NYS P2I New York State Pollution Prevention Institute

PFAS in AFFF

Per- and Polyfluorinated Substances in Aqueous Film Forming Foam

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NYS Pollution Prevention Institute

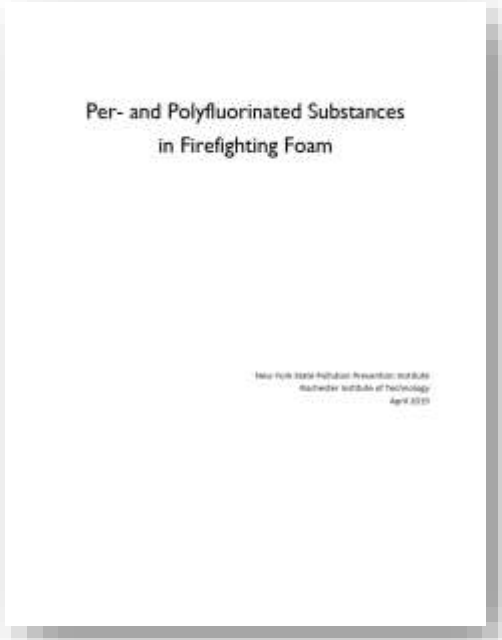
- Headquartered at RIT in Rochester, NY
- Established in 2008
- $3.9M in annual NYS funding administered through the NYS Department of Environmental Conservation
- Focus areas include:
  - Sustainable Manufacturing Assessments
  - Supply Chain Sustainability
  - Technology Commercialization
  - Food Waste Diversion
  - Outreach & Education
  - Research & Development
  - Emerging Contaminants

Agenda

- **Goal: review *Per- and Polyfluorinated Substances in Firefighting Foam* IC2 report**
- **Project goals and objectives**
- **Performance specifications**
- **Fluorine-Free Foam**
- **Ongoing work**

IC2 Report

- The Interstate Chemicals Clearinghouse (IC2) is an association of state, local, and tribal governments that promotes a clean environment, healthy communities, and a vital economy through the development and use of safer chemicals and products.
- The goals of the IC2 are to:
  - Avoid duplication and enhance efficiency and effectiveness of agency initiatives on chemicals
  - Build governmental capacity to identify and promote safer chemicals and products
  - Ensure agencies, businesses, and the public have ready access to high quality and authoritative chemicals data, information, and assessment methods
- Report and list of fluorine-free foams released April 2019 and available at http://theic2.org/



Project Goals

1. understand the **performance needs and specifications** of firefighting foams and the use of PFAS to meet them;
2. **identify and characterize alternatives** to long-chain (C8), fluorine-containing firefighting foams;
3. and **identify agencies and researchers that are focused on the use of alternatives to PFAS** in Class B firefighting foams, including short-chain (C6) fluorosurfactants and fluorine-free foams, and gather credible information that can be used in future alternatives assessment work.

Project Summary

- Compared performance specifications
- Summarized current PFAS in fire-fighting foam restrictions
- Identified 90+ fluorine-free water additives from 22 manufacturers
- Highlighted and summarized PFAS research and AA work
- Summarized fluorine-free foam research
- Developed conclusions, research needs, and actions

Goals

- Precursor for an alternatives assessment of PFOA and PFOS in firefighting foam

Alternatives assessment provides a framework to assess safer alternatives to chemicals of concern in products or processes to prevent regrettable substitution

AFFF Performance Specifications

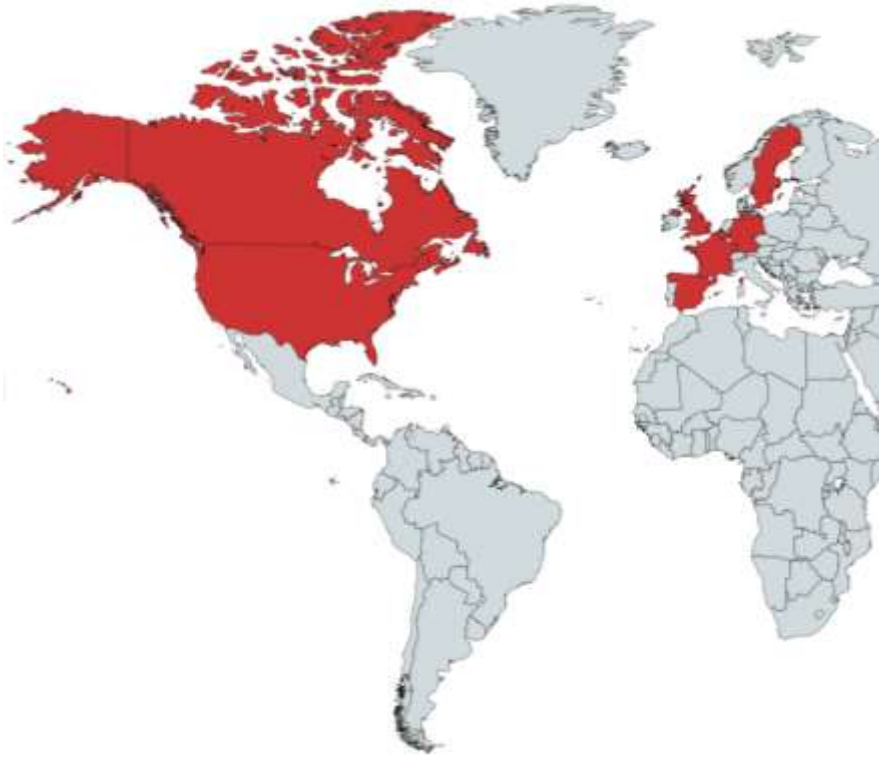
- **Do not require PFAS**
  - Australian Government DEF 5706
  - European Standard EN 1568
  - International Civil Aviation Org. Airport Services Manual
  - ISO 7203 Fire Extinguishing Media, Foam Concentrates
  - LASTFIRE Hydrocarbon Storage Tanks
  - NFPA 11 Standard for low, medium, high expansion foams
  - UL Standard for Foam Equipment & Liquid Concentrates
- **Requires PFAS**
  - US MIL-SPEC
  - International Maritime Organization
- **Limits PFOA & PFOS content**
  - US MIL-SPEC

Identifying Fluorine-Free Foams

- **Goal – comprehensive, up-to-date list to help identify alternatives for specific foam applications**
- **Sources include**
  - IC2 Alternatives Assessment Workgroup members
  - NYSP2I's previous work to identify fluorine-free foams
  - Organizations working to develop and research fluorine-free foams
  - An online search for patents to identify foams and surfactants
  - Online searches for fluorine-free products
  - US DoD Qualified Products Database – all products are short chain (C6) fluorochemicals

Fluorine-Free Foams

- **Product data collected in August 2018, updated April 2019**
- **91 products from 22 manufacturers have been identified plus 13 training foams**
- **Main source of product information was manufacturer websites**



Limitations of Fluorine-Free Foams list

- **Ingredients lists are incomplete**
  - Ingredients are from SDSs
  - Many ingredients are protected as confidential business information
  - Many researchers and those in the firefighting foam industries have raised a concern about foams being truly fluorine-free
- **Lack of independent performance testing**
- **Ecotoxicity and impacts on human health** of most fluorine-free foams and their ingredients have not been characterized

Ongoing work

- PFAS & FFF environmental fate and transport
- FFF performance
- PFAS environmental contamination
- Remediation of PFAS contaminated sites

Thank you

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