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PFAS Case Study: Minnesota

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June 14, 2018

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The MDH Mission - Protecting, maintaining, and improving the health of all Minnesotans.

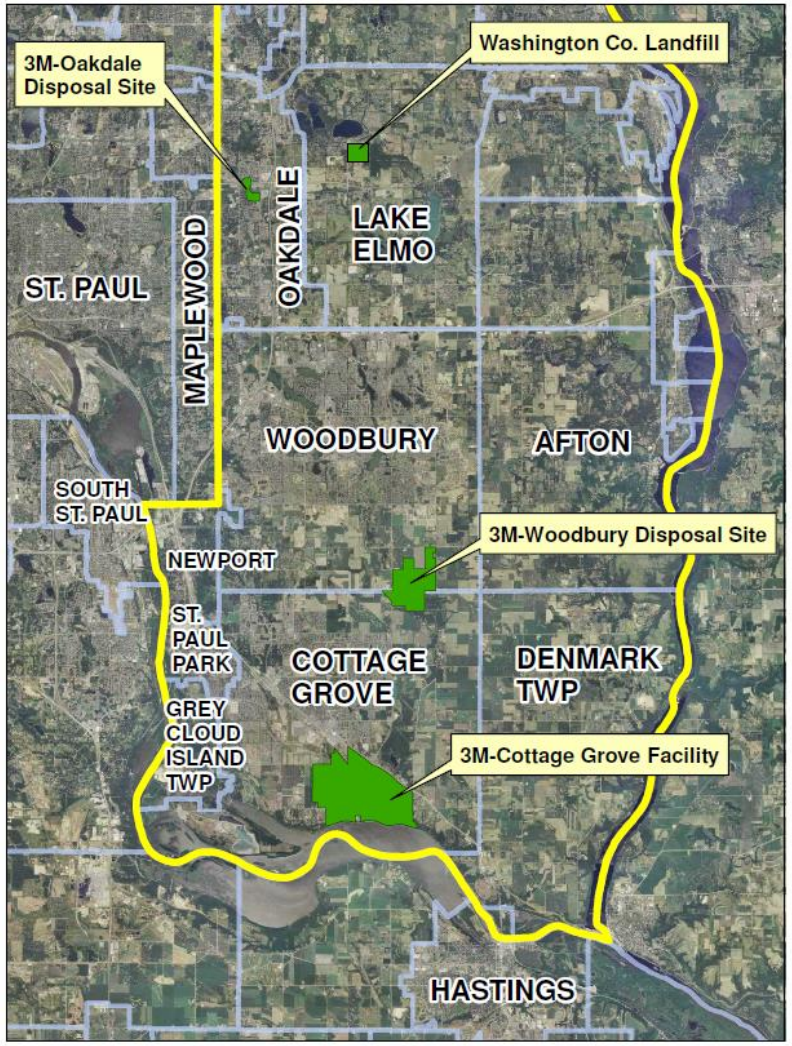
PFAS in Washington County, Minnesota

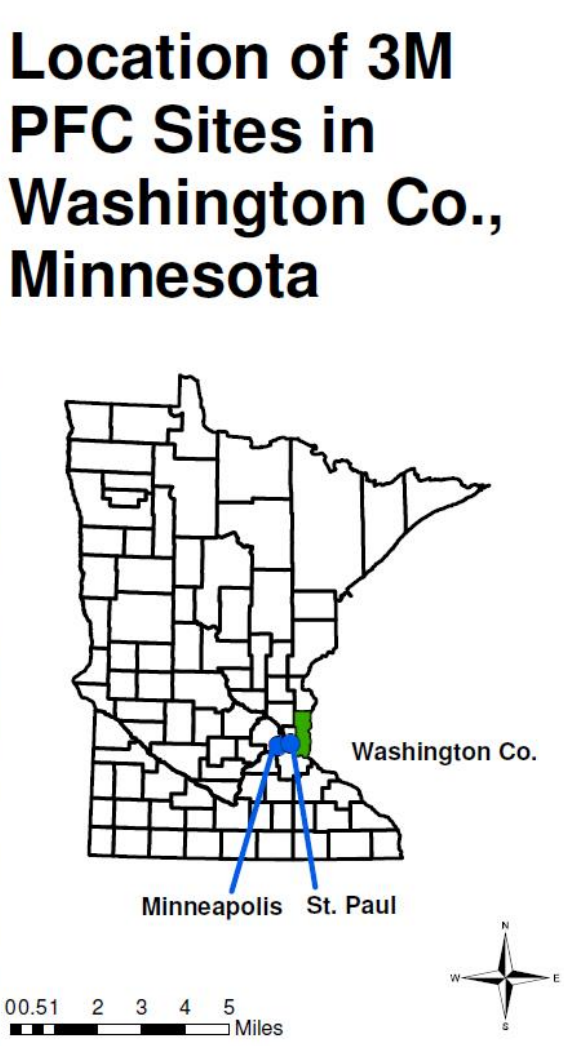
PFAS manufactured in Cottage Grove, MN since the 1940s

PFAS wastes disposed of at plant and in three major off-site disposal areas

State has been investigating since 2002

Consent agreement and court settlement with 3M has funded PFAS assessment and response

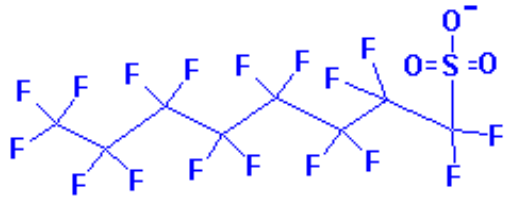




PFAS of Concern in Washington County

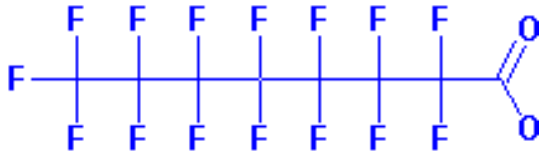
PFOS: $C_8F_{17}SO_3^-$

Perfluorooctane sulfonate



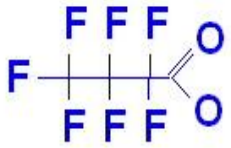
PFOA: $C_8F_{15}O_2^-$

Perfluorooctanoic acid



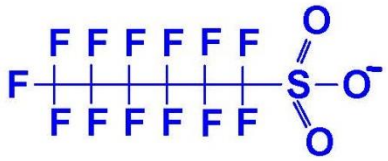
PFBA: $C_4F_7O_2^-$

Perfluorobutanoic acid



PFHxS: $C_6F_{13}SO_3^-$

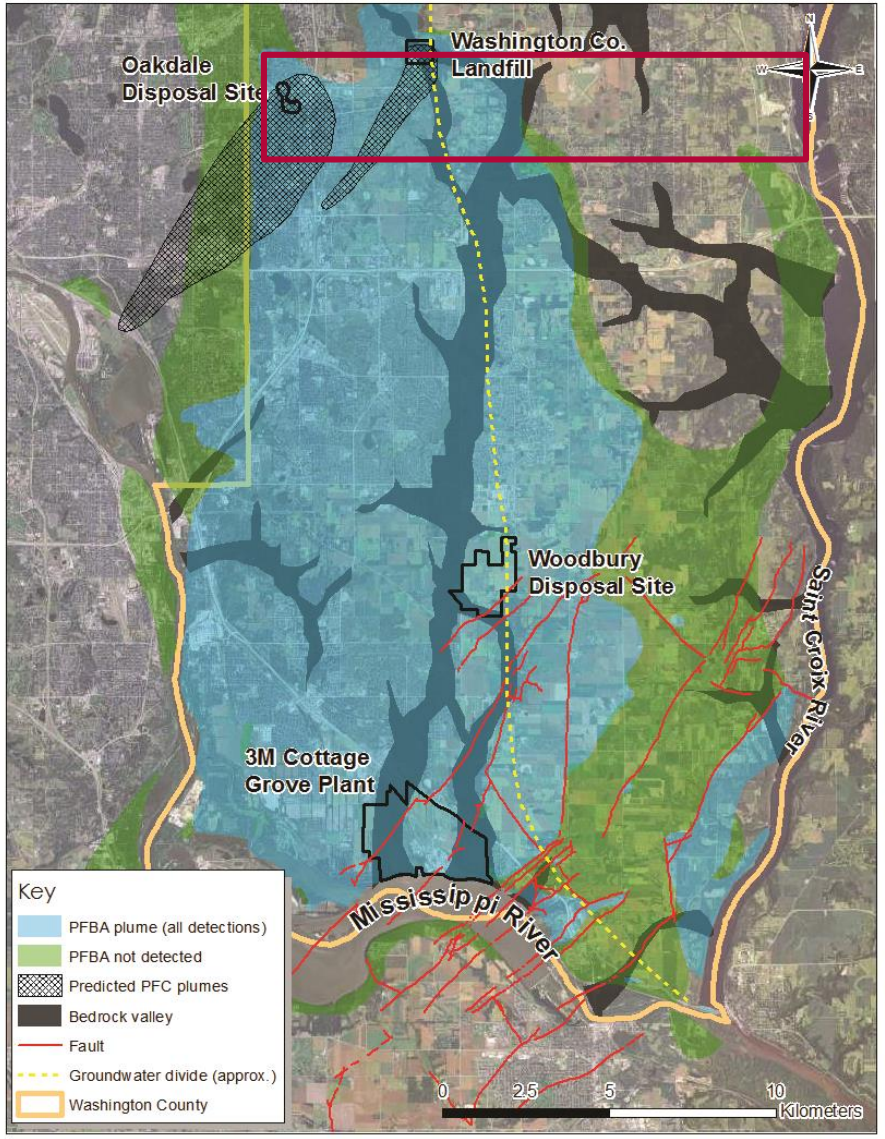
Perfluorohexane sulfonate



Other PFCs detected: PFPeA, PFHxA, PFBS; nearly always occur as a mixture

Geology + Surface Water Transport + PFAS Persistence = Megaplume

- Over 130 mi^2 of groundwater contaminated
  - 4 major aquifers
  - 8 municipal water supply systems
  - >1,800 private wells
  - 600+ drinking water advisories issued to date
  - MUCH larger plume than models predicted
- PFBA most widespread
- Distribution controlled by:
  - Bedrock features (buried valleys, faults/fractures, karst)
  - Groundwater-surface water interactions
  - Human interventions
  - PFAS partitioning



MDH Health-Based Values for PFAS Compounds

- PFOS: 0.027 ppb
- PFOA: 0.035 ppb
- PFBA: 7 ppb
- PFBS: 2 ppb

- MDH evaluates the additive effects of PFAS: Hazard Index (HI)
  - Allows us to account for differing levels of toxicity in similar chemicals
- Protective for both long-term/lifetime and subsequent fetal exposures
- Based on animal studies showing slight liver and thyroid effects (adults) and immune system and developmental effects (infants/children)
- Currently using PFOS value (0.027 ppb) as surrogate value for PFHxS

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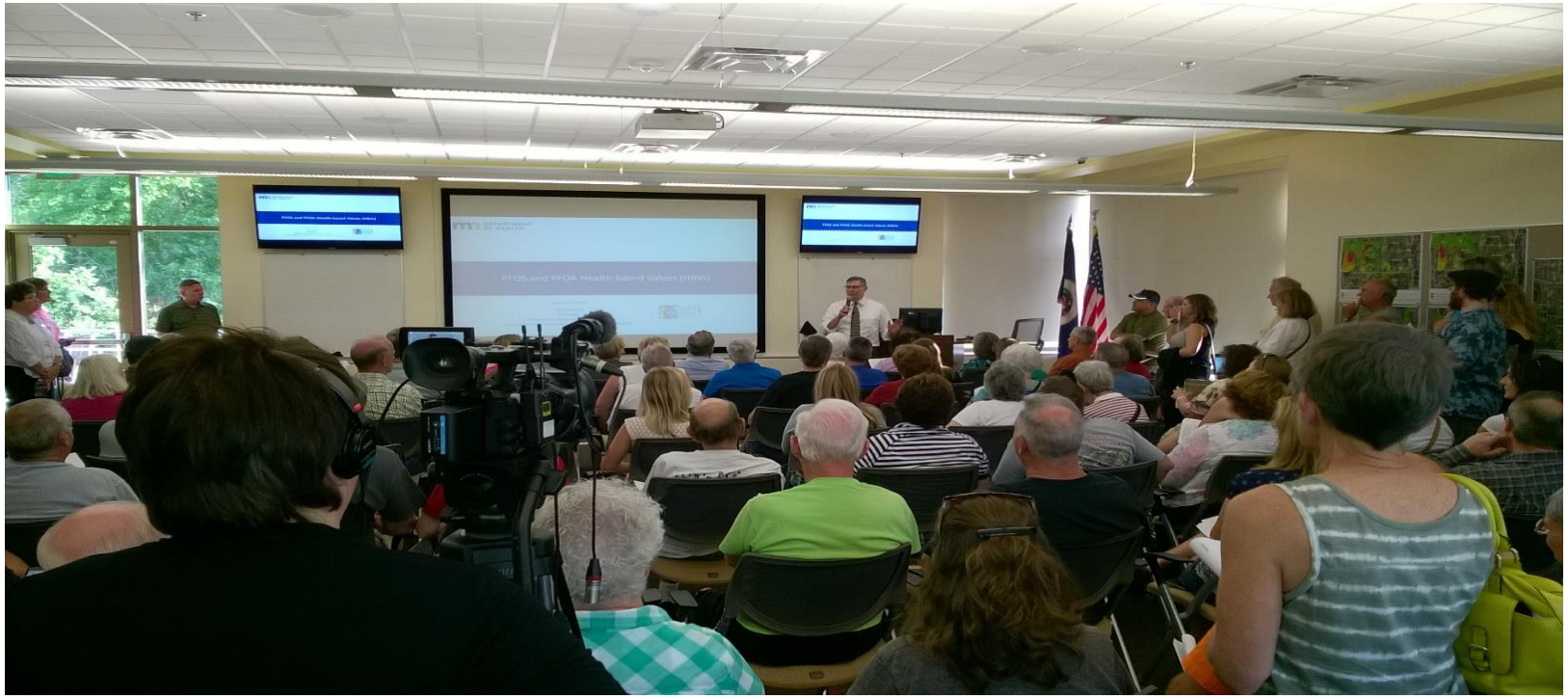

Risk Communication and Community Engagement

Communication (Old Way)	Engagement (New Way)
Communicate To…	Deliberate With…
Public Hearing	Community Conversation
Talk to / Tell	Talk with / Share
Seeking to Establish / Protect Turf	Seeking / Finding Common Ground
Authority	Responsibility
Influencing the Like-Minded	Understanding Those Not Like-Minded
Top-Down	Bottom-Up
Building a Decision-Making Hierarchy	Establishing a Stakeholder Network
Goals / Strategic Plan	Values / Vision
Products	Process
Public Relations	Public / Community Engagement

Risk Communication is…

Information

Resources

Informed Decisions about Risks to Health

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PFCS COMMUNICATIONS PLAN

DRAFT 2

Prepared by MDH Communications
Updated June 7, 2018

COMMUNICATIONS GOALS

- **Inform affected Minnesotans of the issue** and encourage them to take recommended protective actions
- **Provide risk context** and background through audience-appropriate, plain-language messaging
- Explain process to this point and next steps

COMMUNICATIONS OBJECTIVES

- 100 percent of affected Minnesotans receive direct communication about the issue and recommended protective actions by Friday, August 26.
- All secondary audiences are notified of the issue and recommendations by Friday, August 26.
- Accurate messages and positive narrative of protection/precaution dominates media coverage throughout duration of project.

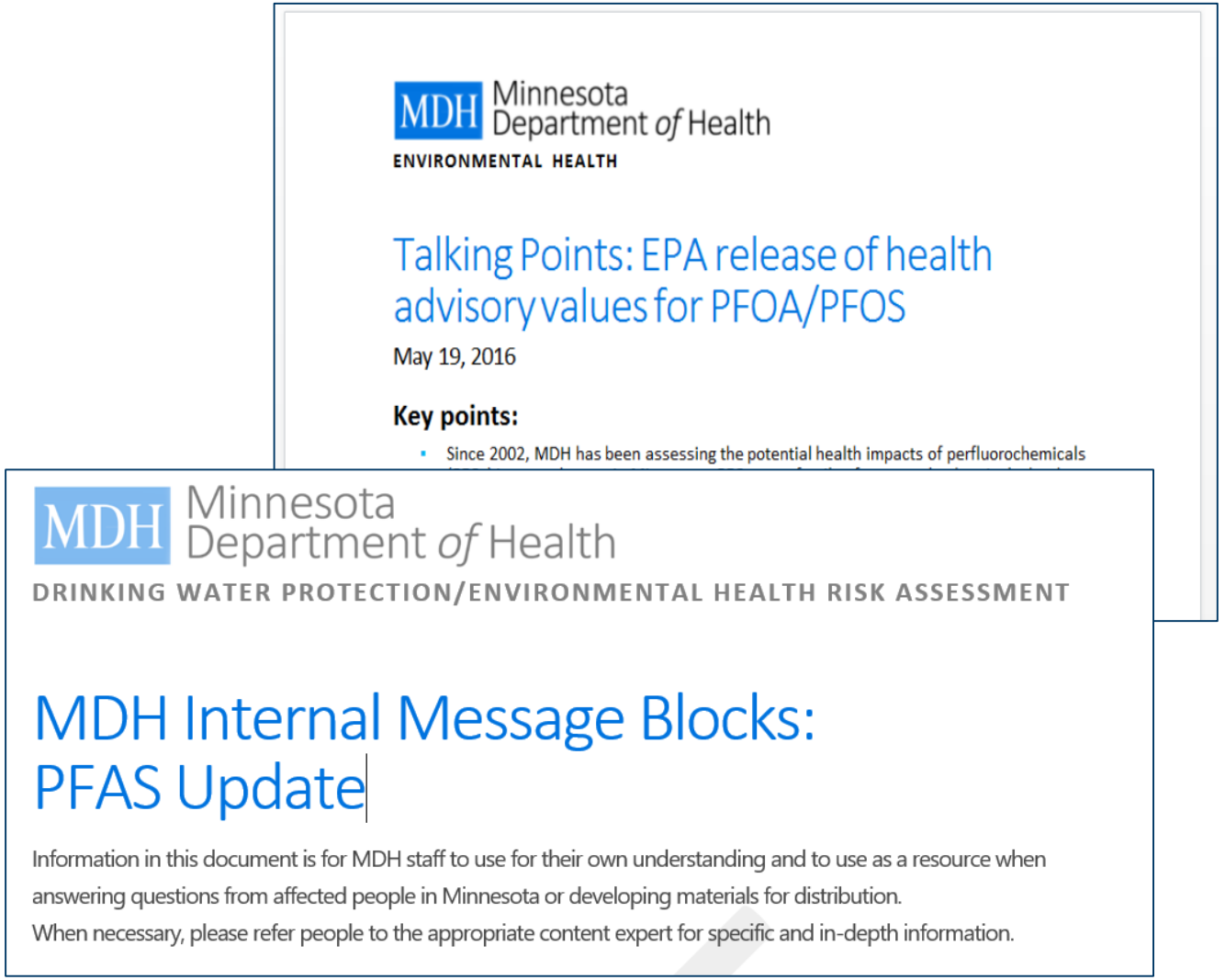
SPOKESPEOPLE

MDH

Planning

MDH General Messages Used to Communicate Risk

- We take a cautious public health approach
- This is a area of active scientific research – discuss scientific method
- As new knowledge becomes available, we will let you know.
- Acknowledge uncertainty
- Explain differences in health guidelines



MDH Minnesota Department *of* Health

ENVIRONMENTAL HEALTH

Talking Points: EPA release of health advisory values for PFOA/PFOS

May 19, 2016

Key points:

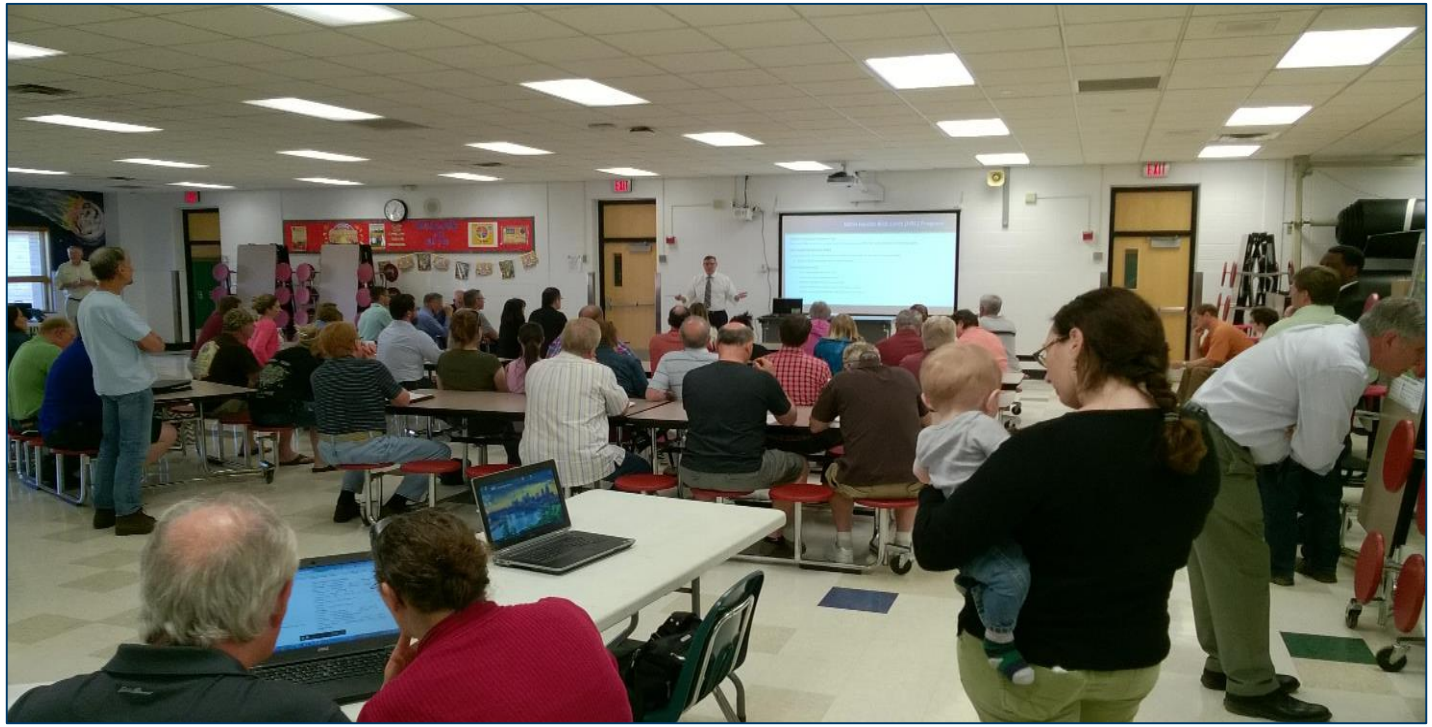
- Since 2002, MDH has been assessing the potential health impacts of perfluorochemicals

MDH Minnesota Department *of* Health

DRINKING WATER PROTECTION/ENVIRONMENTAL HEALTH RISK ASSESSMENT

MDH Internal Message Blocks: PFAS Update

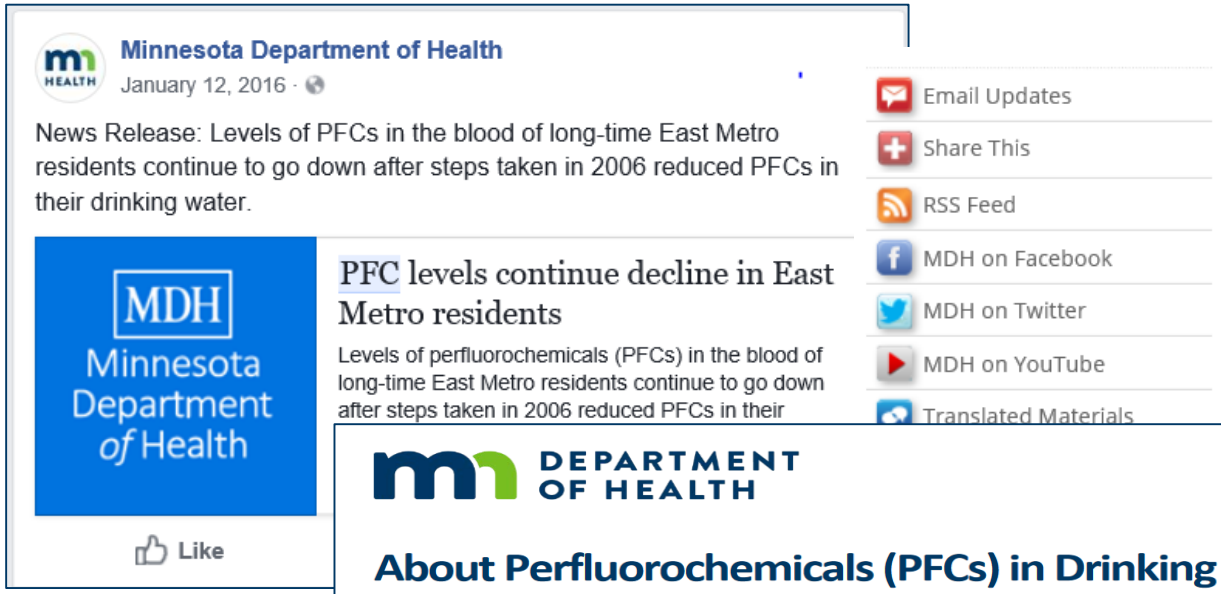
Information in this document is for MDH staff to use for their own understanding and to use as a resource when answering questions from affected people in Minnesota or developing materials for distribution.
When necessary, please refer people to the appropriate content expert for specific and in-depth information.

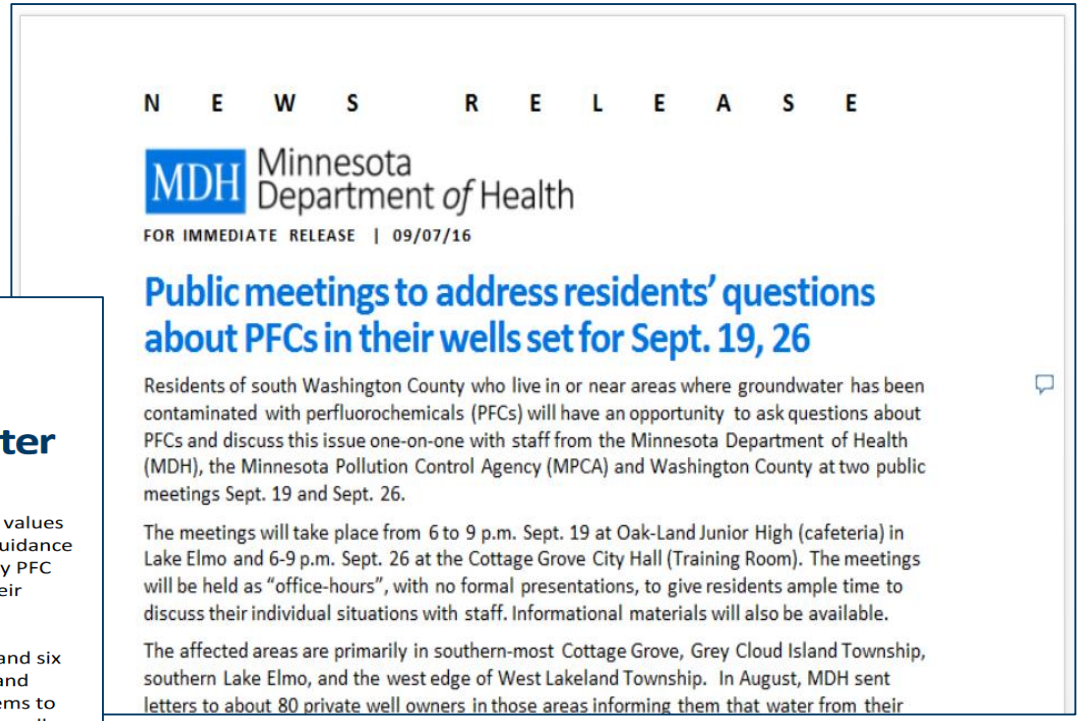


- **Empathy and caring**
- **Competence and expertise**
- **Honesty and openness**
- **Dedication and commitment**

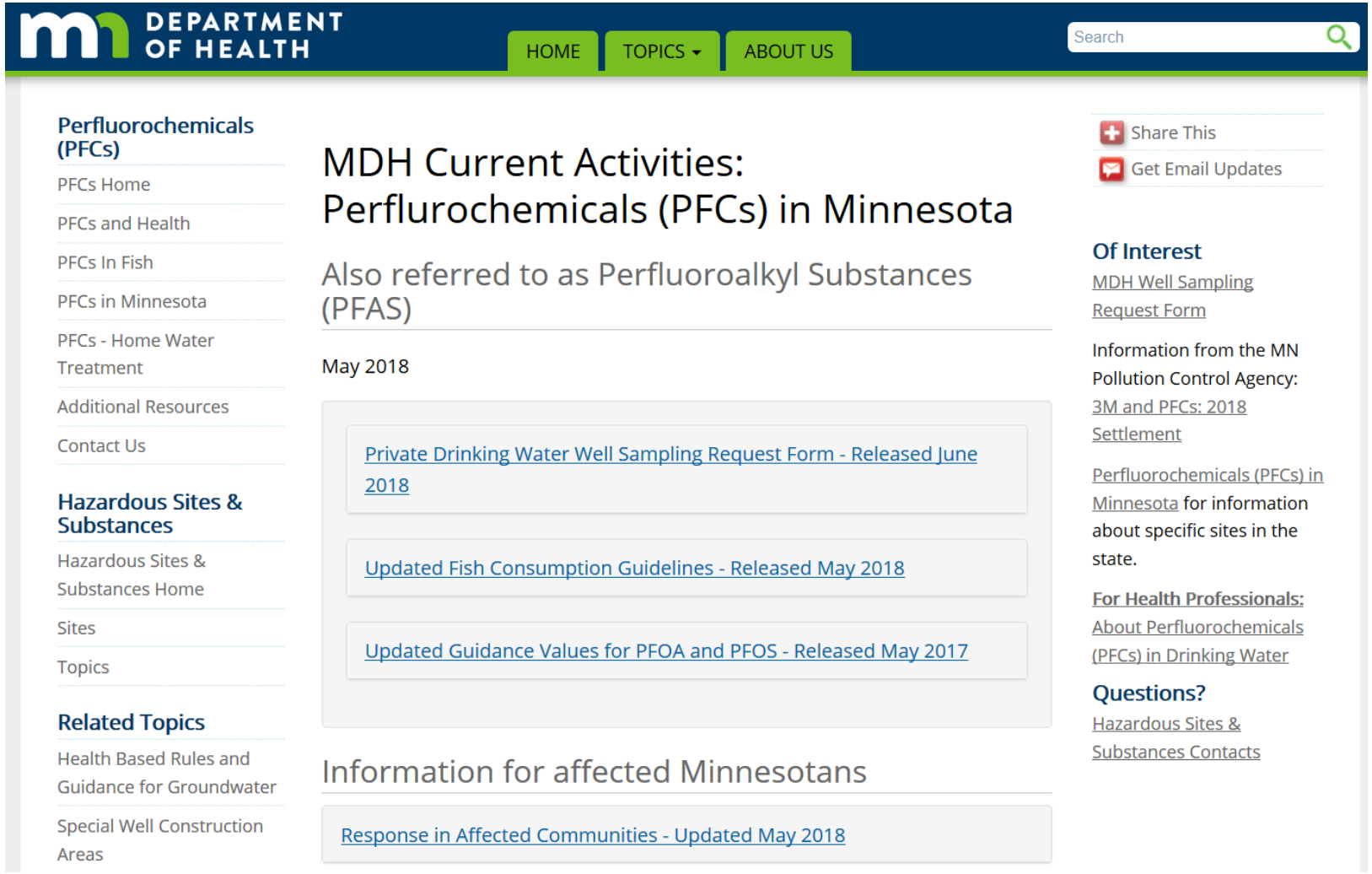
(Covello, 1992, 1993)

MDH Risk Communication Tools





MDH Risk Communication Tools



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Search

Perfluorochemicals (PFCs)

- PFCs Home
- PFCs and Health
- PFCs In Fish
- PFCs in Minnesota
- PFCs - Home Water Treatment
- Additional Resources
- Contact Us

Hazardous Sites & Substances

- Hazardous Sites & Substances Home
- Sites
- Topics

Related Topics

- Health Based Rules and Guidance for Groundwater
- Special Well Construction Areas

MDH Current Activities: Perflurochemicals (PFCs) in Minnesota

Also referred to as Perfluoroalkyl Substances (PFAS)

May 2018

Private Drinking Water Well Sampling Request Form - Released June 2018

Updated Fish Consumption Guidelines - Released May 2018

Updated Guidance Values for PFOA and PFOS - Released May 2017

Information for affected Minnesotans

Response in Affected Communities - Updated May 2018

Share This

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Of Interest

MDH Well Sampling Request Form

Information from the MN Pollution Control Agency: 3M and PFCs: 2018 Settlement

Perfluorochemicals (PFCs) in Minnesota for information about specific sites in the state.

For Health Professionals: About Perfluorochemicals (PFCs) in Drinking Water

Questions?

Hazardous Sites & Substances Contacts

MDH Risk Communication Tools

Minnesota Department of Health
625 Robert St. N.
St. Paul, MN 55164-0975
www.health.state.mn.us

Summary of Results

Perfluorochemicals in Homes and Gardens Study

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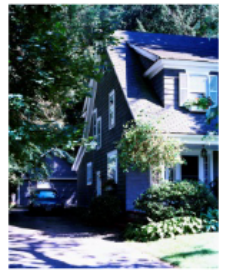
MDH collected samples from ...e that ...nd 232 ...yzed



Site-Specific Meal Advice
for Tested Lakes and Rivers

The Minnesota Department of Natural Resources (DNR), the Minnesota Pollution Control Agency (MPCA), and the Minnesota Department of Health collaborate in producing the fish consumption advisory. Each year, the DNR collects fish from lakes and rivers for testing. Minnesota has around 6,000 fishable lakes. Fish from over 1,400 lakes and streams in Minnesota have been tested for contaminants.

All waters from which fish have been tested are listed in the tables below. The waters that have been tested are not necessarily more contaminated than those

DATA UPDATE: CANCER INCIDENCE IN DAKOTA AND WASHINGTON COUNTIES

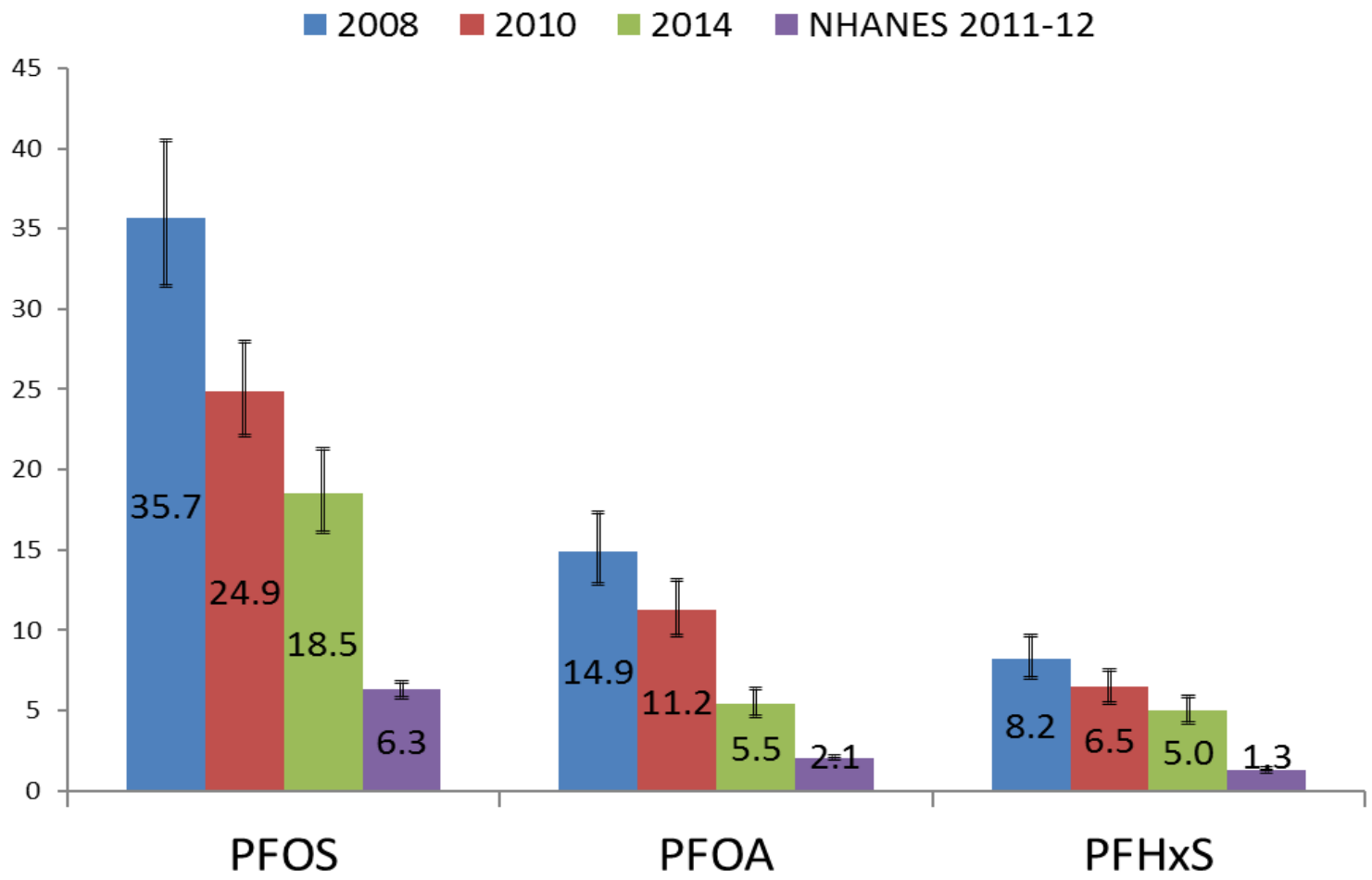
MCSS Epidemiology Report 2015:1

May 13, 2015

Minnesota Cancer Surveillance System

Chronic Disease and Environmental Epidemiology Section

Biomonitoring Data Shows Interventions are Working



Conclusions

- PFAS pose a significant challenge to state and federal environmental and health agencies
  - Human and ecological risks still unclear
- The varied uses of PFAS in consumer and industrial products and processes means many potential sources with differing PFAS mixtures
- The extreme persistence and unique chemical and physical properties of PFAS can result in unusual fate and transport and exposure pathways
- PFAS are an active area of scientific research
- All of this makes for unique risk communication challenges

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Thank you!

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651-201-4910

http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/current.html