

**Pease Study  
PFAS Results Report**

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Flesch-Kincaid Readability Score – 8.1  
deleting table and agency weblinks

Dear [NAME/NAME OF PARENT OR GUARDIAN],

Thank you for participating in the Pease Study that looks at the human health effects of PFAS exposure through drinking contaminated water. Per- and polyfluorinated substances (PFAS) are a group of chemicals used to make products that resist heat, oil, stains, grease, and water. Some PFAS do not break down in the environment. People are mostly exposed through PFAS-contaminated water or food. Exposure may also occur by using products that contain PFAS in the home or at work.

Table 1 shows what we measured in the blood sample [you/your child] provided for the Pease Study on mm/dd/yyyy. We show [your/your child's] result for each chemical compared to the levels that half (50<sup>th</sup> %) and the top 5% of the people in the U.S. in [your/your child's] age group have. For children 3-11 years old the PFAS levels measured in 2013-2014 National Health and Examination Survey (NHANES) are presented and for children 12-19 years old and adults 20+ year old those measured in 2017-2018 NHANES are shown for comparison.<sup>1-2</sup>

Finding PFAS in a person's blood by itself does not mean that the chemical causes disease. Research, like the Pease Study, will provide more information to see if there are health risks from different PFAS levels in blood.

Some people will not have results for all chemicals. [You/Your child] may not have a result for a chemical test if [your/his/her] level is lower than the lab's limit of detection (<LOD).<sup>3</sup> [You/Your child] may also not have a result if the blood sample did not pass a lab quality control check. If the reason for missing results is known, it will be included with [your/your child's] results.

If you have further questions about the meaning of these chemicals tests results, you may contact ATSDR by email at [peasestudy@cdc.gov](mailto:peasestudy@cdc.gov). Below, we list some websites and federal agencies with further information on these chemicals. We also enclose our ATSDR factsheet on Frequently Asked Questions about PFAS.

Sincerely,

Study Investigators.

Where can I find more information?

**Centers for Disease Control and Prevention (CDC) Resources:**

National Health and Nutrition Examination Survey (NHANES) (<https://www.cdc.gov/nchs/nhanes/index.htm>)

**Agency for Toxic Substances and Disease Registry (ATSDR)**

Toxicological Profiles and ToxFAQs (<https://www.atsdr.cdc.gov/ToxProfiles/index.asp> and <https://www.atsdr.cdc.gov/pfas/index.html>)

**U.S. Environmental Protection Agency (EPA)**

Integrated Risk-Information System (IRIS) (<https://www.epa.gov/iris>)

**Table 1.** Your PFAS test results compared to people in your age group.

Test Name	Your Result (µg/L)	NHANES Reference Range <sup>1,2</sup> (µg/L)	
<i>Per- and Poly-fluoroalkyl Substances (PFAS)</i>		Age Group (years):	50 <sup>th</sup> to 95 <sup>th</sup> %
<b>PFOA</b> - perfluorooctanoic acid‡		3-5: 6-11: 12-19: 20+:	1.80 – 5.58 1.94 – 3.84 1.17 – 2.34 1.47 – 3.875.60
• <b>n-PFOA</b> - linear isomer of perfluorooctanoic acid (PFOA) CAS Number 335-67-1		3-5: 6-11: 12-19: 20+:	1.72 – 5.32 1.84 – 3.77 1.10 – 2.34 1.40 – 3.84
• <b>Sb-PFOA</b> - branched isomer of PFOA		3-5: 6-11: 12-19: 20+:	< LOD – 0.280 < LOD – 0.230 < LOD – 0.300 < LOD – 0.200
<b>PFOS</b> - perfluorooctane sulfonic acid‡		3-5: 6-11: 12-19: 20+:	3.41 – 8.82 4.02 – 12.4 2.60 – 7.30 4.70 – 15.1
• <b>n-PFOS</b> – linear isomer of perfluorooctane sulfonic acid (PFOS) CAS No. 1763-23-1		3-5: 6-11: 12-19: 20+:	2.11 – 6.19 2.65 – 8.41 1.70 – 5.70 3.10 – 11.0
• <b>Sm-PFOS</b> – branched isomer of PFOS		3-5: 6-11: 12-19: 20+:	1.00 – 3.60 1.41 – 4.25 0.70 – 2.00 1.40 – 4.60
<b>PFHxS</b> - perfluorohexane sulfonic acid CAS No. 355-46-4		3-5: 6-11: 12-19: 20+:	0.740 – 1.62 0.850 – 4.14 0.80 – 3.40 1.20 – 3.80
<b>Me-FOSAA</b> - 2-(N-methyl-perfluorooctane sulfonamido) acetic acid CAS No. 2355-31-9		3-5: 6-11: 12-19: 20+:	0.110 – 1.02 0.110 – 0.940 0.00 – 0.500 0.100 – 0.600
<b>PFNA</b> - perfluorononanoic acid CAS Number 375-95-1		3-5: 6-11: 12-19: 20+:	0.620-3.49 0.750-3.19 0.400– 1.20 0.400 – 1.40
<b>PFDA</b> - perfluorodecanoic acid CAS Number 335-76-2		3-5: 6-11: 12-19: 20+:	0.100 – 0.370 < LOD – 0.350 0.200 – 0.400 0.200 – 0.600
<b>PFUnDA</b> - perfluoroundecanoic acid CAS Number 2058-94-8		3-5: 6-11: 12-19: 20+:	< LOD - 370 < LOD - 250 < LOD – 0.200 0.100 – 0.400

1. CDC. 2018. 2013-2014 NHANES 50th to 95th percentiles among children 3-5 and 6-11 old from the Fourth National Report on Human Exposure to Environmental Chemicals, Updated Tables, March 2018. Accessed April 13, 2018 at ([https://www.cdc.gov/exposurereport/pdf/FourthReport\\_UpdatedTables\\_Volume1\\_Mar2018.pdf](https://www.cdc.gov/exposurereport/pdf/FourthReport_UpdatedTables_Volume1_Mar2018.pdf)).

2. CDC. 2021. 2017-2018 NHANES 50th to 95th percentiles among children 12-19 years old and adults 20+ years old from the Fourth National Report on Human Exposure to Environmental Chemicals, Updated Tables, March 2021. ([https://www.cdc.gov/exposurereport/pfas\\_early\\_release.html](https://www.cdc.gov/exposurereport/pfas_early_release.html)).

3. NHANES 2017-8 also included measurements for serum 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid, Adona (ammonium salt of 4,8-dioxo-3H-perfluorononanoic acid, and GenX (ammonium salt of 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (HFPO-DA) but the reference ranges were all below LOD and are not measured at Pease Study.

‡ Not measured after Survey Years 2011-2012. Starting in 2013, CDC began measuring linear and branched isomers of both PFOS and PFOA. PFOS and PFOA were calculated by summing the linear and branched isomers for each participant and applying the appropriate sample weight. Because the 2013-2014 values are a calculated sum, there is no limit of detection (LOD) for PFOS and PFOA.