PFAS in the 603
Frequently Asked Questions on PFAS in New Hampshire

What are PFAS?
Per- or polyfluoroalkyl substances, or PFAS, are a family of fluorine-containing compounds. This family includes over 5,000 different chemicals. PFOA, PFOS, PFHxS, and PFNA have the greatest research focus, because historically, they are the most abundant PFAS in the environment. More recently, GenX, a chemical replacement for PFOA, has been researched in other regions of the nation due to concerns about how it may influence the health of humans and wildlife. Currently, there is not a high occurrence of GenX in New Hampshire (NH).

What are the PFAS drinking water standards for New Hampshire?

- In July 2020, legislation was signed into law setting maximum contaminant levels for PFOA, PFOS, PFHxS, and PFNA in NH. These are enforceable limits for public water suppliers and recommendations for private well users.
- PFAS drinking water standards currently vary from state to state because there are no national standards set for PFAS in drinking water by the U.S. Environmental Protection Agency (EPA). States develop these standards using the best science, the professional judgment of toxicologists and health risk assessors, and long-established risk assessment methods. As new studies inform our knowledge and risk assessment, PFAS drinking water standards may change. NH specific and other state contaminant levels can be found here on the Duke “PFAS in Drinking Water: Sources & Standards” fact sheet published in 2020.
- The following chart displays the PFAS standards specific to NH at this time.

<table>
<thead>
<tr>
<th>Per- and Polyfluoroalkyl Substance (PFAS)</th>
<th>Proposed Maximum Contaminant Level nanograms/liter (part per trillion, or ppt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfluorooctanoic acid (PFOA)</td>
<td>12</td>
</tr>
<tr>
<td>Perfluorooctane sulfonic acid (PFOS)</td>
<td>15</td>
</tr>
<tr>
<td>Perfluorohexane sulfonic acid (PFHxS)</td>
<td>18</td>
</tr>
<tr>
<td>Perfluorononanoic acid (PFNA)</td>
<td>11</td>
</tr>
</tbody>
</table>

What are steps I can take to reduce my family’s exposure?

Get your water tested: You can find out how and what to do next through this NH Department of Environmental Services fact sheet or find laboratories recommended by the NH Department of Environmental Services for testing services.

- Enter your results for PFAS (and other contaminants) into the NHDES Be Well Informed app to receive an evaluation of your well water quality and, if advisable, water treatment options.

There are some everyday changes you can make to reduce your family’s exposure.

- If your water tests above the PFAS maximum contaminant levels for New Hampshire, here are some resources, beyond the NHDES Be Well Informed app, designed to find the right filter for your budget to protect your family from PFAS in water.
Reducing

- Environmental Working Group’s (EWG) Water Filter Guide
- Duke University Superfund Research Center’s Filter Guide

- If your tap water has high PFAS levels, choose an alternative water source. However, note that bottled water is not currently held to NH state drinking water standards (unless it is bottled in NH). You should choose bottled water brands that are confirmed to have low PFAS concentrations and packaging without PFAS.
  - You can learn more about the amount of PFAS in various bottled waters through the results of a study conducted by the NH Department of Environmental Services. Samples were collected in 2019 and some companies have since updated their practices in responses to this study.

- Minimize dust in your home to limit exposure to PFAS particles in the air:
  - Leave shoes at the door to avoid tracking in dirt and pollutants.
  - Wet mop or vacuum the floor instead of using a broom to avoid flying PFAS particles. Vacuum with a HEPA (high-efficiency particulate air) filter.
  - Regular maintenance of home air filters has been shown to reduce levels of other persistent pollutants in dust in the home and is anticipated to provide similar reductions in PFAS. Find the right air filter for your home using EPA’s Guide to Air Cleaners in the Home or EWG’s Healthy Living: Home Guide.
  - The average person spends 65 percent of their entire life inside their home! Check out Homes For Health for more tips on keeping each area of your home healthier.

Reducing your family’s PFAS exposure means being more careful when buying common products like pans, rain jackets, and makeup.

- Avoid non-stick cookware containing PFAS. Instead, buy stainless steel and cast-iron pots and pans. If you have old non-stick pans you cannot part with, do not heat them over 450°F or use them in the oven. When the coating shows signs of wear-and-tear, it is time to let them go.
- Avoid stain-resistant treatments by asking for furniture, carpet, and cleaning supplies that do not contain PFAS or are not marketed as “stain-resistant.”
- Purchase PFAS-free products from companies who have committed to eliminating PFAS from their manufacturing. You can find a list of these companies at PFAS Central.
- Be aware that water and stain resistant treatments for textiles used as clothing or carpets are often made using PFAS. Many companies are seeking to eliminate PFAS from their stain and water-resistant products; however, until these transitions are complete it is important to be aware that these products may contain PFAS, particularly if they are older products:
  - PTFE (e.g., Teflon® coating, Gore-Tex® materials)
  - PFOS or PFBS (e.g., Scotchgard® coating), older items contain PFOS (e.g., Polartec® materials)
- Minimize your consumption of foods that are packed in materials containing PFAS. Research suggests that people who eat more meals prepared at home have lower PFAS concentrations in their bodies than those that regularly eat out or get takeout. Common food packaging that may contain PFAS includes:
  - Microwave popcorn
  - Fast food boxes (like French fry containers and pizza boxes)
  - Bakery bags
  - Bottled water
• Find out which cosmetics and personal care products contain PFAS using the ingredient list below, or EWG’s Skin Deep database to find PFAS free cosmetics. PFAS Central also maintains a list of PFAS free personal care products. Generally, be cautious when ingredients contain the words “fluoro” or “perfluoro.” PFAS are found in certain types of dental floss, nail polish, facial moisturizers, eye make-up and more. Here are ingredients to look out for:
  o PTFE
  o Perfluorononyl Dimethicone
  o Perfluorodecalin
  o C9-15 Fluoroalcohol Phosphate
  o Octafluoropentyl Methacrylate
  o Perfluorohexane
  o Pentfluoropropylene
  o Polysiloxane Difluoroethoxy Difluoroethyl Peg Phosphate
  o Polysiloxane Difluoroethoxy Peg-2 Phosphate
  o Methyl Perfluorobutyl Ether
  o Perfluorononyl Decyl Carboxydecyl Peg-10 Dimethicone
  o Perfluorodimethylethylhexane
  o Perfluoroperhydrophenanthrene

What is being done about PFAS in NH?

In addition to the activities listed in the fact sheet, the NH Department of Health and Human Services (NHDHHS) is conducting a public health surveillance study of NH residents to measure their exposure to environmental contaminants, including PFAS. Community level studies are also ongoing, including the area surrounding the former Pease Air National Guard Base.

How can I find out if my family is being exposed to PFAS at high levels?

Biomonitoring (measurement of the toxic chemical compounds, elements, or their metabolites, in the body) studies suggest that most people in the general population have measurable levels of PFAS in their blood. This exposure primarily comes from ingestion of contaminated water and food, as well as from exposure to consumer and personal care products that contain PFAS. However, NH residents are often exposed to PFAS at higher levels than the general population.

It is important to have water testing done every 3-5 years for PFAS and other chemicals such as arsenic, copper, and lead. You can find out how to get your water tested and what to do next through this NH Department of Environmental Services brochure or find out what laboratories the NH Department of Environmental Services are recommending for testing services.

If you are concerned about your PFAS exposure start by speaking with your doctor. The Agency for Toxic Substances and Disease Registry published advice and a fact sheet to help you begin this conversation. Also, NHDHHS has written a letter that you can share with your health care provider. Printing these materials and sharing them with your primary care provider is a useful first step. Blood testing may be suggested, and NH recently passed a law to support insurance coverage of the costs of PFAS blood testing. You can find out more on the NH Department of Health & Human Services webpage about blood testing.

What health effects have been associated with exposure to PFAS?

Many studies have been conducted to understand the association between PFAS exposure and human health effects. While research on these topics is still ongoing, PFAS exposure has been shown to impact
human health as listed below. For examples of scientific journal articles discussing each health effect see the links following each health effect.

PFAS has been shown to:

• Interfere with the body’s natural hormones (See Journal Article)
  • Studies suggest that PFAS interact and interfere with a variety of hormones including, but not limited to estrogen, androgens, insulin, and thyroid-related hormones.
• Increase cholesterol levels (See Journal Article) and risk of thyroid disorder (See Journal Article)
  • Various studies suggest that greater PFAS blood levels are related to increased cholesterol levels, with heightened cholesterol levels leaving individuals at risk for other chronic conditions.
• Affect the immune system (See Research Report)
  • Studies have found PFAS exposure to both heighten and diminish immune responses depending on the specific chemical under study
• Cause physical growth and brain development in children (See Journal Article)
  • Most studies indicate that PFAS adversely affect growth *in utero* and increase risk of obesity in childhood.
  • Some studies suggest that PFAS are neurotoxins and may delay and alter development in children who have been exposed to high PFAS levels, but these health effects have been less consistent across research studies than many of the other observed effects of PFAS on health.
• Increase the risk of certain types of cancer (See Journal Article)
  • Research suggests a correlation between PFAS exposure and both kidney and testicular cancers in humans; however, further studies are needed to confirm these findings.
  • Animal studies have suggested the potential for PFAS exposure to trigger the growth of tumors in breast, liver, and pancreatic tissues.

For a more detailed description on the probable links of PFAS with human health see:

• The C8 Science Panel which specifically investigated the health effects of PFOA and created Probable Link Reports which summarize whether or not PFOA is likely to cause a number of specific health conditions. These reports establish that there was a probable link between PFOA and the following conditions:
  o High Cholesterol
  o Ulcerative colitis
  o Thyroid disease, including hyperthyroidism or overactive thyroid (particularly among women) and hypothyroidism or under active thyroid (particularly among men)
  o Testicular cancer
  o Kidney cancer
  o Pregnancy-induced hypertension
• Rhode Island STEEP Report on health effects