PFAS “Forever Chemicals”

Addressing Impacts to Communities

Presenters: John Jackson, Toxics-Free Great Lakes Binational Network
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PFAS Community Forum North Bay, Ontario

March 27 2024

Canadian Environmental Law Association
EQUITY. JUSTICE. HEALTH.

Toxics-Free Great Lakes Binational Network

Canadian Environmental Law Association (CELA)

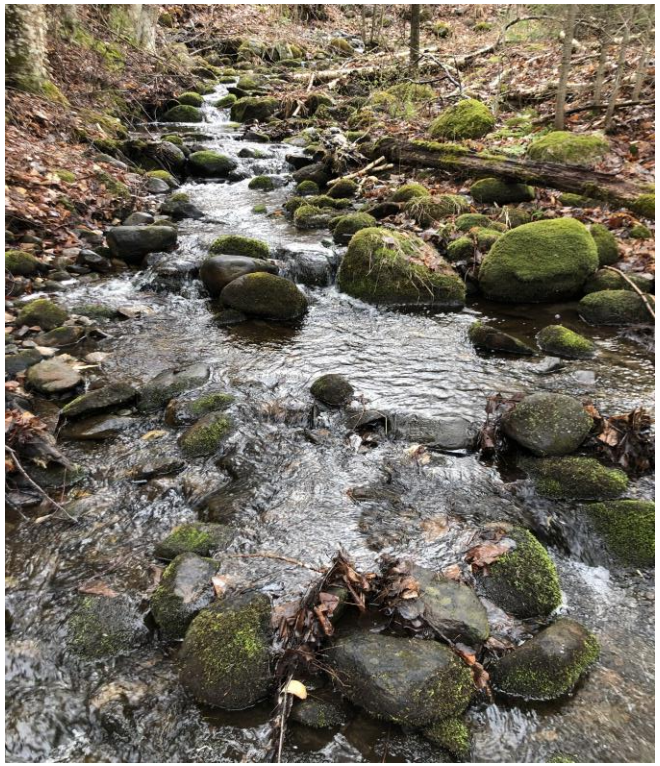

Photo: Kelly Mathews

- Specialty legal aid clinic dedicated to environmental equity, justice, and health
- Founded in 1970, funded by Legal Aid Ontario since 1978
- CELA provides free legal services relating to environmental justice in Ontario, including representing qualifying low-income and vulnerable communities in the courts and before tribunals. CELA also provides free summary advice to the public and engages in legal education and law reform initiatives.

Canadian Environmental Law Association
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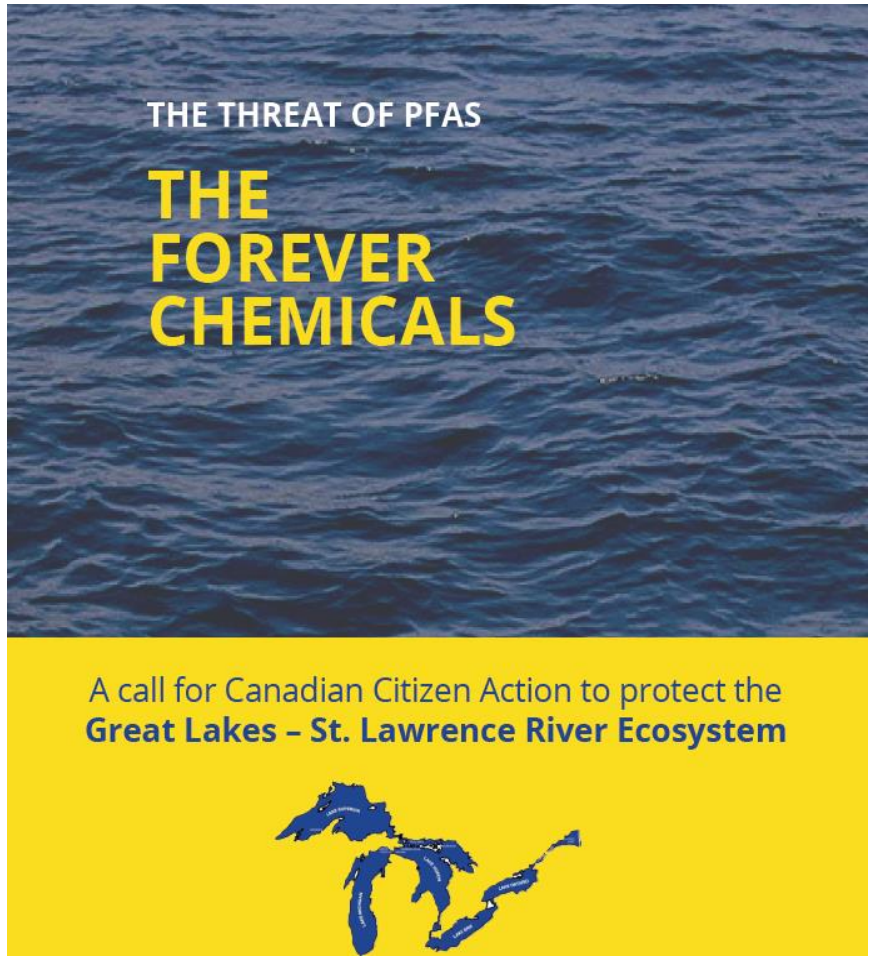
Toxics-Free Great Lakes Binational Network (TFGLBN)

- Advocates, and helps coordinate support, for binational actions on toxic substances in the Great Lakes basin.
- Uses Great Lakes Water Quality Agreement (GLWQA) key principles: zero discharge, virtual elimination, prevention, precautionary approaches, and polluter responsibility to address toxic chemicals in the basin
- advocates for stronger domestic policy and law to ensure action occurs by both governments to meet the GLWQA commitments to address toxic substances.

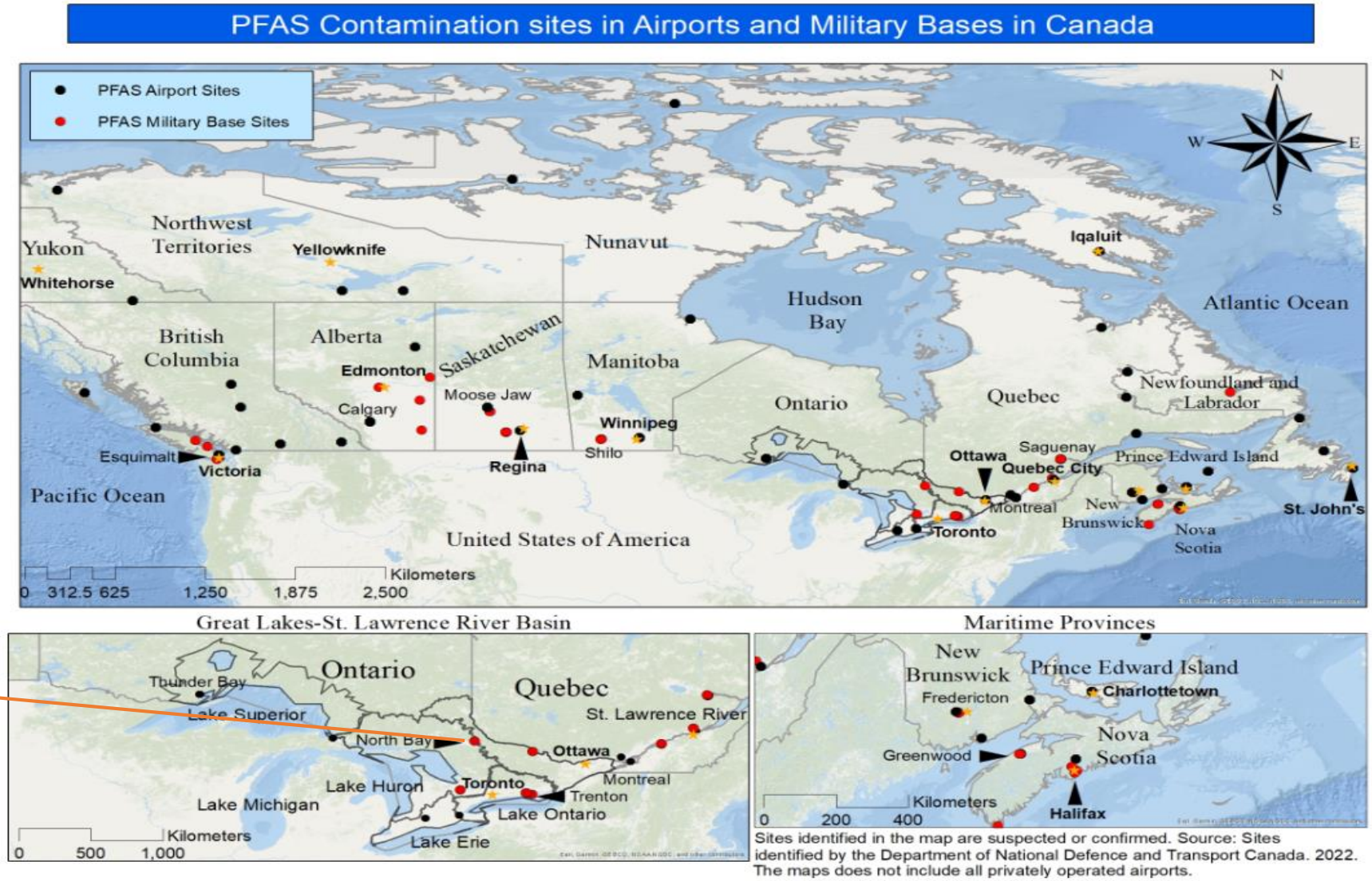
PFAS - Two resources



https://www.cela.ca/threat-PFAS

https://www.cela.ca/pfas-great-lakes-st-lawrence

PFAS Contamination Across Canada



North Bay

Sites identified in the map are suspected or confirmed. Source: Sites identified by the Department of National Defence and Transport Canada. 2022. The maps does not include all privately operated airports.

Confirmed and Suspected Sites of PFAS Contamination, Map & Table – click here to download a PDF of the map and accompanying table

Why are so many people talking about Per- and Polyfluoroalkyl Substances (PFAS)?

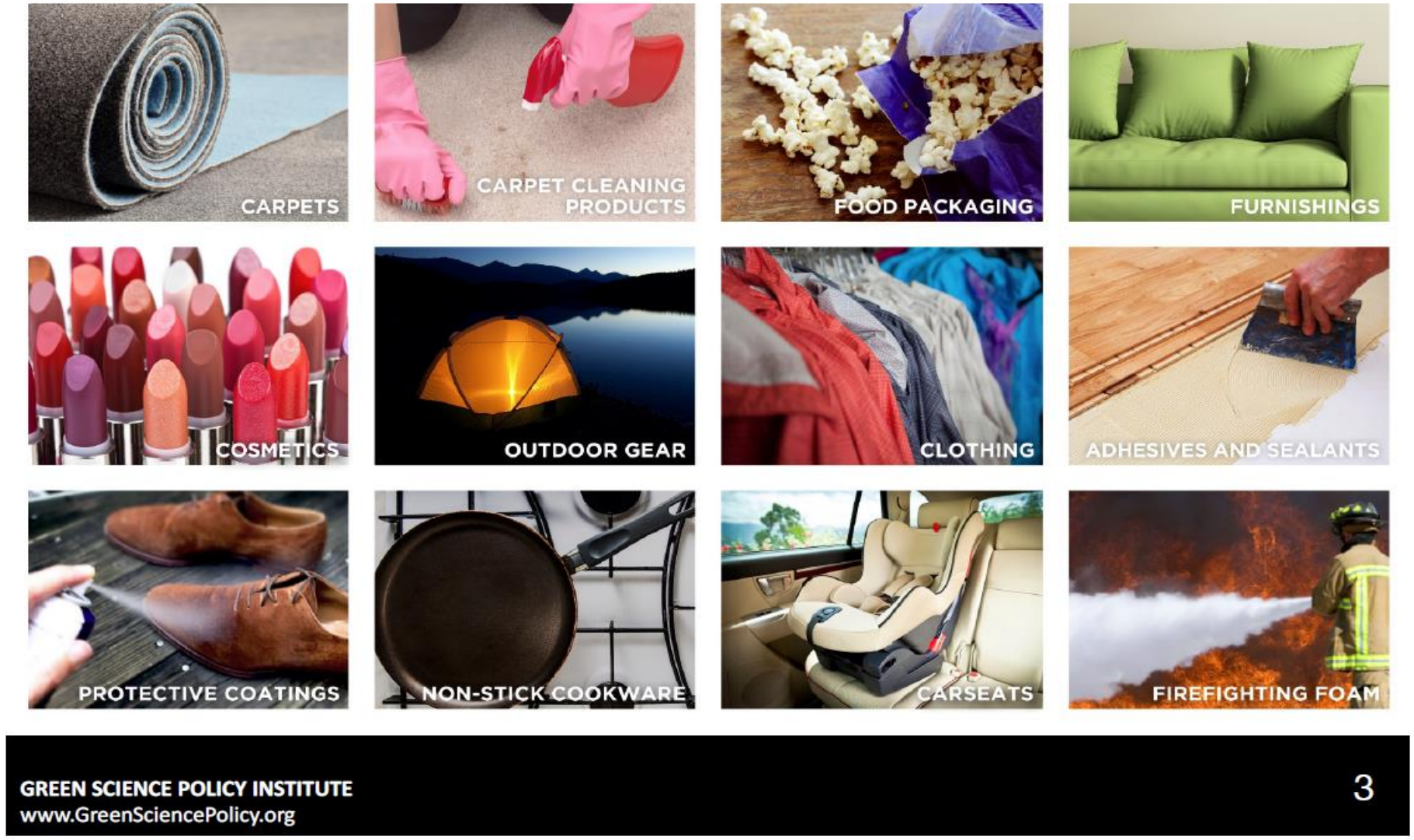
- PFAS has been produced since the 1940s and gives function to many products for stain resistance, water repellency, coatings. The class comprises over 16,000 fluorinated chemicals.
- Manufacturers: 3M (Scotchgard) and Dupont (Teflon) -

  Dupont founded Chemours as a spin off in 2015.
- PFOS and PFOA toxicity was noted in '60s and '70s.
- 2000: 3M announces it will voluntarily halt production of PFOA and PFOS
- 2006: US EPA encourages all major manufacturers to stop making long-chain PFAS, citing potential birth defects and other risks. DuPont and others agree to phase out production by 2015; like 3M, they start making new short-chain fluorinated varieties, none proven safe.

https://www.searchlightnm.org/post/2019/02/19/toxic-timeline-a-brief-history-of-pfas

Source: Beverley Thorpe and Brennain Lloyd presentation PFAS use and contamination in Canada: A call for Community Action, October 16 2019

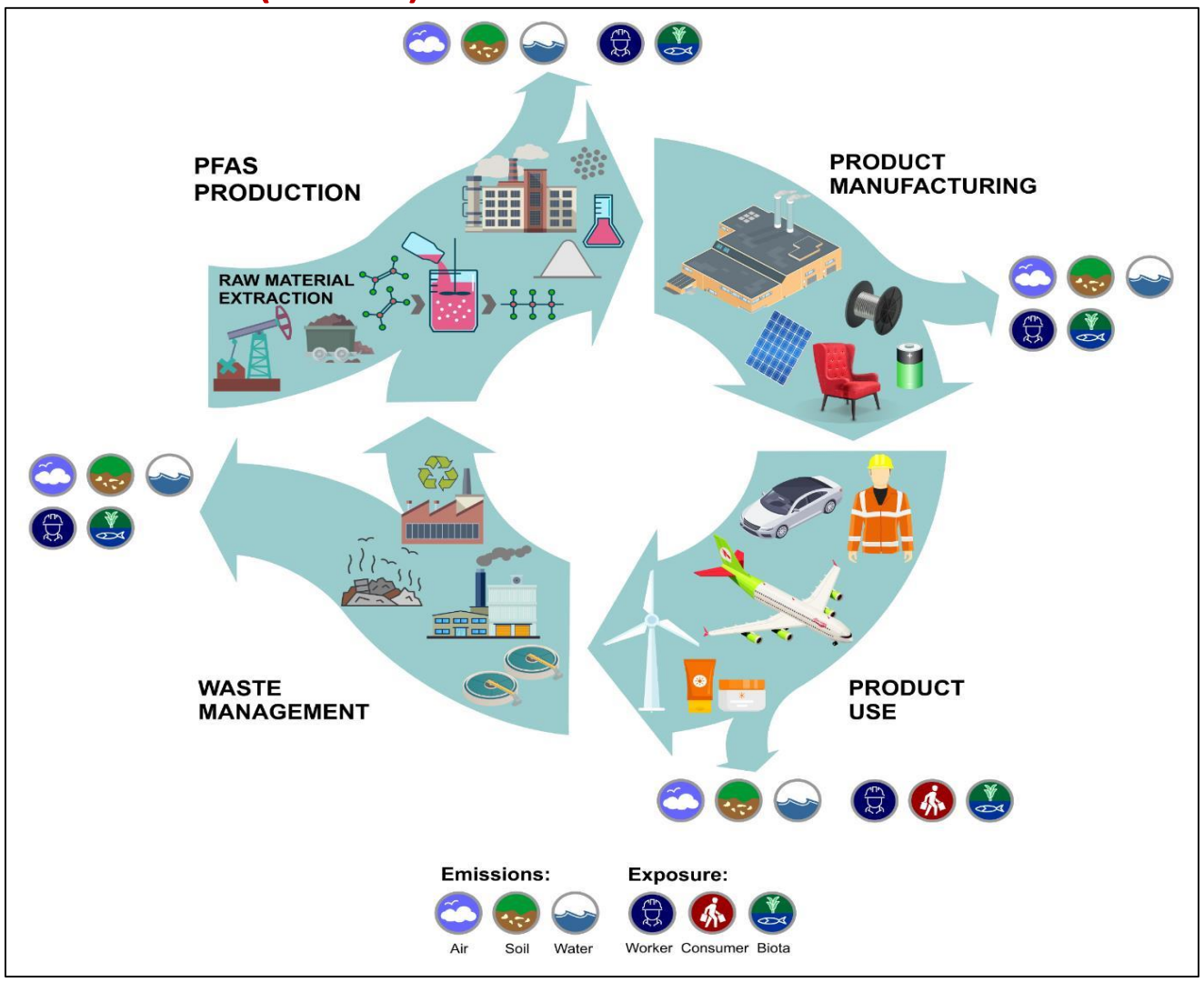
PFAS is found in common products



Source: Beverley Thorpe and Brennain Lloyd presentation PFAS use and contamination in Canada: A call for Community Action, October 16 2019

EUROPEAN COMMISSION STAFF WORKING DOCUMENT: Poly- and perfluoroalkyl substances (PFAS)

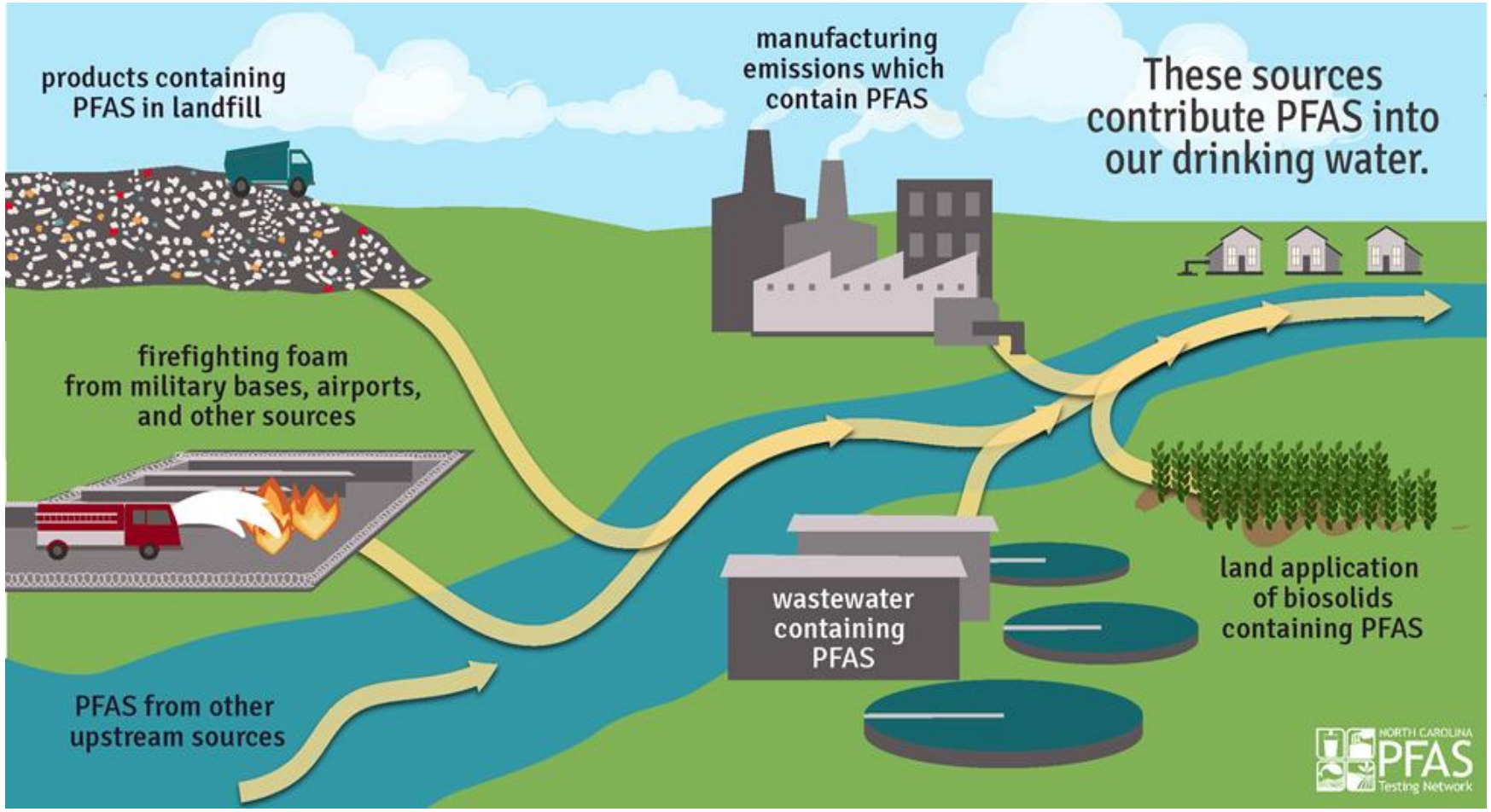
Brussels, 14.10.2020
SWD(2020) 249 final



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

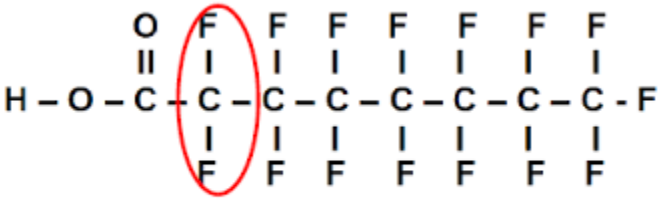
- "A main source of PFAS to humans and the environment is the production of fluoropolymers, use of fire-fighting foams, use in the production of textiles, paints and printing inks and food contact materials.
- release from consumer products, such as textiles, polishing and cleaning products, cosmetics 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."

PFAS Sources to Surface Water



Source: North Carolina PFAS Testing Network

Causes for Concern: ‘Forever Chemicals’



Perfluoro-octanoic Acid (PFOA)

- PFAS are not found in nature and exhibit extreme stability and persistence in the environment due to the strength of the carbon-fluorine molecular bonds.

- Though some PFAS may partially degrade under environmental conditions, they will all eventually transform into highly stable end products that will remain in the environment for hundreds or thousands of years such that human and environmental exposure will continue long into the future.

- Last estimate: over 16,000 compounds in this class

Source: Beverley Thorpe and Brennain Lloyd presentation PFAS use and contamination in Canada: A call for Community Action, October 16 2019

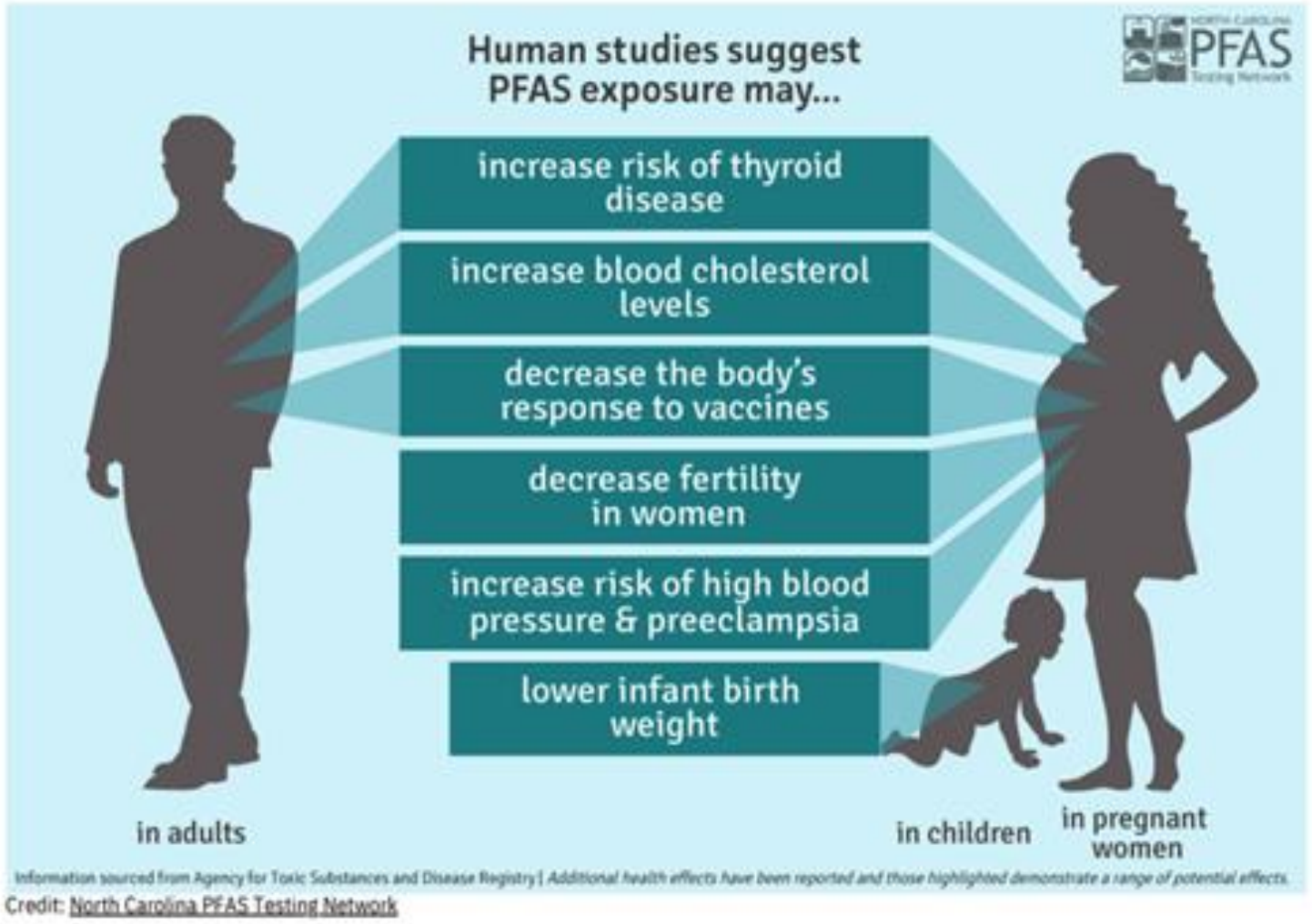
Causes for Concern: Great Lakes – "chemicals of mutual concern"

- In 2015, PFOS, PFOA and long-chain PFCAs were identified to pose a threat to the environment and to human health in the basin

- PFAS are detected in the tributaries and open water sediments across the Great Lakes Basin with the highest levels of PFAS generally found in areas of Lake Ontario, the western end of Lake Erie and the Detroit River corridor.

- The Great Lakes Basin contains 20% of the world's fresh surface water and is home to 40 million people

Cause for Concern: Health Impacts



Credit: North Carolina PFAS Testing Network

- **Health Canada biomonitoring results**:

- PFOS and PFOA are shown to be ubiquitous in the global environment and present in all Canadian populations sampled.
- Preliminary results for urinary fluoride levels found higher levels in Ontario compared to the rest of Canada (to be published)

- The half-life or time it takes to eliminate half of the substance from the human body, for long-chain PFAS (PFOA and PFOS) range from 2.8 to 8.5 years.

Source: Beverley Thorpe and Brennain Lloyd presentation PFAS use and contamination in Canada: A call for Community Action, October 16 2019

Causes for Concern: PFAS is very mobile in water and now a common water pollutant

- Aqueous Film Forming Foam (AFFF) major point source
- Military and airforce bases under scrutiny in many countries
- We have very limited site-specific information in Canada on PFAS contamination around military bases, airports, drinking water monitoring sites, groundwater and wells.
- Short chain PFAS (substituted from long chain PFAS) are more mobile in water and more difficult to treat

Source: Beverley Thorpe and Brennain Lloyd presentation PFAS use and contamination in Canada: A call for Community Action, October 16 2019

Reason for Concern – Firefighting foam

- Firefighting Foam is a major cause of drinking water and groundwater contamination with PFAS
- Aqueous Film Forming Foam (AFFF) is used to put out oil and fuel-based fires. Since 1960s these foams have contained PFAS causing PFAS-related water contamination worldwide.
- We lack information on the location and extent of water contamination around Canadian military bases and airports.
- Well water and groundwater is not publicly tested for PFAS.

Source: Beverley Thorpe and Brennain Lloyd presentation PFAS use and contamination in Canada: A call for Community Action, October 16 2019

Causes for Concern: Most Waste Water Treatment Plants cannot remove all PFAS

WWTPs with advanced biological treatment can actually transform the levels of PFAS in the influent into other and more numerous forms of PFAS into the air and effluent following biological treatment.

This raises cost implications for municipalities – who should pay?

Source: Beverley Thorpe and Brennain Lloyd presentation PFAS use and contamination in Canada: A call for Community Action, October 16 2019

Steps to Action on PFAS
Disclosure and Right to Know

- CELA-TFGLBN-Northwatch-Clean Production Action-Health and Environment Justice Support - Petition on PFAS to the Office of the Auditor General – August 2021

- National Pollutant Release Inventory –mandatory under Canadian law to collect release and transfer data for pollutants – Consider PFAS reporting to NPRI – present

- Prohibition of Certain Toxic Substances, CEPA - Specific focus on PFOS, PFOA, LC-PFCAs

Drinking Water: Health Canada

Table 1 - Guidelines for Canadian drinking water quality - MACs for PFOS and PFOA

PFAS Name	Acronym	Maximum acceptable concentration (MAC) (milligrams/litre) (mg/L)	Maximum acceptable concentration(MAC) (micrograms/litre) (µg/L)
perfluorooctanoic acid	PFOA	0.0002	0.2
perfluorooctane sulfonate	PFOS	0.0006	0.6

Table 2 - Health Canada drinking water screening values - other PFAS

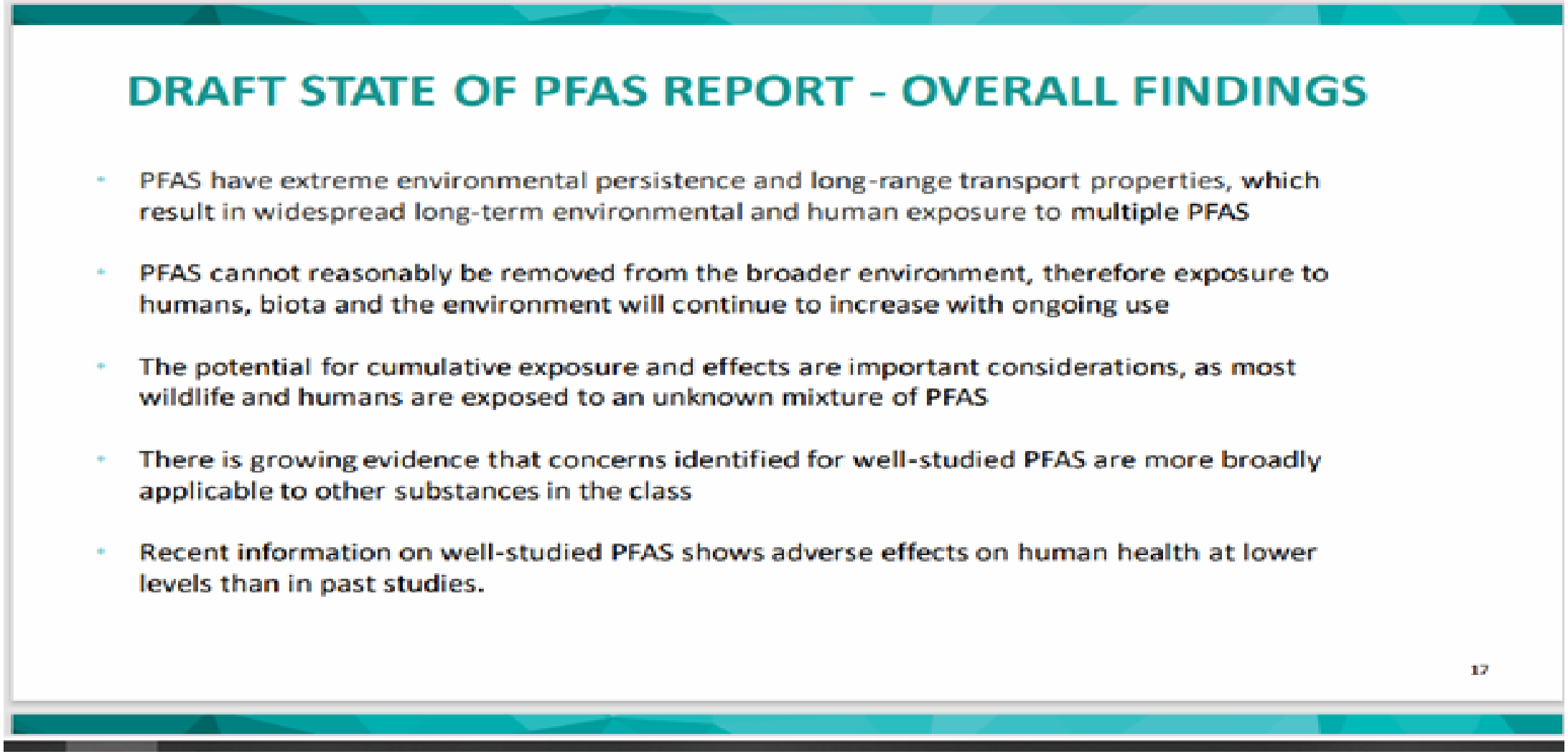
Pfas name	Acronym	Drinking water screening value (milligrams/litre) (mg/L)	Drinking water screening value (micrograms/litre) (µg/L)
perfluorobutanoate	PFBA	0.03	30
perfluorobutane sulfonate	PFBS	0.015	15
perfluorohexanesulfonate	PFHxS	0.0006	0.6
perfluoropentanoate	PFPeA	0.0002	0.2
perfluorohexanoate	PFHxA	0.0002	0.2
perfluoroheptanoate	PFHpA	0.0002	0.2
perfluorononanoate	PFNA	0.00002	0.02
6:2 fluorotelomer sulfonate	6:2 FTS	0.0002	0.2
8:2 fluorotelomer sulfonate	8:2 FTS	0.0002	0.2

Source: https://www.canada.ca/en/services/health/publications/healthy-living/water-talk-drinking-water-screening-values-perfluoroalkylated-substances.html

February 2023 – Objective for Canadian Drinking Water Quality Per- and Polyfluoroalkyl Substances (Health Canada) - Proposed Screening values for PFAS

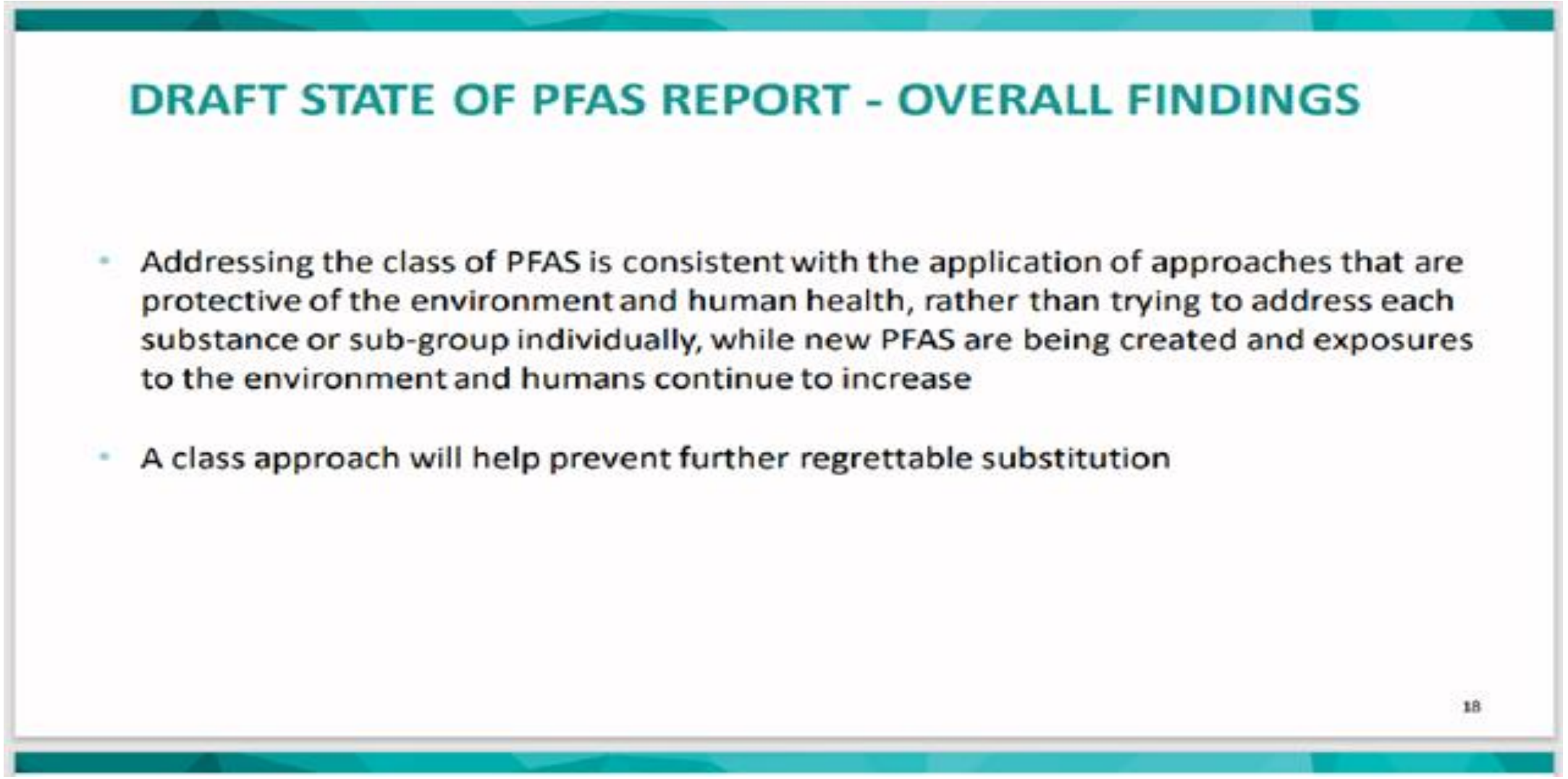
- 30 ng/L for the sum of total per- and polyfluoroalkyl substances (PFAS)
- US EPA Methods – 533 (25 PFAS) and 537.1 (18 PFAS) – 29 unique PFAS

Draft State of PFAS Report, May 2023 Findings



Source: Government of Canada presentation: An Overview of the State of PFAS Report and Next Steps, NPRI PFAS Sub-Group Kick-Off Meeting – Day 1 October 3, 2023

Draft SOPR - Findings



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SOPR – Proposed Conclusion under CEPA

DRAFT STATE OF PFAS REPORT - PROPOSED CONCLUSIONS

- On the basis of what is known about well-studied PFAS and the potential for other PFAS to behave similarly, and on the expectation that combined exposures to multiple PFAS increases the likelihood of detrimental impacts:
  - It is proposed to conclude that the class of PFAS meets the criteria under paragraphs 64(*a*) and 64(*c*) of CEPA as these substances are entering or may enter the environment in a quantity or concentration or under conditions that have or may have immediate or long-term harmful effects on the environment or its biological diversity, or that constitute or may constitute a danger in Canada to human life or health

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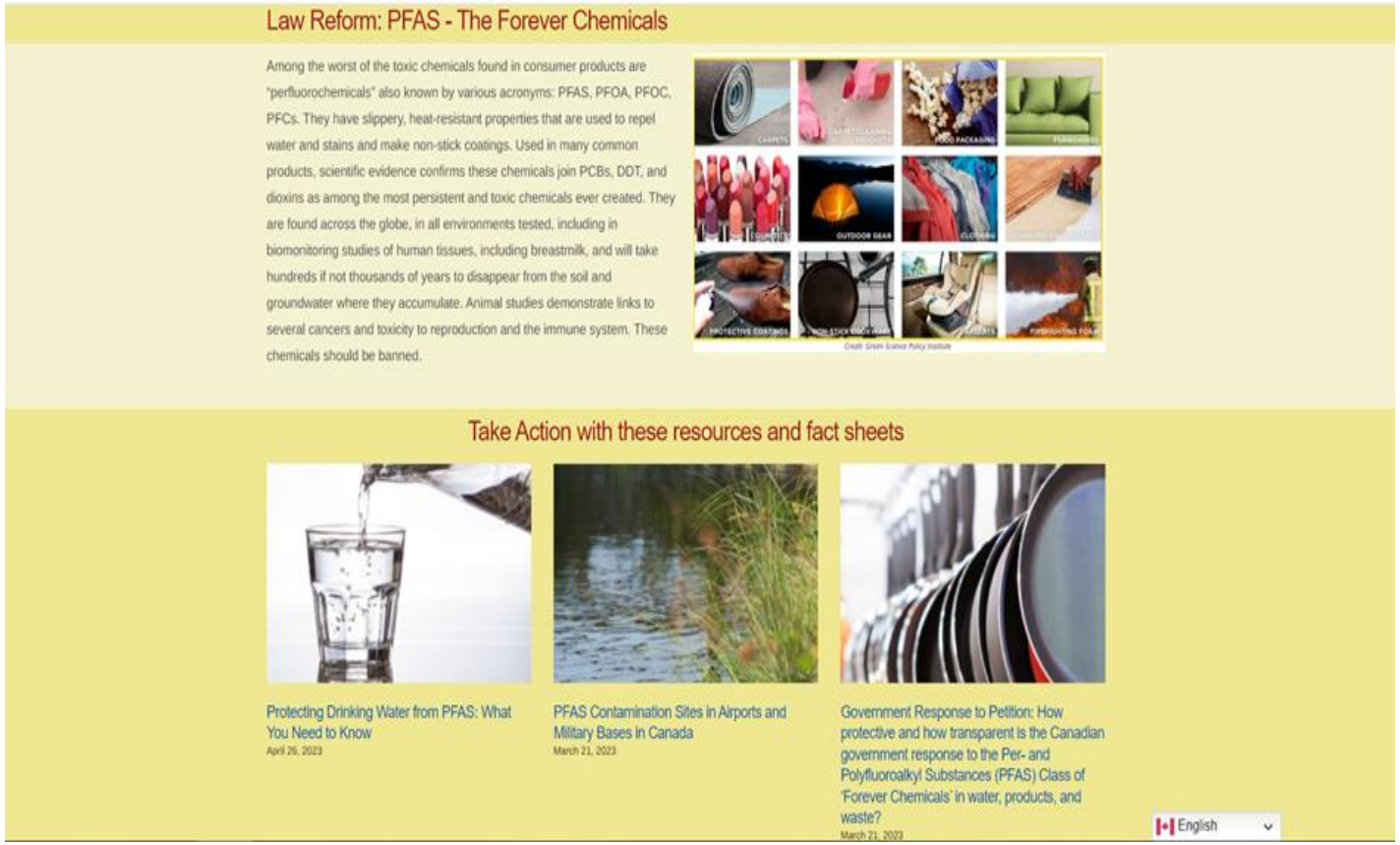
Source: Government of Canada presentation: An Overview of the State of PFAS Report and Next Steps, NPRI PFAS Sub-Group Kick-Off Meeting – Day 1 October 3, 2023

PFAS Resources



CELA.ca

Protecting Drinking Water from PFAS - "Forever Chemicals": What you need to know (Infographics) (2023)

PFAS Contamination Sites in Airports and Military Bases in Canada (Map) (2023)

Government Response to Petition: How protective and how transparent is the Canadian government response to the Per- and Polyfluoroalkyl Substances (PFAS) Class of 'Forever Chemicals' in water, products, and waste? (Petition to the OAG) (2021)

It's Raining 'Forever Chemicals' Across the Great Lakes – PFAS Right-To-Know Toolkit (2021)

The Threat of PFAS – The Forever Chemicals (Fact sheet) (2020)

PFAS “Forever Chemicals”

Contact

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