

PFAS blood levels in children at Pease



PFAS-REACH

PFAS Research, Education,
and Action for Community Health

FINDINGS FROM THE PFAS-REACH CHILDREN'S HEALTH STUDY

July 2025

Key Findings

- PFAS-REACH tested blood samples collected in 2021-2024 from 87 children likely exposed to PFAS from drinking water at the Pease Tradeport in Portsmouth, NH, and in Hyannis and Ayer, MA. All children had detectable levels of PFAS in their blood.
- The median level of the PFAS compound PFHxS was higher in children from Pease compared with children in the U.S. population as well as children from Hyannis and Ayer.
- PFAS levels in children at Pease have gone down over time. Median PFAS blood levels in the PFAS-REACH Study (2023-2024) were lower than those reported in the 2015 testing by the State of New Hampshire and in the 2019-2021 CDC Pease Study.
- None of the children at Pease had PFAS levels above which health experts recommend additional medical evaluation, based on 2022 guidance from the National Academies (NASEM).

What are PFAS?

PFAS (per- and polyfluoroalkyl substances) are a large family of chemicals commonly added to nonstick, stain-resistant, and waterproof consumer products such as carpets and upholstery, rain jackets, cookware, food packaging, and even dental floss. Manufacturers also add PFAS to firefighting foams used at military bases, airports, and fire training areas. Some PFAS are highly persistent in the environment and are often called "forever chemicals."

Exposures to PFAS have been associated with a wide range of health effects, including higher cholesterol, elevated blood pressure, decreased vaccine response in children, thyroid disruption, and kidney and testicular cancers.

PFAS at Pease

PFAS have been found in public water supplies serving millions of people across the U.S. The Pease Tradeport in Portsmouth, NH, was one of the first places in the U.S. to discover PFAS contamination in drinking water. In 2014, high levels of PFAS were found in the water supply providing tap water to the businesses and daycare centers at the Pease Tradeport. The PFAS contamination came from a class of firefighting foam, called AFFF, that had been used at the former Pease Air Force Base. The most highly contaminated well was shut off in 2014. Treatment began in 2016 and since 2021, drinking water from all three wells serving the Tradeport has been filtered to remove PFAS.

How are PFAS regulated in water?

In 2020, New Hampshire established drinking water limits for four PFAS chemicals: PFOA (12 parts per trillion, or ppt), PFOS (15 ppt), PFHxS (18 ppt), and PFNA (11 ppt). New Hampshire was one of the first states to enact enforceable drinking water standards. These standards meant that New Hampshire public water systems had to test for PFAS in drinking water and, in some cases, install treatment.

In April 2024, the federal government issued nationwide PFAS drinking standards. The new standards apply to the four PFAS regulated by New Hampshire, as well as GenX chemicals and PFBS. These national standards are stricter than New Hampshire's 2020 standards and are set at 4 ppt for PFOA and PFOS and 10 ppt for PFNA, PFHxS, and Gen X chemicals. In addition, PFNA, PFHxS, GenX chemicals, and PFBS are regulated as a group based on a hazard index—a measure of the risks from exposures to multiple PFAS.

What did PFAS-REACH do?

In 2021-2024, PFAS-REACH collected blood samples from 87 children likely exposed to PFAS from the water at the Pease Tradeport as well as in Hyannis and Ayer, MA. Parents/guardians were also asked to fill out a questionnaire and respond to periodic text messages about their child's health. Children's blood samples were tested for PFAS and for antibodies related to routine vaccinations.

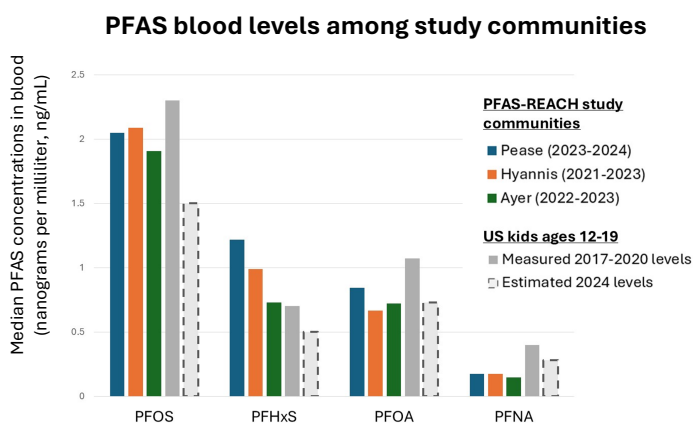
What did PFAS-REACH find?

Blood samples were tested for 24 PFAS chemicals by a laboratory at Emory University. Of these, 12 were detected at least once, and three (PFHxS, PFOA, PFOS) were detected in every sample. PFOA, PFOS, and some of the other PFAS we detected are no longer produced in the U.S. due to concerns about their toxicity. However, they can still show up in the environment and in people's bodies because the chemicals don't break down easily. The other PFAS we detected, such as PFBS, PFHpA, and PFBA, are newer chemicals often used as substitutes for the older, discontinued PFAS in consumer products.

How did PFAS blood levels we found compare across communities?

The median blood level of the PFAS compound PFHxS—historically used in some firefighting foams—was higher in children from Pease compared to those in Hyannis and Ayer, MA. (Public water supplies in Hyannis and Ayer were also contaminated with PFAS from similar firefighting foams.) In contrast, blood levels of three other PFAS compounds—PFOS, PFOA, and PFNA—were similar in children across all three locations.

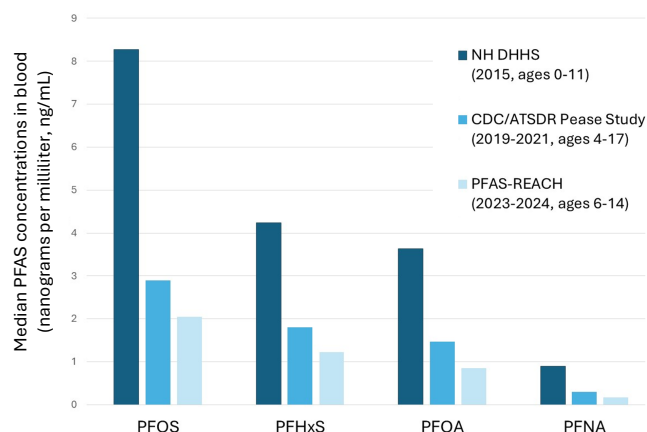
When compared to children in the general U.S. population in 2017-2020, the median blood level of PFHxS in children at Pease was higher, whereas median levels of PFOS, PFOA, and PFNA were lower. Because blood levels for these PFAS have been steadily declining nationwide, we also estimated general population levels for 2024. These 2024 estimates are lower than those reported by the CDC for 2017-2020.



How have PFAS blood levels in Pease children changed over time?

Our results show that PFAS levels in children's blood at Pease have gone down over time. Median PFAS blood levels in children in the PFAS-REACH Study (2023-2024) were lower than those reported in the [2015 testing by the New Hampshire Department of Health and Human Services](#) and the [2019-2021 CDC Pease Study](#). Although PFAS are often called “forever chemicals” because they break down very slowly in the environment, they don't stay in the body forever. Blood levels of PFAS gradually decrease over time when exposures are reduced.

PFAS blood levels in Pease children over time



Comparisons to health benchmarks

We compared the levels of PFAS in the children in PFAS-REACH to guidelines developed by the National Academies of Sciences, Engineering, and Medicine (NASEM) in 2022. These guidelines included recommended health screenings for adults and children with elevated PFAS in their blood. None of the children from Pease in the study exceeded the upper health-based screening threshold of 20 ng/mL (for the combined total of 7 common PFAS). People above this level have an increased risk of health effects.

What's next?

PFAS-REACH researchers are continuing to analyze the data to understand how PFAS can impact the immune system and how diet and consumer products can contribute to PFAS exposures in children.

Looking for information on how to reduce your exposure to PFAS? Visit www.pfas-exchange.org

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TESTING for PEASE



A special thank you to all the families who participated in this study!