Former Wurtsmith Air Force Base – Public Health Role

Michigan Department of Community Health

January 24, 2013 Community Meeting

Oscoda, Michigan

Agenda

- “Housekeeping”
- Introductions
- Presentations
- Questions from community

(Air Force presentation shown first)

MDCH Presentation - Outline

- Who is MDCH
- Agency work at Wurtsmith
- PFC Issue
- Plans

Who is MDCH

- Division of Environmental Health
  - Toxicology and Response Section
- Cooperative agreement with federal Agency for Toxic Substances and Disease Registry
  - Who is ATSDR

Historic Involvement

- Solvents in groundwater and drinking water
  - TCE (trichloroethylene) = main chemical
- Citizen's Advisory Committee requested ATSDR involvement in 1993
- Public Health Assessment report in 2001
  - Minimal/no health risks

Current Status

- Ongoing cleanup/remediation/monitoring
- Michigan Department of Environmental Quality (MDEQ) and US EPA overseeing Air Force work at Base

PFC Issue

- Perfluorinated chemicals (PFCs) used in fire-fighting foam
  - Fire training area near Clark's Marsh
  - PFCs getting into ponds at marsh
  - PFCs can accumulate in fish
- MDEQ asked MDCH to evaluate fish PFC data


Former Wurtsmith
Air Force Base
Clarks Marsh
AuSable River
Source: USGS
Source: NASA, NGA, USGS
2008 Microsoft Corporation
292 m
esri

PFCs – Chemistry

- Very strong carbon-fluorine bond
- Many PFCs
- Uses
  - Consumer products
  - Commercial / Industrial

PFCs - Concerns

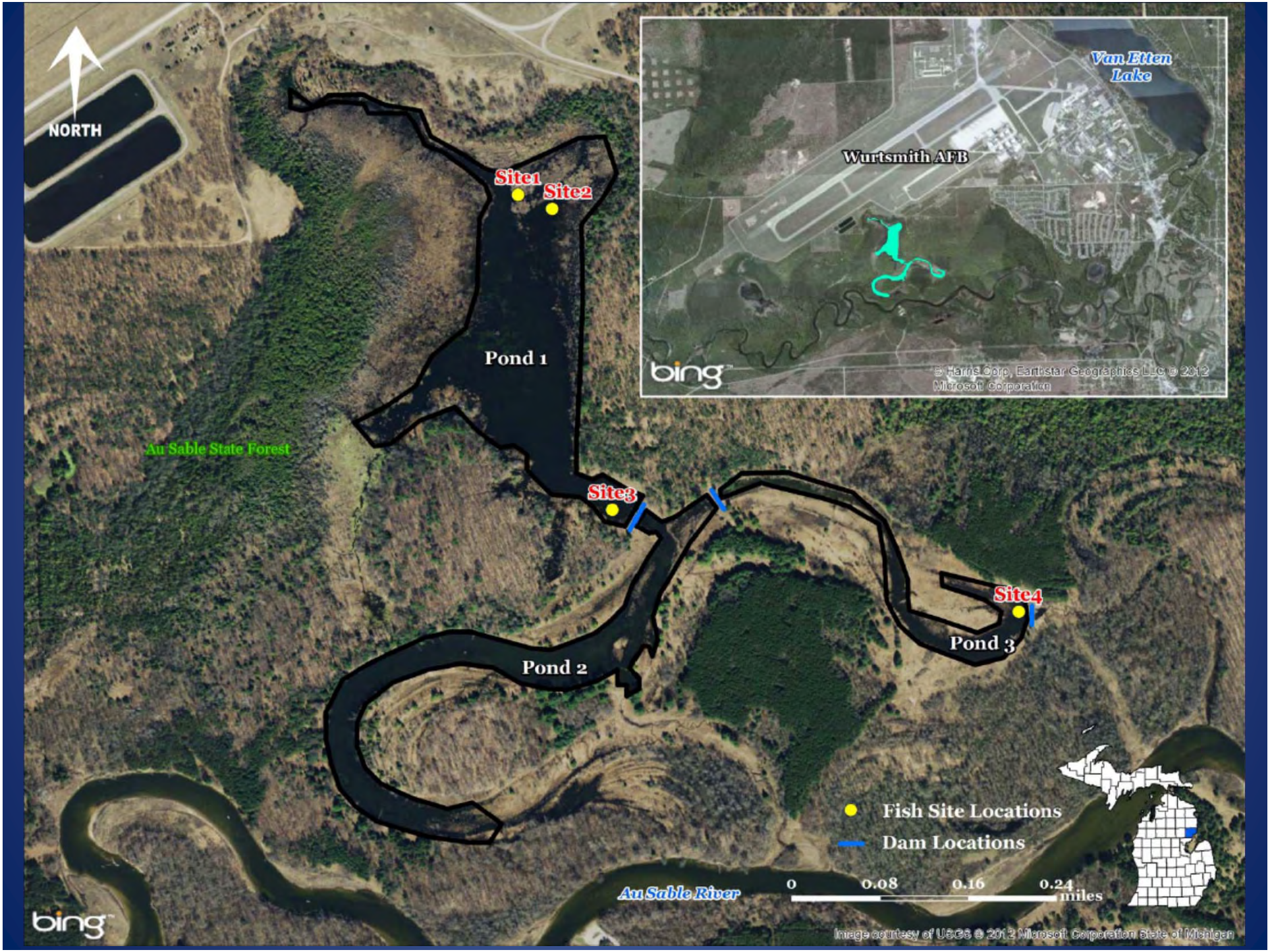
- Persistent, build up in the food chain
- “C8 Study” (West Virginia and Ohio) = primarily PFOA
- Main PFC in fish = PFOS
  - Key study (monkeys): changes in thyroid hormones and cholesterol
  - Other animal studies
  - In fish tissue, mostly in filet (can’t be trimmed out)

PFOS Fish Consumption Screening Values

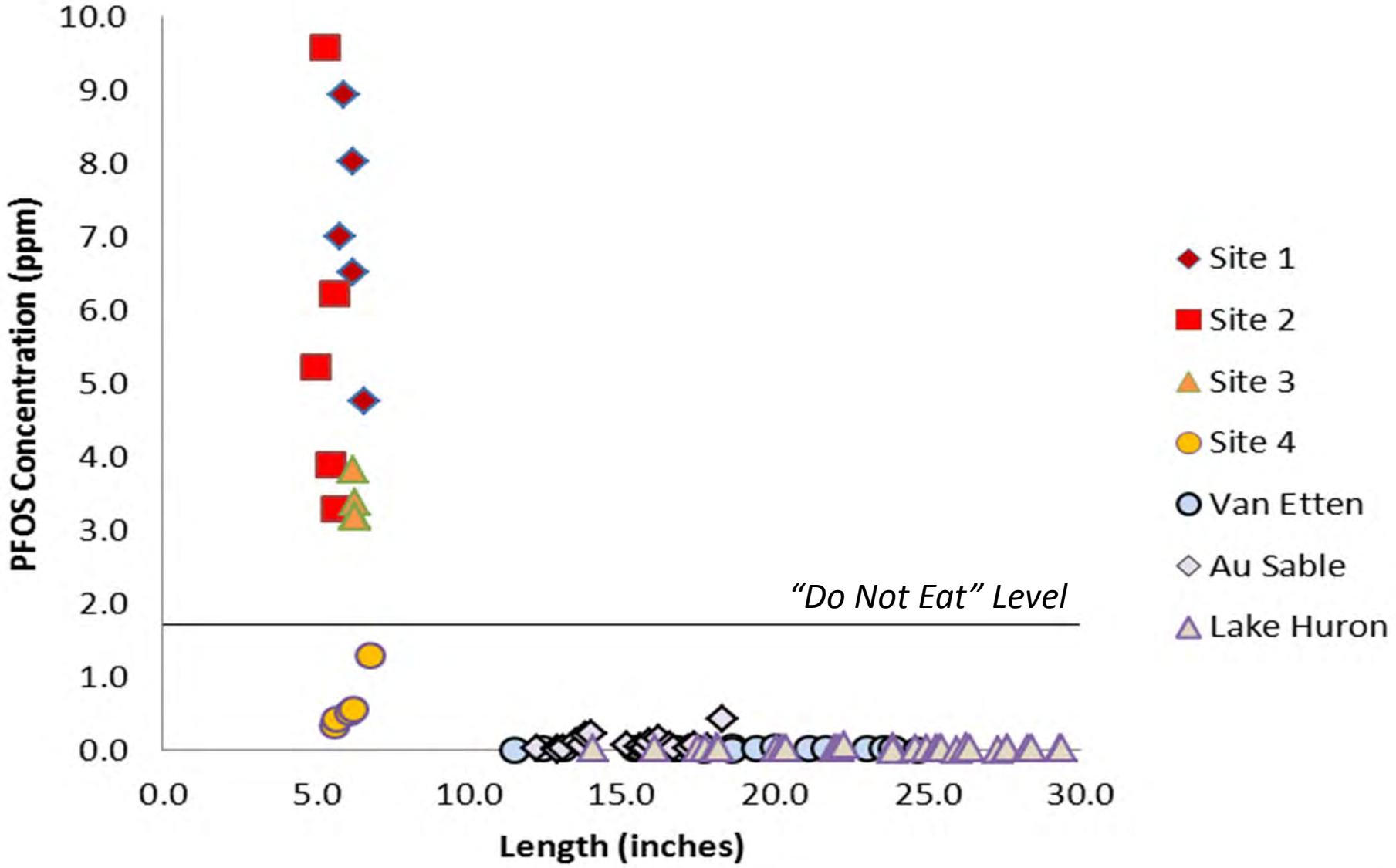
- "Screening value" definition
- Provisional numbers for PFOS
- "Do not eat" = greater than 1.7 ppm
  - "ppm" = parts per million
  - "ppm" = milligrams chemical per kilogram fish
- Lower screening values
  - 0.05 ppm = 16 meals/month
  - www.michigan.gov/eatsafefish

Clark's Marsh fish

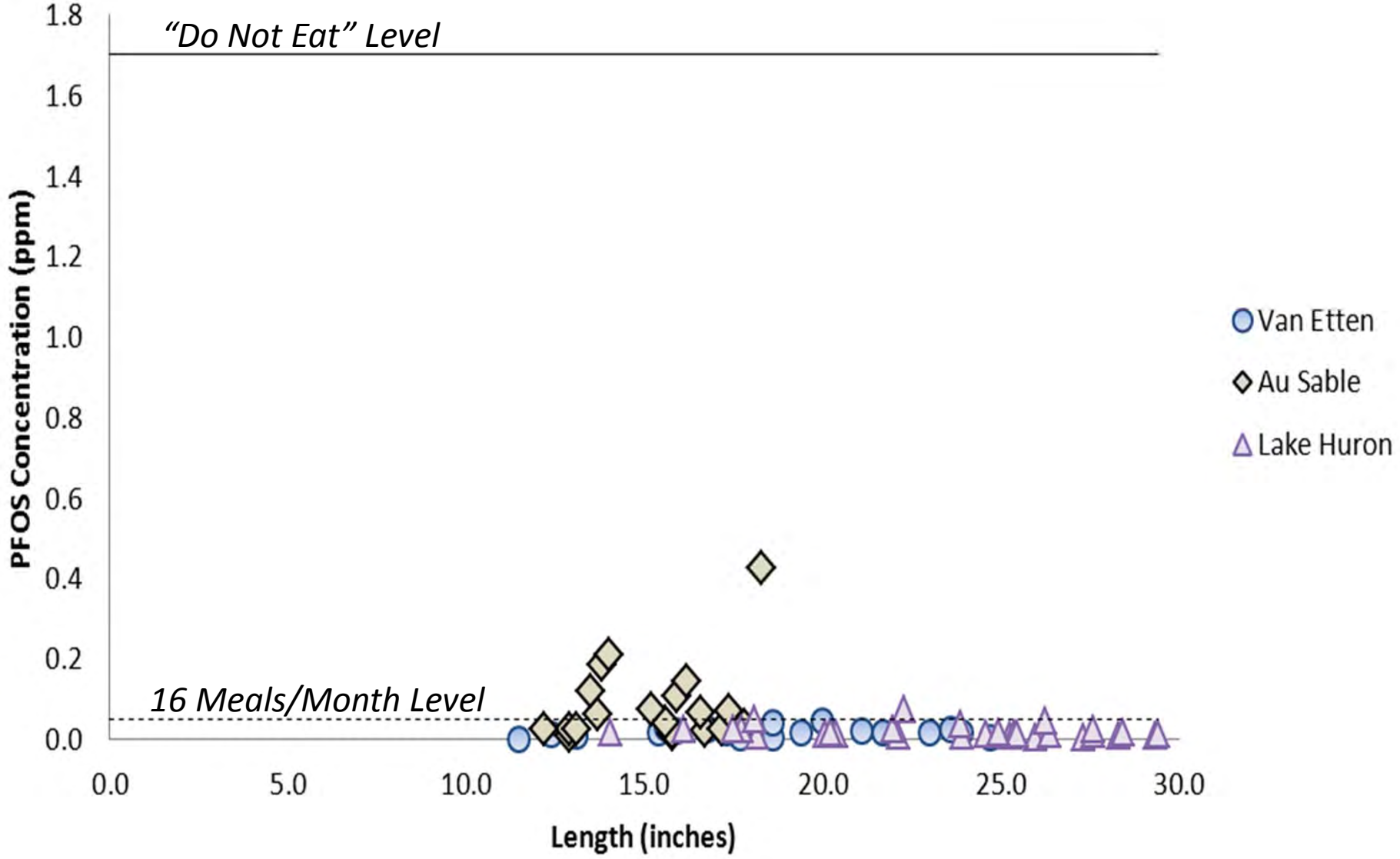
- Pumpkinseed sampled in 2011
- Some perch sampled in 2012
- PFOS range: 0.3 – 8.9 ppm
  - Fish from 3 locations all above 1.7 ppm
  - Fish from 4th location (lower pond) all below but concerns about ongoing contamination
- *"Do not eat" advisory for Clark's Marsh and lower Au Sable River issued in May 2012 (no data for fish from river at that time)*


NORTH
Site1
Site2
Pond 1
Au Sable State Forest
Site3
Site4
Pond 3
Pond 2
Van Etten Lake
Wurtsmith AFB
bing
© Harris Corp, Earthstar Geographics LLC © 2012 Microsoft Corporation
Fish Site Locations
Dam Locations
Au Sable River
0
0.08
0.16
0.24
miles
bing
Image courtesy of USGS © 2012 Microsoft Corporation State of Michigan

PFOS Concentrations in Fish from Clark's Marsh and Other Waterbodies



Close-Up of Fish from Van Etten Lake, Au Sable River, and Lake Huron



Van Etten Lake fish

- Walleye and white sucker sampled in 2010
- Some perch sampled in 2012
- VERY low levels of PFOS → 0.006-0.046 ppm
- *No restrictions regarding PFOS*
- *Guidelines for other chemicals (PCBs, mercury)*
  - www.michigan.gov/eatsafefish

Lower Au Sable River fish

- Smallmouth bass and white sucker sampled in 2011, near discharge of marsh to river (downstream of Whirlpool)
- Lower than Clark's Marsh, higher than Van Etten Lake → 0.006-0.424 ppm
- Additional sampling to be done
- *Do not eat resident fish; follow Lake Huron guidelines for migratory fish*
  - www.michigan.gov/eatsafefish

“Resident” vs. “Migratory” in the Lower Au Sable

- “Resident” = year round in river
  - Perch, bass, bluegill, pumpkinseed
- “Migratory” = coming into river from Lake Huron to spawn
  - Walleye, salmon, trout

Lake Huron fish

- EPA Great Lakes Human Health Fish Tissue Study
  - Mostly trout, sampled in 2010
  - Nearly all data below 0.05 ppm
  - Additional sampling to be done
- *No restrictions regarding PFOS*
- *Guidelines for other chemicals (PCBs, dioxins)*
  - www.michigan.gov/eatsafefish

Allen Lake

- South of west end of runway, west of Clark's Marsh
- No fish data, no lake data
- PFOS in stream that drains lake
  - PFOS in stream = 380 ppt (parts per trillion)
  - PFOS in Clark's Marsh (upper pond) = 7,400 ppt
- *Do not eat Allen Lake fish (precaution)*


Clark's Marsh
Allen Lake

Non-fish questions

- Municipal and private drinking water
  - Municipal intake at Tawas Bay → no concern
  - Tested private wells are not a concern
- Eating wild game
  - Research (New York) shows PFCs in waterfowl from affected waterbodies, more in fish-eating ducks than others
  - Deer? Turkey? Other game?

Non-fish questions (cont'd)

- Swimming
  - Skin contact is no concern
  - Occasional swallow of water is little concern
- Exposure to pets
  - Concerns likely similar to human concerns
- Watering gardens
  - Minnesota research → hardly any uptake into produce

MDCH Plans

- Formalize fish consumption screening value
- Evaluate any additional fish data
- Evaluate data from base
- Outreach
  - Working with Air Force, MDEQ, Forest Service, MDNR, Oscoda and Au Sable Townships, local health department
  - Fact sheets, signs, brochures, reports

MDCH and EPA fact sheets about PFOS

Fish Advisory for Clark's Marsh & Lower Au Sable River

Iosco County, Michigan

What is the fish advisory for Clark's Marsh?

Until further notice, the Michigan Department of Community Health (MDCH) strongly recommends **no one eat any of the fish caught in Clark's Marsh.** Unsafe levels of perfluorinated chemicals, or PFCs, were found in the filets of fish from the marsh.

What is the fish advisory for the lower Au Sable River?

Unsafe levels of PFCs were also found in fish from the lower Au Sable River. Until further notice, the Michigan Department of Community Health (MDCH) strongly recommends **no one eat any resident fish caught in the lower part of the river from Foote Dam to the river's mouth at Lake Huron.** Resident fish are those that live year round in the river and include perch, bass, bluegill, and pumpkinseed.

Migratory fish from Lake Huron are not expected to have high levels of PFCs. Migratory fish are those that move from Lake Huron into the river to spawn and include walleye, salmon, and trout.

There have been advisories on some fish from the lower Au Sable River and Lake Huron.

MDCH would like to remind you about existing advisories on fish from the lower Au Sable River and Lake Huron due to high levels of mercury, PCBs, and dioxins. These advisories have been in place for many years.

- Children and women who are pregnant, nursing, or of childbearing age should eat walleye only once a month. It's safe for boys over age 15, men, and women past childbearing age to eat walleye smaller than 26" in length as often as they'd like, and 26" or larger once a week.
- Children and women who are pregnant, nursing, or of childbearing age should not eat carp. Everyone else should eat carp only once a week.
- Many other fish from Lake Huron have advisories. Visit www.michigan.gov/eatsafefish to find the Eat Safe Fish Guide and advice on eating the fish.

What are PFCs?

PFCs are a group of manmade chemicals that have been used for many years in products that resist heat, oil, stains, grease and water. Products with these chemicals include nonstick cookware, stain-resistant carpeting, and fire-fighting foam. PFCs are very stable and stay in the environment for a long time.

Fire-fighting foam containing PFCs was used by the Air Force at the former Wurtsmith Air Force Base during training and to fight fires. PFCs from the foam have moved through the soil and into the ponds in Clark's Marsh which drains to the lower part of the river. One of the chemicals in the PFC group, perfluorooctane sulfonate, or PFOS, has been found in very high levels in the fish in Clark's Marsh and the lower part of the river.

Can PFCs harm your health?

Eating fish that have PFCs will not make you sick right away and does not mean that you will become sick. But, over time, eating fish with high levels of PFCs can be harmful to your health.

PFCs can affect how your thyroid and liver work, possibly leading to thyroid disease or unhealthy cholesterol levels. Children, women who are pregnant or might become pregnant, and breastfed babies are most likely to be harmed.

Catch and release fishing is fine. Touching the fish will not hurt you.

To learn more about testing and cleanup activities at the former Wurtsmith Air Force Base, visit the U.S. Air Force website at www.afcec.af.mil/brac/wurtsmith/index.asp. To learn more about the public health activities, visit www.michigan.gov/mdch-toxics. Look for the *(Former) Wurtsmith Air Force Base* link under *Health Assessments and Related Documents*.

12.2012

EPA United States Environmental Protection Agency

Emerging Contaminants – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)

May 2012

EMERGING CONTAMINANTS FACT SHEET – PFOS and PFOA

At a Glance

- Fully fluorinated compounds that are human-made substances and not naturally found in the environment.
- Used as a surface-active agent and in variety of products, such as fire fighting foams, coating additives and cleaning products.
- Does not hydrolyze, photolyze or biodegrade under environmental conditions and is extremely persistent in the environment.
- Studies have shown it has the potential to bioaccumulate and biomagnify in wildlife.
- Readily absorbed after oral exposure and accumulates primarily in the serum, kidney, and liver.
- Toxicological studies on animals indicate potential developmental, reproductive and systematic effects.
- Health-based advisories or screening levels for PFOS and PFOA have been developed by both the EPA and the states.
- Standard detection methods include high-performance liquid chromatography and tandem mass spectrometry (MS/MS).
- Common water treatment technologies include activated carbon filters and reverse osmosis units.

Introduction

An "emerging contaminant" is a chemical or material that is characterized by a perceived, potential or real threat to human health or the environment or by a lack of published health standards. A contaminant may also be "emerging" because a new source or a new pathway to humans has been discovered or a new detection method or treatment technology has been developed (DoD 2011). This fact sheet, developed by the U.S. Environmental Protection Agency's Federal Facilities Restoration and Reuse Office (FFRRO), provides a brief summary of the emerging contaminants perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), including physical and chemical properties; environmental and health impacts; existing federal and state guidelines; detection and treatment methods; and additional sources of information.

PFOS and PFOA are extremely persistent in the environment and can be transported long distances in air. As a result, they are widely distributed across the higher trophic levels and are found in soil, air and groundwater at sites across the United States. The toxicity and bioaccumulation potential of PFOS and PFOA indicate a cause of concern for the environment and human health. This fact sheet is intended for use by site managers faced with addressing PFOS and PFOA at cleanup sites or in drinking water supplies and for those in a position to consider whether these chemicals should be added to the analytical suite for site investigations.

What are PFOS and PFOA?

- PFOS and PFOA are fully fluorinated, organic compounds and are the largest made perflourinated chemicals (PFCs) (ATSDR 2009).
- PFOS is a perfluoralkyl sulfonate that is commonly used as a simple salt (such as potassium, sodium, or ammonium) or incorporated into larger polymers (EFSA 2008; EPA 2009a).
- PFOA is a perfluoralkyl carboxylate that is produced synthetically as its salts. Ammonium salt is the most widely produced form (EFSA 2008; EPA 2009a).
- PFOS synonyms include 1-Octanesulfonic acid, 1-Octanesulfonic acid, Heptadecafluoro-, 1-Perfluorooctanesulfonic acid, Heptadecafluoro-1-octanesulfonic acid, Perfluoro-n-octanesulfonic acid, Perfluoroctanesulfonic acid, and Perfluoroctylsulfonic acid (ATSDR 2009; UNEP 2005).
- PFOA synonyms include pentadecafluoro1-octanoic acid, pentadecafluoro-n-octanoic acid; pentadecafluorooctanoic acid; perfluorocaprylic perfluoroctanoic acid; perfluoroheptanecarboxylic acid; and octanoic acid (ATSDR 2009).

Signs by waterbodies (in process)

Do Not Eat Fish From Clark's Marsh

The Michigan Department of Community Health has found unsafe levels of perfluorinated chemicals (PFCs) in fish from Clark's Marsh.

Eating these fish may harm your health.

Boating is fine. Touching the water will not harm you.

Michigan Department of Community Health MDCH

For more information, call MDCH at 1-800-648-6942 or visit www.michigan.gov/eatsafefish.

Do not eat certain fish from the lower AuSable River

from Foote Dam to Lake Huron

The Michigan Department of Community Health has found unsafe levels of perfluorinated chemicals (PFCs) in resident fish from this area. Eating these fish could harm your health.

Do not eat resident fish from the lower Au Sable River. Resident fish are those that live in the river year round and include perch, bass, and bluegill.

Migratory fish such as walleye, salmon, and trout do not have high levels of PFCs.

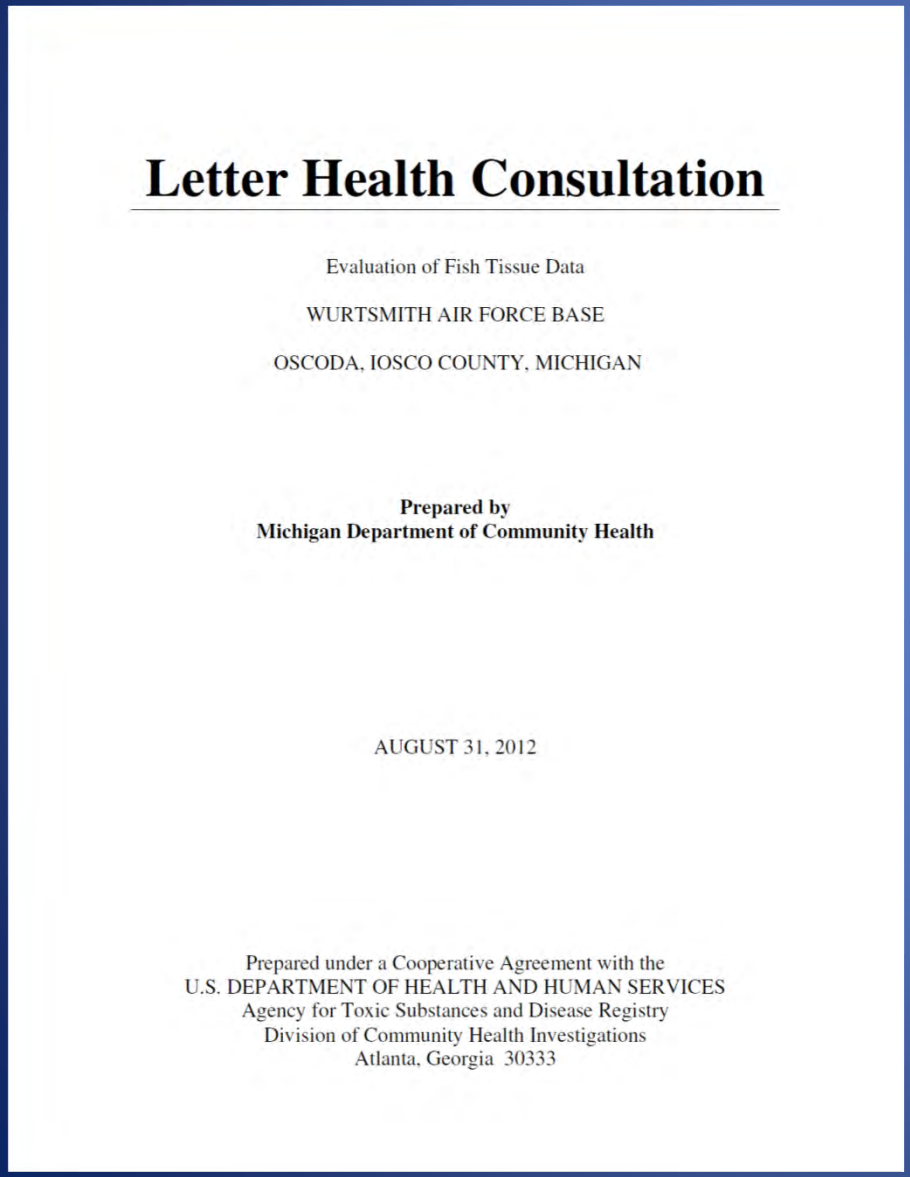
Some fish have advisories because of other chemicals. Check the Eat Safe Fish Guide.

Swimming and boating are fine. Touching the water will not harm you.

Michigan Department of Community Health MDCH

For more information or to get your free Eat Safe Fish Guide, call MDCH at 1-800-648-6942 or visit www.michigan.gov/eatsafefish.

Reports (now, future)



Letter Health Consultation

Evaluation of Fish Tissue Data

WURTSMITH AIR FORCE BASE

OSCODA, IOSCO COUNTY, MICHIGAN

Prepared by
Michigan Department of Community Health

AUGUST 31, 2012

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Community Health Investigations
Atlanta, Georgia 30333

Public Health Assessment/Consultation

- ✓ Environmental data
- ✓ Exposure occurring?
- ✓ Public health implications
- ✓ Recommendations

MDCH Contacts

- Christina Bush, Toxicologist
  - 517-335-9717
  - bushc6@michigan.gov
- Sue Manente, Health Educator
  - 517-335-9003
  - manentes@michigan.gov
- Toxics Hotline (any questions on chemicals)
  - 1-800-648-6942 (MI-TOXIC)

Resources

- Division of Environmental Health webpage
  - www.michigan.gov/mdch-toxics
  - MDCH's Wurtsmith AFB website
    - Click on "Health Assessments and Related Documents"
    - Scroll down to Wurtsmith link
- www.michigan.gov/eatsafefish
- Documents in Oscoda
  - Township library
  - Forest Service station