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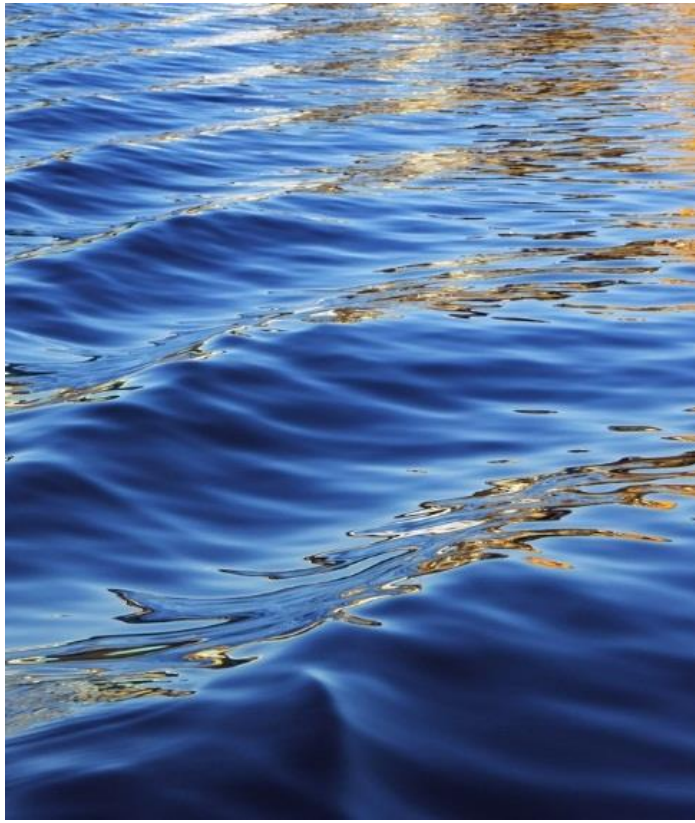
AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PFAS Overview

January 20, 2025
House Committee on Environment

PFAS Overview



What is PFAS?

- Per- and polyfluoroalkyl substances (PFAS) are a class of chemicals estimated to be around 14,000 distinct chemicals.
- PFAS have the following adverse health impacts:
  - Cancer – PFAS increases the risk of kidney, prostate, and testicular cancer.
  - Immune system – PFAS decreases the body's ability to fight disease and the effectiveness of vaccines. PFAS is also interferes with the body's hormone system.
  - Reproductive health – PFAS can decrease fertility and increase blood pressure during pregnancy amongst other issues during pregnancy.
  - Developmental issues – PFAS can cause developmental delays including low birth weight, bone variations, and accelerated puberty.
- Risks from PFAS (specifically PFOA and PFOS and similar PFAS) are expected to occur below our current ability to detect those contaminants.

Where are PFAS used and why?

- PFAS are chemically and physically stable. They are also resistant to heat, water, and oil.
- PFAS were discovered in the 1930's and were in common use by the 1950's.
- PFAS are used in a vary wide range of products –
  - Nonstick cookware;
  - Cleaning products and waxes;
  - Food packaging;
  - Water and stain resistant everything (clothing, carpets, furniture, etc.);
  - Electronics;
  - Renewable energy (batteries, solar panels, heat pumps);
  - Medicines and medical devices;
  - Firefighting Foams; and
  - Unfortunately, so many more.
- PFAS is used ubiquitously in products which creates numerous challenges to regulations

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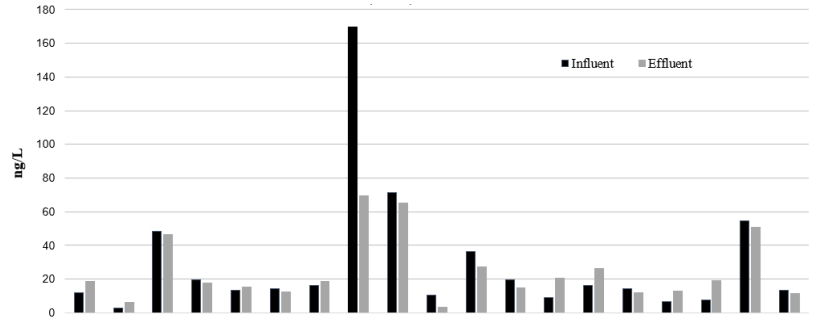
Vermont's PFAS Roadmap

In Vermont, PFAS contamination was initially discovered in 2016, when perfluorooctanoic acid (PFOA), one type of PFAS, was found in water supply wells in Bennington and North Bennington.

Since this discovery, VT ANR-DEC has undertaken significant efforts to protect Vermonters, including:

- Testing and remediating PFAS in public water systems.
- Responding to known contaminated sites.
- Evaluating PFAS concentrations in surface waters, wastewater treatment facilities, common household products, and agricultural inputs.

Identify Sources of PFAS Exposure in Vermont



Investigate PFAS Occurrence in Private Water Supplies

- Private Well Testing Program, 500 residences
  POET installation, site investigation

Implement Strategies to Address PFAS in Municipal Wastewater

- Comprehensive Testing at Vermont's POTWs
- Industrial Discharge Monitoring Requirements
- Pretreatment Discharges from Metal Finishers
- Testing Discharges to POTWs in Select Towns
- Monitoring and Managing PFAS from Landfills

Investigate PFAS Occurrence in Food Wastes that are Recycled to the Land

- EPA Pollution Prevention Grant 2022-2024

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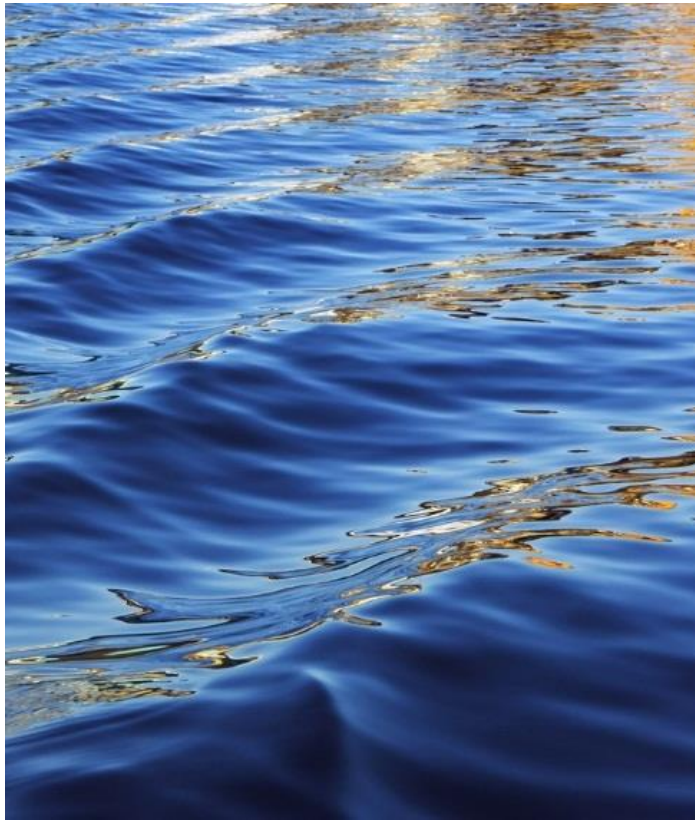
PFAS in Drinking and Ground Water



Regulatory Changes for PFAS in Drinking Water

- In April 2024 EPA adopted primary drinking water regulations for six PFAS
  - PFOA: 4ppt
  - PFOS: 4 ppt
  - PFHxS: 10 ppt
  - PFNA: 10 ppt
  - HFPO-DA (Gen X): 10 ppt
- In addition, the EPA adopted a hazard index approach to address mixtures of PFHxS, PFNA, HFPO-DA, and PFBS.
- On November 27, 2024 DEC proposed to update the Vermont Water Supply Rule, adopting the proposed federal MCLs. Two public meetings were held in early January.
- DEC planning this winter/early spring to update the Vermont Groundwater Protection Rule and Strategy to incorporate the federal MCL as both a permitting standard and cleanup level for contamination.

PFAS Impacts in Water Systems

Public Water Supplies

- 620 systems subject to Vermont testing requirements (public community and NTNC systems).
- 19 (3%) systems have exceeded VT's current PFAS MCL (20 ppt for PFOA, PFOS, PFHxA, PFHpA, PFNA.
- 93 (15%) systems have a detectable level of a regulated PFAS

Private Water Supplies

- Approximately 40% of Vermont's drinking water is through a private supply.
- Vermont sampled 514 wells.
- 11 (2%) exceeded VT's MCL
- 22 (4%) exceed EPAs proposed MCL
- 116 (23%) have a detectable level of a regulated PFAS

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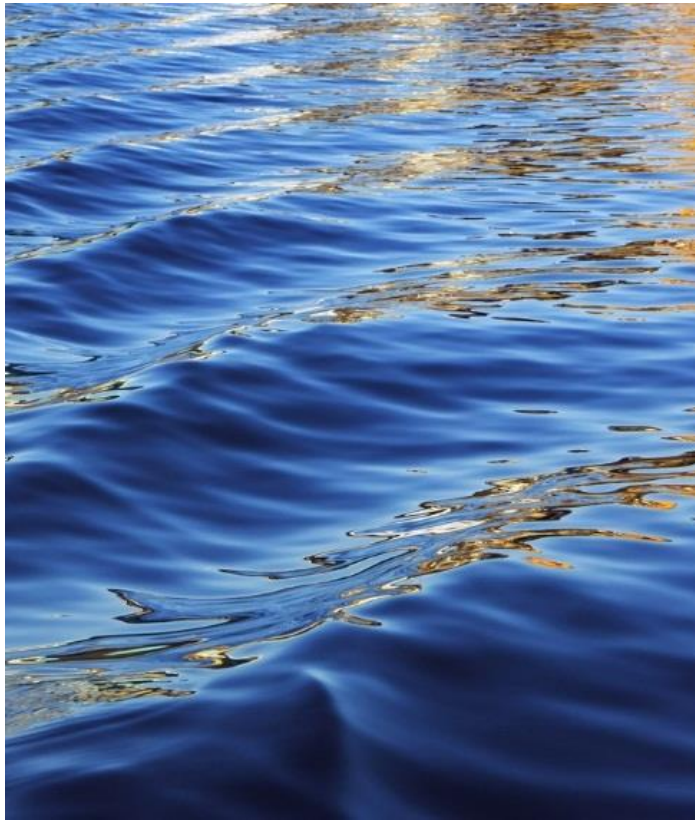
PFAS in Surface Water



Vermont WQS --Aquatic Life Criteria

- EPA has issued aquatic life criteria for PFAS. The following will be incorporated into the next revision of the Water Quality Standards in early 2026.

Table 1—Final Recommended Freshwater Aquatic Life Water Quality Criteria for PFOA and PFOS

Criteria component	Acute water column (CMC) [1]	Chronic water column (CCC) [2]	Invertebrate whole-body	Fish whole-body	Fish muscle
PFOA Magnitude	3.1 mg/L	0.10 mg/L	1.18 mg/kg ww [4]	6.49 mg/kg ww [4]	0.133 mg/kg ww.[4]
PFOS Magnitude	0.071 mg/L	0.00025 mg/L	0.028 mg/kg ww [4]	0.201 mg/kg ww [4]	0.087 mg/kg ww.[4]
Duration	1-hour average	4-day average	Instantaneous.[3]		
Frequency	Not to be exceeded more than once in three years, on average	Not to be exceeded more than once in three years, on average	Not to be exceeded.[5]		

[1] *Criterion Maximum Concentration.*

[2] *Criterion Continuous Concentration.*

[3] *Tissue data provide instantaneous point measurements that reflect integrative accumulation of PFOA or PFOS over time and space in aquatic life population(s) at a given site.*

[4] *Wet-Weight.*

[5] *PFOA and PFOS chronic freshwater tissue-based criteria should not be exceeded, based on measured tissue concentrations representing the central tendency of samples collected at a given site and time.*

PFAS Impacts in Wastewater Systems

POTW Testing

- Phase 1: Vermont is testing influent and effluent, quarterly, at all POTWs
- Grab samples (2 of 4 quarters complete)
- Avg influent = 26ppt (2-1349 ppt)
- Avg effluent = 68ppt (5-2323 ppt)
- Phase 2: Conduct sampling within sewers for source identification

Sewer Sampling

- Conducted testing within sewers of two Vermont communities
- Testing pump stations with measured flow allows for calculation of mass of PFAS (g/day) contributing to the POTW influent from that location
- Results show that **residential sectors** of towns contributed more mass of PFAS to POTW

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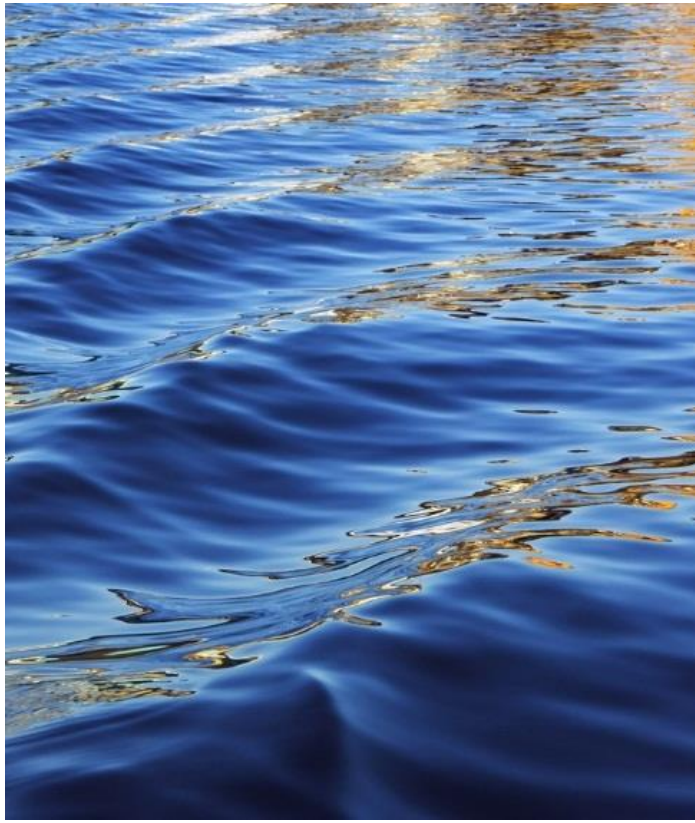
PFAS in Regulated Wastes



PFAS Testing Results at VT Land Application Sites

- Starting in 2019, tested soils and groundwater at all active class B biosolids and septage land application sites (~30 sites)
- If PFAS detected above VT GWES,
  - test proximate drinking water wells (0.25 mi)
  - site closed for land application and corrective action plan developed
- # active permits prior to testing = 14
- # active permits post testing = 4

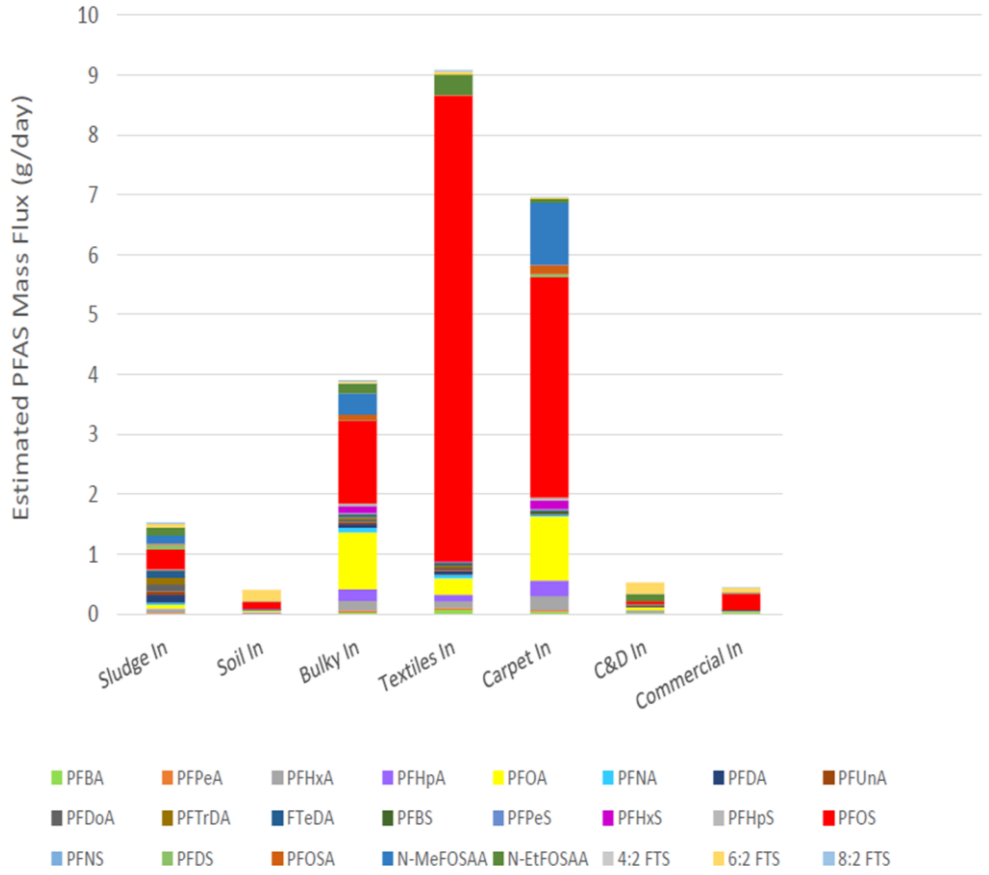
- 65 fields had soil tested
- Avg PFAS in soil = 13.9 ppb (ND-48.5 ppb)
- 138 groundwater wells tested
- 31 (22%) of wells tested above VT GWES
- 44 private drinking water wells tested
- 0 (0%) of DW wells with PFAS above VT MCL and only a few had any detections

Management of Land Application in Vermont

- In 2024, Vermont adopted an interim strategy for the management of biosolids in the State. This strategy primarily dealt with Class A and EQ biosolids (further treated to reduce pathogens). It required that all biosolids must test and any being land applied with concentrations above background PFAS levels must:
  - Meet siting requirements to seasonal high groundwater and drinking water supplies;
  - Report to DEC on the generator, PFAS testing data, location where applied, amount applied, and description of the materials.
- On January 14, 2025 EPA released a human health risk assessment for biosolids. DEC and AAFM are evaluating the assessment for further policy recommendations.
- DEC plans to adopt the interim strategy and other risk management strategies in a rule amendment anticipated this spring/summer.

Management of Landfill Leachate at NEWSVT

- New England Waste Services of Vermont is implementing a pilot of a leachate treatment system at their Coventry, VT landfill.
- The treatment system has been highly successful in removing PFAS from the leachate.
- NEWSVT is also looking to pilot additional destruction and treatment technologies to further reduce PFAS.
- The figure to the right is from a 2019 report and shows the significant contributions of PFAS to the landfill.



Protect Vermonters from Existing Exposures to PFAS

Key Action Items

- Continue implementation of the Vermont PFAS Maximum Contaminant Level.
- Develop laboratory capacity in Vermont.
- Engage with impacted water systems to ensure maximum utilization of state and federal funding to address PFAS.
- Update drinking water standards based on EPA's regulation to establish national PFAS MCLs.
- Continue to identify and remediate PFAS contamination sources at sites across Vermont.
- Continue to evaluate the need for a Vermont Water Quality Standard based on expanded surface water and fish tissue testing.
- Develop an interim strategy to reduce risks associated with managing biosolids and residual materials that contain PFAS.
- Monitor potential discharges of PFAS from landfills, assess impacts to groundwater or water supplies, and provide treatment/remediation.
- Hold PFAS manufacturers accountable.

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Protect Vermonters from Existing Exposures to PFAS

Public Drinking Water Systems

- PFAS VT MCL @ 20 ppt
- Testing at all PCWS and NTNCs, and select TNCs
- Response/Remediation based on levels of PFAS
- Funding: SRF, Emerging Contaminants Grants
- EPA's proposed MCL

Investigating and Remediating Sites Contaminated by PFAS

- Airports and Fire Fighting Facilities
- Superfund Sites

Adopting Water Quality Standards and Monitoring Surface Waters for PFAS

- Water Quality Standards (bioaccumulation stds)
- Monitoring Surface Water and Fish Tissue

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Protect Vermonters from Existing Exposures to PFAS

Investigations and Response to PFAS in Wastewater Sludges

- Investigating PFAS in Biosolids and Sludges
- Responding to PFAS in Biosolids and Sludges

Reducing the Impacts of PFAS from Landfills on the Environment

- Monitoring and Managing PFAS from Landfills
- Leachate treatment

Holding PFAS Manufacturers Accountable

- State's Lawsuit against 3M, DuPont

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Encourage EPA to Provide National Leadership on the Management of PFAS

Key Action Items

- Establish surface water standards for the protection of human health.
- Advocate that EPA ban or restrict certain PFAS containing products using the Toxic Substances Control Act.
- Establish standards for classes of PFAS.
- Provide research on the health effects for additional PFAS compounds.
- Improve and expand methods for detecting PFAS compounds in environmental media.
- Provide guidance/regulation for the disposal and destruction of PFAS.

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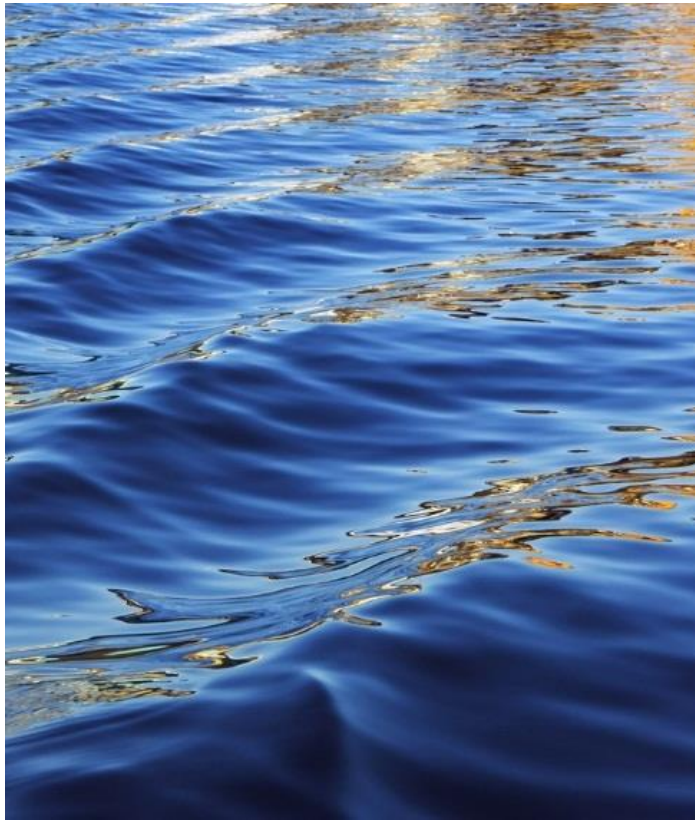
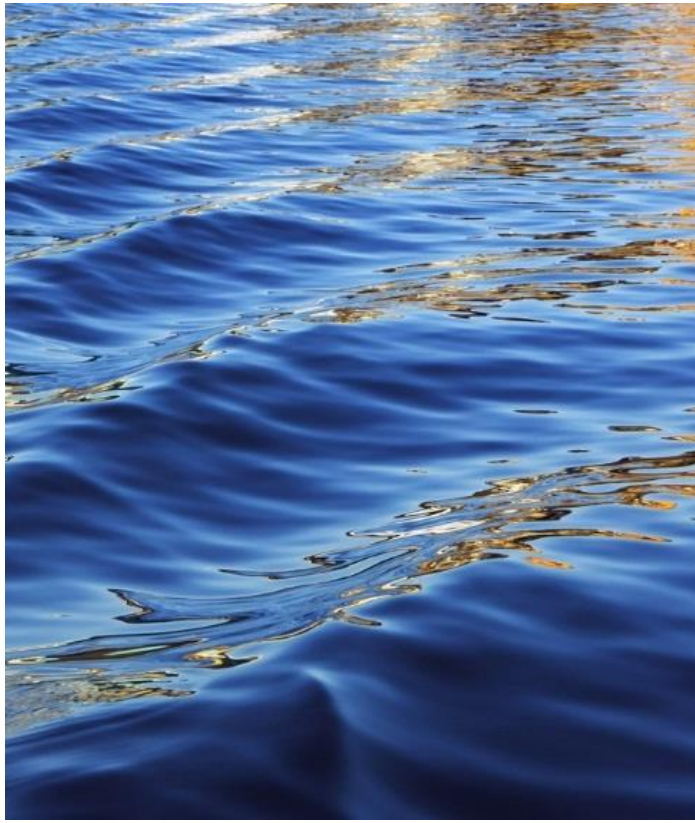
Questions on PFAS Roadmap



PFAS in Consumer Products



What Products has Vermont already Phased Out

Act 36 of 2021

- **Class B Firefighting Foam** (eff. 10/23)
- **Firefighter turnout gear** (notice only)
- **Direct contact food packaging** (7/23)
- **Rugs, carpets, and aftermarket water resistant treatments** (7/23)
- **Ski wax** (7/23)

Act 131 of 2023

- **Cosmetics and menstrual products** (1/26)
- **Adult mattresses** (1/26)
- **Apparel** (1/27 except for outdoor gear for severe weather which takes effect 1/28)
- **Artificial turf** (1/26)
- **Cookware** (1/26)
- **Incontinency protection products** (1/26)
- **Juvenile products** (1/26)
- **Textiles** (1/27)

Act 131 Consumer Products Report

Sec. 9 of Act 131 required ANR, in consultation with the Agency of Agriculture, Food and Markets, Department of Health, and Office of the Attorney General to report back with recommendations and draft legislation on how to effectively manage PFAS within the State, how to inform the public of risk, what Agency would be responsible for management of PFAS in consumer products, and recommendations for the definitions of "PFAS," "consumer product," and "intentionally added."

Addition of products to be phased out

- The report recommends that the following products have PFAS phased out of use:
  - Cleaning products;
  - Dental floss; and
  - Fluorine treated containers.

Definition of PFAS (proposed by ANR)

Current definition

"Perfluoroalkyl and polyfluoroalkyl substances" or "PFAS" means a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom.

Proposed definition

"Perfluoroalkyl and polyfluoroalkyl substances" or "PFAS" means as defined in 40 C.F.R. § 705.3. The Commissioner may adopt exemptions to the definition of PFAS if that chemical is federally regulated and not toxicologically similar to chemicals defined as PFAS. The Commissioner may add chemicals to the definition of PFAS if that chemical contains at least one fully fluorinated carbon atom and is toxicologically similar to chemicals defined as PFAS.

Definition of intentionally added

Current definition

"Intentionally added" means the addition of a chemical in a product that serves an intended function in the product component.

Proposed definition

"Intentionally added" means either of the following: (A) when a person manufacturing a product or product component the final product or product component could contain PFAS, including because: (i) PFAS or PFAS precursors are added to the product or product component; (ii) PFAS or PFAS precursors are used in the manufacturing process of the product or product component; or (iii) PFAS are present in the final product as a byproduct or impurity; or (B) the product or a product component contains PFAS above thresholds established by the Secretary.

Definition of Consumer Product

"Consumer product" means any tangible personal property that is distributed in commerce, and which is used for personal, family, or household purposes. "Consumer products" includes product categories that are normally used by households but sold to businesses (e.g. commercial carpets or commercial floor waxes). "Consumer product" does not include complex durable goods or food.

"Complex durable goods" means a consumer product that is a manufactured good composed of 100 or more manufactured components, with an intended useful life of 5 or more years, where the product is typically not consumed, destroyed, or discarded after a single use. This includes replacement parts for complex durable goods not subject to a phase out under this chapter.

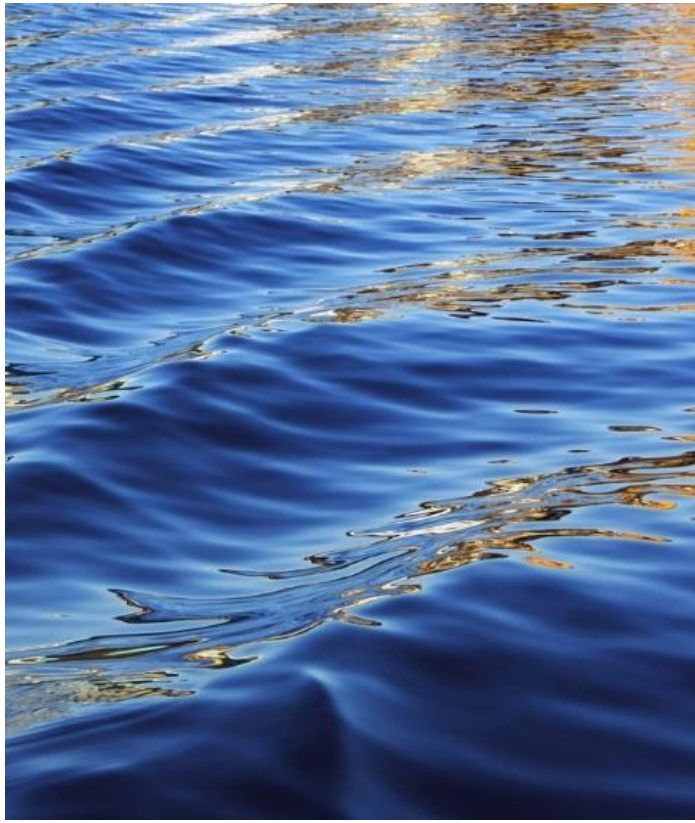
Phase out of PFAS Added Consumer Products

- The report recommends phasing out PFAS in consumer products
- The report recommends that (1) preempted products; (2) products made with at least 50% recycled content; (3) drugs, medical devices, biologics, or diagnostics regulated by FDA unless specifically included by law; (4) products registered or authorized for use under the Federal Insecticide, Fungicide, and Rodenticide Act; and (5) replacement parts for products manufactured before the phase out would all be exempt.
- The report proposes that there be an unavoidable use of PFAS waiver for up to 5 years (can be renewed) if: (1) the product is critical to the functioning of society (see proposal for detail); (2) there is no less harmful alternative to PFAS that serves a functionally equivalent purpose.
- There is a similar unavoidable use waiver for product classes that can be adopted as a rule by the Secretary for not more than 10 years.
- The report proposes to allow an interjurisdictional clearing house perform some of these tasks with the state.
- These requirements would take effect six months after NE jurisdictions with a population of 15M pass substantially similar legislation.

Who would administer the program?

- The report recommends that the Agency of Natural Resources be charged with the implementation of this program.
- Based on the proposal provided to the legislature, ANR has identified the budget and staff to implement the program without any need for additional budget or staffing.
- The work group considered and rejected a labeling program because of the recommendation to phase out a significant amount of PFAS added consumer products.
- ANR will be responsible for providing information regarding PFAS free alternative products before the phase out or for complex durable goods.

Questions on PFAS in Consumer Products



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