

Per- and Poly-Fluorinated Alkyl Substances (PFAS) in Phase I ESAs: Screening Procedures and Best Practices

BACKGROUND

Per- and Polyfluoroalkyl Substances (PFAS) are a broad class of manmade chemicals with a wide variety of current and historic uses. Background on PFAS, including history of manufacture, use and sources; chemical nature and characteristics; and mobility within the environment, can be found in ITRC's published fact sheets.¹

Scientific knowledge as to PFAS occurrence, fate and environmental impact is evolving and the associated uncertainties around regulatory cleanup requirements can result in delays and barriers to the progression of brownfield site redevelopment.

Determining whether there is potential for PFAS to be present at a specific site or property raises a number of issues, beginning at the initial due diligence stages of property transfers and transactions. Phase I Environmental Assessments (ESAs) are the common initial form of environmental due diligence that is undertaken for property transactions and redevelopments occurring under Wisconsin's voluntary party liability exemption (VPLE) program.

The Wisconsin Brownfield Study Group (BSG) tasked a subcommittee to assess current practice and develop an interim due diligence screening process to facilitate the continuance of productive brownfield site redevelopment and the associated VPLE program.

PROPOSAL

The BSG proposes augmenting the site investigation process with supplemental due diligence screening procedures and best practices to be used as interim guidance in the evaluation of PFAS when conducting Phase I ESAs. Specifically, a Site Evaluation Checklist, including a list of standard questions has been developed to aid in the identification of whether there is a potential for PFAS to be present at a property and whether such potential needs to be considered in any follow-up due diligence work.

Primary Efforts Undertaken to Develop Screening Procedures and Best Practices:

1. Supplemental background/state of practice review
 - a. Published and peer reviewed documents
 - b. Directed inquires with other states as to draft guidance/procedures developed for Phase I ESA/desktop surveys (e.g. CA, MI, MN, NY, NC, NJ, NY)
2. Develop a site evaluation checklist and companion document that might include but not be limited to questions around the following concepts:

¹ <https://pfas-1.itrcweb.org/fact-sheets/>

- a. Current or historical site usage with a list of known industry sectors associated with PFAS manufacture or use. For example:
 - i. Primary producers (manufactured at the site)
 - ii. Secondary users (not manufactured, but used in manufacturing)
 - iii. Receivers (may receive PFAS-containing waste)
- b. Manufacturing activities typically associated with PFAS and related processes where releases might occur
- c. Product types typically associated with PFAS and related storage
- d. General inquiries related to knowledge of PFAS-containing materials, dates and timeframe of manufacture/use, including use for fire-fighting or in fire suppressant systems, proximity to stacks/vents, waste storage, handling and treatment systems, etc.

SITE EVALUATION CHECKLIST

Purpose of checklist and questionnaire: Identify the Potential for Per- and Polyfluoroalkyl Substance (PFAS) Contamination

Current or Historical Site Usage (note: PFAS developed circa 1940s):

Site Type: Can the site be classified as one of the following site types, currently or historically?

1. Tier I: Primary PFAS Producers (high likelihood of PFAS impacts)
 - Fluoropolymer chemical manufacturer (e.g., DuPont, 3M)
 - Class B aqueous film-forming foam (AFFF) manufacturers

2. Tier II: Secondary PFAS Users (PFAS likely not manufactured at the site but may be applied during routine processes or material production; moderate/high likelihood of PFAS impacts)
 - Coated cookware manufacturers
 - Paint/varnish/sealants manufacturers
 - Wax coating manufacturers
 - Plastics/polymer manufacturing
 - Textile/leather/carpet manufacturers
 - Metal coating/plating/etching facilities
 - Semiconductor manufacturing
 - Wire manufacturing
 - Paper Industry (Coatings)
 - Aviation sites
 - Oil recycling facilities
 - Agricultural facilities (where biosolids/sludge from Wastewater Treatment Plants application occurs)
 - Former fire or crash site
 - Firefighting training operations

- Firefighting training centers/fire departments
- Petroleum refineries
- Storage of firefighting foams
- Rail yard/Department of Defense operations/Military Installations

3. Tier III: Tertiary PFAS Receivers (may receive PFAS-containing waste)

- Landfills
- Waste water treatment plants
- Businesses that use recycled materials (e.g., recycled pulp)

Manufacturing Activities:

Note whether the facility has ever conducted the following activities. If so, describe the dates that these operations were conducted, the types of materials used in the process, chemical storage locations, emissions associated with these processes (e.g. wastewater, air), and whether there were any other known releases associated with these operations.

1. Fluoropolymer coating applications
2. Coating applications for textiles, leather, or paper products
3. Plastic/polymer/composite resins/rubber/surfactant/coating/mold/flame retardant manufacturing
4. Application of any of the following branded products: Teflon, Stainmaster, Scotchgard, Gore-Tex
5. Metal plating and/or etching operations (is there a mist/fume suppressant system?)
6. Wire coating and insulation activities
7. Photomicrolithography
8. Processes relating to photography, imaging, or film production
9. Paint/varnish/sealants manufacturing

Product Type: Are any of the following products used or stored at the site?

1. Waxes (Simoniz), polishes, adhesives, paints, sealants, dyes, inks, varnishes
2. Rubber (Viton) or plastic
3. Hydraulic fluids (Sydrol, used in aviation industry)

4. Cleaning products known to contain PFAS
5. Pesticides and herbicides
6. AFFF (e.g., 3M '76, National Foam '76, Ansul '7, Angus '94, Chemguard '98, Buckeye '04, Fire Service Plus '11)

Frequency of Use: In order to better understand potential risks, it is important to understand the level of usage considering the following factors:

1. Frequency – How frequently were PFAS compounds used or disposed?
2. Quantity – Volume of PFAS compounds used or disposed at the site (disposed off-site? Where?)
3. Management Practices – How were PFAS managed through processes? How did they move through the facility?
4. Disposal Practices – Where were PFAS containing materials disposed? (e.g. on-site or off-site landfill, land applied biosolids, WWTP, etc.

Material Safety Data Sheets (MSDSs): Obtain and review MSDSs where there is potential for historical use of PFAS containing materials such as the product types listed above.

General Questions:

Has the Company ever used PFAS-containing materials? If yes:

- What materials either currently or historically contained PFAS?
- Over how many years were PFAS-containing materials utilized?
- What PFAS are present in the material?
- Is heat applied during any part of the manufacturing process?
 - Are stacks or vents present?
 - What control technologies are used on stacks/vents?
- Is a septic system present at the site?
 - Does it receive industrial wastewater?
 - Location of leach field?
- What is the water source at the site? Public supply or private well?
 - Has the water source ever been tested for PFAS?

- What air releases may have occurred through handling, management, or processing of PFAS containing materials
- How are raw materials handled and stored at the site?
- How are waste materials handled and stored at the site?
 - Any subsurface disposal?
 - Is there an onsite WWTP? How are effluent and sludges handled and disposed? Are lagoons present?
- Has a fire ever occurred at the site? When? Where? What was the nature of the fire (i.e., what burned, was it a flammable liquid)? Were firefighting foams used to extinguish?
- Have firefighting foams ever been stored or otherwise used onsite?
- Have sludge/biosolids been applied at the site or otherwise managed/burned?
- What are the neighboring property uses? Any adjacent or surrounding properties listed as likely Tier I /II / III Sites above?
 - How far is the nearest military base/landfill/WWTP? Direction / gradient from site?
 - How far is the nearest airport? Direction/ gradient from the site?
- Is the site located in an area of known regional contamination?