PFAS in Food Service & Facility Maintenance

Jennifer Griffith, Project Manager

Stephanie Frisch, Project Manager

Northeast Waste Management Officials' Association (NEWMOA) 89 South Street, Suite 602 Boston, MA 02111

What is **NEWMOA**?

- Northeast Waste Management Officials" Association
- . Non-profit, non-partisan interstate association
- Solid waste, hazardous waste, waste site cleanup & pollution prevention programs
- CT, ME, MA, NH, NJ, NY, RI & VT
- . Formally recognized by EPA in 1986
- <u>www.newmoa.org</u>



Agenda

- . What is PFAS & why do we care?
- . How PFAS gets into the environment
- Information about PFAS in food service & facility maintenance (carpet cleaning & floor stripping & waxing), including ideas to reduce use
- Outline of project with NEKWMD & resources developed

"Before" Poll Questions

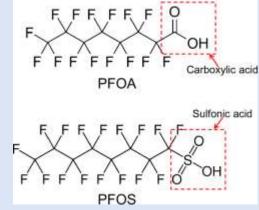
Thank you for your patience!



What are **PFAS**?

PFAS stands for <u>Per- and Polyfluoroalkyl substances</u>

- A group of thousands of synthetic chemicals used in hundreds of types of products
 - Water-resistant/waterproof
 - Oil/grease resistant
 - Stain resistant
 - Resistant to friction
- Known as "forever chemicals"
- Main characteristic: Fluorine attached to Carbon
 - The number of carbons determines the length of the PFAS (C6, C8, etc.) and if it is considered a long-chain or short-chain

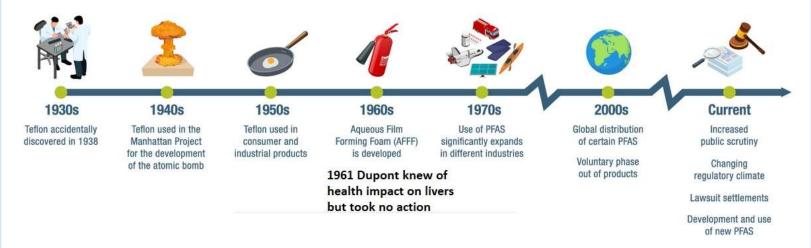


Most people think if something is for sale, that means it's safe...(but that's not true)

How did PFAS develop and evolve?

PFAS Development...

... and Evolution



https://www.kimley-horn.com/what-is-pfas/

Why are PFAS so Problematic?

The carbon-fluorine bond is NOT natural	 Created with tremendous heat and pressure Per (fully) fluorinated PFAS do not breakdown – poly (partially) fluorinated PFAS breakdown only into the fully fluorinated portion which then doesn't change Accumulating all over the planet & in the blood of virtually all animals & people
PFAS impact human & environmental health	PFAS impact the heath of humans, animals, fish and other living beings even with exposure at relatively low levels
PFAS have polluted water supplies	Public water supplies – must test for PFAS - 17 in Vermont have exceeded current standards Private wells – can be contaminated from a variety of sources – including septic systems

PFAS were not a regulated chemicals... until recently!

PFAS Toxicity and Health Effects

PFAS are Linked to a Multiplicity of Adverse Health Effects



Reduced Immune System Function



Increased Risk of Pre-eclampsia in Pregnant Women



Increased Thyroid Disorders and Other Hormone Disruption



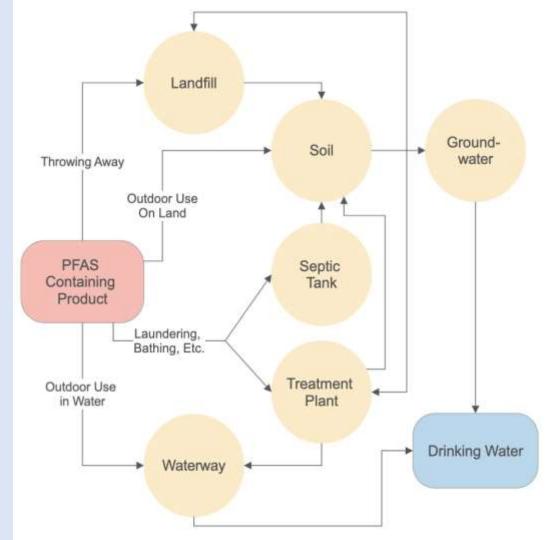
Increased Risk of Liver, Kidney, Prostate ତ Testicular Cancer



Increased Cholesterol Levels

How PFAS in Products Might Impact the Environment

- Remember they do NOT breakdown they just move around
- PFAS can get into groundwater or surface water used for drinking water & lead to significant exposure
- Note: there are other sources of environmental contamination:
 - Firefighting foam
 - Manufacturer use
 - Air deposition
- BUT studies have shown that wastewater from homes has significant amounts



Vermont DEC Wastwater Study

In 2021, DEC worked with the City of Essex Junction and Town of Middlebury to characterize residential, commercial, and industrial PFAS sources entering their WWTFs and found:

• More PFAS, by mass, were measured in wastewater originating from residential communities than from commercial or industrial discharges in these municipalities

• Industrial facility discharges contained unique PFAS but were not a significant source of PFAS to the WWTF, accounting for < 1% of the total mass of PFAS entering the WWTF

What Products Often Contain PFAS?

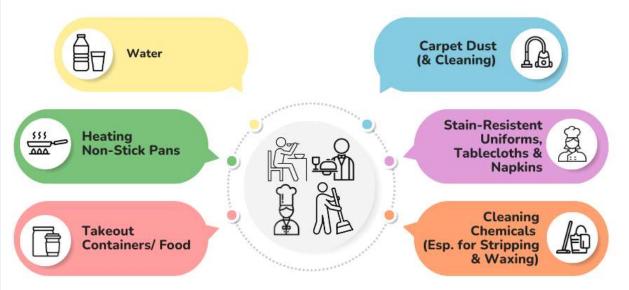
Water-Resistant/Waterproof

Oil/Grease-Resistant

Stain-Resistant/Stain-proof/Stain Release

PFAS in Food Service: Potential Exposure

POTENTIAL PFAS SOURCES FROM FOOD SERVICE



Understanding which products likely contain PFAS and how to avoid purchasing them helps reduce worker and consumer exposure and decrease the amount of PFAS in the environment!

PFAS in Food Service: Potential Contamination

POTENTIAL CONTAMINATION FROM PFAS IN FOOD SERVICE



Wastewater and trash containing PFAS can lead to potential environmental contamination that impacts water resources. Choose PFAS-free cleaning methods and reduce use of PFAS products!

Where are PFAS in Food Packaging?

- Many disposable dinnerware and packaging items are coated in PFAS to achieve water-, oil-, and grease-resistance
 - Increase durability and appearance
- Examples of packaging that may include PFAS:
 - Food contact papers like bags, wraps & liners
 - Disposable dinnerware like plates, bowls, food boats & trays
 - Takeout containers such as pizza boxes, clamshells, paper cartons and interlocking food cartons



PFAS in Food Packaging & Exposure

- PFAS can transfer from packaging to food
- Multiple disposal pathways may lead to PFAS entering the environment:
 - Disposed in a landfill = PFAS enter the leachate
 - Disposed in compost = some PFAS remain in the compost when it is land-applied
 - Disposal in recycling = PFAS enter the waste disposal and/or discharge during the remanufacturing process
- Primary methods of human exposure:
 - Direct consumption
 - Drinking water impacted from PFAS entering environment

Note: Higher temperatures and longer durations of time can lead to greater amounts of PFAS in food



Be Aware of Green Messaging!

Many molded fiber and recycled paper disposable tableware are being advertised as "greener" and "compostable" but are treated with chemicals such as PFAS to achieve water-, and grease-resistant properties. PFAS can be mixed into the paper pulp during manufacturing and be present without an obvious physical coating. PFAS are frequently found in food packaging:

- A 2017 study found 46% of food contact papers and 20% of paperboard samples from fast food restaurants contained PFAS
- Another study found 57% of disposable dinnerware products tested contained PFAS

WA State Dept. Of Ecology Study

May 2021 PFAS in Food Packaging Alternatives

- Viable alternatives that meeting their strict human health and environmental impact safety criteria
- Similar technical performance, commercially available at a similar cost:
 - Wax-coated wraps & liners
 - Kaolin clay-coated & reusable plates
 - Reusable bowls
 - PLA Plastics & reusable trays
 - Kaolin clay-coated & reusable food boats
 - Uncoated paper pizza boxes
 - PLA-coated french fry cartons



Per- and Polyfluoroalkyl Substances in Food Packaging Alternatives Assessment

Developed under Chapter 70A.222.070 RCW

Hazardous Waste and Tests Reduction Program

Washington State Gepartment of Ecology Otympic, Washington

Brinked May 2021, Publication 21-04-004



What You Can Do:

- Look for "No/Low F" Listed Products in the list compiled by the Center for Environmental Health

- Look for GreenScreen-Certified Products

- Look for BPI-Certified Compostable Products - If not using only BPI-Certified Products, Compost ONLY Food Waste

- Choose Reusable Containers





When Disposable is the Only Realistic Option

- Choose disposable materials that are wax-coated or truly uncoated
- Choose products that so not
 advertise oil-, grease-, and water resistant claims
- Avoid disposable products that consistently test positive for PFAS such as molded fiber products and molded recycled paper products



PFAS in Cookware and Exposure

- PFAS can transfer from cookware to food
- Multiple disposal pathways may lead to PFAS entering the environment:
 - Scratched cookware washed in sink = PFAS discharged into water
 - Disposed in a landfill = PFAS enter the leachate
- Primary methods of human exposure:
 - Direct consumption (food)
 - Breathing vapors from overheated cookware
 - Drinking water impacted from PFAS entering environment



Note: Higher temperatures and longer durations of time can lead to greater amounts of PFAS in food

Be Skeptical!

PFAS-Free Claims

Some companies state that their products are "PFC-free" or "PFOA-free" or "PFOSfree", but such statements only cover some specific PFAS chemicals and they are likely still using different PFAS in their products. Even if a website states a product is PFAS-free that doesn't mean it is!



Although one particular PFAS chemical (PFOA) was banned in cookware in 2014, other PFAS including PTFE are still used

What You Can Do:

Use nonstick-free cookware

Such as stainless steel or cast-iron pots and pan





Look for GreenScreencertified products

Greenscreen maintains a database of its certified products If using nonstick cookware, only use low to medium heat!

Lower heat and avoiding surface scratches helps reduce the likelihood of PFAS exposures and release into the environment



PFAS in Textiles and Exposure

- Examples of textiles that may include PFAS:
 - Uniforms, tablecloths, napkins, upholstered chairs, booths & other furniture
- PFAS may enter the environment:
 - Washing textiles = PFAS discharged into wastewater
 - Disposed in a landfill = PFAS enter the leachate
- Primary methods of human exposure:
 - Drinking water impacted by wash water
 - Breathing in and consuming dusts from treated fabrics



Note: The potential health impact from wearing PFAS-containing clothing while sweating in the hot conditions common to foodservice kitchens is unclear and further research is required

What You Can Do:

Choose wood furniture with cushions rather than upholstered furniture

Don't buy uniforms, tablecloths, napkins or other textiles labeled as water-, stain-, or oil-resistant

Consider replacing suspected textiles with untreated alternatives

Choose untreated natural fabrics such as cotton, hemp, or linen!

Avoid fabrics made of synthetic materials that contribute to other human health and environmental concerns such as microplastics

PFAS in Carpets, Cleaning and Exposure

- Multiple disposal pathways may lead to PFAS entering the environment:
 - Wash water disposed of out the back door = direct discharge or PFAS into soil & eventually water
 - Wash water disposed of down the drain
 = PFAS discharged into septic system or wastewater treatment plant
 - Carpet disposed in a landfill = PFAS enter the leachate
- Primary methods of human exposure:
 - Drinking water impacted by wash water disposal
 - Breathing in and consuming dusts from treated carpets and rugs



What You Can Do:

1. Consider wood or tile flooring

2. Opt for new carpet without water-, stain-, or oilresistant properties

3. Frequently vacuum carpet containing PFAS with a HEPA-filter

4. Try to spot treat carpet/rugs rather than wash the entire area

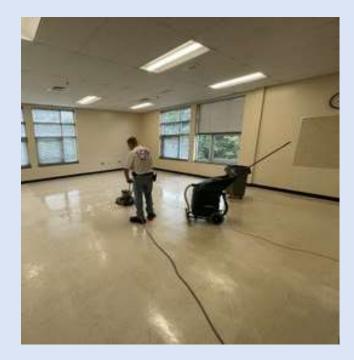
5. Make sure the carpet cleaning product does not contain PFAS

6. Never dispose of wash water from carpet cleaning out the back door

7. If on a septic system, collect and dispose of wash water at a wastewater treatment facility

PFAS Exposure in Floor Stripping & Waxing

- Multiple disposal pathways may lead to PFAS entering the environment:
 - Wastewater disposed of out the back door = direct discharge of PFAS to soil & eventually water
 - Wastewater disposed of down the drain = PFAS discharged into septic system or wastewater treatment plant
- Primary methods of human exposure:
 - Drinking water impacted by wastewater disposal
 - Levels in air might be concerning for worker exposure



PFAS in Floor Stripping, Washing & Waxing

A NH DES Study at Four Schools (published in February 2024):

- PFAS found at high levels in wastewater from floor stripping **at all four schools**
- PFAS lower but still significant levels in the wastewater generated from routine floor cleaning
- Floor stripper and finish products were tested and found to contain high levels of PFAS
- Disposal of wastewater from floor stripping and finishing are **likely** to have contributed to the contamination of groundwater that the schools use for drinking water (all four schools are on septic)

What You Can Do:

1. Avoid floor cleaning – dry sweep as much as possible

2. To the extent feasible, clean floors with plain water

3. Make sure floor stripping, finishing & cleaning products do not contain PFAS 4. Never dispose of wastewater from floor stripping & waxing out the back door

5. If on a septic system, collect and dispose of wastewater at a wastewater treatment facility

PFAS in Food Service Guide

PFAS in Food Service

What Are PFAS?

Per- and Polyfluoroalkyl Substances (PFAS) are a large group of human-made chemicals known for their heat-stable, friction-reducing, and water- and stain-resistant properties. PFAS have been added to many industrial and consumer products since the 1940s and there are thousands of different PFAS chemicals in use today. *PFAS are frequently called "forever chemicals" because they do not breakdown and build up over time in the environment, animals, and people.*

PFAS are used in many categories of products that a food service facility might use:

- Food packaging such as takeout & other disposable containers
- Non-stick cookware

- Textiles such as uniforms, tablecloths, napkins, and upholstered furniture
- · Carpets & cleaning
- · Floor cleaning, stripping & waxing

Each of these is discussed further in this guide.

Understanding which products are likely to contain PFAS and how to avoid buying them helps reduce worker and customer exposure and decreases the amount of PFAS entering the environment and drinking water supplies.



NEWMOA is an equal opportunity provider and employer



USDA PFAS in Consumer Products Project

- Focused on consumer products and the impacts of PFAS on waste streams
- Purpose:
 - Help people learn about PFAS in the environment and waste streams
 - Show people how to avoid purchasing products containing PFAS



USDA PFAS in Consumer Products Project

What we've completed so far:

05

Factsheets

Covering:

- Why Care about PFAS
- Clothing & Other Textiles
- Personal Care Products
- Outdoor Recreation
- Foodware & Packaging



Outreach Events

Summer 2023:

- Tabled at two farmers markets each in ME & NH

In the NEK:

- Lyndonville Farmer Market
- Recycling Center



Guide for Food Service

A Guide that shows what items might contain PFAS & how establishments may contribute to human exposure & contamination of the environment

Overview Factsheet: Why Should I Care?

Key Takeaways:

- Factsheet addresses exposure, health effects and potential environmental impact
- Children can experience heightened exposure to PFAS due to hand to mouth ingestion and close contact with carpeting/rugs causing inhalation of PFAS-containing dusts

What You Can Do:

• Check labels, read ingredients, and be aware that PFAS are considered proprietary ingredients and manufacturers often do not disclose their use



The period Phylo Amerika's Charlon and PHED and Surger period Phylo Amerika's Patricial Science Ver Mainter and Phylo Amerika Science Phyloson, and Control Science Phyloson Phylo Phyloson and Science Phyloson and Phyloson Phyloson and Phyloson Phyloson Phyloson and Phyloson Phyloson Phyloson Phyloson Phyloson Phyloson and Phyloson P

These every remain sciences of IPALE and a communitiest. This fact shared the towards at two work dispenses of IPAL-contraining Community Predicts. Distribution of GS products are likely to contain TPAL and have to another programmers. And as well as you personal sequences and discourses the annuaries? IPAC entering the eventormers and all all facility over the applies.

How Are People Exposed to PFAS7

A search study' combined by the U.S. Sarrian for Disease Cantral and Prevention ISSC flooratifier road people have IRRS in their body.

- The truth expressive tracks are ingetible of facel and some and infinite of dust that curtain (515)
- HSG and be harred of to harve beeth, perturbely if any environment is required to high levels for an extended period of true.
- IOG an ensuring datafied by tell to tracking signific or water setting MSE-data set propert a significant risk.
- The patiential headsh impact from the application of PRIO comparing personal care products on the skin to archae put further meanth's required.



of Arm the Health Effects?

- Economic from build in parameters 18 Feb carries and many effects, including
- 1 Andread Average system function.
- + Increased Philameterial Second
- terminal full of pre-schedgesister program and pre-
- Increased #grod durpher and attent between decadlary
- Instanct full of key killers, promisand nettasky proof

Das is the closereds of Alfanet (FAG chemicals, assessing the risk of each company), an unabilitative of company), an human feath or alfitual to assess. Sensitive are effitivelying first human for assessments has the east registry of PAGS chemicals and ham human may may chemps for antechnicity of PAGI mapping on human feath.

्रस्

ADMACK Is In East Opportunity Provider and Drayloure

Want to limit PFAS exposure? Reduce the number of PFAS-containing products you purchase!



Four Product Category Factsheets



Disking write that & reported from waiting

textile, initialing furniture, surgery, and your

Brandberg to performance in all from

tracked with PERC ht shadt exceptioned

is reached all littled in advant advanta human that all of

the easier residents and pain-proof unlivery terms?

seen popline he WAS. Another Austr' of stickets

Additional Colorante for Ebildren

arranty to shart playteday. During any an-

the name and Address of the OMA have been in one

they are discards the singled on have and

sharp your ligners along resigns income doubt con-

Community in teaching may lead to higher

WAR reasonal substate to shart recently.

- WAI to concept and other teetiles (or

and 1070, that many falsaled as reason or taken

Authing found that 79% of the childring literty tensed.

PDAS containing faulties

managed over the second strend in

Fee: and Printenesskyl Industries (PPAS) are a proop-Torolad primarily contribute to formal aspinants of of increase marks of services that hughling at least time in the High horn antitermatic errorbs, and Vantains, and Latting Sarwhill to fraulti. Unclementing which produces and items to: consists PRAS, and longe to special leaders share balance mouth one industrial suggestion and the standy fire. annual of PDAS automay the ancinement and driving series' adopting. For not trivening hor to PFH2, spart the

"What are WIAD'd, May Blook! I Care?" techdowr Many fights one trapped with HMA to otherway As shifts and under and shift excluded qualities Kry textiles ment to cover as protect surfaces to a preparatives, Eveniples of tractiles this might contain PP-LC In-tube:

+ Colora - Deliling

a - fable inste

- Million B all and in success
- Calculation and Resolution a flags & comparing

Balaker Truck

the spectra of the local sing the full-series channel. and Made In-contrast. PEAC. a support of the section in orate spindert

- Databased statements of Stati Linkson

White WAR considering shottens; and other textiles are adulted, tarrer of the PNAI correct and this the next. make that a plack of good have been it was been a sight routert. He employments is distinguilitation start friends to oil a second continet. We build could place method ministered PRA's party if settion the amountements

Addressed in the Address of the Address of Addressed International Contract of the Address of Addre



Pite and PulyReenable/, Schargenere, 19922) and a provag Transform and participity, privatly contribute to better of furner make president that hadd up tear time in the Assessment's PAO how. any second advised, and having and up having

Diski construction of basic series and Mill Inerto bealth, Understanding wheir, pindeds are likely to building a set on harden

Cleaning some that is required from aligneting of comparisons of PROD consisting hand packaging.

Be Deprint of PEAR free Centre

Group propriet collinant have parkeging

"TTVI" landst on affective this and and shift used to

former studi estimant (1943) tono finanti antali-matari, moti

articular of PEAS or having the universities and drawing and all couplings. For an instrumentation on PFAS secondar "Most on West & Mix Recald | Care ?" April and Many Youtame and food parlenging are establish Pitted to advenue toakin, tall, with givenue canishering which it you are the shifting. The experience of gambaging of Number of Public state opposited PARE to during - Street, or other the

contains MAN and have to see at failing them have

rations and perturnal amounts and theripasas free

· Paper photos & disponsible hittinesees

· Coatain food parkaging

- Anima haat · Traditioned & Informatic comment

When PERS sectors on business and perhapsing and used agains MORI can charafter to food tending to check commission of 19455. Name that legture takened and part kinger die plane of the out load to peaker amounts of WMS in these. Duris Recoulds products are threast same free arter a taniff and provide a patrices for PRAE in arrive the

Rem-cl-Thatte

It ground have making for bilanting-planet are likely by contain thinks. of the process and publications

· Meeting sections that cover he "Assessed address a conclusion destinguarment such

Sec. Sec. 10/00404 is an Enabl Dispersionly Provide and Brighton



The and Polyfermalia Taketarens (PNC) are a group. (Sublect previous primarily contribute to human of liseral starts starts that hadd at our time to be assessed to PESS from

reptorement, arreads, and forsure; and use has refut to bealth. Understanding shirds produces not likely to contains (FER2) and lower to should be over index. induce and presented angelence and thermosis for amount of 1980 seturing the anticonvert and driving ettiet tagailes. For tot terreduction in PRAS, head the "Allastics: HA3 & Ally Mashel ("a eff fathout

Many outdoor interfacts are trained and WAS for actives the shifts and water-maintant landblos. Examyou of costdow reception products that might parties

· Silve Allertanta · Bosta chessi & cari persinchi

. The same **I** where another similary · 10.1 Areast careful and A frontier and to Tarret

· Bahjada

· Wesservering & presentant spread

When WAS spreading sublices products are and prove of the (MAD rule of week off then for pertointeent) collisions the soil and radio. When you is mained at nets, shorts of the PERC done dot into the which some Hothersond from unity hother. If your home a regitive acters. No suttimate is factored being proof where is our premarizants the group heater. I pass unted in lot a second constants. the treast treast plant content second WAR and it and so had been been

Hami-of-Teams

have the barry surgered some condition incoming that had been shown and and resound, or water-montheat plant one that cand at high terms of end, terms to coatings out break

ANYWORKS is an Exact Disponentic Pression and Reputries.





1958 parties included to this and party. House (thank house The Arts stor' unions he particul concerning they used recordering the boatles of within the's and cause to make boothing thread core gigt linear type that

Thread in Water Manufact (1988) and and a star provider Insultanies could a function for using PMAI characteries thing anito proving taken well on append and thus can land portraining of PARS - a direct expression from used, and shit can cause the PEAS counting to came off

and ketter the economic description



Fact and Prophosenality? Independent (PTAR) are a group-1970/C front parasital uses products contactly contribute. of human mask manipuls for kellst up num time is the to batter aspirana her incriminate antitude, and humans, and can be havened the baselily. Linderstratelying schedule providence and Harly inscientees PRAS and how in annual learning them takes indust your present expenses and last more the second of PROJ-petering the anticompart and driving with palata. He at stratight to WAS, reat the Multium Field & Mig Stould 1 (2+2)** factorised

Many personal contempodada include PMd to athrese denibility and water-existent and of-resistant scaling. Nucluris that might carman PAS tockatter · Costumit

· Conversion & South States

· Desited Basel

- Indentia

· Hait care terrelarity · Characteria & phones channel

Bass of Thirds

to general items making the following visition and the last monthly PARE · Waterson' and sectors of anti-spaller. A line with a contaction and all managine had printed, and posteromy

Persient care products car laid to down concerption Many Ignal of courselies module MRE reliably of PRAS adum used in and leaned the mouth. When species, streaments by presidentic, partnership, and spec PRODuced along converting and office increased lag a constants 19833 are existent to increase classifility and printed and and, they get what of draw the shart providence, achieve passounced qualities, and and policies the shadowiged restrat. If you have a regist-Partial product levium. A shallo" similarine batters. We washing its chacker paid below ground the thereast School of Public Health Second 2016, M and the instrumentate the physiological district boots in management impactance, laftly, of these definitions and liquid Into spinel techny, the teachart plant panted Ignitive and more than WH of spe and by presidents rational WAS public ashers the another bart their futured where containent of blass lines (WAG

retreated in a refer in Figure many Personal and Dispersion



-Denking water that is important their waiting

three conversion of PDM is placing protect

off contrast division according to

In soil that says much

Repairing Conserts

Report to a subsequent strend Prior in

inclusting hands affects of long-harts.

Institute WAX and only a filed. Institute

out had be almost atmastactus of WAR.

first to excitabl (Colors, etc.) have

All factsheets can be found at www.newmoa.org/projects/pfas-in-consumer-products/



Vermont Bans PFAS in Products

Act 36 adopted in 2021 (taking effect in 2023):

- firefighting foam
- · food packaging
- ski wax
- residential carpets and rugs, and their aftermarket stain or water-resistant treatments

New Bill signed by the Governor May 30, 2024:

Taking effect in 2026:

- Clothing
- Makeup
- Menstrual & incontinence products
- Non-stick cookware

In 2028: Synthetic Turf



Upcoming Project Activities

Hands-on Technical Assistance at a School in VT

If you would like to be considered for a free technical assistance visit, please contact Jennifer at jgriffith@newmoa.org



"After" Poll Questions

Thank you for your cooperation!





Any questions?

Jennifer Griffith Project Manager jgriffith@newmoa.org

Stephanie Frisch Project Manager sfrisch@newmoa.org