

# Results from soil screening testing for perfluorooctanoic acid (PFOA) in North Bennington

## Summary

Press Release: [Gov. Shumlin Announces Engineering Study and PFOA Soil Sample Results](#) (April 18, 2016)

More than 100 soil samples were collected from locations surrounding the former Chemfab facility in North Bennington to determine if soil contamination exists around the former plant. Preliminary results show PFOA levels ranging from non-detect to 45 parts per billion in the tested soils, with the majority of samples containing less than 10 parts per billion. The Vermont Department of Health soil screening level is 300 parts per billion.

## Sampling Plan

The soil sampling plan was designed to test soils from areas in all eight radial directions from the former Chemfab facility on 1030 Water Street (N, NE, E, SE, S, SW, W, NW), including a few local commercial farms, a school garden, and a playground. Soils samples were collected from 37 locations at varying soil depths (0-6"; 6"-12"; 12"-18"; and 18-24"). A sludge sample was also collected at the Bennington Waste Water Treatment Plant.



## Data Table

The last page of this document contains a table of laboratory results from all surface soil samples in North Bennington.

## Results and Next Steps

### Low Soil Concentrations of PFOA

Overall, all PFOA soil concentrations are well below the Vermont Department of Health soil screening level for exposure at 300 parts per billion. The highest level detected was 45 ppb of PFOA in a soil sample 12-18" deep in a yard. Most home owners' soil levels were in the single part per billion range. Levels on the Chemfab property ranged from 2.7 ppb to 20 ppb, with the average being around 10 ppb.

Based on the results, the Department has concluded that soils around the former Chemfab facility do not pose a risk from direct soil exposure and therefore there is no need to expand soil sampling beyond this initial study scope to individual homeowners' properties. Surface soil remediation is not necessary at the concentrations found.

Further soil sampling is scheduled to occur on the former Chemfab property proper as part of a more detailed site investigation of the former plant property.

## Gardeners Encouraged to Plant This Season

Based upon the preliminary soil results showing very low concentrations of PFOA in soils, the Agency of Agriculture does not calculate a significant risk of PFOA uptake into plants and vegetables from garden soils. Gardeners are encouraged to proceed with their plantings and follow two recommendations:

- 1) Use water containing less than 20 ppt of PFOA in your garden and
- 2) Use clean compost to amend garden soils.

## Frequently Asked Questions

### What are the plans for soil samples that show high levels of PFOA? Are there remediation methods?

There were no high results. All results were well below the Vermont Department of Health soil screening level of 300 parts per billion.

### I know about the 20 parts per trillion health advisory for drinking water. What numbers are important for soil?

The 20 parts per trillion health advisory limit is for drinking water only and is calculated based on assumptions that go into water consumption (liters of water consumed per day, body weight, length of exposure etc.). For soils, the standard set by the Vermont Department of Health is **300 ng/g (parts per billion)**. This is based on assumptions about exposure to soil through skin contact, consumption through dust particles, etc. The health number for drinking water is much lower than for soil since the average person consumes much more water as compared to the intake of contaminated soil.

### Why is the unit of measurement for soils in parts per billion instead of parts per trillion?

Scientists use parts per billion (ng/g) as a standard unit for measuring PFOA concentrations in soils, because soil is a different substance than water and therefore requires a different scale of measurement. This is why the Vermont soil standard is set at **300 ng/g (parts per billion)**, and why the drinking water standard is set at 20 ng/L (part per trillion).

Think about how kilometers or miles are used as a standard unit for expressing running distances. Saying, "I just ran a 5 kilometer race" makes a lot more sense to us than saying, "I just ran a 500,000 centimeter race!" If a 5K race course was off by 100 centimeters, it wouldn't matter in the grand scheme of the race, because centimeters are not significant at this scale. Just like kilometers better quantify the distance of a running race, using "parts per billion" better quantifies concentrations of PFOA in soils or sediments.

### What does the wastewater sample result mean?

While soil samples were being collected in March, the Department also had a water sample collected from the incoming wastewater stream at the local wastewater treatment plant to evaluate if sewage sludge might also contain PFOA. The influent stream is mainly liquid municipal wastewater with a low percentage of solid sludge. The result of 350 ng/L (parts per trillion) of PFOA from this sample indicates that a thorough evaluation of PFC concentrations in sewage sludge from North Bennington is necessary. The Department has already begun sewage sludge sampling.

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## More Information:

For questions regarding PFOA in Vermont, call 211 or visit <http://dec.vermont.gov>.  
For health related questions, call the Vermont Department of Health at 1-800-439-8550 or visit <http://healthvermont.gov/enviro/pfoa.aspx>.

Summary of Laboratory Results  
Surface Soil Sampling - PFOA Detections  
North Bennington, VT  
March 2016

Sample Location	Sample Date	0 - 6" bgs (ng/g)	6" - 12" bgs (ng/g)	12" - 18" bgs (ng/g)	18" - 24" bgs (ng/g)	VT PFOA Soil Screening Value* (ng/g)
22 Asa Way	3/17/2016	0.82	0.39J	NS	NS	300
25 Asa Way	3/16/2016	0.97	1.2	8.2	7.7	300
Vacant Lot Asa Way	3/21/2016	2.9	4.1	2	1.2	300
1 College Drive: Bennington College						
Bennington College Garden	3/18/2016	1.1	0.65J	0.38J	0.67J	300
Bennington College Adjacent to Garden	3/18/2016	2.9	4.9	2.8	1.8	300
Bennington College Adjacent to Soccer Field	3/18/2016	3.6	3.6	3	1.7	300
Bennington College Jennings Meadow Trail	3/18/2016	2.1	2.8	2.6	2.3	300
132 Harrington Road: Pembroke Nursery						
Stockpile 1 - Topsoil Composite	3/22/2016	5.6	NS	NS	NS	300
Stockpile 2 - Topsoil Composite	3/22/2016	1.5	NS	NS	NS	300
Garden	3/22/2016	0.75	1.8	1.9	2	300
246/248 Harrington Road WWTP Sewer Sludge	3/22/2016	350 ng/L **	NS	NS	NS	
1682 Harrington Road	Sampling Pending					300
29 Lever Street	3/22/2016	1.4	1.1	1.1	2.5	300
765 Murphy Road	3/17/2016	6.4	6.3	2.6	1.6	300
? Murphy Road (No Street Address)	Sampling Pending					300
2009 N. Bennington Road	3/22/2016	4.2	4.9	45	NS	300
Paran Lake - Fishing Access Area	3/23/2016	2	1.9	4.1	4.6	300
980 Park Street	3/21/2016	2.7	1.5	1.5	NS	300
8 Polygraphic Lane	3/21/2016	4.2	1.9	2.1	2.4	300
15 Polygraphic Lane	3/21/2016	0.84	1.1	NS	NS	300
59 River Road Playground Roadside	3/16/2016	0.74J	0.86	0.66J	ND	300
59 River Road Playground Slide	3/16/2016	ND	ND	NS	NS	300
180 River Street	3/23/2016	2	0.66J	ND	ND	300
6 Royal Street	3/17/2016	0.82	ND	ND	0.55J	300
5 Scarey Lane	3/17/2016	6.2	5.9	7.1	8.2	300
10 Scarey Lane	3/21/2016	4.1	1.4	2.3	3.6	300
15 Scarey Lane	3/17/2016	1.5	1.2	NS	NS	300
26 Scarey Lane	3/21/2016	1.1	0.33J	NS	NS	300
32 Scarey Lane	3/17/2016	1.3	0.9	0.35J	0.85	300
9 School Street: Village School						
Small Playground	3/18/2016	ND	ND	ND	ND	300
Large Playground	3/18/2016	ND	ND	ND	ND	300
Maple Tree	3/22/2016	1.3	3.1	2.9	NS	300
Northeast Parking Lot	3/22/2016	0.88	ND	0.75	NS	300
26 Susan Taylor Lane	3/21/2016	0.63J	0.86	1.5	1.6	300
37 Susan Taylor Lane	3/16/2016	5.8	3.5	2.5	NS	300
37 Susan Taylor Lane Garden	3/16/2016	8.2	7.3	5.2	2.9	300
492 Water Street - Paran Creek Access	3/24/2016	ND	1.3	ND	0.65J	300
1030 Water Street - Former Chemfab						
Riverside	3/23/2016	9.1	2.7	4.2	4.9	300
West Side	3/23/2016	11	3.6	3.1	4.1	300
BD East	3/23/2016	20	6.1	4.8	13	300
Vent W	3/24/2016	20	11	10	12	300
16 Wilkey Way	3/23/2016	2.9	3.3	4.6	5.7	300

PFOA - Perfluorooctanoic acid

units - ng/g - nanograms per gram or parts per billion

ng/L - nanograms per Liter or parts per trillion

ND - denotes Not Detected

NS - denotes Not Sampled due to auger refusal at 3 locations (2nd and 3rd attempts made adjacent to initial auger hole)

J - denotes Estimated Value

bgs - denotes below ground surface

\* VT PFOA Soil Screening Value = 0.3 mg/kg = 300 ng/g

\*\*Sample from wastewater influent at wastewater treatment plant (WWTP)