CBIA E2 – 11/19/2021

PFAS Action Plan Update & Regulatory Overview

Speakers: Ray Frigon and Shannon Pociu, CT DEEP Remediation Division

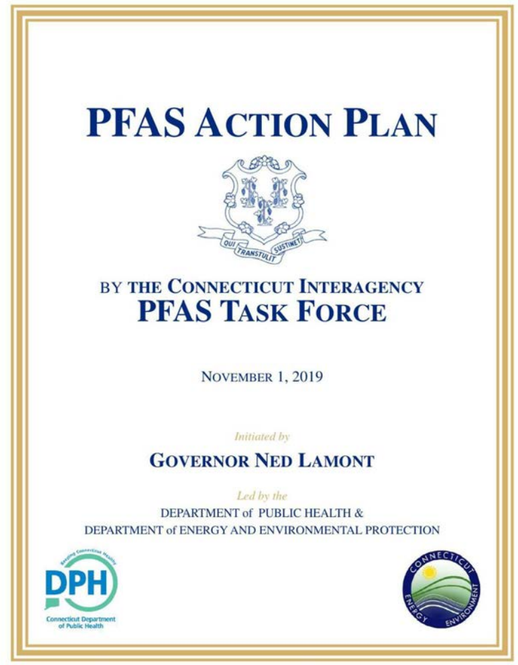
Agenda

- PFAS Action Plan Update
  - Sampling Initiatives
  - AFFF Take-Back
- Current Regulatory Status

- DEEP Program Approaches
  - Remediation Division
  - Water Quality Criteria
  - Municipal Wastewater
  - Discharge Permits
  - Waste Disposal
  - Release Reporting
  - Air
  - Laboratory Methods

CT Interagency PFAS Task Force

ACTION PLAN OVERVIEW



www.ct.gov/CTPFASTaskForce

HUMAN HEALTH

Minimize human health risk for Connecticut residents

POLLUTION PREVENTION

Minimize future releases of PFAS to the environment

REMEDIATION

Identify, assess, and clean up historical releases of PFAS to the environment

Education, outreach, & communication
Legislative opportunities

State Agency Efforts on PFAS

- Putting PFAS Action Plan recommendations *“into action”*
  - ✓ Internal DEEP PFAS working group
  - ✓ Close coordination between DEEP and DPH
  - ✓ Close coordination with other state agencies/entities (DESPP, DAS, CAA, UCONN)
- Keeping up with the science
  - ✓ Participation in regional and national workgroups
  - ✓ Collaboration with local universities
- Outreach and guidance to affected residents, municipalities, health departments, and stakeholder groups

2021 LEGISLATIVE WRAP-UP – PFAS Bills

PA 21-191

(SB 837)

- Bans AFFF use for training/testing upon passage & for firefighting beginning Oct. 1, 2021
- Directs DEEP to identify take-back program for municipal AFFF
- Bans in-state sale of PFAS-containing food packaging by manufacturers/distributors beginning Jan. 2024

PA 21-121

(HB 6666)

- Requires annual PFAS testing by water bottlers that utilize DPH-approved sources (beginning by Jan. 2022)
- Authorizes DPH to prohibit use of bottled water sources with PFAS levels above DPH Action Level

2021 LEGISLATIVE WRAP-UP – PFAS Funding

Public Act 21-111

- $1.15 M/year bond allocation for FY 2022 and FY 2023
- Grants-in-aid to municipalities for:
  - Provision of potable water
  - Assessment and remedial action to address PFAS pollution

Public Act 21-191

AN ACT CONCERNING THE USE OF PERFLUOROALKYL OR POLYFLUOROALKYL SUBSTANCES IN CLASS B FIREFIGHTING FOAM.

- Signed July 13, 2021
- 2 Sections:
  - Section 1: AFFF provisions
  - Section 2: Bans in-state sale of PFAS-containing food packaging beginning Jan. 1, 2024 – amends CGS Section 22a-255h (not being discussed today)

AFFF Ban Summary

Effective dates of bans on use of Class B foam containing PFAS

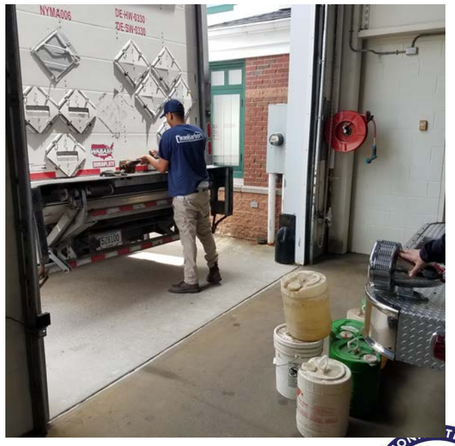
Alternative identified by DEEP is National Foam Universal®F3 Green.

AFFF USE	EFFECTIVE DATE OF BAN
Testing and training	7/13/2021 (Effective upon bill passage)
Firefighting or vapor suppression	10/1/2021
Airports	10/1/2023
Federally-required uses	Allowed until prohibited by Federal law, or 1 year after Federal law changes no longer requiring use.

AFFF TAKE-BACK PROGRAM

- **AFFF Take-Back Program** (DEEP/DESPP, supported by $2M bond)
  - ✓ PFAS-free foam selected by DESPP with DEEP input: Feb. 5, 2021
  - ✓ Take-back program underway for state/municipal AFFF concentrate (30,000 gal. collected to date, est. 40,000 gal. total)

  - ✓ Phase 1 – Container collection and storage/disposal: Launched in May 2021
  - ✓ Phase 2 – Decontamination study: Initiated Summer 2021
  - ❑ Phase 3 – Remove AFFF from and decontaminate apparatus: Pending funding

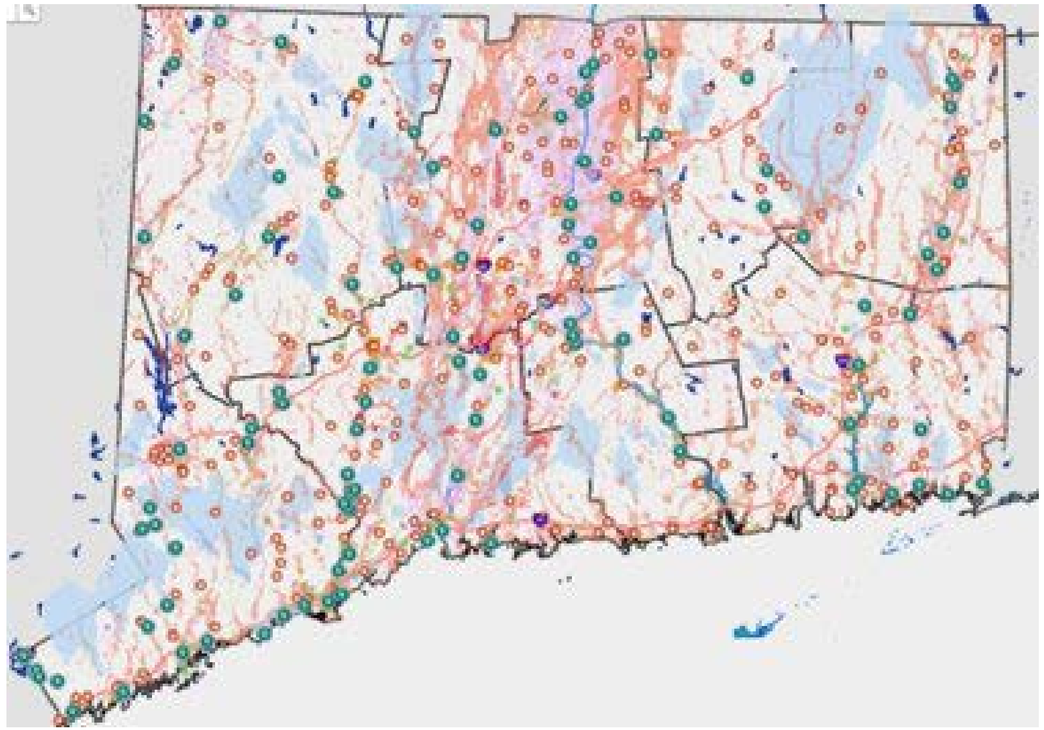


AFFF TAKE-BACK PROGRAM – Decon Study

- **2 Decon Locations & Cleaning Methods**
  - Focus on state's 8 regional foam trailers
  - Trial cleaning of 3 fire trucks
- **Sampling Fluorine-Free Foam from municipal fire departments** that already replaced AFFF

ONGOING PFAS PROJECTS – GIS Project

- **PFAS Vulnerability Study**
  - Comprehensive mapping of ***potential*** PFAS sources and sensitive receptors such as public and private drinking water supplies and surface water/fisheries
  - Intended use: Inform prioritization and planning for future PFAS testing
  - **DEEP is NOT planning to test 2,400 sites.**



ONGOING PFAS PROJECTS – POTW Testing

- Sampling of about 1/3 of POTWs (35)
  - Summer sampling round completed 9/30
  - Second round planned in Feb/March 2022
- Media tested:
  - **Influent, effluent, sludge** at all 35 POTWs
  - **Scrubber water** at the 5 POTWs with incinerators
  - **Surface water** and **fish tissue** samples from 10 receiving waters (summer only)
- Final report anticipated in Spring 2022

ONGOING PFAS PROJECTS – Potable Water Testing

- **Killingworth**
  - DEEP sampling private wells near PFAS detection in a community well water system
    - Approx. 70 private wells tested to date
    - 16 wells exceed DPH Drinking Water Action Level (DWAL) – carbon treatment systems installed
  - Source investigation pending
- **East Hampton**
  - Known AFFF deployment site associated with a fire
  - DEEP and DPH testing private wells potentially impacted
    - 1 private well exceeds DWAL – bottled water provided
  - Sampling on-going

NEW PFAS PROJECTS – UCONN Senior Design

4 PFAS-related Senior Design Projects selected by UConn School of Engineering students for 2021-2022 school year.

1. **Soil Background Study**, may include groundwater and soil leaching analysis (with DEEP, analysis funding-dependent)
2. **In-situ Soil Remediation** alternatives analysis (with DEEP)
3. **PFAS in Artificial Turf** (with DEEP and DPH Environmental Health, analysis funding-dependent)
4. **PFAS Laboratory Extraction** – design a new automated solid phase extraction technique (with DPH Lab Certification Program)

UCONN | UNIVERSITY OF CONNECTICUT

Current Regulatory Status – EPA

PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024 | US EPA

Per- and Polyfluoroalkyl Substances (PFAS) | US EPA

- **Research, Restrict, Remediate**
  - No MCL for drinking water yet. Final rule expected Fall 2023.
  - PFAS not currently regulated as a hazardous waste under RCRA or as a hazardous substance under CERCLA.
    - Hazardous substance proposed rule expected Spring 2022.
  - Evaluating Effluent Limitations Guidelines & NPDES Permits
  - Research on toxicology, analytical methods, remedial technologies.

Current Regulatory Status – CT DPH

- **Drinking Water Action Level for the Sum of 5 PFAS** (11/2016)
  PFOA, PFOS, PFNA, PFHxS & PFHpA
  70 parts per trillion (ppt) or nanograms per liter (ng/L)

  ❖ ***May change in the future as DPH reviews updated information.***

- DPH State Health Laboratory
  - Purchasing lab equipment to analyze PFAS in drinking water samples.
  - Estimated in-service mid-2022.

Current Regulatory Status – CT DEEP

DEEP Bureau Approaches

Water Protection & Land Reuse

- Remediation
- Water Planning & Management

Materials Management & Compliance Assurance

- Water Permitting & Enforcement Division/Discharge Permits
- Waste Disposal
- Release Reporting

Air

- Hazardous Air Pollutants
- EPA Research
- Incineration

Lab Methods

- Drinking Water
- Environmental Matrices

Remediation Division Policy

FROM DEEP Website: Contaminants of Emerging Concern (ct.gov)

"The Remediation Standard Regulations do not contain numeric cleanup standards for emerging contaminants but do require remediation using the procedures for **Additional Polluting Substances** (APS). ***Regulated parties and their environmental professionals should consider whether emerging contaminants are constituents of concern when evaluating Phase I information and test for those emerging contaminants where warranted. Doing so will help avoid uncertainty, audits, and further work in the future."***

If PFAS are contaminants of concern based on site history/ operations, they must be included in site characterization.

RSR Additional Polluting Substance Criteria

Applies to ∑ PFOA, PFOS, PFNA, PFHxS & PFHpA

Remediation Standard	Criterion
Residential Direct Exposure Criterion	1.35 mg/kg
Industrial/Commercial Direct Exposure Criterion	41 mg/kg
GA Pollutant Mobility Criterion	1.4 µg/kg
GB Pollutant Mobility Criterion	14 µg/kg
Groundwater Protection Criterion (adopts DPH's Drinking Water Action Level for ∑ PFOA, PFOS, PFNA, PFHxS, PFHpA)	70 ng/L
Surface Water Protection Criterion	In Development

Requesting APS and Alternative Criteria (ct.gov)

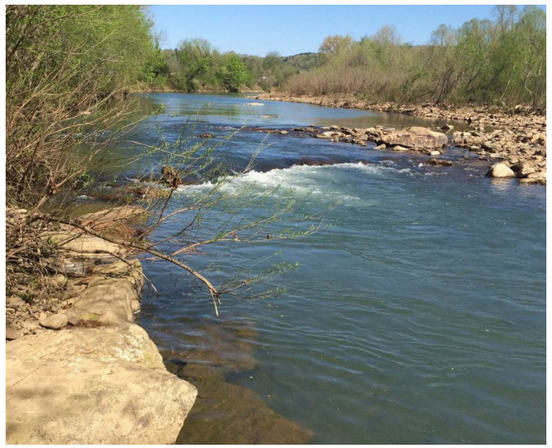
Significant Environmental Hazards & PFAS

CGS Section 22a-6u(c)

- After July 1, 2015, if a TEP **in the course of investigating and remediating** pollution on or emanating from a parcel determines **pollution has affected** a public or private **drinking water supply well**…**with any substance** from the release **for which there is no RSR criterion**,
  - o TEP shall notify client and owner of property within 7 days.
  - o Owner of parcel that is the source of pollution to a drinking water well shall, within 30 days:
    1) Perform confirmatory sampling of well and submit report to Commissioner with a plan for further action, and
    2) Notify Commissioner in writing.

Water Planning & Management Division

- **Water Quality Criteria** development
- Plans for **surface water & fish tissue sampling** statewide (pending funding availability)
- **Municipal Wastewater**
  - Initial sampling of POTWs
  - Information gathering
  - Will identify “sewersheds” with higher PFAS for future prioritization and outreach to reduce PFAS discharges.



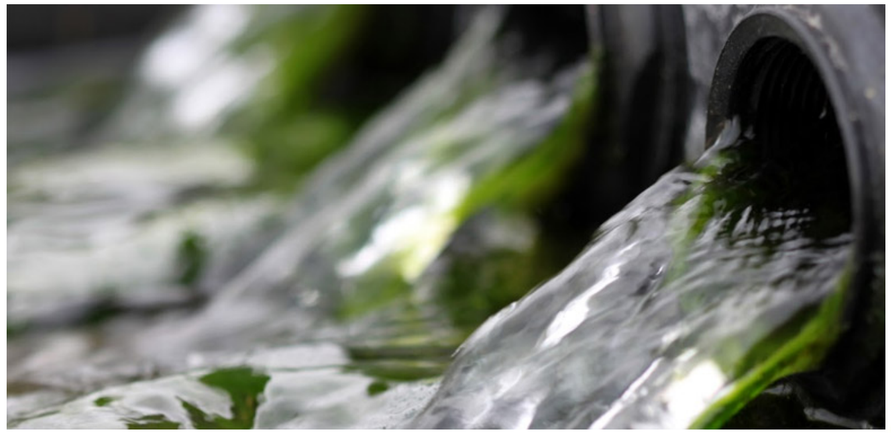
Water Permitting & Enforcement Division (1)

- **Discharge Permit Focus**: Preventing new releases to the environment.

- For new permits, renewals, or modifications for facilities with specific SIC/NAICS codes that could be associated with PFAS use:
  - Requiring an inventory of products/chemicals used.
  - If PFAS used or suspected present, requiring screening of 2 representative grab samples.
    - So far, most facilities have confirmed they are not using PFAS.

Water Permitting & Enforcement Division (2)

- Instances of known PFAS: conservatively requiring treatment to Non-Detect prior to discharge to surface water or POTW
  - Modified EPA Method 537.1/Isotope Dilution/DoD QSM Table B-15 for groundwater remediation wastewaters
  - Draft EPA Method 1633 – for industrial wastewater discharges
  - Not regulating “J” values



PFAS Waste Disposal

- EPA's December 2020 "Interim Guidance on Destroying and Disposing of Certain PFAS and PFAS-Containing Materials" – to be updated by Fall 2023.
- Following EPA developments with respect to hazardous waste and hazardous substance listings
- CT Regulated Waste - CR04 – waste chemical liquids
- Contact receiving facility for acceptance guidelines

PFAS Release Reporting

- **Current Requirements:** **Report all PFAS releases**, including AFFF.
- **Future Release Reporting:** PFAS included in proposed regulations.

❖ ***Report a release of any quantity of liquid containing PFAS in any amount.***

PROPOSED (NEW) Sec. 22a-450-2(b)(1)(K) Releases Subject to Reporting.

(b) A Reportable Material Other than Oil or Petroleum. A person required to report a release, shall report the release of a reportable material, other than oil or petroleum, specified in this subsection.

(1)The release of any quantity of a reportable material, other than oil or petroleum, if:

(K)The release contains per- or polyfluoroalkyl substances, commonly referred to as PFAS, in liquid form, and includes, but is not limited to, chemicals commonly referred to as PFOS, PFOA, PFNA, PFHpA, and PFHxS.

Air Bureau

- PFAS not currently listed as Hazardous Air Pollutants (RCSA Section 22a-174-29)
  - Exception – “PTFE decomposition products” listed but no hazard limiting value established.
- Following EPA research and guidelines
  - Air sampling methods still being developed.
- Concerns about incineration
  - Complete combustion/mineralization of PFAS?
  - Possibility of Products of Incomplete Combustion (PICs) forming if temperature & duration are insufficient to fully destroy PFAS.

PFAS LAB METHODS – Drinking Water

- **Drinking Water Methods**
  - EPA Method 537 ver. 1 (14 PFAS)
  - EPA Method 537.1 (18 PFAS)
  - EPA Method 533 (29 PFAS) – focus on shorter chain PFAS

- **Environmental Sample Analysis**
  - Modified EPA 537.1 with isotope dilution – being used for soil, groundwater, surface water, etc.

Caution: Modifications are not consistent among labs!

PFAS LAB METHODS – Environmental Matrices

- **EPA Methods 3512 and 8327** finalized July 2021
  - SW-846 Method, preparation and direct injection, external standard
  - 24 PFAS compounds in non-potable water

❖ **Draft EPA Method 1633**, announced 9/2/2021
  - Clean Water Act Method, developed by EPA and DoD, broadly conforms to DoD Quality Systems Manual ver. 5.3, Table B-15, isotope dilution
  - **40 PFAS** compounds in **wastewater, surface water, groundwater, soil, biosolids, sediment, landfill leachate, and fish tissue**
  - Though not required until officially promulgated through rulemaking, EPA recommends using now for NPDES permits.

DEEP Remediation Division recommends use of
Modified EPA Method 537.1 with isotope dilution/DoD QSM Table B-15 or
Draft EPA Method 1633/DoD QSM Table B-24.

NEXT STEPS FOR DEEP

AMBIENT WATER QUALITY & SURFACE WATER PROTECTION CRITERIA

Remediation Standard	APS Criterion*
Residential Direct Exposure Criterion	1.35 mg/kg
Industrial/Commercial Direct Exposure Criterion	41 mg/kg
GA Pollutant Mobility Criterion	1.4 µg/kg
GB Pollutant Mobility Criterion	14 µg/kg
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Surface Water Protection Criterion	In Development

*Applies to ∑ [PFOA, PFOS, PFHxS, PFNA, PFHpA]

DISCHARGE PERMIT MONITORING AND LIMITS

LANDFILL MONITORING

SUPPLEMENTAL BID FOR PFAS LAB ANALYSIS

- To include additional matrices and methods

QUESTIONS?

DEEP PFAS Webpage
PFAS Task Force Webpage
CT PFAS Action Plan

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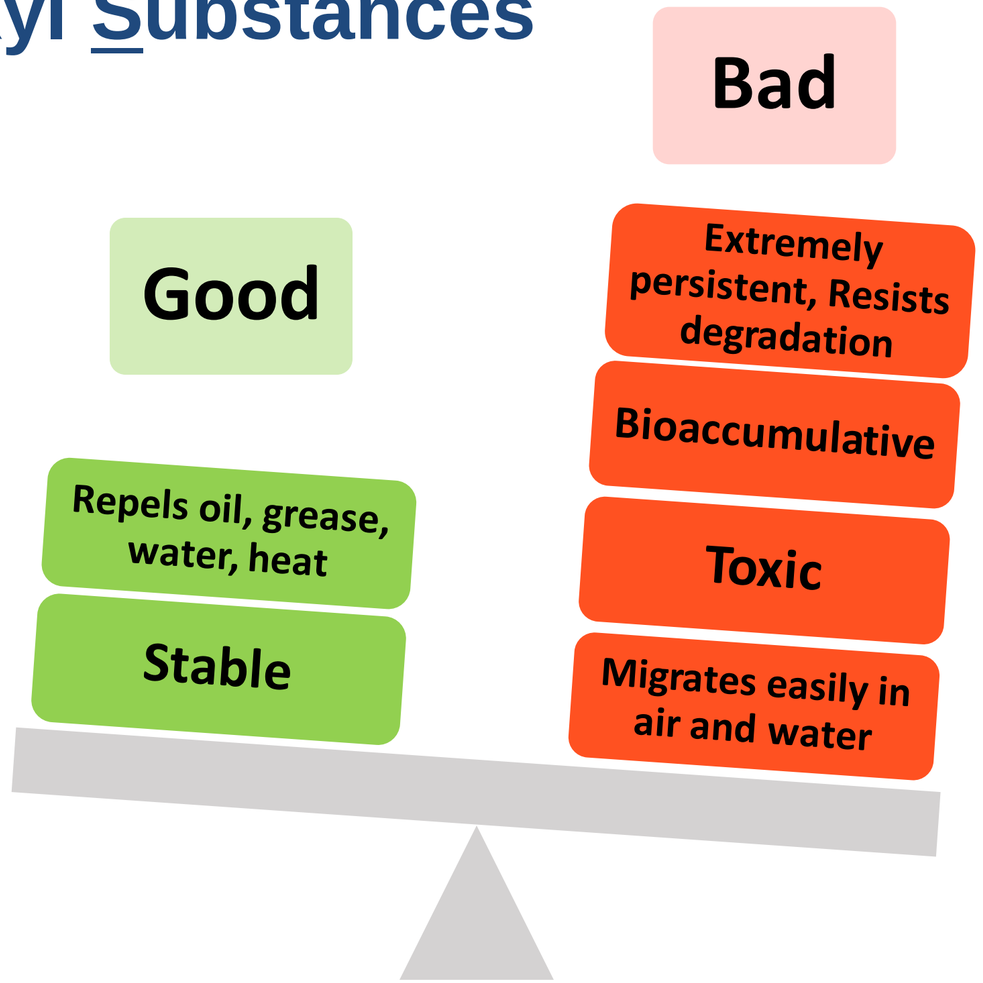
What are PFAS?

PFAS = Per- and Polyfluorinated Alkyl Substances

- Family of >5,000 chemicals
- Widely used in industrial processes and consumer products since 1950s
- Common products
  - Non-stick cookware
  - Grease-resistant food packaging
  - Waterproof apparel
  - Stain-resistant fabrics & carpet
  - Aqueous Film-Forming Foam (AFFF)



Problems Caused by PFAS

- Health effects on multiple organs and phases of life
- Present in human blood worldwide
- Polluted drinking water supplies worldwide – now issue in US
- Ubiquitous discovery in the environment
- Replacement chemicals also a problem

PFAS Uses and Sources

















Public Act 21-191 - Summary

- **Extensions to comply with 10/1/2021 AFFF ban** will be allowed for**:**
  - Chemical plants
  - Oil refineries
  - Terminal, storage, and distribution facilities for flammable liquids
- Must first apply to DEEP for 2-year extension.
  - Extension of Class B PFAS Firefighting Foam Use (ct.gov)
  - Will need to provide:
    - ✓ Justification for request
    - ✓ Containment, treatment, and disposal measures for AFFF

Public Act 21-191 - Summary

- DEEP shall develop or identify a **Take-Back Program for municipal AFFF by 10/1/2021**
  - Currently underway

- Provisions may be **enforced by DEEP** within available appropriations.