



PFAS in Food Service

Promoting Alternatives

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:

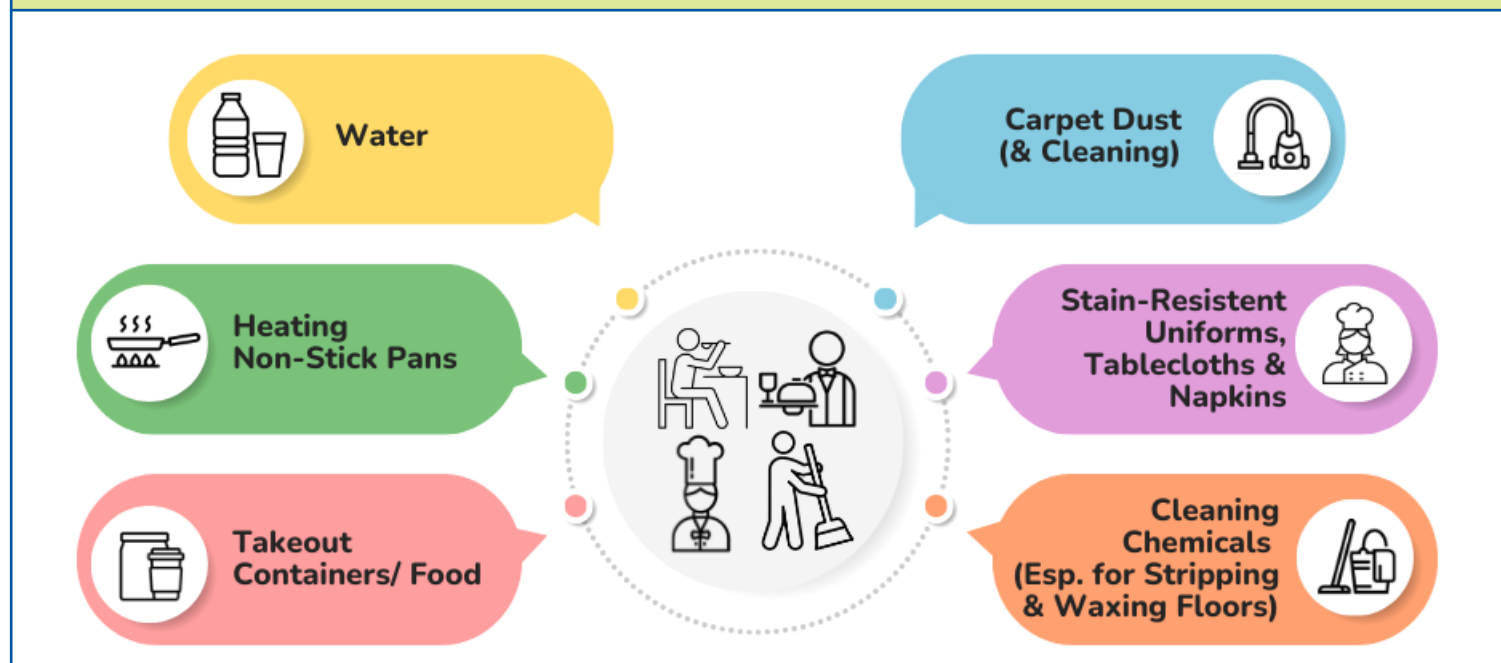
- **Food packaging** such as takeout & other disposable containers
- **Non-stick cookware**

- **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.

POTENTIAL PFAS SOURCES FROM FOOD SERVICE

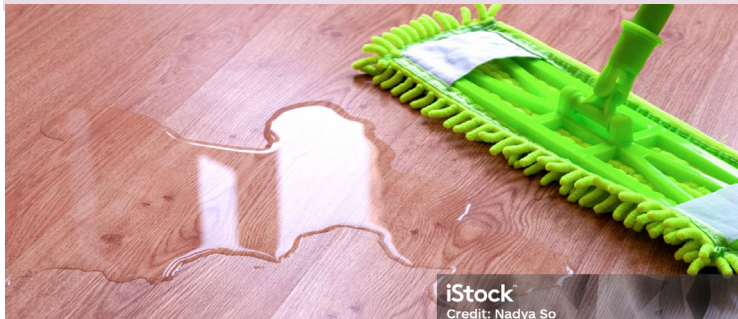


What Are the Health Effects?*

Scientists have found exposure to PFAS can cause many health effects, including:

- Reduced immune system function
- Increased cholesterol levels
- Increased risk of pre-eclampsia in pregnant women
- Increased thyroid disorders and other hormone disruption
- Increased risk of liver, kidney, prostate, and testicular cancer

Due to the thousands of different PFAS chemicals, assessing the risk of each compound, or combinations of compounds, on human health is difficult. Scientists are still studying the health effects of exposures for the vast majority of PFAS chemicals and future findings may change our understanding of PFAS impacts on human health.



When are PFAS in Products?

Most items with water/oil/stain resistant properties contain PFAS. Since most PFAS are considered proprietary ingredients, manufacturers do not disclose their use of PFAS to purchasers. For labeled products, avoid products with ingredients containing “fluoro” in the name, since this denotes a type of PFAS. But just because a compound with “fluoro” is not listed, that doesn’t mean that it’s PFAS-free. **Most products that contain PFAS do not disclose it.**



FOOD PACKAGING

Many disposable dinnerware and packaging items are coated in PFAS to achieve water-, oil-, and grease-resistance to increase durability and appearance. Examples of packaging that may contain PFAS include:

- Food contact papers like bags, wraps & liners
- Disposable dinnerware like plates, bowls, food boats & trays
- Take-out containers like pizza boxes, clamshells, french fry cartons & interlocking folded containers (also called food cartons or food pails)

When PFAS-containing foodware and packaging are used, some PFAS can transfer to food leading to direct consumption of PFAS. **Note that higher temperatures and longer durations of time can lead to greater amounts of PFAS in food.**

Once disposable products are thrown away, they enter a landfill and provide a pathway for PFAS to enter the environment. When PFAS-containing paper and fiber products are composted, some PFAS remains in the compost and enters the environment when it is used. If the products are put in recycling, the PFAS enter the environment during or after the remanufacturing process (through waste disposal and/or discharge to the air or water) or transfer into the new products.

Foodware and packaging primarily contribute to human exposure to PFAS from:

- Direct consumption of food containing PFAS from foodware and packaging
- Drinking water that is impacted from disposing or composting PFAS containing food packaging

Be Aware of Green Messaging!

Many molded fiber and recycled paper disposable dinnerware are being advertised as “greener” for the planet but are often 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 a physical coating. PFAS are frequently found in food packaging:

- A 2017 study* found 46% of food contact papers (e.g., wrappers for sandwiches, burgers, desserts, etc.) and 20% of paperboard samples from fast food restaurants contained PFAS
- Another study* found 57% of disposable dinnerware products tested contained PFAS



What You Can Do:

As PFAS awareness has increased, some manufacturers have removed PFAS from their products, so it is possible to purchase dinnerware and food packaging that does not contain PFAS.

- **Choose reusable dining/ serveware and containers!**

Reusable items are inherently PFAS-free making them a great alternative that **both protects human health and reduces waste**. When disposable is the only realistic option:

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

- **Look for “No/Low F” listed products** in the Center For Environmental Health (CEH) Database of Single-Use Food Service Ware Products Tested for Fluorinated Additives published in 2021: https://docs.google.com/spreadsheets/d/1sNwuTxMwNMKfLo0B033ObIXQzkja5nJwv_MNSEcr6HMedit#gid=98842983

- **Look for GreenScreen-certified products:** GreenScreen maintains a database of its certified products at: <https://www.greenscreenchemicals.org/certified/products-standards>

- **Look for BPI-certified compostable products:** BPI maintains a database of its certified products at: <https://bpiworld.org/find-certified-products>

- **If not using only BPI-certified products - compost only food waste.** Do not compost containers and packaging that may contain PFAS as it can lead to contamination of soil and the environment

Washington State Department of Ecology published a study* in May 2021 that examined PFAS in food packaging and the availability of viable alternatives, including reusables. They determined that there



are non-PFAS alternatives that meet their strict human health and environmental impact safety criteria; have similar technical performance; and are commercially available at a similar cost for the following types of products:

- Wraps & liners (wax-coated)
- Plates (Kaolin clay-coated & reusables)
- Bowls (reusables)
- Trays (PLA plastic & reusables)
- Food boats (Kaolin clay-coated & reusables)
- Pizza boxes (uncoated paper)
- French fry cartons (PLA-coated)



COOKWARE

Certain cookware materials can leach compounds when heated to high temperatures or exposed to acidic foods. Although one particular PFAS chemical, PFOA (perfluorooctanoic acid) was banned in cookware in 2014, other PFAS including PTFE (polytetrafluoroethylene) are still used to produce nonstick cookware. When scratched or used at high temperatures, nonstick coatings can break down and

release PFAS into food, wash water, and the air.

When nonstick cookware is washed in the sink, PFAS can wash out into the water that is discharged. If the facility is on a septic system, the wastewater is discharged below ground where it can contaminate the groundwater. If the facility is on a sewer system, the treatment plant cannot remove the PFAS and it enters the environment in the discharging water and through sludge disposal.

Non-stick cookware primarily contributes to human exposure to PFAS from:

- Breathing in vapors from overheated cookware
- Direct consumption from food cooked on scratched surfaces

What You Can Do:

- **Use nonstick-free cookware** such as stainless steel or cast iron pots and pans
- **Look for GreenScreen-certified products:** GreenScreen maintains a database of its certified products at: www.greenscreenchemicals.org/certified/product-standards
- If you must use nonstick cookware, **use only low to medium heat** and avoid surface scratches to reduce the likelihood of PFAS exposures and release to the environment

Be Skeptical of PFAS-Free Claims

Some nonstick cookware have packaging labels that may lead to confusion. Some companies state that their products are PFC-free, PFOA-free and/or PFOS-free, but such statements only cover some specific PFAS chemicals. They are likely still using different PFAS in their products such as PTFE (polytetrafluoroethylene).



TEXTILES

Many fabrics are treated with PFAS to achieve durability and water- and stain-resistant qualities.

Any textiles meant to cover or protect surfaces may contain PFAS. Examples of textiles used at food service establishments that might contain PFAS include:

- Uniforms
- Tablecloths & napkins
- Upholstered chairs, booths & other furniture

When PFAS-containing textiles are washed, some of the PFAS comes out into the wash water that is discharged. If you wash on-site and have a septic system, the wastewater is discharged below ground where it can contaminate the groundwater. If your facility is on a sewer system, the treatment plant cannot remove PFAS and it enters the environment in the discharging water and through sludge disposal.

Textiles primarily contribute to human exposure to PFAS from:

- Drinking water that is impacted from washing PFAS-containing textiles
- Breathing in and consuming dusts coming off PFAS-containing textiles

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

POTENTIAL CONTAMINATION FROM PFAS IN FOOD SERVICE

Floor Stripping & Waxing
Wastewater Down the Drain or Out the Back Door



Carpet Cleaning
Wastewater Down the Drain or Out the Back Door



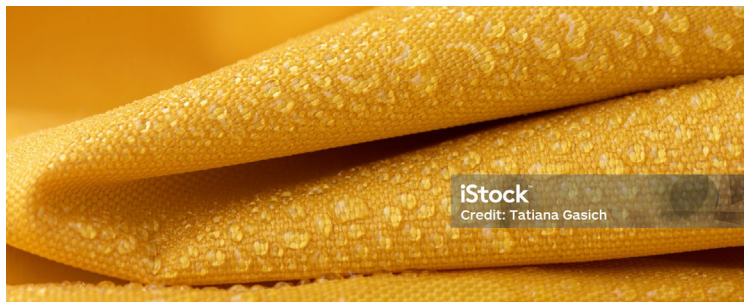
Environmental Contamination & Impacts to Water Resources



Food Packaging
into Trash or Compost



Washing Stain-resistant
Uniforms, Tablecloths & Napkins



What You Can Do:

- **Don't buy** uniforms, tablecloths, napkins or other textiles labeled as water-, stain-, or oil-resistant
 - Look for untreated, natural fabrics like cotton, hemp or linen
 - Avoid fabrics containing synthetic materials like polyester and nylon because they contribute to other human health and environmental concerns, including microplastics
- **Choose wood furniture** with cushions (made from fabric that is not treated to be water-, stain-, or oil-resistant) rather than upholstered furniture
- If you already have suspect textiles, **consider replacing** them with untreated alternatives



CARPETS & CLEANING

Many carpets and rugs are often treated with PFAS to achieve durability and water- and stain resistant properties. Since PFAS are considered proprietary ingredients, carpet and rug manufacturers often do not disclose these treatments. In addition, some carpet cleaning products might also contain PFAS.

When PFAS-containing carpets are washed or a cleaning product containing PFAS is used, PFAS comes out in the wash water that is generated. If your facility has a septic system, the wastewater is discharged below ground where it can contaminate the groundwater. If your facility is on a sewer system, the treatment plant cannot remove PFAS and it enters the environment.

Carpets primarily contribute to human exposure to PFAS from:

- Drinking water that is impacted from washing PFAS-containing carpet
- Breathing in and consuming dusts from PFAS-containing carpet

What You Can Do:

- **Consider wood or tile** flooring instead of carpet
- **When buying** a new rug or carpet, opt for carpet without water-, stain-, or oil-resistant properties
 - Wool is a natural fiber that has natural water- and stain-resistant properties (note that wool carpet can be more expensive than carpets made from plastics such as acrylic, polypropylene, and polyester)
- If you have a concern that existing carpets might contain PFAS, **frequently vacuum using a HEPA-filter** vacuum (and be careful when disposing of the filter bag so you don't release the dust)
- Rather than wash the entire carpet, **try to spot treat** with plain soap and water or other all natural stain removal remedies
- **Make sure** the carpet cleaning product used does not contain PFAS
 - If doing it yourself, avoid products with "fluoro" in the ingredients

- If hiring a cleaning company, ask them about the products they use. Educate them and ask for test results that show no fluorinated compounds are present
- Choose products listed in EPA’s Safer Choice Program: <https://www.epa.gov/saferchoice/products>
- Never dispose of the wash water from carpet cleaning out the back door. If your facility is on a septic system, do not put it down the drain – make sure to collect it and bring it to a treatment facility or hire a licensed hauler to remove it. Contact your state PFAS program for further information and guidance



FLOOR STRIPPING & WAXING

The New Hampshire Department of Environmental Services (NH DES) published a report in February 2024* presenting the results of their study into PFAS in floor stripping, washing, and refinishing (waxing) at four schools and found:

- PFAS at high levels in the wastewater generated from floor stripping at all four schools
- PFAS at lower (but still significant) levels in the wastewater generated from routine floor cleaning
 - This could indicate that PFAS is coming off previous floor finishing coatings, was in the floor surface when new, is residual in the equipment used (if also

used for floor stripping and/or finishing), and/or is in the cleaning product used

- Floor strippers and finishes were tested and found to contain high levels of PFAS
- Disposal of the wastewater from floor stripping and finishing are likely to have contributed to the contamination of groundwater that the schools use for drinking water

Each of the four schools used products made by different manufacturers indicating that PFAS are widely used in floor care products.

Floor cleaning, stripping, and waxing primarily contribute to human exposure to PFAS from drinking water that is impacted from disposing of floor cleaning, stripping, and/or waxing wastewater. A study* of PFAS emissions during professional floor stripping/waxing indicates there is a potential for concerning occupational exposures



What You Can Do:

- **Avoid floor cleaning** - dry sweep as much as feasible
- To the extent feasible, clean floors with **plain water**
- **Make sure** the floor stripping, finishing, and cleaning product used do not contain PFAS
 - Avoid products with “fluoro” in the ingredients

- Ask your supplier about the products they have. Educate them and ask for test results that show no fluorinated compounds are present in what you use
- Choose products listed in EPA's Safer Choice Program: <https://www.epa.gov/saferchoice/products>
- Test the wastewater generated by your floor stripping, waxing, and cleaning activities for PFAS
- Never dispose of the wastewater from floor stripping or refinishing down the drain or out the back door. If your facility is on a septic system, do not put it down the drain – make sure to collect it and bring it to a treatment facility or hire a licensed hauler to remove it. Contact the PFAS program in your state for more information and guidance



Contacts For More Information & Assistance

New Hampshire Department of Environmental Services wastewater disposal:
gwdischarge@des.nh.gov or (603) 271-2858

Vermont Department of Environmental Conservation PFAS Hotline: (800) 693-0206

For Vermont Schools: Informed Green Solutions - www.informedgreensolutions.org or (802) 723-6633

NEWMOA

NORTHEAST WASTE MANAGEMENT OFFICIALS' ASSOCIATION

NEWMOA is a non-profit, non-partisan, interstate association whose membership is composed of the state environment agency programs that address pollution prevention, toxics use reduction, sustainability, materials management, hazardous waste, solid waste, emergency response, waste site cleanup, underground storage tanks, and related environmental challenges in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont (www.newmoa.org).

This document was developed by NEWMOA with input from the Project Partners:

Northeast Kingdom Waste Management District (NEKWMD)

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Vermont Department of Environmental Conservation (VT DEC)

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*For references and more information, visit: <https://www.newmoa.org/pfas-in-food-service-guide/>