Southern New Hampshire PFOA Investigation: Public Meeting

in

Litchfield, NH

March 24, 2016

Agenda

- **Introduction**
  - Tom Burack, Commissioner
- **PFC/PFOA Background**
  - Mike Wimsatt, Director, Waste Management Division
- **Health Effects**
  - Dr. Benjamin Chan, State Epidemiologist
- **Actions to Date**
  - Brandon Kernen, Manager, Hydrology/Conservation
- **Next Steps and Information/Communication**
  - Clark Freise, Assistant Commissioner
- **Questions and Answers (written)**

  Hand to John during presentation
  - John Regan, Moderator
- **Informal Q&A (verbal)**
  - John Regan, Moderator

PFC/PFOA Background

Mike Wimsatt

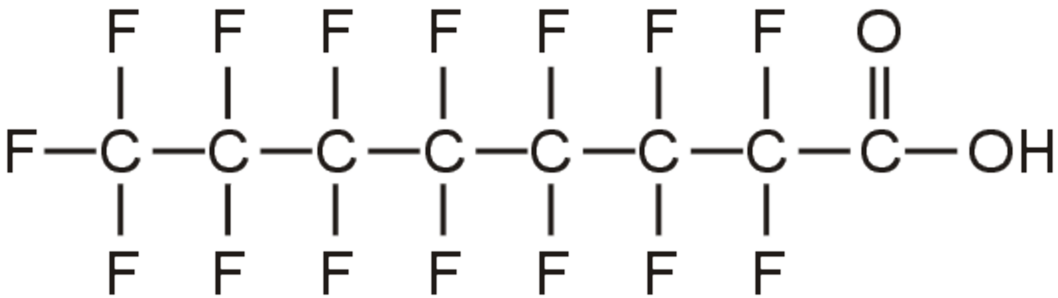
Director, Waste Management Division

What are Perfluorochemicals (PFCs)?

- Family of synthetic chemicals comprised primarily of long chains of carbon and fluorine
- Used for decades to make products that resist heat, oils, grease, stains and water
  - Non-stick cookware
  - Outdoor clothing
  - Stain-resistant carpet
  - Fire-fighting foam
  - Paper/packaging
  - Cleaning products
  - Pesticides

What is Perfluorooctanoic Acid (PFOA)?

- PFOA is a specific perfluorochemical (PFC)



- Used in the production of other PFCs, including Teflon^{R}
- Often produced as its ammonium salt, ammonium perfluorooctanoate (APFO)
- Produced and used since the 1940s

Fate and Transport of PFOA

- Use of PFOA in manufacturing can result in releases to air, water, and soil
- PFOA released to the air is readily adsorbed to particles and settles to the ground
- PFOA deposited into/onto the soil can be transported to and contaminate groundwater
- PFOA is very resistant to degradation and so is very persistent in the environment

Fate and Transport of PFOA (cont.)

- PFOA is found in water, soil, and sediments, and in the blood and tissue of wildlife throughout the world
- Nearly all people have some level of PFOA in their blood
- Potential health effects from exposure to low levels of PFOA are not well understood
- The Environmental Protection Agency (EPA) has identified PFOA as an “emerging contaminant”

PFOA as an Emerging Contaminant and EPA's Health Advisory

- PFOA is not currently regulated under the Safe Drinking Water Act
- 2009 - EPA established a Provisional Health Advisory (PHA) of 400 parts per trillion (ppt)
- This PHA is a health-based concentration, above which action should be taken to reduce exposure to PFOA through drinking water
- The PHA is based upon short-term exposure
- EPA is expected to establish and release a lifetime health advisory in Spring of 2016

Why are We Investigating PFOA Contamination in Southern NH?

- On 26 Feb., Saint-Gobain Performance Plastics reported to DES results of water tests at its Merrimack facility
- PFOA was detected at 30 parts per trillion in water supplied by Merrimack Village District Water System (MVD)
- NHDES and MVD took immediate steps to sample drinking water in the area, which will be described in detail later

Why did Saint-Gobain Perform Testing?

- Saint-Gobain has a history of PFOA use at their Merrimack facility
- Saint-Gobain has facilities in Hoosick Falls, NY and North Bennington, VT that also used PFOA
- PFOA contamination of groundwater and drinking water at levels above the PHA have been detected in the vicinity of both the NY and the VT facilities

Saint-Gobain APFO Use and Air Permit History in Merrimack

- PFOA (as APFO) was used at the Saint-Gobain facility dating back to at least 2001
- APFO is regulated by NHDES as an air toxic pollutant
- In 2001, Saint-Gobain obtained a permit for expanded operations. Emissions testing from similar NY facilities showed no detection of APFO
- 2004 – Following testing with improved methods, Saint-Gobain shared data with NHDES identifying that APFO emissions were occurring

Saint-Gobain APFO Use and Air Permit History in Merrimack

- 2005 – Following emissions testing in Merrimack, NHDES determined that the potential existed to exceed ambient air limits for APFO
- 2006 – Administrative Order by Consent requiring the phase-out of APFO use at facility
- 2007 – Substantial reductions achieved
- Current emissions of APFO reported by Saint-Gobain to be at or near zero

Saint-Gobain APFO Use Investigation at Merrimack Facility

- NHDES has made a comprehensive Information Request to Saint-Gobain relative to its past use of APFO, including:
  - A comprehensive review of past use and handling of APFO and other PFCs in Merrimack, including dates and quantities
  - Information regarding routine disposal practices
  - Information regarding any past spills, releases, or emissions of APFO
- NHDES has also requested that Saint-Gobain conduct an initial soil and groundwater investigation

Health Effects

Dr. Benjamin Chan

State Epidemiologist

“How are we exposed to PFCs?”

Commercial and Industrial Products That Use PFCs

Commercial Products	Industrial Uses
Cookware (Teflon®, Nonstick)	Photo Imaging
Fast Food Containers	Metal Plating
Candy Wrappers	Semiconductor Coatings
Microwave Popcorn Bags	Aviation Hydraulic Fluids
Personal Care Products (Shampoo, Dental Floss)	Medical Devices
Cosmetics (Nail Polish, Eye Makeup)	Firefighting Aqueous Film-Forming Foam
Paints and Varnishes	Insect Baits
Stain Resistant Carpet	Printer and Copy Machine Parts
Stain Resistant Chemicals (Scotchgard®)	Chemically Driven Oil Production
Water Resistant Apparel (Gore-Tex®)	Textiles, Upholstery, Apparel and Carpets
Cleaning Products	Paper and Packaging
Electronics	Rubber and Plastics
Ski Wax	

List Produced by CDC/ATSDR

PFOA Exposure Decreasing

- Most people have been exposed to PFOA through everyday commercial products
- In 2006, PFOA manufacturers joined an EPA global stewardship program:
  - On track to phase out these chemicals by the end of 2015

EPA. 2010/2015 PFOA Stewardship Program. Accessed at: http://www.epa.gov/opptintr/pfoa/pubs/stewardship/

PFOA Exposure is Through Oral Ingestion

- Consumption of food and water is the most important source for exposure to PFCs (includes migration of PFCs into food from boxes/packaging)
- Ingestion of contaminated dust is a significant source of exposure (carpets, upholstery, clothing)
- In infants, toddlers, and children, hand-to-mouth behavior is a significant source of exposure
- Limited exposure through breathing
- Minimal exposure through skin contact

Trudel et al. Estimating Consumer Exposure to PFOS and PFOA. Risk Analysis. 2008;28(2):251-69.

“What does finding PFOA in our water mean for our health?”

Long Term Health Effects are Unclear

- Animal studies: varied health effects
- Studies of PFC exposure in animals do not necessarily predict the same health impacts in humans
- Human studies have evaluated a variety of health effects without consistent findings

Health Effects Being Studied

- Changes to the liver enzymes levels
- Increases in total cholesterol levels
- Increases in uric acid levels, which may affect blood pressure
- Changes in sex hormone levels that could affect reproductive development and puberty
- Changes in thyroid hormone levels
- Lower immune function (lower antibody response to immunization)
- Growth and development (lower birth weight in infants, obesity in adolescents/adults, cognitive and behavioral development)
- Decreased kidney function
- Incidence of insulin resistance and diabetes
- Occurrence of some types of cancers: prostate, kidney, and testicular cancer

C8 (PFOA) Health Project, 2005-2006

- Environmentally exposed study of 69,030 participants from West Virginia and Ohio (Ohio-River Valley)
- Exposed to PFOA from a Chemical Plant
- One of the largest and most important studies of health effects in an environmentally exposed community

http://www.c8sciencepanel.org/prob_link.html

Link Report

- Health “links” were determined by three independent epidemiologists that reviewed the science
- “Probable link" – “more likely than not that among class members a connection exists between PFOA exposure and a particular human disease.”
- Based on a class action lawsuit settlement
- Reports do not represent the consensus of the medical/scientific community about the health effects from PFOA

http://www.c8sciencepanel.org/prob_link.html

C8 Science Panel Link Reports:

No "Probable Link":

- HTN
- Coronary Heart Disease
- Stroke
- Chronic kidney disease
- Liver disease
- Osteoarthritis
- Parkinson's disease
- Other autoimmune diseases (other than UC)
- "Common infections" (i.e. influenza)
- Neurodevelopmental disorders, including ADHD and learning disabilities
- Asthma or COPD
- DM type 2
- Birth defects
- Miscarriage or stillbirths
- Preterm birth or low birth weight

"Probable Link":

- High cholesterol
- Thyroid disease
- Ulcerative colitis
- Testicular cancer
- Kidney cancer
- Pregnancy-induced hypertension

http://www.c8sciencepanel.org/prob_link.html

Difficulty Interpreting the Science

- Studies are not consistent: some studies found associations, but others looking at the same health effect did not
- Even though some studies have found associations between PFCs and health outcomes, it does not mean that PFCs *caused* these effects
- The effects may have been due to other factors that were not considered by the researchers
- Changes identified often are not clinically (biologically) relevant

Studies Have More Consistently Suggested an Association With:

- Increases in blood cholesterol
- Increases in blood uric acid levels
- Increases in some liver function tests
- Lower infant birth weights

What do these ultimately mean for a person's health?

ATSDR Perfluoroalkyl Toxicological Profile, August 2015. Available at: gov/substances/toxsubstance.asp?toxid=237

“Are we at risk of developing cancer from PFOA exposure?”

Comprehensive Reviews of the Science Evaluating Cancer and PFCs

Critical Reviews in Toxicology

http://informahealthcare.com/txc
ISSN: 1040-8444 (print), 1547-6898 (electronic)

Crit Rev Toxicol, 2014; 44(S1): 1–81
© 2014 Informa Healthcare USA, Inc.
DOI: 10.3109/10408444.2014.905767

informa healthcare

REVIEW ARTICLE

A critical review of perfluorooctanoate and perfluorooctanesulfonate exposure and cancer risk in humans

Ellen T. Chang[1], Hans-Olov Adami[2], Paolo Boffetta[3], Philip Cole[4], Thomas B. Starr[5], and Jack S. Mandel[1]

DRAFT
TOXICOLOGICAL PROFILE FOR PERFLUOROALKYLS

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

August 2015

- The toxicology review above by Chang and colleagues was funded by the 3m company, a PFC manufacturer.
- The toxicological profile to the right by CDC/ATSDR is an independent review of the science.

NH DIVISION OF Public Health Services
Improving health, preventing disease, reducing costs *for all*
New Hampshire Department of Health & Human Services

Summary of Critical Review

- Most evaluations have shown no association between PFOA and various cancers
- Positive associations have been: weak, inconsistent, off-set by negative associations, without a positive exposure-response gradient, and not consistent with animal toxicological findings
- Many of the positive associations were seen in the community setting, and not occupational settings where exposure was 1-2 orders of magnitude higher

Chang et al. A critical review of perfluorooctanoate and perfluorooctanesulfonate exposure and cancer risk in humans. Crit Rev Toxicol 2014;44(S1):1-81.

Authors' Conclusion

"The existing epidemiologic evidence does not support the hypothesis of a causal association between PFOA or PFOS exposure and cancer in humans."

Chang et al. A critical review of perfluorooctanoate and perfluorooctanesulfonate exposure and cancer risk in humans. Crit Rev Toxicol 2014;44(S1):1-81.

ATSDR's Conclusions

"There is no conclusive evidence that perfluoroalkyls cause cancer in humans. Some increases in prostate, kidney, and testicular cancers have been seen in individuals exposed to high levels. These results should be interpreted cautiously because the effects were not consistently found and most studies did not control for other potential factors such as smoking."

ATSDR TOX FAQs. Available at: http://www.atsdr.cdc.gov/tfacts200.pdf

Summary

- There is a lot of uncertainty about what PFC exposure means for a person's health
- The health changes with more consistent findings related to PFC exposure (i.e. liver function tests) have unclear health implications
- Associations found between PFOA and several cancers are unclear and inconsistent, and need to be interpreted cautiously
- Further study is ongoing

Should we get our blood tested for PFOA?

- PFOA blood testing is not commonly available
- There is no medical need or recommendation to get your blood tested for PFOA
- A blood test **can** tell you how much PFOA is in your body at the time of the test
- A PFOA blood test **cannot**:
  - Tell you where or how you were exposed to the PFOA found in your body
  - Tell you what, if any, health problems might occur, or have occurred, because of the PFOA in your body

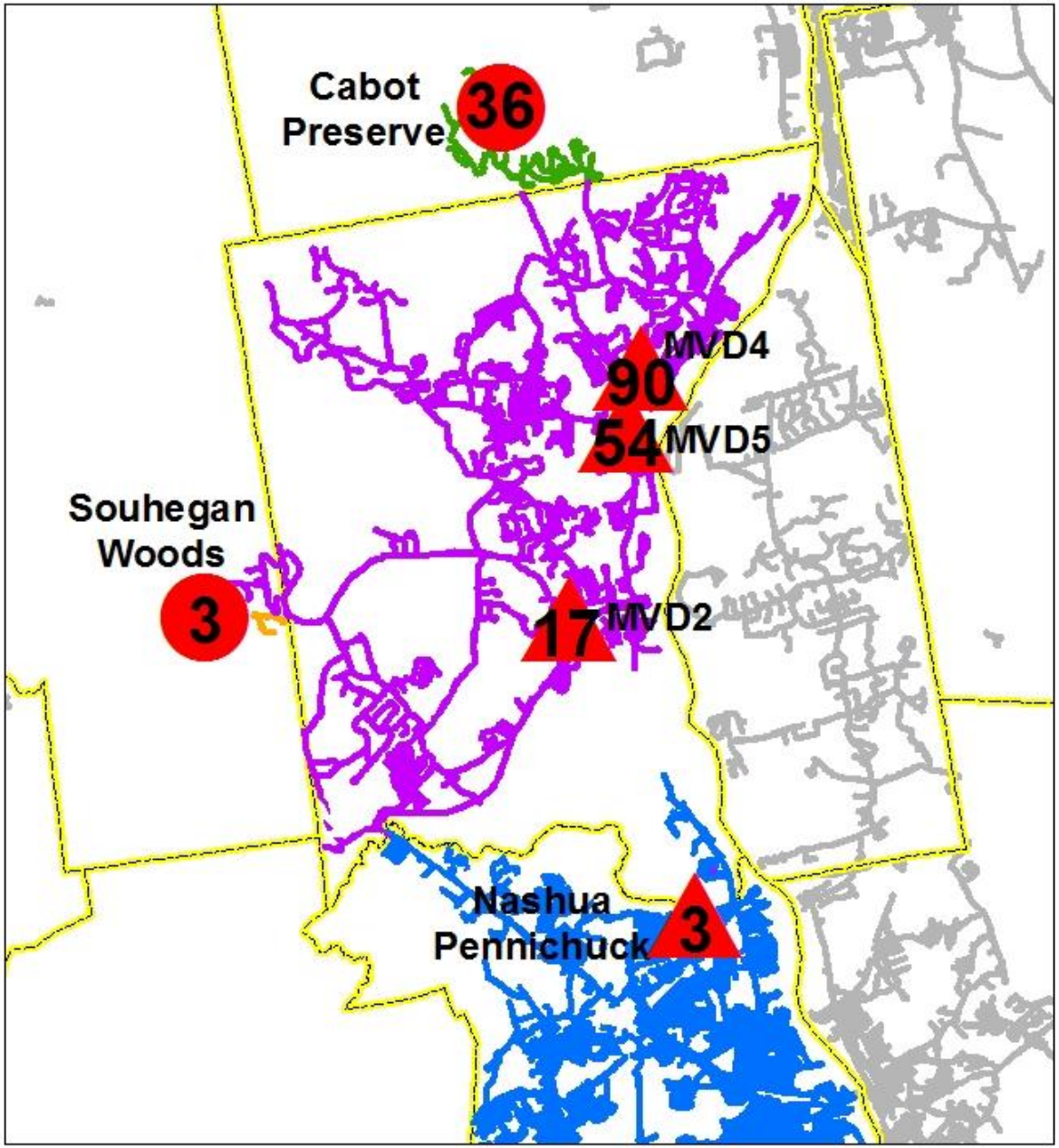
Actions to Date

Brandon Kernen

Manager of Hydrology and Conservation, Drinking Water and Groundwater Bureau

Public Notice and Testing

- March 4th – Press release (initial detect at St.-Gobain)
- March 9th- Sampling of MVD's wells & initial door-to-door sampling
- March 18th – Private notification to well owners, delivery of bottled water, and press release (March 9th results)
- March 19th-21st – Door-to-door sampling/letter distribution



PFOA INVESTIGATION

Political Boundary

Public Water Supplies

Water Distribution

MVD

Nashua System

Cabot / Greenfield

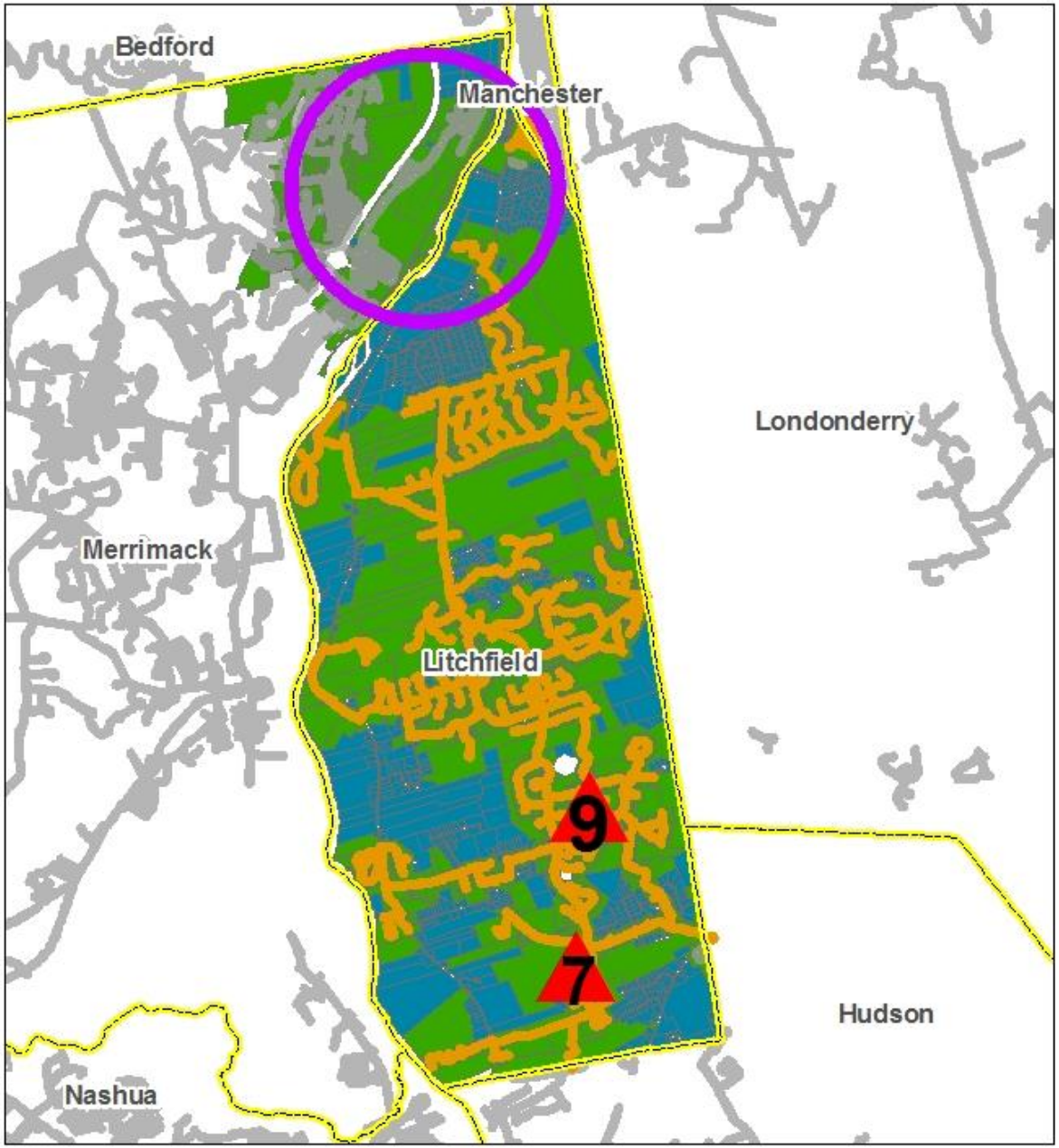
Souhegan Woods

Sample Result (PPT) Water Source

Sample Result PPT Redistribution

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Public Water Supply Testing Results



PFOA INVESTIGATION

Political Boundary

Public Water Supplies

Water Distribution

Litchfield System

Initial Target Sampling Area

Connected to PWS

Private Well Likely

Sample Result (PPT) Water Source

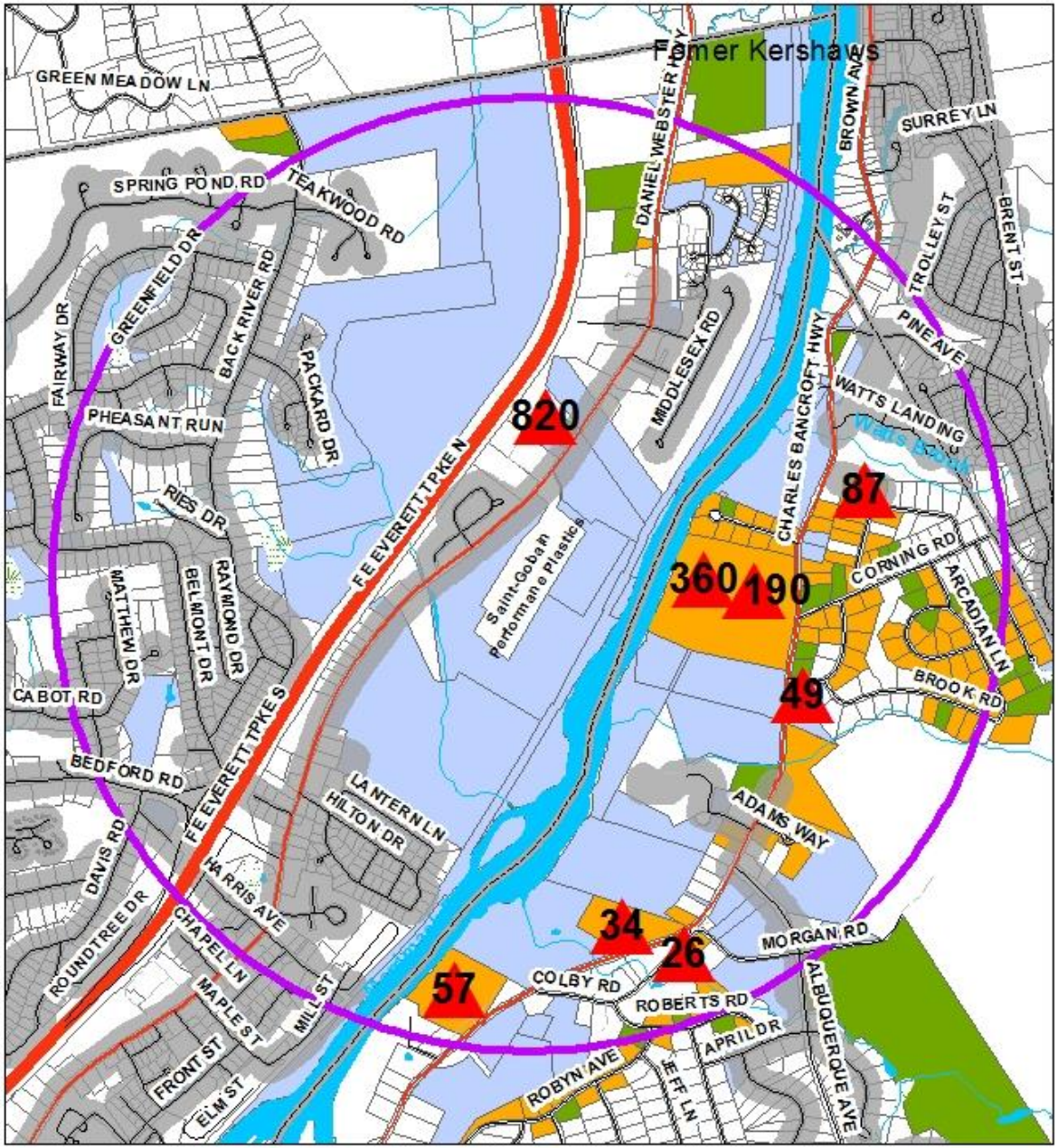
NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Public Water Supply Testing Results

Drinking Water Well Sampling

Town	Potential Wells	Sampled	Contacted/ Not Sampled
Merrimack	14	5	5
Litchfield	188	98	27

- **Sampled 8 wells March 9th. Obtained results late March 17th.**
- **Sampled 95 wells March 18th-20th. Nineteen results due March 29th. Remaining results arriving March 30th-April 6th.**
- **Expediting all steps in process.**



PFOA INVESTIGATION

1 Mile — Area of Investigation

Sampling Status

- Sampled
- Contacted
- Not Developed
- Sample Result (PPT)

Public Water Supplies

- Water Distribution
- Political Boundary

New Hampshire Department of Environmental Services

Drinking Water Well Testing Results

- Installation of monitoring wells around the facility completed
- Soil sampling completed/results pending
- Water quality testing will begin week of 3/28/2016

Saint-Gobain On-Site Investigation

Next Steps and Information/Communication

Clark Freise

Assistant Commissioner

Next Steps

- Any properties that test over 100 ppt will have bottled water delivered
  - Alternatives are being examined (filter, public water, etc.)
- Testing for remaining private wells within one mile of Saint-Gobain is being planned
  - Cards left at sites “Contacted/Not Sampled” on map
  - Letters requesting access will be mailed
  - Letters to parcel owners in the service area of MVD and Pennichuck (within 1 mile) to identify any private wells (important you respond)

Next Steps (cont.)

- Saint-Gobain On-Site Investigation
  - Information Request delivered 18 March
  - Commitment from Saint-Gobain that:
    - Soil sample and test well results in early April
    - All responses delivered by early May

Information/Communication

- Sign up Sheet
  - E-mail list sign up
  - Sign up if you are interested in having your well tested
  - Next round of testing will be guided by data/results
  - Please write legibly
- Southern NH PFOA Investigation Website:
  - http://des.nh.gov/organization/commissioner/pfoa.htm
- Handouts (all available on the Investigation website)
  - EPA PFOA Fact Sheet
  - Well Testing Information
  - Water Treatment Options Fact Sheet
  - Blood Testing Fact Sheet

Information/Communication (cont.)

- We will share information through further face-to-face meetings as results arrive
  - We will continue to communicate with your town
  - We will be here
    - You will see us sampling
    - You will see us at the next meeting

Questions and Answers (written)

John Regan

Questions and Answers (verbal)

John Regan