

# SMART Remediation

Smart Methods in Advanced Remediation Technologies

*PFAS in Canada: A Legal Perspective on the “Forever Chemicals” – Laws, Guidelines, and Practical Considerations*



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# PFAS in Canada: A Legal Perspective on the “Forever Chemicals” – Laws, Guidelines, and Practical Considerations

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Audience members should seek legal advice for specific situations.

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## Outline

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- **What are Forever Chemicals**
- **Pollution Prohibitions**
- **Federal, Provincial, & US PFAS Developments**
- **Key Takeaways**



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# FOREVER CHEMICALS

## What are “Forever Chemicals”?

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- **Per- and polyfluoroalkyl substances (PFAS), a group of several thousand man-made/synthetic chemicals that include**
  - perfluorooctane sulfonate (PFOS)
  - perfluorooctanoic acid (PFOA)
  - perfluoroalkyl carboxylic acid (PFCA)
  - perfluorobutane sulfonic acid (PFBS)
  - long-chain perfluoroalkyl carboxylate (LCPFAC)
- **Persistent, bio-accumulative and toxic (PBT)**
- **Stable and very slow rate of break down in the environment**

## What are “Forever Chemicals”?

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- **Developed for stain resistance and water repellent characteristics**
- **Common uses**
  - food packaging, take out containers
  - inks and photo media coatings
  - non-stick cookware
  - stain resistant furniture
  - water repellent outdoor gear
  - fire fighting foam and fire retardant

## POLLUTION PROHIBITIONS AS A LEGAL FRAMEWORK

# Environmental Liabilities

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- **Regulatory Liability**

- regulator can issue orders
- regulator can prosecute under environmental statutes
- “person responsible”, “contaminant”, “adverse effect”

- **Civil Liability**

- contamination on-site (soil, groundwater, indoor air)
- contaminant migration and impact off-site (groundwater, air emissions)
- concept of “flow through” property
- causes of action and damages

# Pollution Prohibitions

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- **Pollution prohibitions are the foundation of environmental law**

- **Discharge of contaminants are prohibited where**

- exceed regulated concentrations
- cause or likely to or may cause adverse effect/impairment of water quality
- interfere with fish ecology/fish habitat
- breach of statute or regulation
- contravention of an approval or order (non-compliance)

## Pollution Prohibitions – Ontario’s EPA

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- A person shall not **discharge** a **contaminant** or cause or permit the **discharge** of a **contaminant** into the natural environment, if the discharge causes or may cause an **adverse effect** (s. 14, ON EPA)
- Every person who **discharges** a **contaminant** or causes or permits the **discharge** of a **contaminant** into the natural environment shall forthwith notify the Ministry if the **discharge** is out of the normal course of events [and if] the **discharge** causes or is likely to cause an **adverse effect** ... (s. 15, ON EPA)

## Pollution Prohibitions – Ontario’s EPA

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- “**adverse effect**” means one or more of, (a) impairment of the quality of the natural environment for any use that can be made of it, (b) injury or damage to property or to plant or animal life, (c) harm or material discomfort to any person, (d) an adverse effect on the health of any person, (e) impairment of the safety of any person, (f) rendering any property or plant or animal life unfit for human use, (g) loss of enjoyment of normal use of property, and (h) interference with the normal conduct of business (s. 1(1), ON EPA)
- “**contaminant**” means any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect (s. 1(1), ON EPA)
- “**discharge**”, when used as a verb, includes add, deposit, leak or emit and, when used as a noun, includes addition, deposit, emission or leak (s. 1(1), ON EPA)

## Pollution Prohibitions – Alberta’s EPEA

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- No person shall **release** or permit the **release** into the environment of a **substance** in an amount, concentration or level or at a rate of release that causes or may cause a significant **adverse effect** (s. 109(2), AB EPEA)
- A person who releases or causes or permits the **release** of a **substance** into the environment that may cause, is causing or has caused an **adverse effect** shall, as soon as the person knows or ought to know of the **release**, report the **release** to specified persons (s. 110, AB EPEA)

## Pollution Prohibitions – Alberta’s EPEA

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- “**adverse effect**” is impairment of or damage to the environment, human health or safety or property (s. 1(b), AB EPEA)
- “**release**” means a spill, discharge, dispose of, spray, inject, inoculate, abandon, deposit, leak, seep, pour, emit, empty, throw, dump, place and exhaust (s. 1(hhh), AB EPEA)
- “**substance**” (i) any matter that (A) is capable of becoming dispersed in the environment, or (B) is capable of becoming transformed in the environment into matter referred to in paragraph (A), (ii) any sound, vibration, heat, radiation or other form of energy, and (iii) any combination of things referred to in subclauses (i) and (ii) (s. 1(mmm), AB EPEA)

## Pollution Prohibitions – BC’s EMA

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- If a **polluting substance escapes** or is **spilled** or **waste** is **introduced into the environment** other than as allowed or authorized by specified circumstances the person who had possession, charge or control of the substance or **waste** immediately before the escape, spill or introduction must, immediately after he or she learns of the escape, spill or introduction, report the escape, spill in accordance with the Spill Reporting Regulation (s. 79(5), BC EMA)

## Pollution Prohibitions – BC’s EMA

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- **“polluting substance”** means means any substance, whether gaseous, liquid or solid that, in the opinion of the minister, is capable of causing pollution if it were to (a) escape into the air, (b) be spilled onto any land or into any body of water, or (c) escape onto any land or into any body of water (s. 79(1), BC EMA)
- **“waste”** includes (a) air contaminants, (b) litter, (c) effluent, (d) refuse, (e) biomedical waste, (f) hazardous waste, and (g) other prescribed substances, whether or not the type of waste referred to in (a) to (f) or prescribed under (g) has any commercial value or is capable of being used for a useful purpose (s. 1(1), BC EMA)
- **“introduce into the environment”**, in relation to waste, includes discharge, emit, dump, abandon, spill, release and allow to escape into the environment (s. 1(1), BC EMA)

## Discharges or Releases to Water – *Fisheries Act, OWRA, Municipalities*

- **Fisheries Act**
  - s. 35(1) – Prohibition against work, undertaking or activity that results in harmful alteration, disruption or destruction of fish habitat
  - s. 36(3) – Prohibition against depositing a deleterious substance in water frequented by fish
- **Ontario Water Resources Act**
  - s. 30(1) – Prohibition against discharges to water that may impair water quality
- **Municipal areas of control**
  - By-laws, sewer use, pollution prevention, drinking water protection

## REGULATION OF PFAS

## *Canadian Environmental Protection Act, 1999*

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- **PFOS and PFOA are on the Toxic Substances List**
- **Minister may post a notice to require a person to prepare and implement a pollution prevention plan (s. 56) or an environmental emergency plan (s. 199)**
- **Minister may issue environmental quality guidelines to support and maintain particular uses of the environment (s. 54)**

## *Canadian Environmental Protection Act, 1999*

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- ***Prohibition of Certain Toxic Substances Regulations, 2012***
- **PFOS and PFOA are listed**
- **A person must not manufacture, use, sell, offer for sale or import a toxic substance ... or a product containing it unless the toxic substance is incidentally present (s. 6(1) CEPA)**
  - some exceptions in Reg. 2012
    - PFOS in photographic films, papers and printing plates
    - PFOS in aqueous film forming foam present in a military vessel or military fire-fighting vehicle contaminated during a foreign military operation
    - PFOA in aqueous film forming foam used in fire-fighting
    - PFOA in a product intended for personal use

# Canadian Environmental Protection Act, 1999

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- **Proposed Prohibition of Certain Toxic Substances Regulation, 2022**
  - introduce additional restrictions on the use, import, manufacture and sale of PFAS chemicals
  - some exemptions for use and sale of Electrical and Electronic Equipment (EEE)
  - $\leq 1$ ppm for each substance in AFFF used in firefighting
  - repeal of 2012 exemptions
    - PFOS in photographic films, paper, and printing plates
    - PFOA and LCPFCA for personal use
    - PFOA and LCPFCA in manufactured items (some exemptions still apply)
    - PFOA and LCPFCA manufactured before December 23, 2016

# Federal Environmental Quality Guidelines

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- **Develop FEQGs as adjunct to risk assessment/risk management of priority chemicals in CMP or other federal initiatives**
- **ECCC identified PFOS, it's salts and precursors entering the environment in a quantity that has or may have an immediate or long-term harmful effect**
- **Guidelines for concentrations in**
  - surface water (6.8  $\mu\text{g/L}$ )
  - fish tissue (9.4 mg/kg ww)
  - wildlife diet (consumption of aquatic biota)
    - mammalian 4.6  $\mu\text{g/kg}$  ww food
    - avian 8.2  $\mu\text{g/kg}$  ww food
    - bird eggs (1.9  $\mu\text{g/g}$  ww)

# Health Canada

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## Guidelines for Canadian Drinking Water Quality

- Intended to guide provincial and municipal drinking water standards
- Contain maximum acceptable concentrations for PFOS and PFOA in drinking water
- Health Canada has informal drinking water screening values and soil screening values for 9 other PFAS
- Notice of Intent to Address the broad Class of Per- and Polyfluoroalkyl Substances

## Cross-Canada Check-up

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Province/Territories	Regulatory PFAS Limit
Alberta	Yes (Remediation Guidelines)
British Columbia	Yes (Contaminated Sites Regulation)
Manitoba	No
New Brunswick	No
Newfoundland and Labrador	No
Northwest Territories	No
Nova Scotia	No
Nunavut	No
Ontario	Interim Advice (Drinking Water)
Prince Edward Island	No
Québec	No
Saskatchewan	No
Yukon	No

## BC's Contaminated Sites Regulation

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- **The BC CSR contains numerical standards for**
  - Water – PFOA (0.2 µg/L), PFOS (0.3 µg/L) and PFBS (80 µg/L) (Schedule 3.2)
  - Soil – PFOS and PFBS (Schedule 3.1)
- **Numerical standards only apply at sites with specific Schedule 2 activities**
  - A4 – fire retardant manufacturing or wholesale bulk storage
  - C3 – metal plating or finishing
  - E10 – contamination or likely contamination of land by substance migrating from an industrial or commercial site
  - G1 – aircraft maintenance, cleaning or salvage

## Alberta Remediation Guidelines

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- **Updated as of January 1, 2023**
- **Tier 1 Guidelines – Soil and groundwater remediation guidelines for PFOS and PFOA**
  - Soil Guidelines dependent on land use
  - Groundwater Guidelines (PFOA 0.0006 mg/L; PFOS 0.0002 mg/L)
  - PFOS/PFOA Guidelines both individual and joint
    - “As the toxicological effects of PFOA and PFOS are considered to be additive, the sum of the ratios of the detected concentrations to the corresponding [maximum allowable concentrations] for PFOS and PFOA should not exceed 1.”

## Ontario Drinking Water Guidance

- **2017 – Ontario develops “interim advice” for PFAS, recommending that drinking water used for human consumption not exceed 70 ng/L for eleven different PFAS**
- **Present – MECP working with Health Canada and other provinces/territories on appropriate approaches for new Canadian Drinking Water Quality Guidelines for PFAS**
  - expected to be released in early 2023

## Select Standards & Guidelines

Jurisdiction	Standard or Guideline	PFOA	PFOS
Canada (Health Canada)	Guidelines for Canadian Drinking Water	0.0002 mg/L	0.0006 mg/L
CCME	Groundwater Quality Guideline		0.0006 mg/L
BC	Contaminated Sites Regulation <ul style="list-style-type: none"> <li>• Water Standard</li> <li>• Soil Standard for groundwater as drinking water</li> </ul>	0.20 µg/L	0.30 µg/L 0.35 µg/L
Alberta	Tier 1 Groundwater Remediation Guidelines	0.0002 mg/L	0.0006 mg/L
Ontario	Interim Drinking Water Advice	Combined of 11 PFAS above 70 ng/L	
US (EPA)	Interim Health Advisory	0.004 ng/L	0.02 ng/L

## US Federal Developments

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- **EPA Lifetime Drinking Water Health Advisories for Four Perfluoroalkyl Substances – June 2022**
  - currently undergoing US EPA Science Advisory Board Review
  - interim updated Health advisories replace 2016 final
    - PFOA 0.004 ppt
    - PFOS 0.02 ppt
    - Gen X Chemicals 10 ppt (replacement for PFOA)
    - PFBS 2000 ppt (replacement for PFOS)
- **EPA Actions to Address PFAS**

## KEY TAKEAWAYS

# Approaching the PFAS Problem

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- **Consider potential sources**
  - aviation, firefighting, landfills, metal plating, plastics & rubber manufacturing, protective coatings, refineries, rail yards
- **Develop Conceptual Site Model**
  - chemical analyses, type of PFAS, Fate and Transport, existing standards/guidelines, site specific standards, adverse effect, migration pathways, receptor and exposure pathways, Toxicity Reference Values
- **Review available law and guidance**
- **Consider remedial options/risk assessment**

# Key Takeaways

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- **Binding numerical concentration standards/guidelines are currently only in place in BC and AB (for contaminated sites) in Canada**
- **Expect continued standards development**
- **In addition, provincial laws still prohibit releases that cause, or may cause, an adverse effect**
- **Engage technical and legal support early to understand the problem & potential solutions**

# Willms & Shier Environmental Lawyers

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- **Established nearly 50 years ago**
- **Environmental, Indigenous, and Energy law**
- **16 lawyers**
  - seven lawyers are certified by the Law Society of Ontario as Environmental Law Specialists and one in Indigenous Legal Issues
  - lawyers called to the Bars of Alberta, British Columbia, Ontario, New Brunswick, Northwest Territories, Nunavut and the Yukon
  - offices in Toronto, Ottawa, Calgary, and Yellowknife



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