



INFORMATION SHEET

December 2017

PFOA biomonitoring group-level results: Summary of findings for Petersburg area participants

The New York State Department of Health (NYS DOH) offered blood testing for PFOA to people from the Petersburg area beginning in April 2016. This information sheet shows group results so people can see how their levels compare with those of other participants, other communities, and the general population, while keeping individual results confidential.

As studies have shown, when PFOA is present in drinking water, PFOA levels in blood are expected to be higher than levels in the general U.S. population. The blood testing result provides information about exposure to PFOA and allows for comparisons to people living elsewhere. Because scientists and public health experts are still learning about PFOA and human health, the blood testing result does not indicate if a person's current illness is due to PFOA, or if a person will experience illness in the future due to PFOA. The result only provides exposure information.

- Table 1 shows combined blood test results for 508 Petersburg area participants by gender and age group.
- Table 2 shows blood test results for people served by the Petersburg public water supply by gender and age group.
- Table 3 shows results for adults by number of years served by the public water supply.
- Table 4 shows numbers of Petersburg blood testing participants with results in specific ranges.
- Table 5 includes information about PFOA levels in other groups with PFOA in drinking water, people who work with PFOA, and the general U.S. population.
- Additional information about drinking water, PFOA, and blood testing is available on the NYS DOH website www.health.ny.gov/DrinkingWaterResponse.

The tables show two types of “middle” levels. They show the geometric mean and the 50th percentile. Geometric means are a way of calculating the middle level. They are used in science to prevent the highest and lowest values from distorting the average when the rest of the data are close together. The 50th percentile is the middle result among all the

individual results: half of the people had levels higher and half had levels lower than the 50th percentile

Table 1 PFOA blood test results for Petersburg area blood testing participants: adults and children by gender and age group tested from April through November 2016			
	Number of participants	PFOA level in micrograms per liter	
		Geometric mean	50th percentile
All participants	508	6.78	4.96
Adults			
All adults (age 18 and over)	465	7.00	4.99
Adults by gender			
Females	237	5.68	4.46
Males	228	8.70	5.76
Adults by age group			
18-39 years	80	4.84	3.75
40-59 years	179	9.96	6.36
60 years and older	206	5.95	4.96
Adults by gender and age group			
Females 18-39 years	37	3.14	2.47
Females 40-59 years	95	5.79	4.29
Females 60 years and older	105	6.88	5.58
Males 18-39 years	43	7.00	5.15
Males 40-59 years	84	18.39	14.74
Males 60 years and older	101	5.12	4.34
Children			
Children (under age 18)	43	4.81	4.38
Children by gender			
Females	17	3.30	3.09
Males	26	6.14	5.74
Children by age group			
Younger than 6 years	9	5.23	4.03
6 to 10 years	15	3.46	3.34
11 to 17 years	19	5.98	7.68

Table 1 above shows the geometric mean blood PFOA level is 6.78 mcg/L and the 50th percentile blood PFOA level is 4.96 mcg/L for the 508 Petersburg area participants. The total of 508 includes people with a variety of types of potential exposures to PFOA. The total includes people served by Petersburg public water, people served by private well water, people working in the area, and former residents. PFOA levels in this group ranged from non-detectable to greater than 400 micrograms per liter (mcg/L).

Table 1 shows that middle PFOA blood levels are higher in males than females. This is consistent with findings in other populations. In this group of Petersburg blood testing participants, males in the 40-59 year age group have higher PFOA blood levels than other age or gender groups. The higher PFOA levels in this age group may be due in part to work-place exposures to PFOA. Additional information about PFOA levels in people with occupational exposures is being developed for blood testing participants from both the Hoosick Falls and Petersburg areas and will be made available in the future.

Table 2 below shows PFOA levels for adults and children served by the Petersburg public water supply. The geometric mean for the total of 47 adults is 10.68 and the 50th percentile is 12.80. Five children on the public water supply had their blood tested. The geometric mean for this group is 5.11, and the 50th percentile is 6.16. PFOA levels are shown for females and males separately, for three age groups for adults and for all children under age 18 as a group. It is not possible to provide additional breakdowns because the numbers in each gender/age group are very small.

Table 2 PFOA blood test results for adults and children served by Petersburg public water, by gender and age group: tested from April through November 2016			
	Number of participants	PFOA level in micrograms per liter	
		Geometric mean	50 th percentile
Adults			
All adults (age 18 and over)	47	10.68	12.80
Adults by gender			
Females	25	7.30	8.79
Males	22	16.46	17.46
Adults by age group			
18-39 years	6	13.26	14.97
40-59 years	14	7.44	7.84
60 years and older	27	12.28	14.40
Children			
Children (under age 18)	5	5.11	6.16

Table 3 on the following page shows PFOA blood levels according to how many years the person lived in a home served by the Petersburg public water supply. The PFOA levels do not show an increasing trend for people who lived in homes served by public water longer than 15 years. This could be interpreted as evidence the public water supply did not contain PFOA for a period of time longer than 15 years. However, the numbers of participants are relatively small for each 15-year period, so strong conclusions cannot be drawn from this information.

Table 3			
PFOA blood test results for adults			
by number of years served by Petersburg public water:			
tested from April through November 2017			
	Number of participants	PFOA level in micrograms per liter	
		Geometric mean	50 th percentile
Adults (age 18 and over)	47	10.68	12.80
Adults by length of residence in Petersburg water district			
less than 16 years	9	11.08	10.10
16 to 30 years	12	11.58	13.49
31 to 45 years	15	8.43	12.80
more than 46 years	11	13.13	13.90

Table 4 presents additional information about the specific PFOA levels of participants while keeping individual levels confidential. Reading across the table for all adults, the table shows that 233 participants (50%) had PFOA blood levels of 5 micrograms per liter or less and 16 (3%) had PFOA blood levels higher than 400 micrograms per liter. For adults served by public water, 13 out of 47 (28%) had levels of 5 micrograms per liter or less and five (11%) had levels higher than 30 micrograms per liter. Of the 43 children tested, 37 (86%) had PFOA levels below 10 micrograms per liter. The five children served by Petersburg public water had PFOA blood levels below 10 micrograms per liter.

Table 4								
Blood PFOA level ranges for all adults and children,								
and for adults and children served by Petersburg public water;								
for participants tested from April through November 2016								
Adults	Up to 5 mcg/L PFOA	Greater than 5 up to 10 mcg/L PFOA	Greater than 10 up to 20 mcg/L PFOA	Greater than 20 up to 30 mcg/L PFOA	Greater than 30 up to 100 mcg/L PFOA	Greater than 100 up to 200 mcg/L PFOA	Greater than 200 up to 400 mcg/L PFOA	Greater than 400 mcg/L PFOA
All adults (465)	233	73	57	23	35	18	10	16
All adults served by Petersburg public water (47)	13	5	17	7	5	0	0	0
Children	Up to 10 mcg/L PFOA	Greater than 10 mcg/L PFOA						
All children (43)	37	6						
All children served by public water supply (5)	5	0						

PFOA LEVELS FROM OTHER STUDIES

Table 5 shows information for comparing PFOA levels to other groups: other communities with PFOA in drinking water, people who worked with PFOA, and the general U.S. population. General U.S. population levels are provided both for 1999-2000 and for 2013-2014 to show how levels have been declining in the general population due to these chemicals being phased out of use beginning in 2000.

- Comparing **Table 1** and **Table 5** shows the middle PFOA level for all Petersburg area participants (6.78 mcg/L) is lower than the levels shown for other communities where there was contamination of drinking water with PFOA. Comparing data in these two tables also shows that the middle levels for Petersburg area participants are higher than the middle and 95th percentile levels in the general U.S. population in 2013-2014.
- Comparing **Table 2** and **Table 5** shows the middle PFOA levels for participants served by the Petersburg public water supply are also lower than levels shown for other communities where there was contamination of drinking water with PFOA. Comparing the two tables also shows the middle levels for people served by the public water supply are higher than the middle and 95th percentile levels in the general U.S. population in 2013-2014.

Table 5 PFOA Levels in Blood from Other Studies: Other communities with PFOA contamination in drinking water, people who worked with PFOA, and general U.S. population		
PFOA RESULTS FOR COMPARISON	Results in mcg/L	
Other communities with PFOA in drinking water:	Average level	High level
Little Hocking, Ohio	228	N.A.
Lubeck, West Virginia	92	N.A.
Tuppers Plains, Ohio	42	N.A.
Mason County, West Virginia	16	N.A.
People who worked with PFOA:	Average level	
3M workers, Decatur, Alabama	112	N.A.
DuPont workers, Parkersburg, West Virginia	410	N.A.
General U.S. population:	Middle level (50th percentile)	High level (95th percentile)
U.S. population in 1999-2000**: age 12 and up	5.20	11.90
U.S. population in 2013-2014: age 12 and up	2.07	5.57
Males only	2.37	5.67
Females only	1.67	5.07
Young people age 12-19	1.67	3.47

Notes for Table 5 are on the next page.

NOTES FOR TABLE 5:

mcg/L = micrograms per liter: A microgram per liter equals one part per billion, about one drop of liquid in an Olympic size swimming pool.

Middle level (50th percentile): Half the people had a result below and half had a result above this level.

High level (95th percentile): 95 of every 100 people had results below this level.

Average level: The average is usually very similar to the middle level. In the published community studies, the average level is used.

N.A.: These levels are not available in the published studies about these communities.

****PFOA levels for the general U.S. population** for 1999-2000 and the most recently published levels for 2013-2014 are provided. Blood levels of PFOA declined over these years because some PFAS began to be phased out of use starting in 2000.

References:

1. General U.S. population: National Health and Nutrition Examination Survey (NHANES), National Report on Human Exposure to Environmental Chemicals, U.S. Centers for Disease Control and Prevention (CDC), 2011-12.218.
2. Ohio/West Virginia communities: Paustenbach DJ, Panko JM, Scott PK et al (2007). A methodology for estimating human exposure to perfluorooctanoic acid (PFOA): a retrospective exposure assessment of a community (19512003). J Toxicol Environ Health 70:28-57.
3. Workers: Olsen GW (2015) "PFAS biomonitoring in higher exposed populations," in DeWitt JC (ed.) Toxicological effects of perfluoroalkyl and polyfluoroalkyl substances. Humana Press, Springer.

FOR MORE INFORMATION: NYS DOH, Center for Environmental Health, Bureau of Environmental and Occupational Epidemiology, Corning Tower, Albany NY 12237 518-402-7950 or BEOE@health.ny.gov.