

## INFORMATION SHEET

June 2018

# Hoosick Falls Area PFOA Biomonitoring Group-Level Results

## Introduction

The New York State Department of Health (DOH) has continued to assess PFOA results for people who participated in the Hoosick Falls blood testing program. This information sheet provides expanded group information about everyone who participated in the testing program between February and November 2016, a total of 2,903 people.

These group results presented by gender and age categories make it possible for individuals to compare their own levels with those of other participants and people living elsewhere who were exposed to PFOA, while keeping individual results confidential. People who did not have a blood test can estimate what their PFOA level would have been by using the information in these tables.

Individual results only provide exposure information and cannot be used to determine whether a person's current illness is due to PFOA or if a future illness is likely to result from PFOA. Future studies of PFOA exposure by scientists, public health experts, and government agencies may provide more definitive information on health effects. Knowledge of an individual's exposure may be helpful in applying this information in the future.

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. Once the exposure to PFOA is prevented, PFOA levels decline in blood by about half every two to four years (half-life). In Hoosick Falls, bottled water was available for area residents starting in November 2015 and the Village water had no detectable PFOA level (less than 2 parts per trillion) starting March 24, 2016 as a result of granular activated carbon (GAC) filtration. Some people were tested closer to when bottled water first became available (February 2016 - April 2016) and some were tested after the interim GAC had been operational for a while (June 2016 - November 2016). Some of the tables in this information sheet provide PFOA levels for participants according to the time period during which their blood was tested. Generally, people who were tested in the later time period had lower levels of PFOA. A second round of blood testing will be offered in 2018 for interested area residents.

## List of Data Tables

Tables are used to present seven ways of looking at the data. These are:

- 1:** All Participants - PFOA Levels by Drinking Water Source and Time Periods
- 2:** All Participants - PFOA Levels by Gender and Age
- 3:** Participants Served by Village Water - PFOA Levels by Gender, Age, and Time Periods of Blood Tests
- 4:** Participants Served by Village Water - PFOA Levels by Number of Years on Village Water and Time Periods of Blood Tests
- 5:** All Participants – Range of PFOA Levels
- 6:** Participants Exposed at Work – PFOA Levels
- 7:** Other Exposed Communities – PFOA Levels

The tables show two types of “middle” levels, the geometric mean and the 50<sup>th</sup> 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 50<sup>th</sup> percentile is the middle result among all the individual results: half of the people had levels higher and half had levels lower than the 50<sup>th</sup> percentile. The tables also show the 90<sup>th</sup> percentile. Ten percent of the people had values above this level and 90 percent had values below it.



## The Data Tables

### 1: All Participants - PFOA Levels by Drinking Water Source

The first table (**Table 1a**) provides PFOA results for all 2,903 participants -- people using Village water, people using private wells, people who work in the area, and former residents. The table also compares the PFOA results between people who were using Village water at the time of testing and people who were not.

Table 1a PFOA blood test results by drinking water source Participants tested February 2016 through November 2016				
	Number of participants	PFOA in micrograms per liter		
		Geometric mean	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile
All participants	2903	21.6	26.1	123.0
<b>By drinking water source at time of blood collection</b>				
Currently on Village water	1640	43.5	48.5	156.5
Not currently on Village water	1263	8.7	8.1	44.3

For all participants, PFOA levels ranged from non-detectable to greater than 500 micrograms per liter (mcg/L). Among the 2,903 participants, the geometric mean PFOA level is 21.6 mcg/L, the 50th percentile PFOA level is 26.1 mcg/L, and the 90th percentile PFOA level is 123 mcg/L. The people served by the Village of Hoosick Falls water system had higher levels of PFOA than the people who were not served by Village water. Among the 1,640 people served by Village water at the time of the testing, the geometric mean PFOA level was 43.5 mcg/L, the 50th percentile was 48.5 mcg/L, and 90th percentile was 156.5 mcg/L.

The second table (**Table 1b**) provides PFOA results for the same groups as **Table 1a** according to the time period during which their blood was tested.

Table 1b PFOA blood test results by drinking water source and by time period of blood sample collection: Participants tested February 2016 through November 2016						
	February 2016 – April 2016			June 2016 – November 2016		
	Number of participants	PFOA (micrograms per liter)		Number of participants	PFOA (micrograms per liter)	
		50 <sup>th</sup> percentile	90 <sup>th</sup> percentile		50 <sup>th</sup> percentile	90 <sup>th</sup> percentile
All participants	2081	28.3	136.0	822	20.9	87.6
<b>By drinking water source at time of blood collection</b>						
Currently on Village water	1172	55.8	171.0	468	36.2	117.0
Not currently on Village water	909	8.7	45.9	354	7.1	41.6

The 50th percentile PFOA levels for groups of participants served by Village water are about one-third lower in the more recent time period than in the earlier time period (36.2 compared to 55.8 mcg/L). People who had their blood tested more recently may differ from people tested earlier. One way they might be different is that those



tested more recently may have lived in the Village for a shorter length of time. Table 4a provides more information about this by showing PFOA levels by number of years participants were served by Village of Hoosick Falls public water and time periods of testing.

**2: All Participants - PFOA Levels by Gender and Age**

**Table 2** provides PFOA results by gender and age for all 2,903 participants. This includes people using Village water, people using private wells, people who work in the area, and former residents.

<b>Table 2</b>				
<b>PFOA blood test results for Hoosick Falls area blood testing participants, by gender and age group:</b>				
<b>Participants tested February 2016 through November 2016</b>				
	Number of participants	PFOA in micrograms per liter		
		Geometric mean	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile
<b>Adults</b>				
All adults (age 18 and over)	2376	22.9	28.1	138.0
<b>Adults by gender</b>				
Females	1303	20.2	25.4	128.0
Males	1073	26.6	31.9	148.0
<b>Adults by gender and age group</b>				
<b>Females</b>				
18-39 years	382	13.8	17.4	61.6
40-59 years	538	20.2	27.5	121.0
>=60 years	383	29.5	41.7	173.0
<b>Males</b>				
18-39 years	293	22.1	26.9	84.2
40-59 years	414	28.3	35.9	163.0
>=60 years	366	28.6	40.0	166.0
<b>Children</b>				
All children (under age 18)	527	16.5	20.1	58.1
<b>Children by gender</b>				
Females	269	16.0	20.0	57.6
Males	258	17.1	20.2	59.3
<b>Children by gender and age group</b>				
<b>Females</b>				
Younger than 6 years	51	17.4	20.2	61.8
6 to 10 years	84	18.3	23.1	63.5
11 to 17 years	134	14.2	18.9	47.0
<b>Males</b>				
Younger than 6 years	63	22.8	27.2	95.5
6 to 10 years	80	14.8	16.4	55.2
11 to 17 years	115	16.0	20.5	52.5



### 3: Participants Served by Village Water - PFOA Levels by Gender and Age

The tables in this section provide information about PFOA levels among participants served by the Hoosick Falls public water system. The first table (**Table 3a**) shows this information for adults and children. For adults, PFOA levels were higher in males than females, and higher in people who are older. This pattern is consistent with PFOA level results in other communities. This is because, if the exposure continues, the levels in an individual's blood increase over time, which is another way of saying as the person ages. For children, however, the results show middle PFOA levels are highest in the youngest age groups. These findings align with other studies of communities with PFOA in drinking water. **Table 3b** on the next page provides more detailed age ranges for children to show more specifically how their levels vary by age group.

<b>Table 3a</b>				
<b>PFOA blood test results for adults and children served by Village of Hoosick Falls public water, by gender and age group:</b>				
<b>Participants tested February 2016 through November 2016</b>				
	Number of participants	PFOA in micrograms per liter		
		Geometric mean	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile
<b>Adults</b>				
All adults (age 18 and over)	1303	49.3	58.9	172.0
<b>Adults by gender</b>				
Females	717	45.5	54.1	164.0
Males	586	54.4	64.2	186.0
<b>Adults by gender and age group</b>				
<b>Females</b>				
18-39 years	209	24.1	26.9	81.1
40-59 years	291	49.4	57.9	141.0
>=60 years	217	75.1	89.3	207.0
<b>Males</b>				
18-39 years	168	34.2	37.6	96.9
40-59 years	225	64.1	75.2	201.0
>=60 years	193	67.0	82.4	226.0
<b>Children</b>				
Children (under age 18)	337	26.7	30.8	64.8
<b>Children by gender</b>				
Females	173	25.8	30.9	61.8
Males	164	27.6	30.3	73.7
<b>Children by gender and age group</b>				
<b>Females</b>				
Younger than 6 years	33	27.4	37.1	117.0
6 to 10 years	55	27.0	33.8	64.9
11 to 17 years	85	24.5	27.9	49.3
<b>Males</b>				
Younger than 6 years	45	34.5	37.9	117.0
6 to 10 years	48	24.5	28.5	64.8
11 to 17 years	71	26.1	29.7	44.0



The second table (**Table 3b**) provides PFOA levels by gender and age for children who were served by the Hoosick Falls public water system. The tables show that the PFOA levels were highest in the youngest children. The geometric means show a relatively sharp drop in PFOA levels for children ages three through five compared to children under age three. This is consistent with PFOA levels among exposed children in other communities.

PFOA is thought to build up or concentrate more in the youngest children because of exposures occurring before birth and from breastfeeding or formula feeding if tap water is used. Other possible reasons for the higher levels in younger children are that small children may consume more water compared to their body size and may excrete PFOA more slowly than adults.

According to the national Centers for Disease Control and Prevention (CDC), “breastfeeding is still recommended despite the presence of chemical toxins” [such as PFOA] because “for the vast majority of women the benefits of breastfeeding appear to far outweigh the risks.”

<b>Table 3b</b>				
<b>PFOA blood test results for children served by Village of Hoosick Falls public water,</b>				
<b>by gender and age group:</b>				
<b>Participants tested February 2016 through November 2016</b>				
	Number of participants	PFOA in micrograms per liter		
		Geometric mean	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile
<b>All children (under age 18)</b>	337	26.7	30.8	64.8
<b>Children by gender</b>				
Female	173	25.8	30.9	64.8
Male	164	27.7	30.3	73.7
<b>Children by gender and expanded age groups</b>				
<b>Females</b>				
Younger than 3 years	14	34.8	38.4	*
3 to 5 years	19	22.9	37.1	*
6 to 8 years	36	25.1	34.5	*
9 to 11 years	29	32.7	33.3	*
12 to 14 years	38	22.0	24.4	*
15 to 17 years	37	24.7	27.9	*
<b>Males</b>				
Younger than 3 years	12	50.6	44.6	*
3 to 5 years	33	30.0	29.1	*
6 to 8 years	28	25.9	28.5	*
9 to 11 years	27	22.8	31.9	*
12 to 14 years	30	25.5	32.8	*
15 to 17 years	34	27.3	29.4	*

\* Number of children in each grouping is too small to show 90<sup>th</sup> percentile



The third table (**Table 3c**) provides PFOA results according to the time period during which participants shown in Tables 3a and 3b had their blood tested. Comparing the middle levels (50<sup>th</sup> percentiles) from the earlier time period to the more recent time period shows reduced PFOA levels in almost every gender and age grouping.

<b>Table 3c</b>						
<b>PFOA blood test results for adults and children served by Village of Hoosick Falls public water, by gender and age group and by time period of blood collection: Participants tested February 2016 through November 2016</b>						
	<b>February 2016 – April 2016</b>			<b>June 2016 – November 2016</b>		
	<b>Number of participants</b>	<b>PFOA in micrograms per liter</b>		<b>Number of participants</b>	<b>PFOA in micrograms per liter</b>	
		<b>50<sup>th</sup> percentile</b>	<b>90<sup>th</sup> percentile</b>		<b>50<sup>th</sup> percentile</b>	<b>90<sup>th</sup> percentile</b>
<b>Adults</b>						
All adults (18 and over)	960	64.2	182.5	343	42.6	136.0
<b>Adults by gender</b>						
Females	536	60.3	170.0	181	39.9	142.1
Males	424	72.6	201.0	162	44.9	125.0
<b>Adults by gender and age group</b>						
<b>Females</b>						
18-39 years	145	29.6	81.7	64	24.3	62.7
40-59 years	218	65.1	150.0	73	45.4	113.0
>=60 years	173	91.0	221.0	44	79.5	170.0
<b>Males</b>						
18-39 years	112	40.5	111.0	56	33.2	82.3
40-59 years	163	79.1	226.0	62	62.2	125.0
>=60 years	149	91.6	261.0	44	56.0	165.0
<b>Children</b>						
Children (under age 18)	212	33.8	65.3	125	27.2	57.6
<b>Children by gender</b>						
Females	109	35.1	63.5	64	26.6	49.4
Males	103	32.5	83.1	61	28.4	60.6
<b>Children by gender and age group</b>						
<b>Females</b>						
Younger than 6	13	41.2	*	20	29.4	*
6 - 10 years	35	39.5	*	20	23.1	*
11 - 17 years	61	27.9	*	24	29.4	*
<b>Males</b>						
Younger than 6	25	47.0	*	20	28.2	*
6 – 10 years	29	29.8	*	19	28.4	*
11 – 17 years	49	29.7	*	22	28.0	*

\* Number of children in each grouping is too small to show 90<sup>th</sup> percentile.



**4: Participants Served by Village Water - PFOA Levels by Number of Years on Village Water**

The tables in this section provide information about PFOA levels among participants served by the Hoosick Falls public water system according to how long they have been using the public water system. The first table (**Table 4a**) shows this information for adults **by number of years served by the Village water supply**. Increasing blood PFOA levels for groups of participants with increasing length of residence suggests PFOA exposures from public drinking water may have been occurring for more than 40 years.

Table 4a PFOA blood test results for adults by number of years served by Village of Hoosick Falls public water: Participants tested February 2016 through November 2016				
	Number of participants	PFOA in micrograms per liter		
		Geometric mean	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile
All adults (age 18 and over)	1303	49.3	58.9	172.0
<b>Adults by length of residence on the Village water supply</b>				
Less than 10 years	377	26.9	31.1	97.9
10 to 24 years	446	54.7	62.4	164.0
25 to 40 Years	258	67.2	79.1	195.0
More than 40 years	222	78.2	91.6	221.0

The second table (**Table 4b**) provides PFOA results according to the time period during which the participants in Table 4a had their blood tested. These results show that the 50th percentile blood PFOA levels decline by approximately 25 to 35 percent from the earlier to the more recent time period for groups of participants with similar lengths of residence in the Village.

Table 4b PFOA blood test results for adults by number of years served by Village of Hoosick Falls public water and by time period of blood sample collection: Participants tested February 2016 through November 2016						
	PFOA in micrograms per liter February 2016 – April 2016			PFOA in micrograms per liter June 2016 – November 2016		
	Number of participants	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile	Number of participants	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile
All adults (age 18 and up)	960	64.2	182.5	343	42.6	136.0
<b>Adults by length of residence on the Village water supply</b>						
Less than 10 years	264	35.6	113.0	113	24.0	82.3
10 to 24 years	325	66.6	173.0	121	52.1	113.0
25 to 40 Years	198	84.4	195.0	60	59.8	195.0
More than 40 years	173	98.3	225.0	49	61.7	170.0



**5: All Participants – Range of PFOA Levels**

**Tables 5a and 5b** provide additional information about specific PFOA blood levels among adult and child participants. They show the number of adults and children with PFOA blood levels within specific ranges, for all participants and participants served by the Village water supply. A double asterisk [\*\*] means that most people’s results fall in the lower part of the range; this is used only when the range presented is bigger than 100.

The single asterisk [\*] means the number of people whose results are in that range is smaller than five. Numbers smaller than five are not provided to protect confidentiality. It is the policy of the Department not to release personal health information for individuals. This includes not releasing partial information that would enable an interested person to figure out the identity of another individual. Personal health information is protected from disclosure under the New York Personal Privacy Protection Act (Article 6 and 6-A of the Public Officers Law).

<b>Table 5a</b> <b>Number of participants with blood PFOA levels within specific ranges,</b> <b>in micrograms per liter (mcg/L),</b> <b>Participants tested February 2016 through November 2016</b>										
<b>ADULTS</b>										
	Up to 25 mcg/L PFOA	Greater than 25 up to 50 mcg/L PFOA	Greater than 50 up to 75 mcg/L PFOA	Greater than 75 up to 100 mcg/L PFOA	Greater than 100 up to 200 mcg/L PFOA	Greater than 200 up to 300 mcg/L PFOA	Greater than 300 up to 400 mcg/L PFOA	Greater than 400 up to 500 mcg/L PFOA	Greater than 500 up to 1700** mcg/L PFOA	Greater than 1700 mcg/L PFOA
Adults (2376)	1121	409	273	194	281	65	21	6	6	0
Adults served by Village water (1303)	292	276	223	168	259	60	17	*	*	0

<b>Table 5b</b> <b>Number of participants with blood PFOA levels within specific ranges,</b> <b>in micrograms per liter (mcg/L),</b> <b>Participants tested February 2016 through November 2016</b>						
<b>CHILDREN</b>						
	Up to 25 mcg/L PFOA	Greater than 25 up to 50 mcg/L PFOA	Greater than 50 up to 75 mcg/L PFOA	Greater than 75 up to 100 mcg/L PFOA	Greater than 100 up to 300** mcg/L PFOA	Greater than 300
Children (527)	301	154	45	13	14	0
Children served by Village water (337)	130	139	43	13	12	0





**6: Participants Exposed at Work – PFOA Levels**

**Table 6** provides preliminary information about participants who reported being employed (currently or within two years prior to the time of the blood collection) at a facility where PFOA was used. These participants include people who were served by Village public water, people served by private wells, and people who participated in the blood testing due to their concerns about their potential PFOA exposures from occupational exposures. Some people in this group were employed at facilities not located in Hoosick Falls. The people included in Table 6 reported a variety of job titles and job locations within facilities that used PFOA.

The geometric mean and 50<sup>th</sup> percentile PFOA blood results for people with occupational exposures (Table 6) compared with results in the prior tables for similar groupings (which include all participants), show that middle blood PFOA levels for the group of people with occupational exposures are higher than middle levels for the entire group.

<b>Table 6 PFOA blood test results for adults reporting occupational exposures to PFAS From employment in the Hoosick Falls area, by water source, gender, age group, and length of residence: tested from February through November 2016</b>				
	Number of participants	PFOA level in micrograms per liter		
		Geometric mean	50 <sup>th</sup> percentile	90th percentile
<b>All adults reporting occupational exposures</b>	123	57.6	60.3	253
Adults not currently served by public water	56	33.3	34.3	106
<b>Adults with occupational exposures currently served by Hoosick Falls public water</b>				
<b>Adults currently served by public water</b>	67	91.1	84.9	334
<b>By gender</b>				
Females	16	79.8	96.4	*
Males	51	94.9	84.2	334
<b>By age group</b>				
18-39 years	15	41.2	32.2	*
40-59 years	35	121.3	119.0	*
60 years and older	17	101.6	135.0	*
<b>By length of residence</b>				
Less than 10 years	10	70.3	65.9	*
10 to 24 years	21	84.4	71.9	*
25 – 40 years	15	84.0	84.2	*
More than 40 years	21	117.7	121.0	*

\* Number of people in each grouping is too small to show 90<sup>th</sup> percentile



**7: Other Exposed Communities – PFOA Levels**

This last table (**Table 7**) provides information that can be used to compare the PFOA levels shown in this information sheet, or individual laboratory results, to levels in other communities that had PFOA in drinking water, people who worked with PFOA, and the general U.S. population. Comparing PFOA levels shows that the middle PFOA levels for Hoosick Falls area participants are within the range of levels shown for communities in Ohio and West Virginia where there was contamination of drinking water with PFOA. The middle levels shown for all Hoosick Falls area participants and for participants served by the Hoosick Falls public water supply (Tables 1-4) are higher than the middle and 95th percentile levels in the general U.S. population.

<b>Table 7</b> <b>PFOA Levels in Blood from Other Studies:</b> <b>Other communities with PFOA contamination in drinking water,</b> <b>people who worked with PFOA, and the general U.S. population</b>		
	Results in micrograms per liter	
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	High level
3M workers, Decatur, Alabama	1125	N.A.
DuPont workers, Parkersburg, West Virginia	410	N.A.
General U.S. population:	Middle level (50 <sup>th</sup> percentile)	High level (95 <sup>th</sup> percentile)
Age 12 and up: 1999-2000*	5.20	11.90
Age 12 and up: 2013-2014	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
Children age 6-11	1.94	3.84
Children age 3-5	1.80	5.58

**Table 7 Notes:**

**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 (50<sup>th</sup> percentile):** Half the people had a result below and half had a result above this level.

**High level (95<sup>th</sup> 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 PFOA began to be phased out of use starting in 2000.

**Table 7 References:**

1. General U.S. population: National Health and Nutrition Examination Survey (NHANES), Fourth National Report on Human Exposure to Environmental Chemicals, U.S. Centers for Disease Control and Prevention (CDC), Updated Tables, March 2018, Volume One.
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 (1951-2003). *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.

**Additional information is available on the DOH website, <http://www.health.ny.gov/hoosick>.**

**The following links are just a few examples of sources for additional information. For assistance with accessing documents you are interested in, please contact NYSDOH.**

For information about PFOA and other perfluorinated chemicals:

[https://www.atsdr.cdc.gov/pfc/docs/pfas\\_fact\\_sheet.pdf](https://www.atsdr.cdc.gov/pfc/docs/pfas_fact_sheet.pdf)

The C8 Health Project: Design, Methods, and Participants, December 2009, Frisbee, SJ et al.

[www.ncbi.nlm.nih.gov/pubmed/20049206](http://www.ncbi.nlm.nih.gov/pubmed/20049206)

Community exposure to perfluorooctanoate: relationships between serum concentrations and exposure sources, August 2006, Emmet, EA et al. [www.ncbi.nlm.nih.gov/pubmed/16902368](http://www.ncbi.nlm.nih.gov/pubmed/16902368)

TOXFAQs for Perfluoroalkyls. <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=1116&tid=237>

Exposure to Environmental Toxins (and breastfeeding).

[https://www.cdc.gov/breastfeeding/disease/environmental\\_toxins.htm](https://www.cdc.gov/breastfeeding/disease/environmental_toxins.htm)

The Surgeon General's Call to Action to Support Breastfeeding

<http://www.surgeongeneral.gov/library/calls/breastfeeding/>

**CONTACT 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](mailto:BEOE@health.ny.gov)