



CONNECTICUT'S AFFF TAKE-BACK PROGRAM

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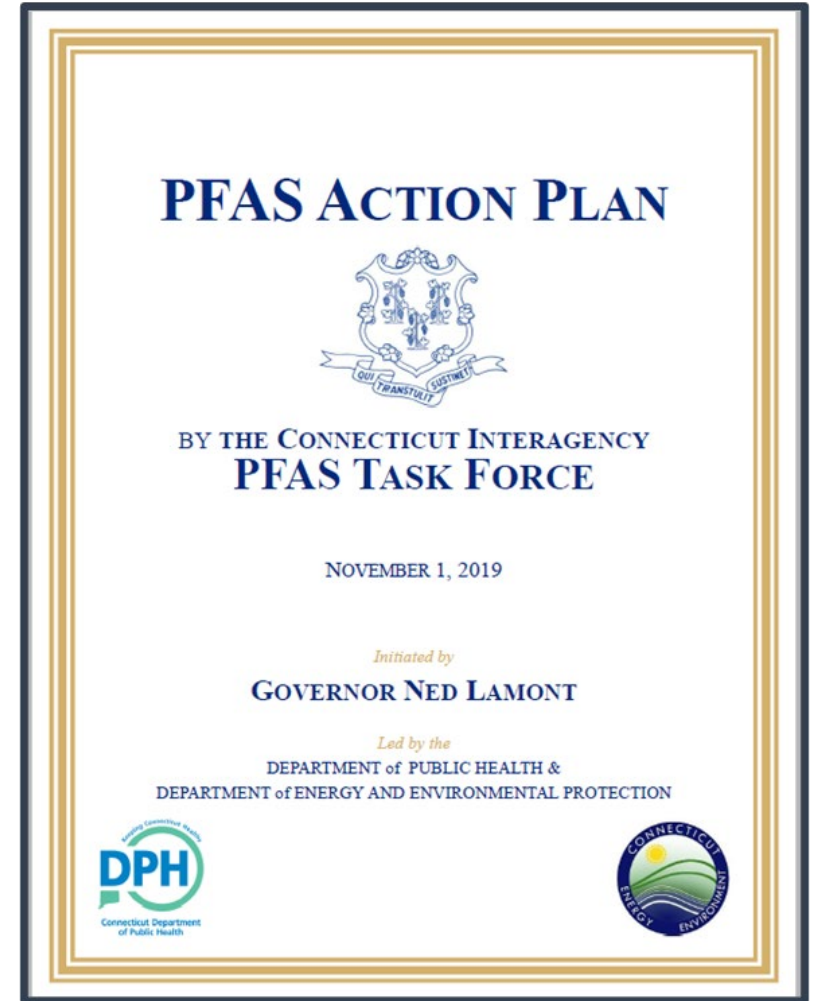
AGENDA

- **Connecticut's Interagency PFAS Action Plan**
- **Legislation**
- **Firefighting Foam Alternative**
- **Take-Back Program Due Diligence and Logistics**
- **Results of AFFF Decon Pilot**
- **Next Steps**
- **Questions**

CONTEXT: 2019 PFAS ACTION PLAN

Comprehensive strategy for protecting Connecticut's citizens from PFAS exposure and protecting the environment from the effects of PFAS pollution.

- 34 recommended actions
- 4 Strategic Focus Areas:
 - Protecting the Health of CT Citizens
 - Pollution Prevention
 - Remediation
 - Education, Outreach and Communication



CT AFFF TAKE-BACK PROGRAM BACKGROUND

- ❑ Planning for an AFFF Take-Back Program began in 2019 prior to the State's [PFAS Action Plan](#)
- ❑ **June 2019** - [Advisory Bulletin](#) issued on AFFF use
- ❑ **2020** – CT DEEP received state funding for Take-Back Program and private well testing for PFAS
- ❑ **April 28, 2021** – State Contract issued for Alternative Fluorine-Free Foam purchase
- ❑ **June 30, 2021** – Declaration: [Alternative Fluorine-Free Foam \(F3\) identified for use](#) in state fire apparatus
- ❑ **July 13, 2021** – New state law signed: AN ACT CONCERNING THE USE OF PERFLUOROALKYL OR POLYFLUOROALKYL SUBSTANCES IN CLASS B FIREFIGHTING FOAM. [CT General Statutes Sec. 22a-903a](#)
 - Banned training with AFFF upon passage
 - Banned most AFFF uses as of 10/1/21
 - Directed DEEP to initiate an AFFF Take-Back Program (began in April 2021)



CT NEXT GENERATION FOAM COMMITTEE

- Convened March 2019 by the CT Dept. of Emergency Services & Public Protection's Commission on Fire Prevention & Control
- Objective: Identify a fluorine-free, environmentally friendly replacement for AFFF used in CT's regional foam trailers
- Members
 - CT Dept. of Emergency Services & Public Protection, State Fire Administrator
 - CT DEEP, Emergency Response Unit and Remediation Division
 - CT Municipal Fire Department leaders
 - Petroleum Terminal representative
 - Expanded to include representatives of MassDEP, RI DEM, and ME DEP who wished to observe



FLUORINE-FREE FOAM (F3) EVALUATION

❑ Replacement Foam Requirements for Fire Services:

- ✓ Effective on both polar and nonpolar flammable liquids
- ✓ Meet NFPA 11 – Standard for Low-, Medium-, and High-Expansion Foams
- ✓ Meet UL-162 GFGV – Foam Equipment & Liquid Conc.
- ✓ Foam trailer equipment compatibility (aeration nozzles)

❑ Requirements for Environmental Protection:

- ✓ **Favorable laboratory report = Fluorine-free + No regrettable substitutions**
- Invited vendors of several “fluorine-free” firefighting products
- Reviewed [GreenScreen™](#) (2018) list of certified foams
- Consulted with LASTFire representative



TAKE-AWAYS FROM F3 TESTING/ EVALUATION

F3 products considered were not suitable for LASTs with subsurface injection fire suppression systems

Foam concentrate is a tough matrix to analyze!

- Dilution needed → Detection limits on order of ppm or ppb vs. drinking water advisory levels in ppt

Defer to GreenScreen Certified™ for Firefighting Foam

CT Fire Services Next Generation Foam Committee identified an F3 product for use in state apparatus – National Foam Universal®^{F3} Green



CT AFFF TAKE-BACK PROGRAM OVERVIEW

✓ Phase 1 – Container Collection & Disposal of AFFF concentrate from state/municipal fire departments

- April 2021 – April 2022
- 35,300 gal.+ collected from >250 town fire departments

✓ Phase 2 – PFAS Decontamination Study/ Regional Foam Trailer Cleaning:

- Summer 2021 - Summer 2022
- Now purchasing new foam trailers

□ Phase 3 – Dispose of AFFF from ~400 municipal fire trucks:

- Pending funding



LOGISTICS: AFFF DISPOSAL

- DEEP Haz Waste, Air, Water staff reviewed RCRA, CAA, and CWA permits and compliance history of potential disposal locations
- Ongoing review of community relations and environmental justice context of potential proposed storage, treatment and disposal
- Review other states/federal actions, EPA Interim Guidance on Destruction and Disposal of Certain PFAS
- Confirm DEEP acceptance of contractor and treatment and disposal approach

Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances

INTERIM GUIDANCE FOR PUBLIC COMMENT
DECEMBER 18, 2020

The contents of this document do not have the force and effect of law and are not meant to bind the public in any way. This document is intended only to provide clarity to the public regarding existing requirements under the law or agency policies. This guidance is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person.

Clean Harbors®		WASTE MATERIAL PROFILE SHEET	
Clean Harbors Profile No. CH2151630			
A. GENERAL INFORMATION			
GENERATOR EPA ID #REGISTRATION #	CTCESQC99999	GENERATOR NAME:	Connecticut State of
GENERATOR CODE (Assigned by Clean Harbors)	CON207	CITY	Hartford
ADDRESS	79 Elm Street	STATE/PROVINCE	CT
CUSTOMER CODE (Assigned by Clean Harbors)	CON207	PHONE:	(860) 424-3377
ADDRESS	79 Elm Street	CITY	Hartford
		STATE/PROVINCE	CT
		ZIP/POSTAL CODE	06106
B. WASTE DESCRIPTION			
WASTE DESCRIPTION: Anti fire fighting foam concentrate			
PROCESS GENERATING WASTE: virgin product			
IS THIS WASTE CONTAINED IN SMALL PACKAGING CONTAINED WITHIN A LARGER SHIPPING CONTAINER? No			
C. PHYSICAL PROPERTIES (at 25C or 77F)			
PHYSICAL STATE	NUMBER OF PHASES/LAYERS	VISCOSITY (if liquid present)	COLOR
SOLID WITHOUT FREE LIQUID	<input checked="" type="checkbox"/> 1 2 3 TOP 0.00	<input checked="" type="checkbox"/> 1 - 100 (e.g. Water)	clear
POWDER	% BY VOLUME (Approx.) MIDDLE 0.00	101 - 500 (e.g. Motor Oil)	
<input checked="" type="checkbox"/> MONOLITHIC SOLID	BOTTOM 0.00	501 - 10,000 (e.g. Molasses)	
<input checked="" type="checkbox"/> LIQUID WITH NO SOLIDS		> 10,000	
LIQUID/SOLID MIXTURE			
% FREE LIQUID	ODOR	BOILING POINT °F (°C)	MELTING POINT °F (°C)
% SETTLED SOLID	NONE	<= 95 (<=35)	< 140 (<60)
% TOTAL SUSPENDED SOLID	<input checked="" type="checkbox"/> MILD	95 - 100 (35-38)	140-200 (60-93)
SLUDGE	STRONG	101 - 129 (38-54)	> 200 (>93)
GAS/AEROSOL	Describe:	<input checked="" type="checkbox"/> >= 130 (>54)	TOTAL ORGANIC CARBON
			<= 1%
			1-9%
			>= 10%
FLASH POINT °F (°C)	pH	SPECIFIC GRAVITY	ASH
			BTU/LB (MJ/kg)

Facility Audit: Lambton, ON



ACORD		CERTIFICATE OF LIABILITY INSURANCE		Page 1 of 2		DATE (MM/DD/YYYY)	
						10/28/2016	
THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.							
IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).							
PRODUCER		Wills of Massachusetts, Inc. c/o 26 Century Blvd. P. O. Box 395191 Nashville, TN 37230-5191		CONTACT NAME PHONE FAX E-MAIL ADDRESS		877-945-7378 888-467-2378 certificates@wills.com	
INSURED		Clean Harbors Environmental Services, Inc. 62 Longwater Drive Norwell, MA 02061		INSURER A: ACE American Insurance Company INSURER B: American Guarantee and Liability Insurance INSURER C: ACE American Insurance Company INSURER D: Indemnity Insurance Company of North America INSURER E: INSURER F:		22667-001 26247-003 26267-076 43575-003	
COVERAGES		CERTIFICATE NUMBER: 23763527		REVISION NUMBER:			
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.							
INSR	TYPE OF INSURANCE	ACORD SUBS	POLICY NUMBER	POLICY EFF	POLICY EXP	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY	Y	ID0027858478	11/1/2016	11/1/2017	EACH OCCURRENCE	\$ 2,000,000
	CLAIMS-MADE X OCCUR					DAMAGE TO RENTALS	\$ 500,000
	Y					AMED EXCL (Auto/Aviation/Aviation)	\$ 5,000

LOGISTICS: AFFF INVENTORY

CT Commission on Fire Prevention and Control surveyed fire departments in 2019-2020




- Volume of AFFF in containers
- Volume of AFFF onboard apparatus
- Fire Training Areas – self-reported

Survey distributed via ListServ

Established dedicated email address to receive responses/questions

Reported Inventory:

- Approximately 40,000 gallons of AFFF reported by 139 fire departments (includes 4 state airports)
- About half in containers; half onboard apparatus.

Fire Department Foam Inventory Form			
Department			
Address			
Contact Name		Phone #	
The foams of concern are Legacy Foams manufactured prior to 2003 and Modern Fluorinated foams manufactured prior to 2016 including AFFF 3%; AFFF-ATC or AR-AFFF 1%/3%, 3%/3% or 3%/6%; FLUOROPROTEIN FOAM CONCENTRATE 3% or 6%; FILM FORMING FLUORO-PROTEIN (FFFP) and Unknown type foams			
Legacy Foams Manufactured Prior to 2003			
<input type="checkbox"/> 5 Gallon Pails	# _____ pails,	total # gallons	_____
<input type="checkbox"/> 30 Gallon Drum	# _____ drums,	total # gallons	_____
<input type="checkbox"/> 55 Gallon Drum	# _____ drums,	total # gallons	_____
<input type="checkbox"/> Apparatus Foam	# of Apparatus: _____ Tank Sizes _____		
Modern Fluorinated Foams manufactured prior to 2016			
<input type="checkbox"/> 5 Gallon Pails	# _____ pails,	total # gallons	_____
<input type="checkbox"/> 30 Gallon Drum	# _____ drums,	total # gallons	_____
<input type="checkbox"/> 55 Gallon Drum	# _____ drums,	total # gallons	_____
<input type="checkbox"/> Apparatus Foam	# of Apparatus: _____ Tank Sizes _____		
How/Where Is Foam Stored? Drinking Well present? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Address(es) where foam training has occurred (Continue on Reverse Side If Needed):			
			Drinking Well present? <input type="checkbox"/> Yes <input type="checkbox"/> No
			Drinking Well present? <input type="checkbox"/> Yes <input type="checkbox"/> No
			Drinking Well present? <input type="checkbox"/> Yes <input type="checkbox"/> No
			Drinking Well present? <input type="checkbox"/> Yes <input type="checkbox"/> No
			Drinking Well present? <input type="checkbox"/> Yes <input type="checkbox"/> No
Notes:			
We request your cooperation in returning your survey by July 31, 2019 – You may return your survey by either			
		Email: foam.survey@ct.gov	
		Mail: Commission on Fire Prevention & Control 34 Perimeter Road, Windsor Locks, CT 06096	
		Fax: 860-654-1889	

2021 CONTAINER COLLECTION IMPLEMENTATION – INSTRUCTIONS FOR FIRE DEPARTMENTS



State of Connecticut PFAS AFFF Take Back Program

Container Collection Stage

Overview of PFAS AFFF Take Back Program

To reduce environmental risk from releases of Per- and Poly- fluoroalkyl Substances (PFAS), the State Bond Commission released legislatively authorized funds to advance the State of Connecticut's Interagency PFAS Task Force Action Plan.

One key step in that plan is to implement a Take Back Program to collect Aqueous Film-Forming Foam (AFFF) concentrate from State and Municipal Fire Services once an alternative has been identified.

Stage 1: Collection of containerized foam is the first stage of the Take Back Program.

Stage 2: A second Take Back Program stage will involve the removal of AFFF from fire apparatus on board systems and decontaminate the apparatus and other equipment.

Point of Contact: The Connecticut Department of Emergency Services and Public Protection, Commission on Fire Prevention and Control (DESPP/CFPC) is the point of contact for fire departments. CFPC will inform and coordinate the collection process between the state's permitted contractor, Clean Harbors Environmental Services, Inc. (Clean Harbors)¹ and individual municipal and volunteer fire departments and state agency fire departments/organizations. You may contact the CFPC at foamsurvey@ct.gov.

Replacement Foam: The State of Connecticut is contracting with a vendor to purchase replacement foam (Universal Green) for state agencies. While municipalities may purchase from any vendor, please note that municipalities may also choose to purchase from the state contract. The state vendor information will be posted on the [CT Department of Administrative Services contract board website](#).

¹ The Connecticut Department of Energy and Environmental Protection/Materials Management and Compliance Assurance Bureau/Emergency Response and Spill Prevention Division (DEEP/MMCA/ERSPD) has deployed Clean Harbors Environmental Services, Inc. (Clean Harbors), a contractor from State DAS Contract # 16PSX0197 "Removal and Disposal of Hazardous Waste Streams and Services" to complete tasks associated with the removal and disposal of AFFF containers from local and regional fire departments and multiple state facilities throughout Connecticut.

How the collection process works: The removal and disposal contractor, Clean Harbors, will pick up containers [various sizes of drums, buckets, or other containers] from state agencies and from municipal career and volunteer fire departments. Such contractor will arrange for the appropriate transportation and disposal of collected AFFF concentrate and containers at a permitted disposal facility.

PFAS AFFF Take Back Program Eligibility—Container Collection Stage

- State agencies, regional entities
- Municipal Fire Departments, Career and Volunteer
- Other entities approved by the program

Take Back Program Collection Instruction Steps

1. The State is working from the Foam Survey that most of you replied to in recent months. If you have not indicated to the CFPC that you have foam concentrate ready for pickup, then send an email to foamsurvey@ct.gov, preferably no later than May 7, 2021.
2. Towns and Cities with multiple stations should consolidate containers at one station per town.
3. Clean Harbors will contact you by email with the collection date and time (with a two-hour window).
 - a. An individual from your organization must be present on the pickup date.
 - b. Cancellations must be identified 3 days in advance by contacting Clean Harbors at daiglej@cleanharbors.com with a copy to Deacon.Justin@cleanharbors.com and Pannutod@cleanharbors.com.
3. Place the concentrate containers in an area that is accessible and ensure that the containers are protected from being knocked over. Provide secondary containment or place absorbent materials around the containers while awaiting collection.
4. It is not necessary to empty apparatus or other equipment into containers. A bulk collection will occur later. This stage of the collection program is intended to remove AFFF concentrate in existing stored containers.
5. Do not include materials or wastes that are not AFFF concentrate.
6. This collection does not involve the purchase of replacement foam.

Contacts

If you have any questions, you may contact the Commission on Fire Prevention and Control at foamsurvey@ct.gov or text Nick Wallick at 860-836-8911 or Jeff Morrisette at 860-566-0690.

COLLECTION: CT AFFF TAKE-BACK PROGRAM RESULTS

- ✓ **Phase 1 – Container Collection & Disposal of AFFF concentrate from state/municipal fire departments**
 - Notices sent electronically and paper poster sent to Fire Departments - March & April 2021
 - Safety Data Sheets (SDS) collected for pickups
 - Contractor collected May 2021 – April 2022
 - **35,300 gal.+ collected from >250 town fire departments**
 - Decrease in reports of AFFF use since ban and Take Back program



PHASE 2: AFFF DECON DEMONSTRATION PROJECT GOALS

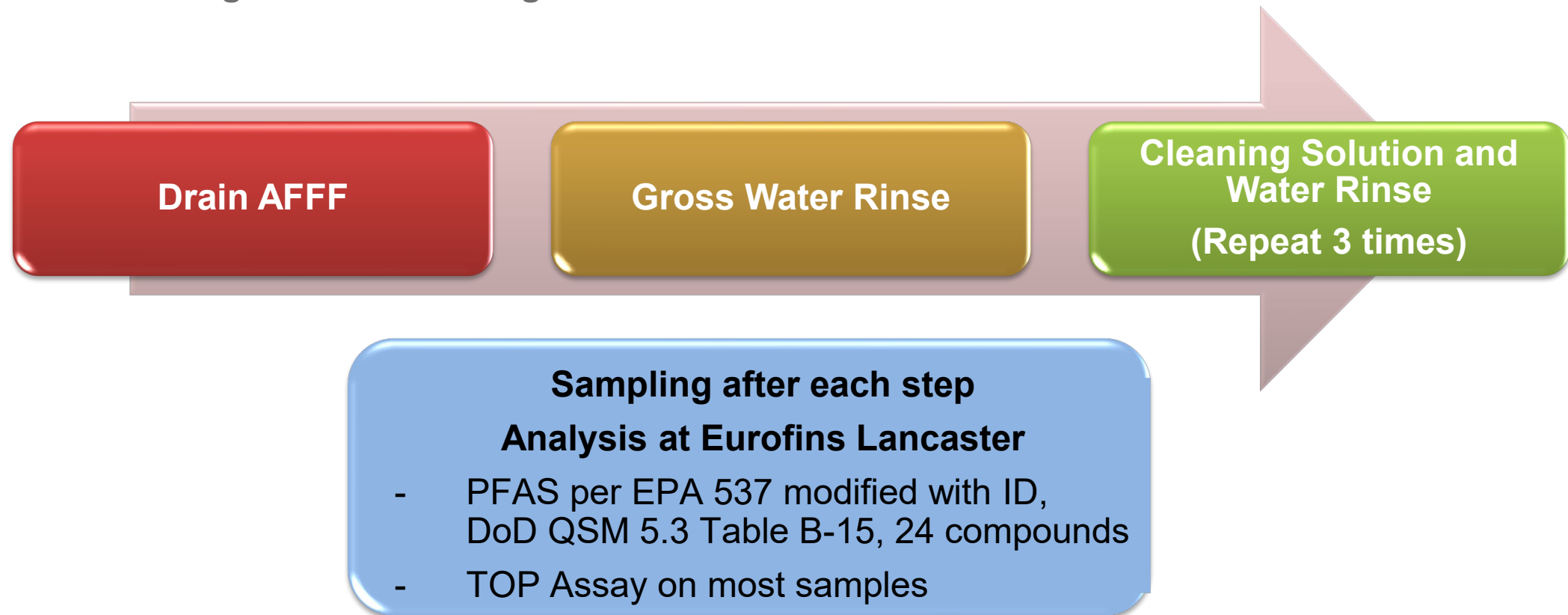
- ❑ Risk reduction rather than elimination
 - **Gross PFAS removal**
 - **How to clean?**
 - **Clean to what level? ppb? ppt?**
- ❑ Waste minimization
- ❑ Cost-benefit analysis
 - **Clean vs. replace equipment?**
 - **On-site treatment of waste liquids vs. off-site disposal?**
- ❑ Refine SOP for remaining trailers and tailor approach for cleaning municipal fire apparatus



DEMONSTRATION PROJECT APPROACH

□ 2 vendors using 2 different cleaning solutions at separate locations

- AECOM teaming with TRS and Hiller using *PerfluorAd*® system
- Arcadis using V171 / Fluoro Fighter™



FOAM TRAILER SPECS

500-gallon foam concentrate capacity, C6 AR-AFFF

Poly tank with baffles

3 foam proportioners and deluge

3 sets of on-board hand lines

Transfer pump assembly



Connecticut Department of Energy & Environmental Protection



AECOM/TRS/HILLER – FOAM TRAILER CLEANING



Foam Trailer Cleaning
using
PerfluorAd[®] system



KEY TAKE-AWAYS FROM AFFF DECON DEMONSTRATION

- ❑ **Proprietary cleaning agents were more effective** at reducing PFAS than plain water rinses (>99% vs. ~95% removal)
- ❑ However, **residual PFAS levels remain** following use of proprietary cleaning agents that will still cross-contaminate new Fluorine-Free Foam (F3)
- ❑ **Significant Logistics and Cost**
 - Fire apparatus are custom. Not a “one-size-fits-all” approach. Is the replacement foam compatible with existing equipment?
 - Look for economies of scale. More cost effective to clean multiple apparatus at the same time.
- ❑ **Disposal of AFFF and PFAS waste** can be challenging and expensive

RISK REDUCTION

Transitioning to Fluorine-Free Foam and cleaning fire apparatus is collectively a significant environmental improvement over continued use of AFFF.

- However, residual PFAS remaining in fire apparatus, even after rinsing, can cross-contaminate the new foam. Deployment of the new foam may still pose a potential environmental and/or human health risk.



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NEXT STEPS

- ❑ **Purchase new foam trailers**
 - Cost-Benefit Analysis showed price of cleaning was equivalent to purchasing new trailers
 - Will avoid cross-contamination of new foam
- ❑ **Continued education & outreach to fire services**
 - Most AFFF use is illegal in Connecticut
 - Promote updated [Guidance to Municipal Fire Departments](#) that provides advice for using new foam and existing apparatus
- ❑ **Remove & dispose of AFFF from municipal apparatus/clean apparatus**
 - **2023 Legislative Session News:** \$3M allocated to DESPP to assist Municipal Fire Departments with disposal of AFFF and cleaning fire trucks

FOR MORE INFORMATION

[CT DEEP PFAS Webpage](#)

[CT DEEP PFAS in Firefighting Foam Webpage](#)

[PFAS Task Force Webpage](#)

[CT PFAS Action Plan](#)

Contact Information:

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