Perfluorochemicals (PFCs) and Healthcare Provider Recommendations

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NH Division of Public Health Services
Healthcare Provider Webinar

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

Overview

- Drinking water contamination in NH
- Health effects of PFC exposure
- PFC blood testing
- Healthcare provider recommendations
- Comments from our Panel
- Questions and discussion

Perfluorochemicals (PFCs)

- Synthetic chemicals
- Used in products that resist stains, oil, grease, and water
  - Surface protection: carpeting, furniture, clothing, coatings for paper and cardboard
  - Surfactants in free flowing products
  - Firefighting foams
- Persist in the environment
- Some PFCs remain in the human body for years

ATSDR. Draft Toxicological Profile for Perfluoroalkyls. May 2009. Accessed at: http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=237#12

Exposure to PFCs Mainly Through Oral Ingestion

- Most significant exposure is through contaminated food and water
- Contaminated dust ingestion
- Hand-to-mouth transfer (infants & children)
- Found in breast milk
- Cross the placenta in-utero
- Limited exposure through breathing and skin contact

ATSDR. Draft Toxicological Profile for Perfluoroalkyls. May 2009. Accessed at: http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=237#12

U.S. EPA Health Advisory Levels for PFOA and PFOS in Drinking Water

- Drinking water levels that are considered safe over a lifetime
- Protective for all individuals:
  - Fetuses expose in-utero
  - Nursing infants
  - Children and adults
- PFOA: 0.07 µg/L (70 ppt)
- PFOS: 0.07 µg/L (70 ppt)
- PFOA + PFOS: 0.07 µg/L (70 ppt)

EPA. Provisional Health Advisories for PFOA and PFOS. January 2009. Accessed at: http://water.epa.gov/action/advisories/drinking/upload/2009_01_15_criteria_drinking_pha-PFOA_PFOS.pdf

Active NH Site Investigations for Drinking Water Contamination

- Pease Tradeport (PFOA, PFOS, PFHxS)
- Saint-Gobain (PFOA)
  - Merrimack, Litchfield, Bedford, Manchester, Londonderry
- Textiles Coated International (PFOA)
  - Amherst & Manchester (2 separate sites)
- Former Merrimack Landfill (PFOA)
  - Merrimack, Bedford
- LL&S Landfill (PFOA, PFOS)
  - Salem

Number of Drinking Water Wells Tested

	SAINT-GOBAIN AREA	TCI AMHERST	FORMER MERRIMACK LANDFILL	FORMER LL&S LANDFILL	TCI MANCHESTER
WELLS SAMPLED	574	175	66	19	2
RESULTS RECEIVED	487	120	41	0	2
≥70	166	7	1	0	0
SCHEDULED	4	4	4	10	0

http://des.nh.gov/organization/commissioner/pfoa.htm

“What does PFC exposure mean for a person’s health?”

Health Effects Being Studied

- Changes to liver enzyme levels
- Increases in total cholesterol levels
- Increases in uric acid levels (marker for CV disease)
- 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)
- Occurrence of some types of cancers: prostate, kidney, and testicular cancer

C8 (PFOA) Health Project, 2005-2006

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

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

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Overall the Science is Uncertain

- Studies are not consistent: some studies found associations, but others looking at the same health effect have 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 confounding 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

Summary

- Human studies have evaluated a variety of health effects without consistent findings
- Long term health effects are unclear
- There is a concern and anxiety in the affected communities about what PFC exposure means for their health

“What is happening with PFC blood testing?”

PFC Blood Testing: Usefulness

- PFC blood testing is neither medically necessary nor recommended
- A blood test will tell a person their level of exposure at the time of the test
- Neither DHHS nor a healthcare provider will be able to tell a person whether they have had, or will have, health problems as a result of the exposure
- Risk for developing health problems is unknown

PFC Blood Testing: Availability

- NH DHHS has decided to make PFC blood testing available for individuals concerned about their exposure.
- PFC blood testing is being offered for those who live on streets where bottled drinking water is being provided because of private drinking water wells that tested above 70 ppt PFOA, PFOS, or PFOA/PFOS combined.

PFC Blood Testing: 2015-2016

- Pease Tradeport (April-October 2015): tested 1578 individuals (results can be found online)
- Pease Tradeport: Re-opening testing beginning July 2016
- Southern NH: Offering testing beginning July 2016

“As a healthcare provider, how should I manage my patients exposed to PFCs?”

General Healthcare Provider Recommendations

- Not possible to connect any current health problem(s) to PFC exposure
- Not possible to connect PFC exposure to any future health problem(s) that might develop
- Take patient concerns about health seriously
- Decisions for further medical testing/screening should be based on a thorough history, exam, and assessment
- Discuss general health promotion and disease prevention with patients

Medical Screening Recommendations (1)

- Patients may come to you concerned about their health with or without a PFC blood test result
- Some patients may ask for: Liver function tests (LFTs), Thyroid function tests (TFTs), Lipid panel, etc. to look for health effects from PFC exposure
- There is no recommendation from DHHS or CDC that providers need to perform screening blood testing because of PFC exposure

Medical Screening Recommendations (2)

- There is no recommendation for further medical testing because:
  - It is unclear how additional testing specifically because of PFC exposure would be clinically useful
  - You would not be able to connect abnormalities on testing to PFC exposure
- Ultimately it is up to the discretion of the provider on whether further testing is indicated
- Healthcare providers need to consider the risks of further testing – any testing and medical procedures can lead to harm without added benefit

C8 Medical Monitoring Protocol

- Class action lawsuit settlement against Dupont also established an independent “Medical Panel” which developed a Medical Monitoring Protocol to screen Class Members for the six “probable link” conditions:

www.c-8medicalmonitoringprogram.com/docs/med_panel_education_doc.pdf

You May be Asked About the C8 Medical Monitoring Protocol

- Environmental scientists and community activists have been promoting the C8 Medical Monitoring Protocol for people exposed
- Not a recommendation by NH DHHS or the CDC
- Healthcare providers should be prepared to discuss the risks and benefits of such testing
- CDC's Agency for Toxic Substances Disease Registry (ATSDR) is in process of creating healthcare provider recommendations

You May be Asked about PFC Treatment

- Removal of PFCs:
  - Phlebotomy
  - Bile Acid sequestrates (Cholestyramine)
- Medical supplementations for PFC exposure:
  - Iodine Supplementation
  - Vitamin C
- None of these (above) are recommended
- Potential for adverse health consequences is high without clear benefit

Healthcare Provider Resources

- NH DHHS Website:
  http://www.dhhs.nh.gov/dphs/pfcs/providers.htm
- Immediate questions (NNEPC): 1-800-562-8236
- Region 1 Pediatric Environmental Health Specialty Unit (PEHSU) referral:
  - Adult referrals: 617-665-1580
  - Child referrals: 617-355-8177
- Dartmouth-Hitchcock Medical Center (DHMC) environmental health referral:

http://med.dartmouth-hitchcock.org/referrals/lebanon_referrals.html

Panelists on the Webinar

Dr. Alan Woolf, MD, MPH
PEHSU at Boston Children's Hospital

Dr. Carolyn Murray, MD, MPH
Dartmouth-Hitchcock Medical Center

Dr. Karen Simone, PharmD
Northern New England Poison Center

Discussion Topics

- What questions and concerns do you have?
- What are you hearing from patients?
- How can we help you further?