

Adding PFAS Sources to Canada's National Pollutant Release Inventory

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Presentation to NPRI PFAS SUB-GROUP MEETING

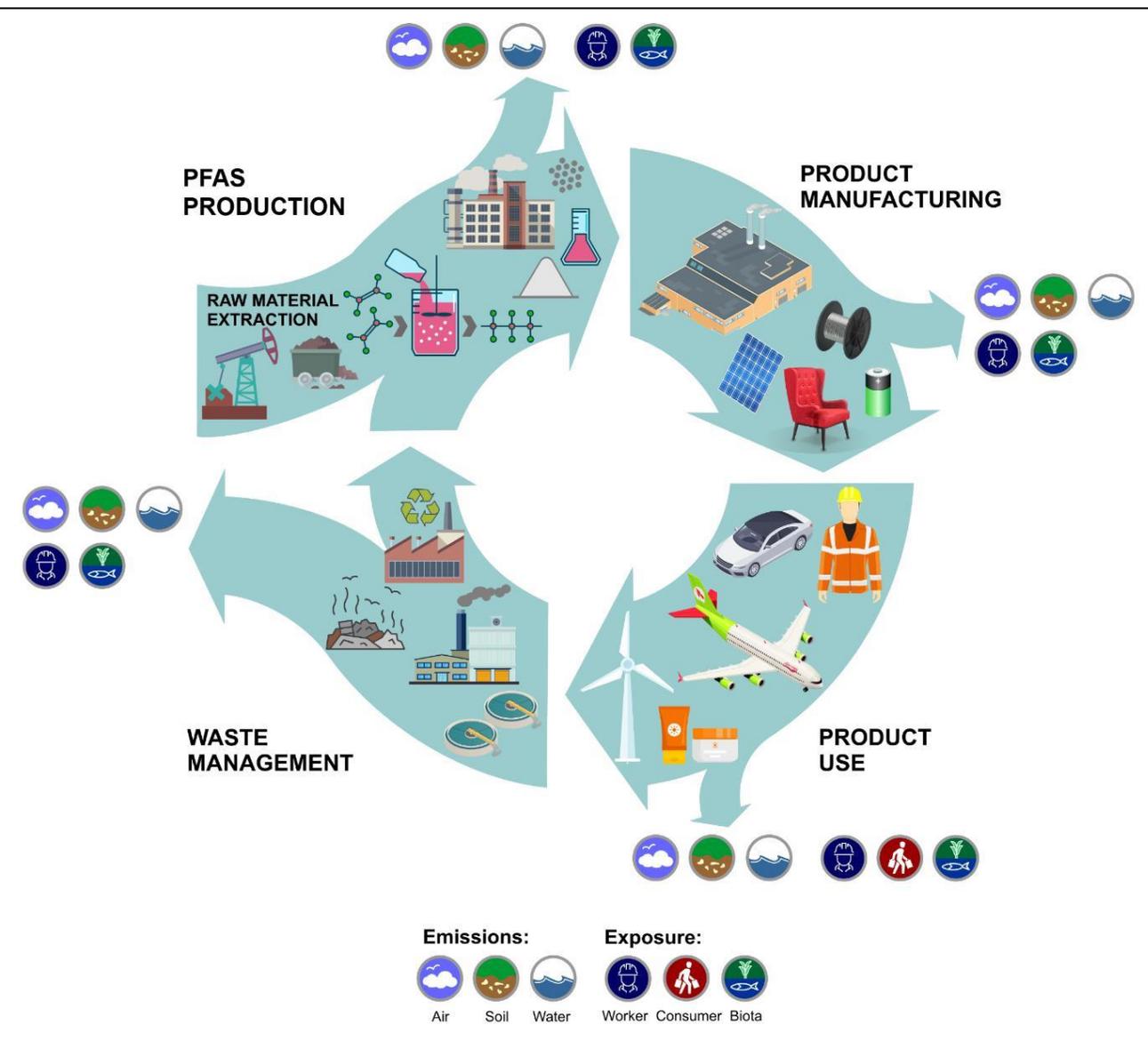
December 14, 2023





What are PFAS: properties, uses, concerns and sources of emissions

- “A main source of PFAS to humans and the environment is the production of fluoropolymers, use of fire-fighting foams, use in the production of textiles, paints and printing inks and food contact materials.
- release from consumer products, such as textiles, polishing and cleaning products, cosmetics and food contact materials, during their use and at the end of their life.
- PFAS can be released to the environment from industrial and municipal waste-water treatment plants, landfills, recycling and incineration plants and from re-use of contaminated sewage sludge.”



Washington State's PFAS Chemical Action Plan:- Identifying the types of industries that use or process PFAS in the state

Table 17: Secondary manufacturing in Washington.

NAICS code name	Count of businesses
All other plastics product manufacturing	241
Automobile manufacturing (plating activity)	13
Aviation and Aerospace	165
Carpet rug mills	13
Corrugated solid fiber box manufacturing	28
Electroplating, plating, polishing, anodizing	60
Leather hide tanning finishing	12
Medical products	249
Other fabricated wire product manufacturing	74
Oil (petroleum) and mining	128
Paper mills (except newsprint)	54
Paper bag coated treated paper manufacturing	69
Paperboard mills	10
Pulp mills	18
Semiconductors related devices manufacturing	33
Textile fabric finishing mills	46
Total of secondary manufacturing by NAICS code	1,213



Per- and Polyfluoroalkyl Substances
Chemical Action Plan

Hazardous Waste and Toxics Reduction Program
Washington State Department of Ecology
Olympia, Washington
Publication 21-04-048
Revised September 2022



Similar to the situation in Canada, WA state does not produce PFAS but some secondary manufacturing facilities do use PFAS.

PFAS Chemical Action Plan. Washington State. 2022

<https://apps.ecology.wa.gov/publications/summarypages/2104048.html>

Researching PFAS use and release by US NAICS codes



pubs.acs.org/journal/estlcu



Letter

Presumptive Contamination: A New Approach to PFAS Contamination Based on Likely Sources

Derrick Salvatore, Kira Mok, Kimberly K. Garrett, Grace Poudrier, Phil Brown, Linda S. Birnbaum, Gretta Goldenman, Mark F. Miller, Sharyle Patton, Maddy Poehlein, Julia Varshavsky, and Alissa Corder*



Cite This: *Environ. Sci. Technol. Lett.* 2022, 9, 983–990



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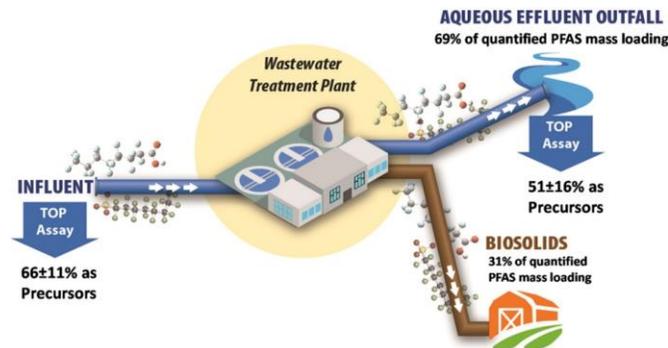
See Memo from Beverley Thorpe
sent to NPRI PFAS Sub-group – Oct 23, 2023

- **Rationale:** Toxic Release Inventory is inadequate. Researchers point out that only 39 unique facilities reported PFAS emissions to the US TRI in 2020
- “likely a huge underestimation, and that facility type is a better predictor of PFAS discharges.”
- **Output:** Researchers compiled a list of industry sectors that are presumed to use or release PFAS based on contamination site data along with the corresponding NAICS codes.

The Salvatore et al study presumes PFAS contamination around three types of facilities:

1. fluorinated aqueous film-forming foam (AFFF) discharge sites,
2. certain industrial facilities, and
3. sites related to PFAS-containing waste.

The Interstate Technology Regulatory Council's overview of 'PFAS Releases to the Environment' confirms these three groupings as major sources of PFAS releases to the environment.



Fabric Coating Mills	Paint and Coating Manufacturing
Paper Bag and Coated and Treated Paper Manufacturing	Broadwoven Fabric Mills
Paper (except Newsprint) Mills	Electroplating, Plating, Polishing, Anodizing, and Coloring
Petroleum Refineries	Polish and Other Sanitation Good Manufacturing
Semiconductor and Related Device Manufacturing	Unlaminated Plastics Film and Sheet (except Packaging)
Metal Coating, Engraving (except Jewelry and Silverware), and	Allied Services to Manufacturers
Other Commercial and Service Industry Machinery Manufacturing	Electronic Component Manufacturing
Solid Waste Landfill	All Other Basic Organic Chemical Manufacturing
Commercial Printing (except Screen and Books)	Fiber, Yarn, and Thread Mills
Carpet and Rug Mills	Leather and Hide Tanning and Finishing
Plastics Material and Resin Manufacturing	Petroleum Lubricating Oil and Grease Manufacturing
All Other Miscellaneous Chemical Product and Preparation	Hazardous Waste Treatment and Disposal
Solid Waste Combustors and Incinerators	Textile and Fabric Finishing Mills
Other Paperboard Container Manufacturing	Support Activities for Printing
Narrow Fabric Mills and Schiffli Machine Embroidery	Nonwoven Fabric Mills
Paperboard Mills	All Other Miscellaneous Fabricated Metal Product Manufacturing
Other Chemical and Allied Products Merchant Wholesalers	Textile Bag and Canvas Mills
Plastics Packaging Film and Sheet (including Laminated)	All Other Miscellaneous Electrical Equipment and Component
Hazardous Waste Collection	Other Nonhazardous Waste Treatment and Disposal
Soap and Other Detergent Manufacturing	Airports
Military Bases	Fire Training Sites
Waste Water Treatment Plants	



Salvatore et al ' list of industry sectors that are presumed to use or release PFAS based on publicly available contamination site data



Comparison of NPRI NAICS list to US NAICS identified in US study

- **190** US NAICS codes associated with PFAS use, release or disposal were identified by the researchers

- Only **78** NAICS codes used in the NPRI matched the 190 NAICS codes identified in the study.

Comparison of NPRI NAICS list to US NAICS identified in US study

Examples of matched NAICS are in yellow highlights. 78 NPRI NAICS codes matched 190 US NAICS codes (also in white) For full listing see Appendix to Memo.

212230	Copper, Nickel, Lead, and Zinc Mining
212291	Uranium-Radium-Vanadium Ore Mining
212299	All Other Metal Ore Mining
221111	Hydroelectric Power Generation
221112	Fossil Fuel Electric Power Generation
221113	Nuclear Electric Power Generation
221118	Other Electric Power Generation
221122	Electric Power Distribution
221320	Sewage Treatment Facilities
221330	Steam and Air-Conditioning Supply
238320	Painting and Wall Covering Contractors

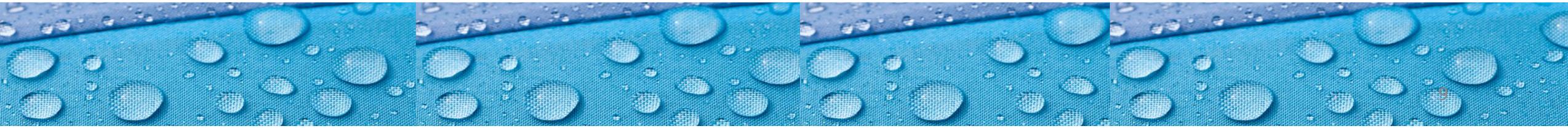
238320	Painting and Wall Covering Contractors
238330	Flooring Contractors
311225	Fats and Oils Refining and Blending
313110	Fiber, Yarn, and Thread Mills
313210	Broadwoven Fabric Mills
313220	Narrow Fabric Mills and Schiffli Machine Embroidery
313230	Nonwoven Fabric Mills
313240	Knit Fabric Mills
313310	Textile and Fabric Finishing Mills
313320	Fabric Coating Mills
314110	Carpet and Rug Mills
314910	Textile Bag and Canvas Mills

324110	Petroleum Refineries
324121	Asphalt Paving Mixture and Block Manufacturing
324122	Asphalt Shingle and Coating Materials Manufacturing
324191	Petroleum Lubricating Oil and Grease Manufacturing
324199	All Other Petroleum and Coal Products Manufacturing
325110	Petrochemical Manufacturing
325120	Industrial Gas Manufacturing
325130	Synthetic Dye and Pigment Manufacturing
325180	Other Basic Inorganic Chemical Manufacturing

326121	Unlaminated Plastics Profile Shape Manufacturing
326122	Plastics Pipe and Pipe Fitting Manufacturing
326130	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing
326140	Polystyrene Foam Product Manufacturing
326150	Urethane and Other Foam Product (except Polystyrene) Manufacturing
326160	Plastics Bottle Manufacturing
326190	#N/A
326191	Plastics Plumbing Fixture Manufacturing
326199	All Other Plastics Product Manufacturing
326211	Tire Manufacturing (except Retreading)

Some Observations

1. Only 6 digit NAICS codes were compared. Why NPRI NAICS codes have a low match to US NAICS codes used in the study should be investigated.
2. This exercise provides a useful basis for NPRI to identify NAICS codes and sectors known to use, release or transfer PFAS
3. The researchers note that the NAICS codes they chose were not comprehensive. This is due to lack of publicly available data for presumptive PFAS contamination from:
 - firefighting training sites,
 - railroad and airplane crash sites with AFFF use,
 - oil and gas hydraulic fracturing sites,
 - bulk fuel storage facilities, and
 - sewage sludge application sites



Recommendations

1. NPRI reporting requirements for PFAS must be comprehensive.
2. It will require expanding the types of facilities that may be currently exempt based on sector exemptions, reporting thresholds for facility size and thresholds for amount used, released or transferred, and de minimus concentration exemptions
3. Facilities known to use and release PFAS – such as oil and gas fracking sites and conventional oil drilling - should not be exempt from NPRI reporting nor protected by confidential business information – considering the impact of PFAS contamination to people and the environment
4. NPRI working group must set a timeline to integrate comprehensive PFAS reporting into the NPRI by 2025 in order to fulfil its stated goals and help reduce the multiple releases of these forever chemicals into Canada’s environment.

