCLA *within 1 year*
- House Oversight and Reform Committee, Environment Subcommittee hearing March 6: “Examining PFAS Chemicals and their Risks”

Media and Public Perception

- PFAS in the media every day
- “PFAS” versus “PFOA” + “PFOS”
 - Class of chemicals versus individual chemical risks
 - “Total PFAS”
 - EPA Drinking Water Analysis = 16 compounds
 - Groundwater (EPA modified analysis) = 24 compounds
- *The Devil We Know* (“The Chemistry of a Cover-up”)

“THE DEVIL WE KNOW is the story of how one synthetic chemical, used to make Teflon products, contaminated a West Virginia community. But new research hints at a much broader problem: nearly all Americans are affected by exposure to non-stick chemicals in food, drinking water, and consumer products. With very little oversight on the chemical industry in this country, we invite you to learn more about the problem and how you can protect yourself and your family.”

Remedial Action Planning

- Groundwater
- Soils/Solids (including construction-impacted)
- Air Emissions
- Sampling Protocols and Analytical Methods
- Disposal
- Investigation being requested at both state and federal cleanup sites

Environmental Diligence Considerations

- How to address emerging contaminants in environmental diligence:
 - Environmental site assessments
 - Environmental compliance audits
- Insurance coverage implications

Conclusions

- Focus on Current and Proposed Regulations (State and Federal)
- Self-Audits or Counsel-Led Investigation (privileged and confidential)
- Media/Public/Employee/Investor Relations
- Best Management Practices

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