P2 Project: PFAS Reduction in Wastewater

Agency of Natural Resources
Department of Environmental Conservation
Wastewater Management Program
Residuals Management & Emerging Contaminants Program

Welcome

Project Team:

Nick Giannetti, Pretreatment Coordinator – Project Lead

Wastewater Management Program

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Wastewater Management Program

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Residuals and Emerging Contaminants Program

Today's Goal

Gain an understanding of our upcoming wastewater project and consider participating.

Agenda

- Project Overview (5 min)
- Background (25 min)
- Project Details (25 min)
- Questions

Project Overview

Project Overview

Voluntary & investigatory project, focused on:

Sources of Per- and Polyfluorinated Substances (PFAS) in wastewater from metals and aerospace businesses.

Major project elements:

1. Small workgroup of participating businesses (cohort);
2. Sampling;
3. Source identification;
4. Alternative scoping; and
5. Recommendations to implement practices.

Project Goals:

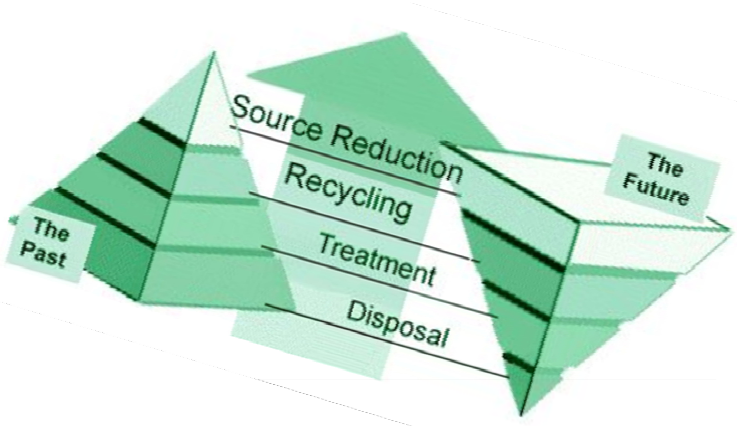
1. Characterize PFAS species, concentration, and mass in wastewater;
2. Identify and quantify sources of PFAS contributing to wastewater;
3. Research and identify alternatives or practices to reduce PFAS containing sources; and
4. Encourage adoption of pollution prevention or source reduction practices.

FY20 EPA P2 Grant

2-year grant period: FY21-22

Implement source reduction technical assistance at businesses in National Emphasis Areas:

- **Aerospace Product and Parts Manufacturing and Maintenance**
- **Metal Manufacturing and Fabrication**



Background – Why PFAS & Why P2?

PFAS General Info

What are PFAS:

1. Large group of human-made chemicals that have been used for decades due to their resistance to heat, oil, stains, grease, and water.
2. PFAS do not break down in the environment and will bioaccumulate in plants and animals.
3. PFAS are ubiquitous in our environment and have been found in lakes, ponds, rivers, groundwater, soils, food, indoor dust, as well as in a plants, animals, and humans.

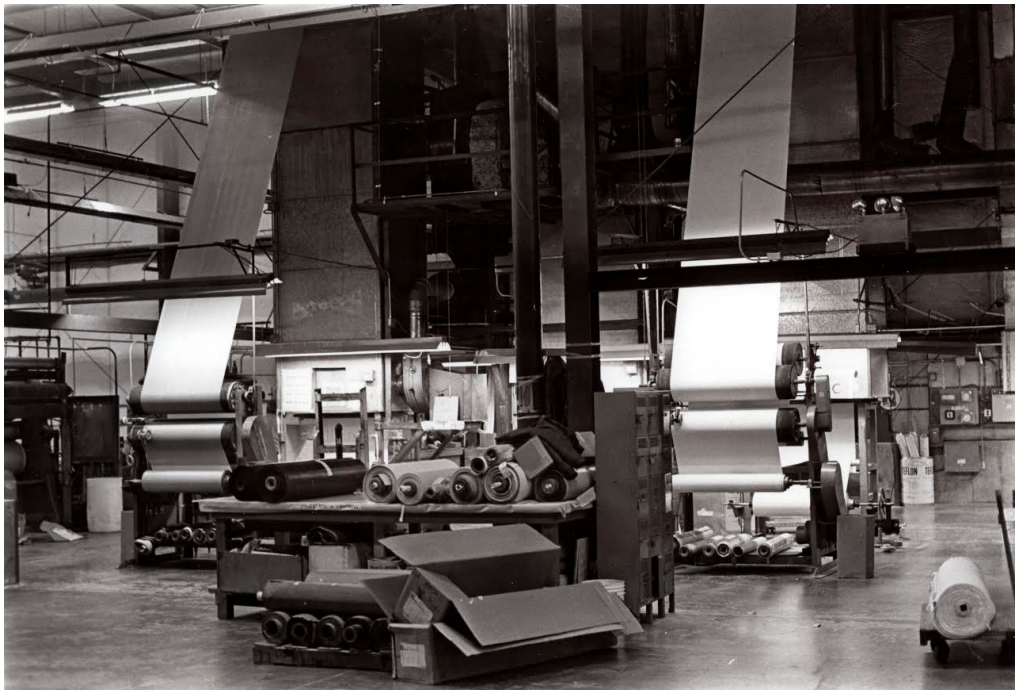
Concern:

1. PFAS have toxic effects and pose human health risks even at very low levels (parts per trillion). PFAS exposure has been associated with the following health impacts according to the Vermont Department of Health:
   a. Affecting the growth, learning, and behavior of infants and older children;
   b. Lowering a person's chance of getting pregnant;
   c. Interfering with the body's natural hormones;
   d. Increasing cholesterol levels;
   e. Affect the immune system; and
   f. Increasing the risk of cancer.

For more information see:
VT Department of Health
Interstate Technology Regulatory Council PFAS Fact Sheet

North Bennington/Bennington PFOA

Teflon Town: ChemFab's toxic legacy



File photo/Bennington Banner

Once The Pride Of North Bennington, Chemfab Made Fabrics Used Worldwide, And In Space

DAVID ZALUBOWSKI / AP

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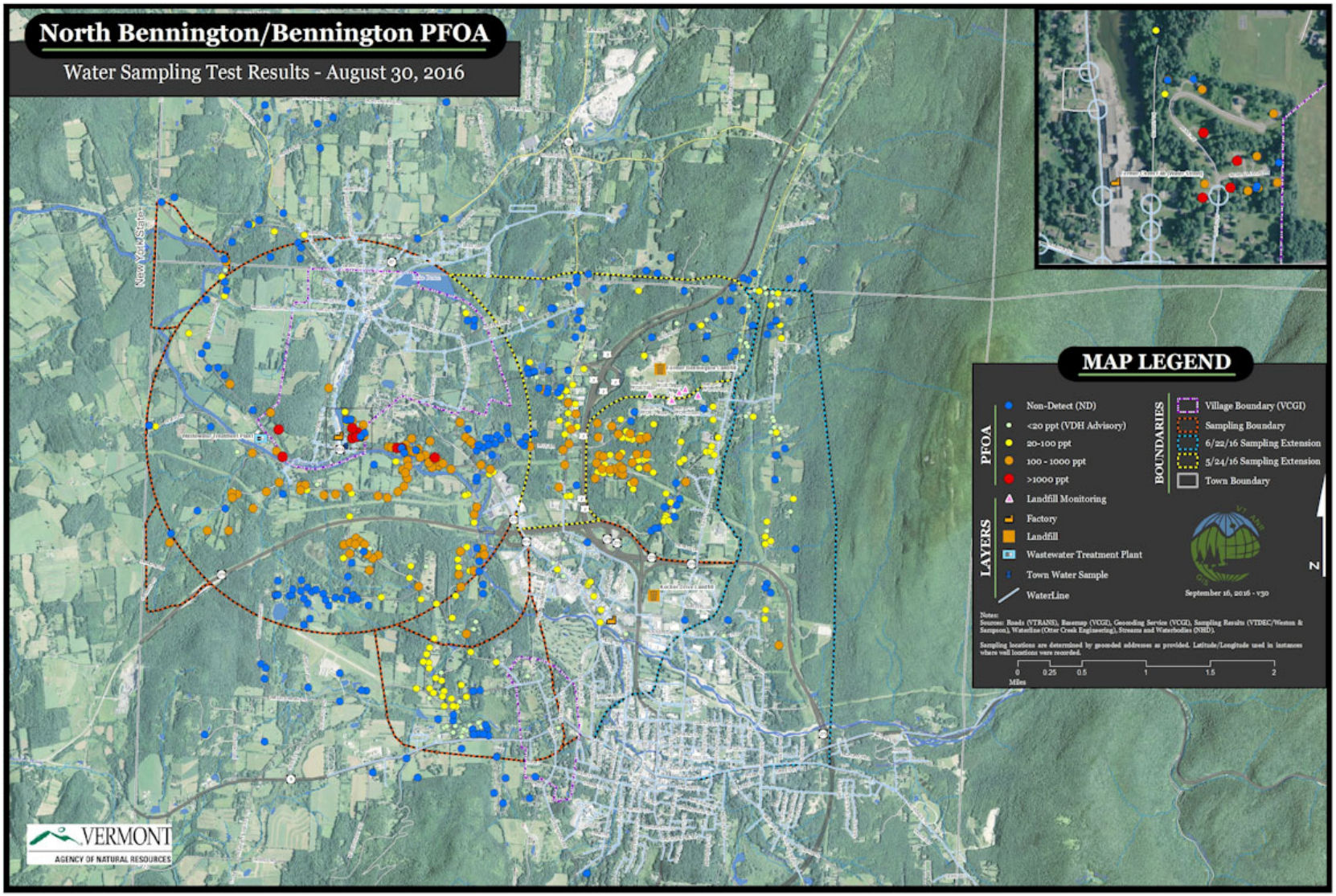

- 700 samples collected from private wells
- >60% wells with PFOA detected
- ~ 50% wells with > 20 ppt PFOA
- POET systems installed
- New municipal water supply lines extended to ~400 homes

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PFAS Standards in water @ ***part per trillion*** (ppt)

1 ppt = 1 ng/L = 1 oz /7.5B gal = ~ 75oz (3 cases) in Lake Champlain (6.8 T gal)

VT Regulated PFAS	Health Advisory/ MCL (ng/L)	Groundwater Enforcement Std (ng/L)	Residential Soil Dermal Contact (mg/kg)
PFHxS (C6)	20 ppt (*)	20 ppt (*)	1.22 ppm (sum)
PFHpA (C7)			
PFOA (C8)			
PFOS (C8)			
PFNA (C9)			

(*) = any combination of the 5 compounds

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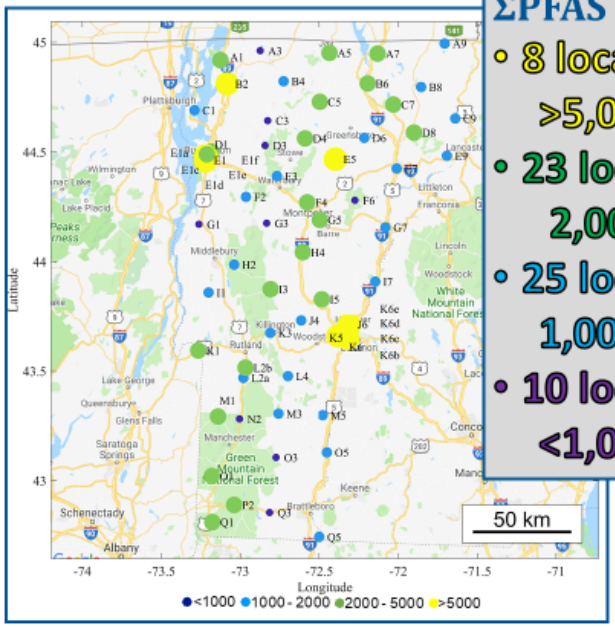
The University of Vermont

SANBORN | HEAD

Per- and Polyfluoroalkyl Substances (PFAS) in Vermont Shallow Soils

Wenyu Zhu, Ph.D.
Department of Civil and Environmental Engineering
University of Vermont

Harrison Roakes, P.E.
Sanborn, Head & Associates



ΣPFAS (n=66)

- 8 locations
  >5,000 ng/kg
- 23 locations
  2,000-5,000 ng/kg
- 25 locations
  1,000-2,000 ng/kg
- 10 locations
  <1,000 ng/kg

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Weston & Sampson

westonandsampson.com

98 South Main Street, Suite 2
Waterbury, VT 05676
tel: 802.244.5051

REPORT

January 30, 2020

Poly- and Perfluoroalkyl Substances at Wastewater Treatment Facilities and Landfill Leachate

2019 Summary Report

Statewide evaluation of PFAS in:

- ~400 samples. Analyzed for 24 PFAS. Modified 537.
- Landfill leachates (4)
- WWTF influent, effluent (19) , sludges/biosolids (22)
- Industrial discharges (2)

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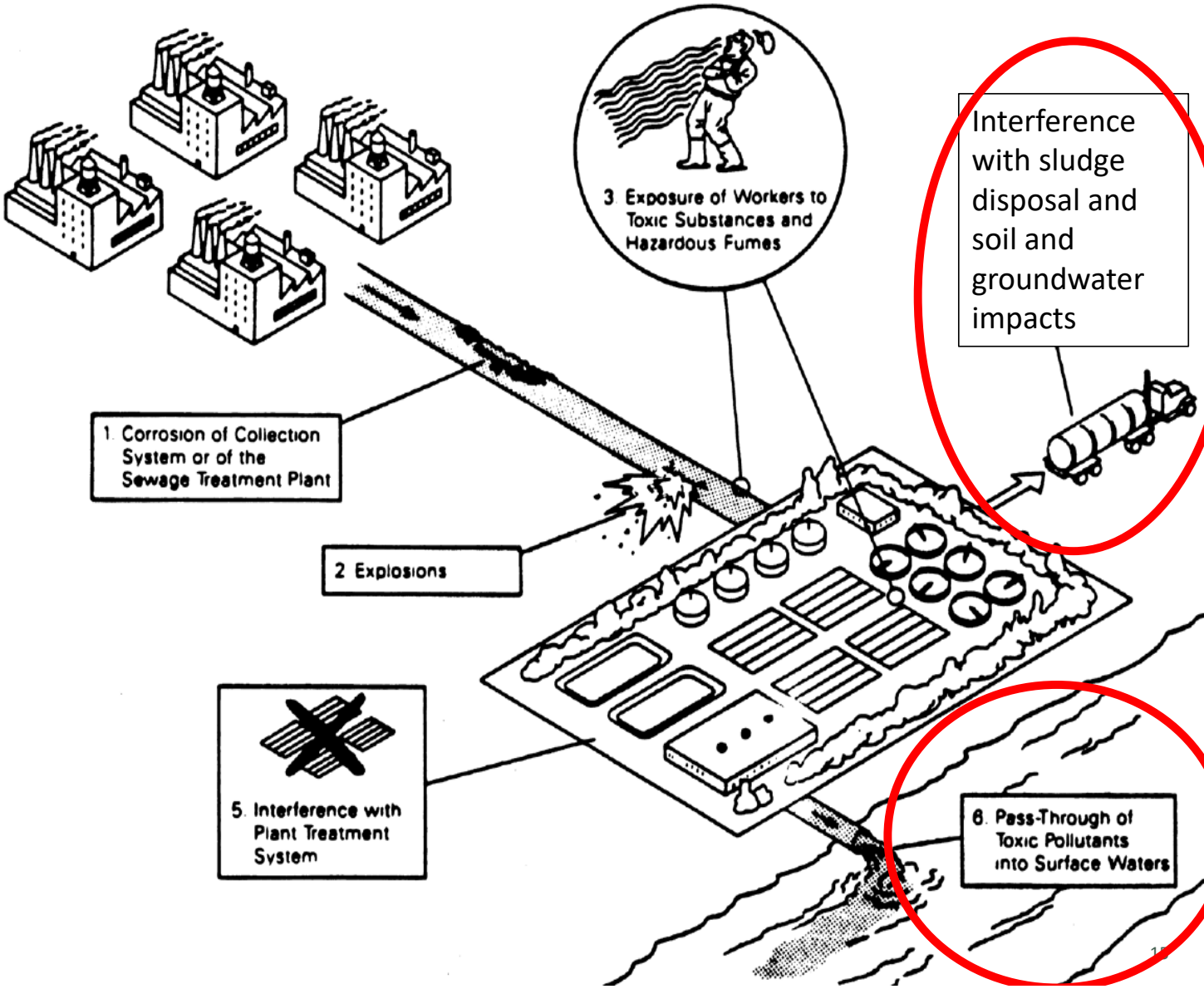
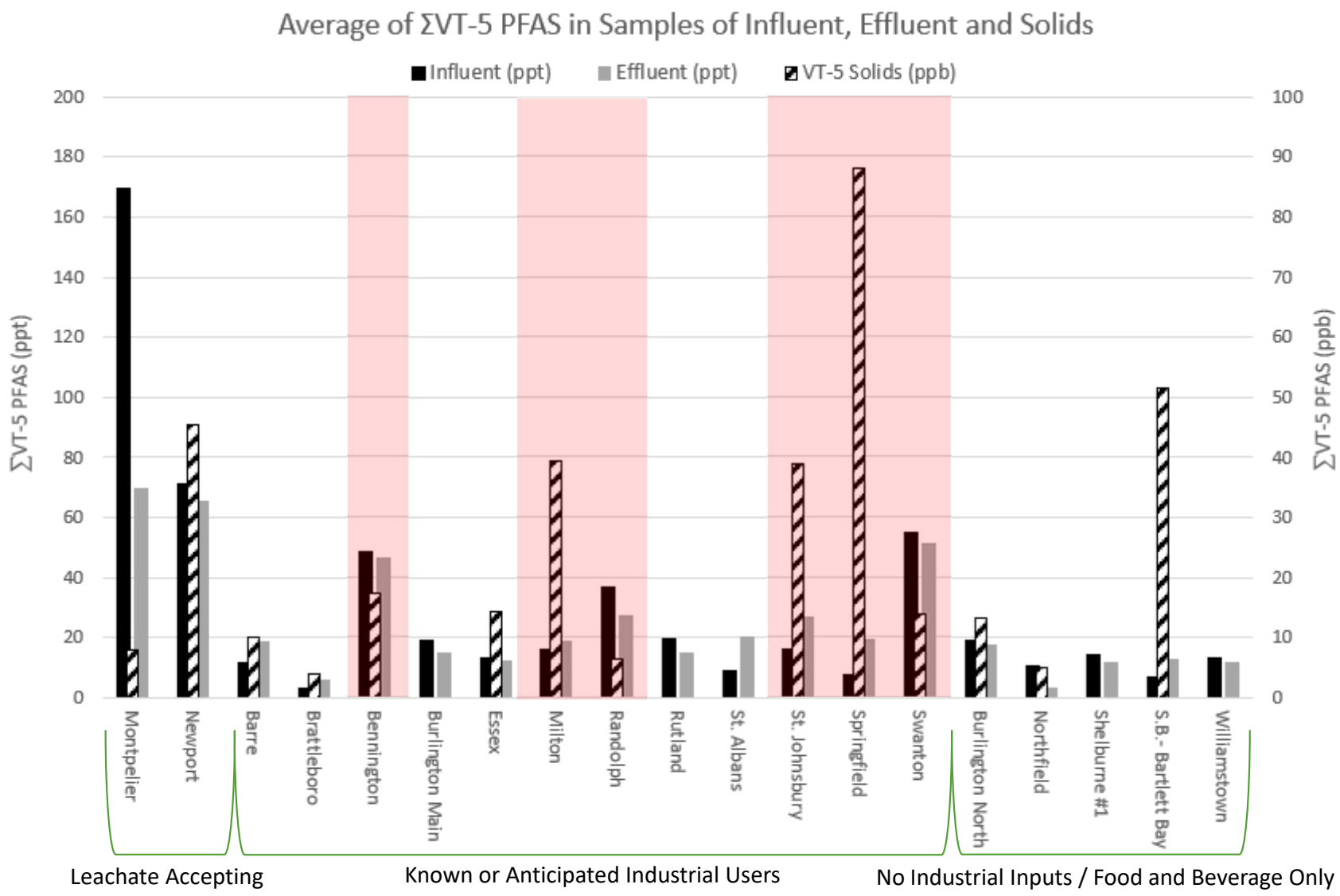
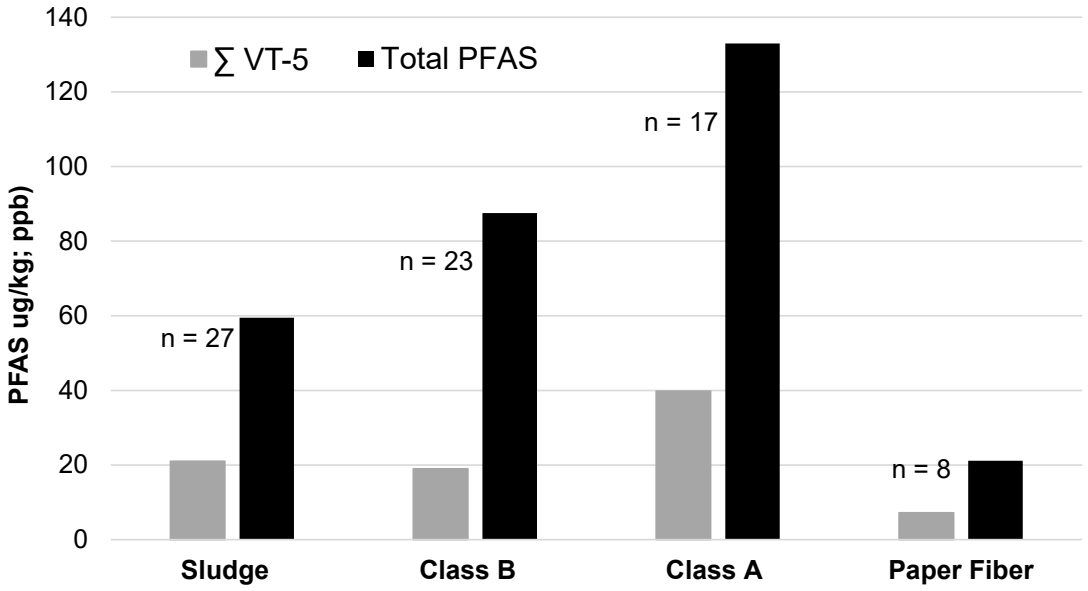
PFAS concerns:

Pass-through and sludge disposal




Average of ΣVT-5 PFAS in Samples of Influent, Effluent and Solids
Influent (ppt)
Effluent (ppt)
VT-5 Solids (ppb)
∑VT-5 PFAS (ppt)
∑VT-5 PFAS (ppb)
0
20
40
60
80
100
120
140
160
180
200
0
10
20
30
40
50
60
70
80
90
100
Montpelier
Newport
Barre
Brattleboro
Bennington
Burlington Main
Essex
Milton
Randolph
Rutland
St. Albans
St. Johnsbury
Springfield
Swanton
Burlington North
Northfield
Shelburne #1
S.B.- Bartlett Bay
Williamstown
Leachate Accepting
Known or Anticipated Industrial Users
No Industrial Inputs / Food and Beverage Only

Average PFAS (ppb) in Samples of Residual Materials



Waterbury, sludge drying beds

Swanton, Class B biosolids

Springfield, Class A biosolids

Short Paper Fiber

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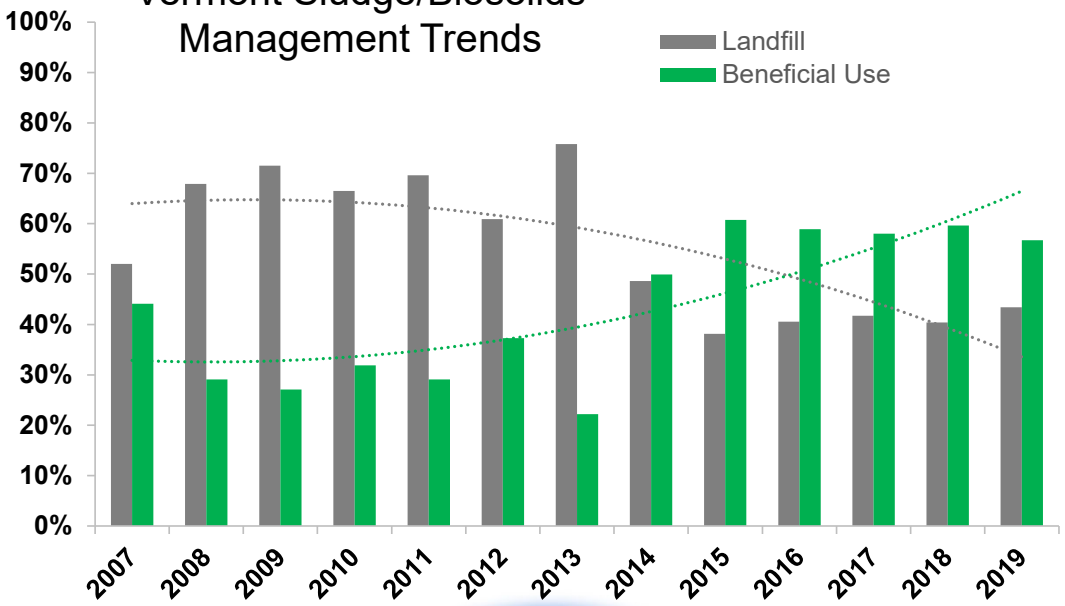
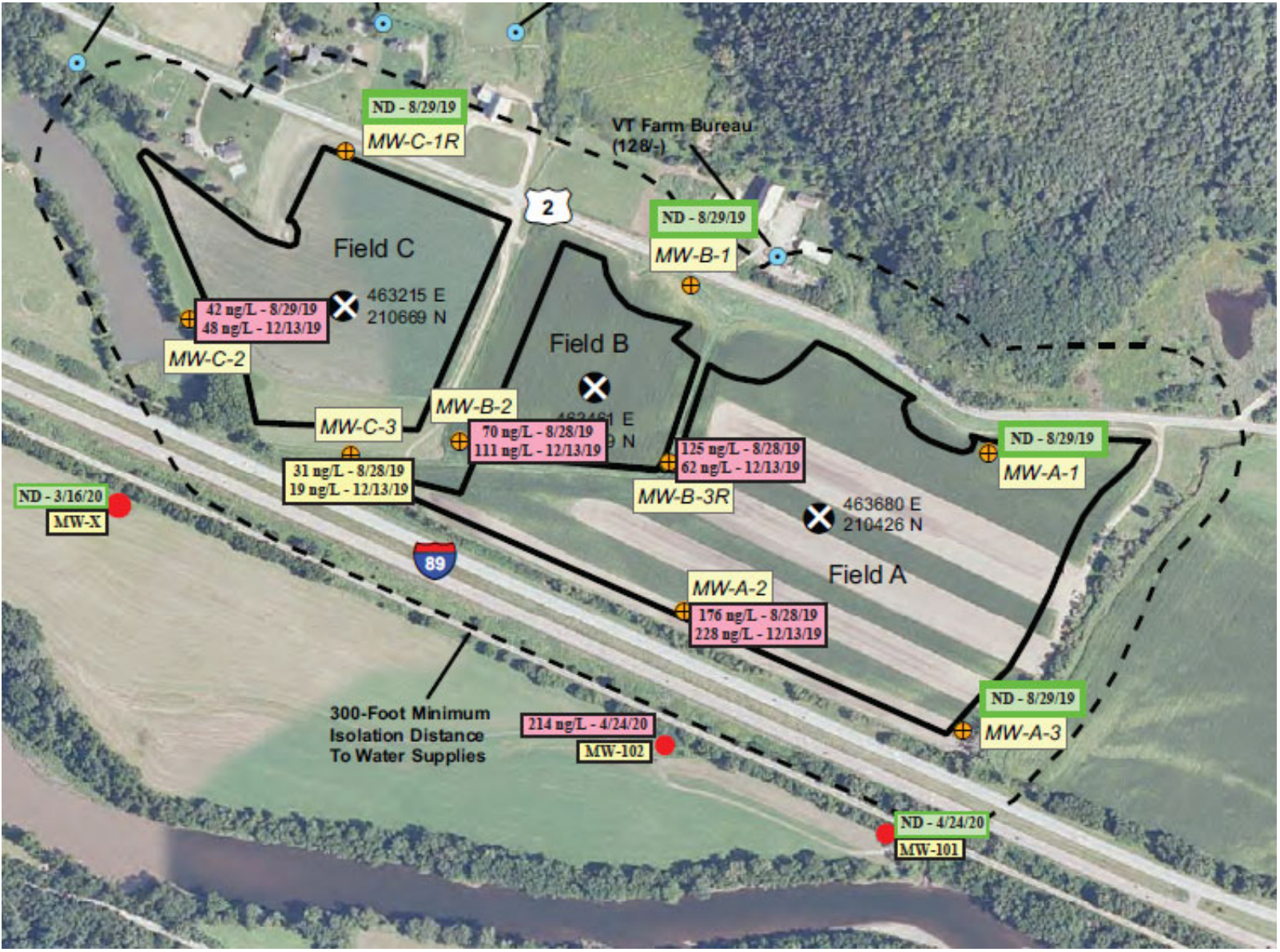
Vermont Sludge/Biosolids Management Trends



Septage Management 2019



- Confirmation GW Sampling
- Compliance Point Sampling @ 300’
- Land application on hold at this site

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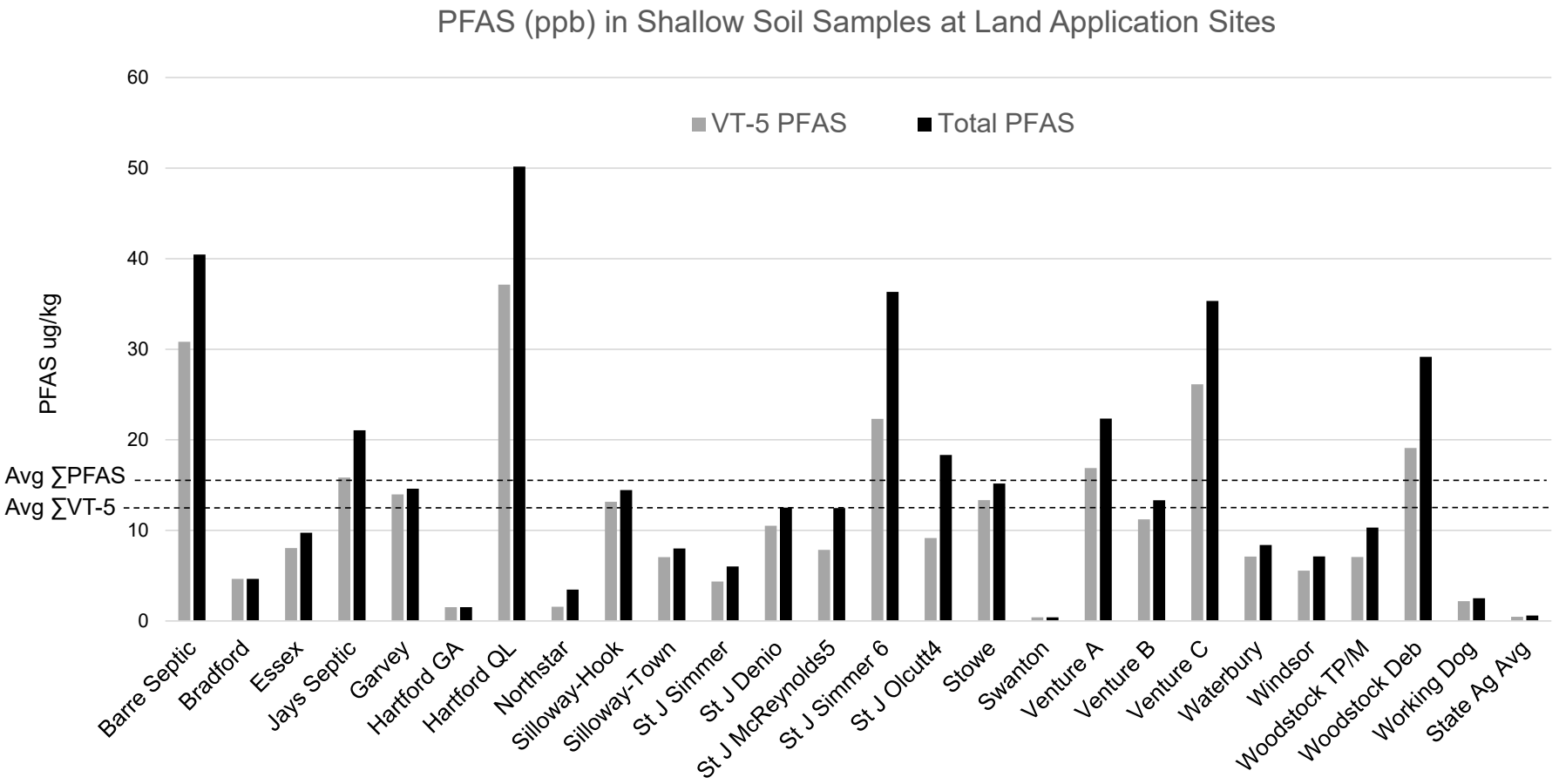
PFAS (ppb) in Shallow Soil Samples at Land Application Sites
VT-5 PFAS
Total PFAS
PFAS ug/kg
60
50
40
30
20
10
0
Avg ∑PFAS
Avg ∑VT-5
Barre Septic
Bradford
Essex
Jays Septic
Garvey
Hartford GA
Hartford QL
Northstar
Silloway-Hook
Silloway-Town
St J Simmer
St J Denio
St J McReynolds5
St J Simmer 6
St J Olcutt4
Stowe
Swanton
Venture A
Venture B
Venture C
Waterbury
Windsor
Woodstock TP/M
Woodstock Deb
Working Dog
State Ag Avg

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- Results: PFAS found to be ubiquitous in the environment
  - All VT background soils
  - All VT WWTP influent/effluent tested
  - All VT biosolids tested (unless DL's are > 5ppb)
  - All VT land application site soils (range from background to 4-5x)
  - ~20% of shallow GW wells at land app sites above GW standard

- Response by VTDEC:
  - Land application sites with PFAS in onsite GW above standard
    - ✓ Temporarily halt spreading
    - ✓ Additional monitoring of GW
    - ✓ Testing of DW supplies within ¼ mile of site – no detections!
  - New Solid Waste Rules issued
    - ✓ Contain PFAS monitoring requirements for biosolids permittees, including materials, soils, groundwater
    - ✓ Registry for imported class A biosolids includes PFAS testing
    - ✓ Amending VT permits to include PFAS monitoring – for 2021
  - Development of WQS for VT5 PFAS
  - Source Reduction (to WWTPs and surface waters)
    - ✓ EPA Pollution Prevention Grant – metals and aerospace industry
    - ✓ Additional sampling/investigation planned for 2021

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Development of WQS

1. February 2020: State of Vermont Plan - Deriving Ambient Water Quality Standards for the Emerging Chemicals of Concern: PFAS

2. January 1, 2024: ANR will follow its rule-making process to develop and adopt surface water quality standards for, at a minimum, VT 5 PFAS.

3. Some other states have low WQS:

Michigan:

PFOS: 12 ppt

PFOA: 12,000 ppt (non-drinking water source)

PFOA: 420 ppt (drinking water source)

State of Vermont Plan

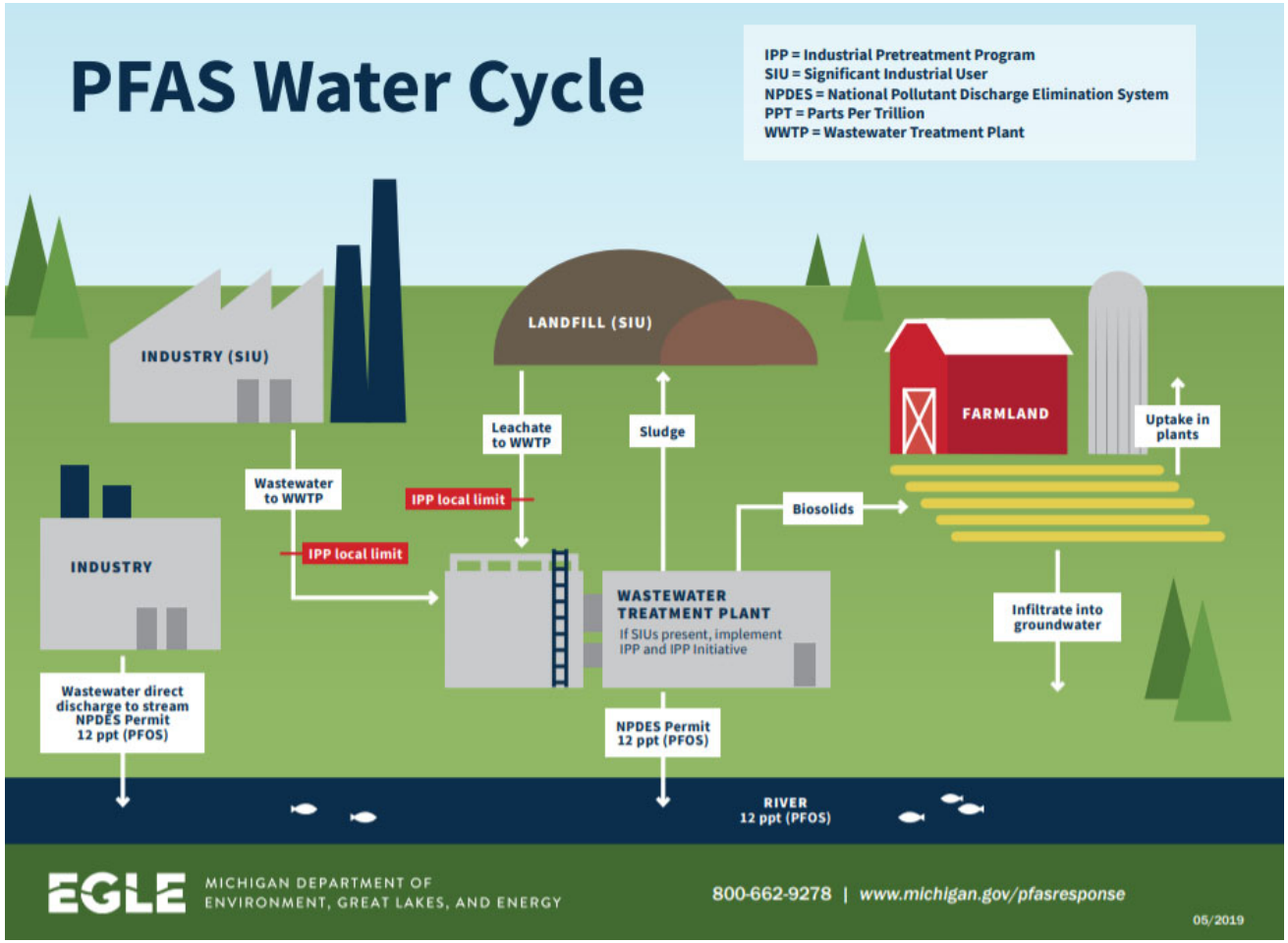
Deriving Ambient Water Quality Standards for the Emerging Chemicals of Concern: Per- and Polyfluoroalkyl Substances (PFAS)

Prepared for the Vermont General Assembly in Accordance with No. 21 of the Acts and Resolves of 2019 (Session 2019).

Other States – Wastewater Regulation

Required 95 POTWs:

1. Industrial users sampling of PFAS
2. Screening criteria: 12 ppt PFOS
3. Requirements for Industrial Users:
   - Pollutant minimization plans;
   - Equipment/tank change out/clean outs;
   - Product replacement;
   - Pretreatment to remove PFAS; and
   - Continued compliance monitoring.



Other States – Wastewater Regulation

Municipal Wastewater Treatment Facility Influent, Effluent, and Sludge:

Perfluorohexanesulfonic acid (PFHxS)[11]	---	---	Report ng/L	1/quarter	Composite
Perfluoroheptanoic acid (PFHpA)[11]	---	---	Report ng/L	1/quarter	Composite
Perfluorononanoic acid (PFNA)[11]	---	---	Report ng/L	1/quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[11]	---	---	Report ng/L	1/quarter	Composite
Perfluorooctanoic acid (PFOA)[11]	---	---	Report ng/L	1/quarter	Composite
Perfluorodecanoic acid (PFDA)[11]	---	---	Report ng/L	1/quarter	Composite

Industrial Users Effluent:

- Platers/Metal Finishers
- Paper and Packaging Manufacturers
- Tanneries and Leather/Fabric/Carpet Treaters
- Manufacturers of Parts with Polytetrafluroethlylene (PTFE) or teflon type coatings (i.e. bearings)
- Landfill Leachate
- Centralized Waste Treaters
- Contaminated Sites
- Fire Fighting Training Facilities

Industrial User Effluent Characteristic	Maximum Daily	Monitoring Requirements	
		Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	Report ng/L	1/year	Composite
Perfluoroheptanoic acid (PFHpA)	Report ng/L	1/year	Composite
Perfluorononanoic acid (PFNA)	Report ng/L	1/year	Composite
Perfluorooctanesulfonic acid (PFOS)	Report ng/L	1/year	Composite
Perfluorooctanoic acid (PFOA)	Report ng/L	1/year	Composite
Perfluorodecanoic acid (PFDA)	Report ng/L	1/year	Composite

Why Source Reduction?

Ecological Exposures:

1. Wastewater is a conduit for PFAS to enter the environment through effluent discharged to surface waters and land application of biosolids (soil, crop uptake, groundwater).

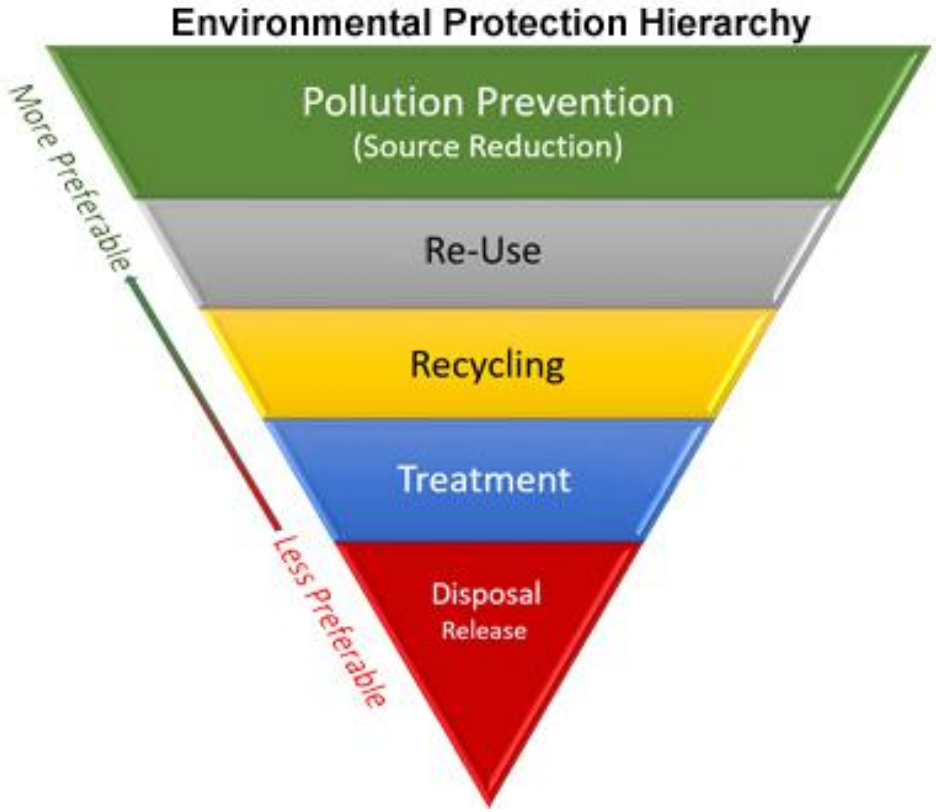
Conventional Wastewater Treatment:

1. Conventional treatment does not effectively remove PFAS;
2. Current treatment options are expensive and the science and technologies available for managing the waste residuals and potential air emissions are still developing.

Ubiquitous and widespread contamination. VT's data indicates:

1. Contamination of groundwater;
2. Present in all environmental media sampled: Landfilled materials, leachate, influent, effluent, biosolids;
3. Present in residential and urban soils: Soil Background Study.

Pollution Prevention (P2)



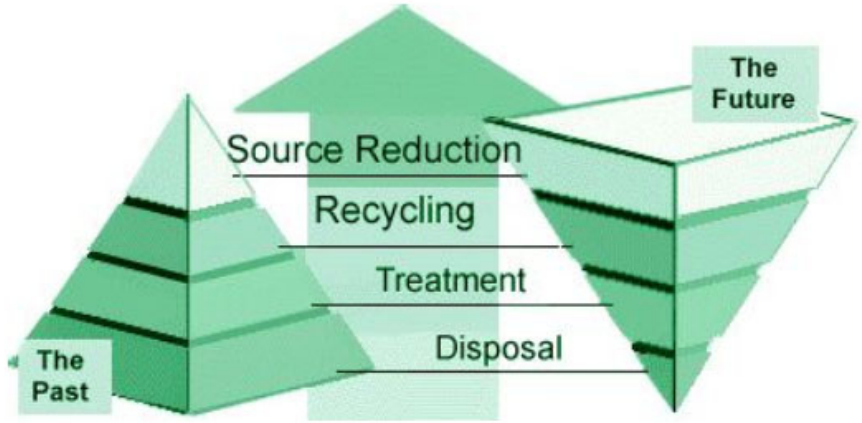
Pollution prevention (P2) is any practice that reduces, eliminates, or prevents pollution at its source, also known as "source reduction."

- Source reduction is fundamentally different and more desirable than recycling, treatment and disposal.
- There are significant opportunities for industry to reduce or prevent pollution at the source through cost-effective changes in production, operation, and raw materials use.
- The opportunities for source reduction are often not realized because existing regulations focus upon treatment and disposal.

Pollution Prevention (P2)

Typical practices:

- Equipment or technology modifications;
- Process or procedure modifications;
- Reformulation or redesign of products;
- Substitution of raw materials; and
- Improvements in housekeeping, maintenance, training or inventory control.



Why Metals/Aerospace?

Michigan Environment Great Lakes and Energy Findings:

1. Metal finishing facilities, particularly those utilizing chrome, are significant PFAS sources to WWTFs;
2. PFOS detected is from historical use of PFOS-based fume suppressants prior to the ban in September 2015;
3. 6:2 FTS is attributed to replacement fume suppressants.

MI EGLE STUDY: PFAS IN EFFLUENT AT 11 CHROME PLATING FACILITIES

Location Sample ID	Total (ppt)	6:2 FTS (ppt)	PFOS (ppt)	23 Other PFAS Analytes (ppt)
I	3,166,509	3,140,000	25,300	1,209
G	1,043,339	1,030,000	12,700	639
J	672,399	672,000	**ND**	399
C	556,393	482,000	51,700	22,693
K	204,615	203,000	1,200	415
D	85,455	49,500	33,700	2,255
B	58,239	51,000	610	6,629
H	12,837	7,880	4,330	627
A	1,130	**ND**	1,060	70
F	452	294	158	**ND**
E	71	32	15	24

https://www.michigan.gov/documents/egle/wrd-ep-pfas-chrome-plating_693686_7.pdf

Why Metals/Aerospace?

Activities with potential to contribute PFAS:

a. PTFE coatings or seals;

b. Surfactants, dispersants, wetting agents, or fume/mist suppressing agents for:
   - Hard chrome plating;
   - Decorative chromium plating;
   - Chromic acid anodizing;
   - Nickel, cadmium, or lead plating;
   - Metal plating on plastics;
   - Alkaline zinc plating;
   - Etch baths, including glass etching, fused silica, and aluminum.

c. Corrosion inhibitors or other products to reduce wear, enhance heat resistance, or aesthetic appearance;

d. Electroless plating of nickel and/or copper;

e. Electroplating of copper, nickel, and/or tin;

f. Use leveling agents for zinc electrodeposition.

Prospective Facilities

Looking for facilities that:

1. Engaged in (1) aerospace product and parts manufacturing and maintenance and/or (2) metals manufacturing and fabrication; and

2. **Perform activities that have the potential to contribute PFAS to their process wastewater discharge;**

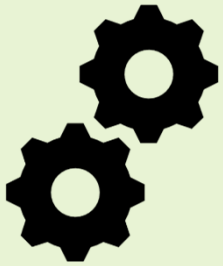
3. Discharge process wastewater to a Vermont POTW;

4. Elevated influent / effluent / biosolids data.

Project Details

5 min. break

Project Approach



Wastewater Sampling

- Characterize PFAS discharge and sources

Source Identification

- Data collection and assessment to ID wastewater PFAS sources

Source Reduction

- Scoping source reduction strategies and implementation recommendations;

Cohort Workgroup

- Workgroup between project participants;

State Report Out

Timeline - Overview

November 2020	Issued sampling contract
January 2021	Issued Tech. Assistance RFP
March 2021	Obtain Tech. Assistance Provider
April 2021	Identify up to six participating businesses
May 2021 through May 2022	Perform technical assistance: sampling, ID PFAS sources, and P2 practices.
June 2022 – September 2022	Report out to businesses with wastewater data, source identification results, and implementation recommendations.
June 2022 – September 2022	Amplify best practices by sharing findings.
By December 2022	Produce final report for EPA with case studies, project outputs, and outcomes.

Timeline - Detailed

March 2021	Issue technical assistance contract.
March 31, 2021	Businesses to commit to project participation by signing MOU.
May 2021	Project kick-off meeting with group.
May 2021	Begin coordinating rounds of wastewater sampling.
June 2021	Schedule site visit for source ID data collection.
June 2021 – Dec. 2021	Periodic requests for data/information for source ID and further sampling.
August – Sept. 2021	Group cohort meeting.
Oct. 2021 – March 2022	Periodic requests for data/information for ID of P2 practices.
Nov. – Dec. 2021	Group cohort meeting.
Feb. – March 2022	Group cohort meeting.
May – June 2022	Project closing - group cohort meeting.
June 2022	Report out to businesses with wastewater data, source identification results, and implementation recommendations.

Data Collection – Sampling

Up to 8 samples at each facility

- Characterize PFAS concentration in wastewater discharge
- Pair with flow data to characterize PFAS mass loading
- Multiple rounds of sampling to be established to assess variability
- Flexibility to sample products and processes which contain PFAS

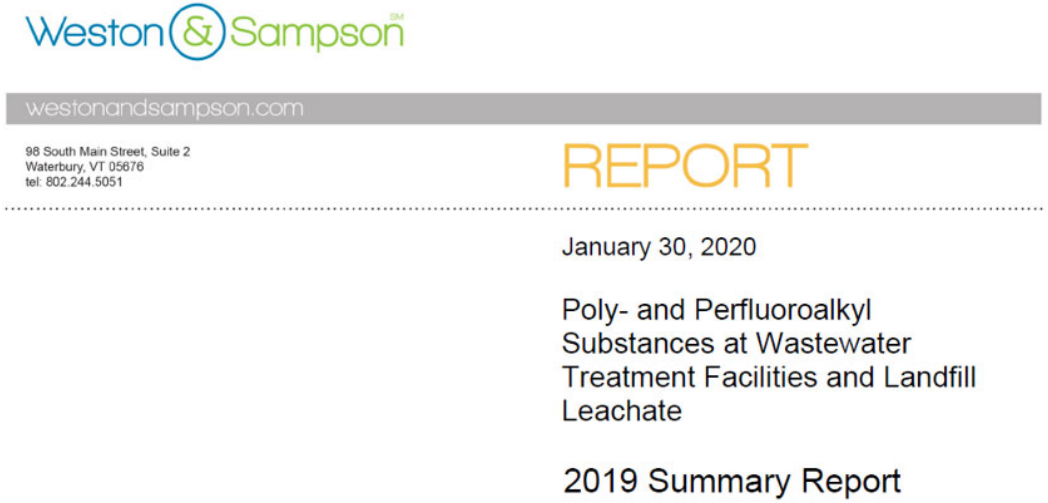
Level of Effort:

- Work with State and sampling contactor to establish sampling points and schedule
- Allow access to sampling contractor for sampling
- Individual facility point person(s) to establish sampling point and schedule

Anticipated Timeframe:

- June – December 2021

Contractor:


Weston & Sampson

westonandsampson.com

98 South Main Street, Suite 2
Waterbury, VT 05676
tel: 802.244.5051

REPORT

January 30, 2020

Poly- and Perfluoroalkyl Substances at Wastewater Treatment Facilities and Landfill Leachate

2019 Summary Report

Anticipated Sampling Method

1. Grab samples
2. 24 analytes
3. Modified Method 537.1 using Alpha Analytical Laboratory

   Method: *Mansfield, MA Determination of Selected Perfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS).*
   - Reference: EPA Method 537, Version 1.1, September 2009, EPA
   - Document #: EPA/600/R-08/092.
4. Reporting limit: 2 ng/L (ppt)
5. Site Specific Quality Assurance Project Plan and Health and Safety Plan

Analytes

Analyte	CAS Number	Analytical Method	Sample Prep	Units	Reporting Limit (RL)	Method Detection Limit (MDL)
Perfluorobutanoic Acid (PFBA)	375-22-4	537	537	ng/L	2	0.408
Perfluoropentanoic Acid (PFPeA)	2706-90-3	537	537	ng/L	2	0.396
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	537	537	ng/L	2	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	NONE	537	537	ng/L	2	0.452
Perfluorohexanoic Acid (PFHxA)	307-24-4	537	537	ng/L	2	0.328
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	537	537	ng/L	2	0.2452
Perfluoroheptanoic Acid (PFHpA)	375-85-9	537	537	ng/L	2	0.2252
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	537	537	ng/L	2	0.376
Perfluorooctanoic Acid (PFOA)	335-67-1	537	537	ng/L	2	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	537	537	ng/L	2	1.332
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	537	537	ng/L	2	0.688
Perfluorononanoic Acid (PFNA)	375-95-1	537	537	ng/L	2	0.312
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	537	537	ng/L	2	0.504
Perfluorodecanoic Acid (PFDA)	335-76-2	537	537	ng/L	2	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	537	537	ng/L	2	1.212
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	537	537	ng/L	2	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	537	537	ng/L	2	0.648
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	537	537	ng/L	2	0.26
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	537	537	ng/L	2	0.98
Perfluorooctanesulfonamide (FOSA)	754-91-6	537	537	ng/L	2	0.58
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	537	537	ng/L	2	0.804
Perfluorododecanoic Acid (PFDoA)	307-55-1	537	537	ng/L	2	0.372
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	537	537	ng/L	2	0.3272
Perfluorotetradecanoic Acid (PFTA)	376-06-7	537	537	ng/L	2	0.248
PFOA/PFOS, Total		537	537	ng/L	2	0.236
PFAS, Total (5)		537	537	ng/L	2	0.236

Source Identification

Identify wastewater PFAS sources:

- Initial survey to collect baseline info, operations, point of contacts;
- At least one on-site visit and walkthrough;
  - Identification of discharge points;
  - Process wastewater streams.
- Detailed request for information to:
  - ID specific products used and dosage (if necessary);
  - ID fluorinated inputs, products, or materials used in process;
  - Provide chemical info sheets, SDSs, manufacturers;
  - Flow rate data.
- Follow-up research investigation into products used;
- Requests for information from product suppliers and chem. Manufacturers;
- Follow-up sampling of individual PFAS sources or process streams;
- Sampling and calculations to determine contribution of PFAS source to wastewater.

Source Identification

Level of Effort:

- Coordinate with State to schedule and provide on-site visit and walk-through;
- Respond to requests for information from State on processes and products used;
- Appoint individual facility point person(s).

Anticipated Timeframe:

- June – December 2021

ID of Source Reduction Strategies

Identifying Source Reduction or P2 Strategies to Reduce PFAS:

- State's Tech. Asst. expert (contractor) to take lead;
- Using sampling data and source ID findings to inform source reduction strategies;
- Providing source reduction strategies in the form of a report with recommendations for implementation;
- Encourage steps towards or full-blown implementation of strategies.

Level of Effort:

- Support by collaborating with State and Tech. Asst. expert on investigation into viable alternatives;
- Respond to requests to for information to scope alternatives and implementation strategies;
- Consider implementation of strategies.

Anticipated Timeframe:

- October 2021 – March 2022

ID of Source Reduction Strategies

Currently Active:

Technical Assistance Expert:

- Seeking assistance from source reduction expert;
- Looking for entity with expertise in metal finishing, PFAS, pollution prevention, industrial wastewater;
- Bidder's conference held in January, with good turnout and qualified candidates;
- Awarded by end of March.

Potential P2 Practices

1. Alternative “green” chemistries to PFAS containing products;
   - Investigation into PFAS-free or less-toxic PFAS containing products;
2. Identifying opportunities for changes or enhancements to operations to minimize the amount of PFAS introduced into wastewater streams;
   - Process operations;
   - Cleaning practices.
3. Increase efficiency in use of PFAS containing chemicals or products;
4. Implementing procedures to reuse, or extend use of PFAS within process streams;
5. Investigating other procedures to reduce and/or capture PFAS in wastewater prior to release POTWs.

Cohort Workgroup

Cohort Model: Workgroup between businesses to share source identification and reduction findings.

1. Each business will sign an agreement to be part of the Cohort; and
2. Commit to improvement goals and participation in project.

Provides:

1. Focused, on-going technical assistance to a committed group of businesses;
2. Opportunity to share realistic solutions relevant to PFAS use and reduction in the sector;
3. Strengthens sector-wide capacity and leverages the expertise of other businesses;
4. Scalable and replicable models for other businesses in the sector to follow.

Cohort Workgroup

Cohort Model: Workgroup between businesses to share source identification and reduction findings.

What to expect:

1. Initial project kick-off meeting with group; and
2. Four quarterly group meetings coordinated by State.

Anticipated meeting topics:

1. Sharing information on sampling, source ID, and P2 strategies, and implementation strategies;
2. Presentation of data and findings from sampling contractor;
3. Group-wide technical assistance from technical assistance contractor;
4. Bringing outside resources to the group to achieve improvement goals.

Other Opportunities:

1. Conference presentations;
2. Case studies;
3. Videos;
4. State-wide press releases;
5. Other publications.

Participation

Benefits to your business.

1. Lead national effort in novel focus area;
2. Environmental stewardship;
3. Local community health;
4. Proactively gain an understanding of this emerging contaminant, how the business is using it, & how the business can reduce it;
5. Take advantage of state and federal funding;
6. State, regional, potentially nationally recognition through published case studies, press releases, P2 presentations, and P2 publications;
7. Networking opportunity with cohort participants, State, sampling contractor, tech. assistance contractor, and regional partners;
8. Access free training and technical assistance;
9. Build your brand.

Privacy

Confidential treatment of trade secret information:

Confidential Business Information (CBI) Request Form

To request confidential treatment of trade secret information please complete this form and submit it along with the information you are seeking confidential trade secret status for. This form must be submitted along with the information each time any such information is submitted. Please note that in order to receive confidential treatment, you must demonstrate to the satisfaction of the Secretary that the information relates to trade secrets "meaning confidential business records or information, including any formulae, plan, pattern, process, tool, mechanism, compound, procedure, production data, or compilation of information which is not patented, which a commercial concern makes efforts that are reasonable under the circumstances to keep secret, and which gives its user or owner an opportunity to obtain business advantage over competitors who do not know it or use it." Regardless, the information submitted with this form shall be kept confidential until the Secretary makes a determination whether the claimed information merits confidential treatment.

How to Sign Up

Vermont Pollution Prevention PFAS Cohort

MEMORANDUM OF UNDERSTANDING AND COLLABORATION AGREEMENT

1. With support from DEC, agreement to participate in Cohort activities.
2. Commit to one or more of the following P2 goals, and work towards achieving it:
   - Reduction of PFAS use in manufacturing processes;
   - Reduction of PFAS released into the environment;
   - Substitution of greener chemistries for PFAS-containing products;
   - Elimination of PFAS compounds from the manufacturing process.
3. Available here: *Distribute following this presentation.*

Closing…

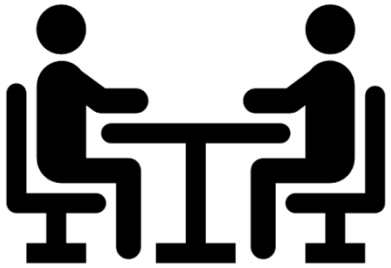
We will be following up with:

Copy of this presentation;

MOU form;

Request for participation by March 31.

Open Discussion.



Thank you.

Nick Giannetti | *Pretreatment Coordinator*

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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Summary of VT PFAS Reports

VT Department of Health PFAS: https://www.healthvermont.gov/environment/drinking-water/perfluoroalkyl-and-polyfluoroalkyl-substances-pfas-drinking-water

ITRC PFAS Fact Sheet: https://pfas-1.itrcweb.org/

EPA P2 Grant: https://www.epa.gov/sites/production/files/2020-01/documents/cfy_20-21_p2_grant_rfa_final.pdf

Evaluation of PFAS within the waste streams disposed of at the New England Waste Services of Vermont (NEWSVT) landfill

- Sanborn Head: PFAS Waste Source Testing Report, dated October 2019: https://anrweb.vt.gov/PubDocs/DEC/SolidWaste/OL510/OL510%202019.10.15%20NEWSVT%20PFAS%20Source%20Testing%20Rpt%20-%20Final.pdf

Statewide evaluation of PFAS within landfill leachate, wastewater treatment facility (WWTF) influent, effluent, biosolids and sludges

- Weston and Sampson: Wastewater Facility and Landfill PFAS Sampling Summary report, dated January 2020: https://dec.vermont.gov/sites/dec/files/wmp/SolidWaste/Documents/02.03.20_PFAS%20in%20LF%20and%20WWTF%20Final%20Report.pdf

State of Vermont Plan Deriving Ambient Water Quality Standards for the Emerging Chemicals of Concern: Per- and Polyfluoroalkyl Substances (PFAS), dated February 2020

- https://dec.vermont.gov/sites/dec/files/wsm/docs/VWQS-PFAS-Plan-Report-Final-20200204.pdf

VT ANR PFAS Statewide Sampling Plan, dated July 2019

- https://anrweb.vt.gov/PubDocs/DEC/PFOA/2019%20Statewide%20Sampling%20Plan/PFAS%20sampling%20plan%2007162019_Final.pdf

VT DEC PFAS Contamination Report, dated July 2018

- https://dec.vermont.gov/sites/dec/files/documents/PFAS%20Sampling%20Report%207.10.18%20FINAL.pdf