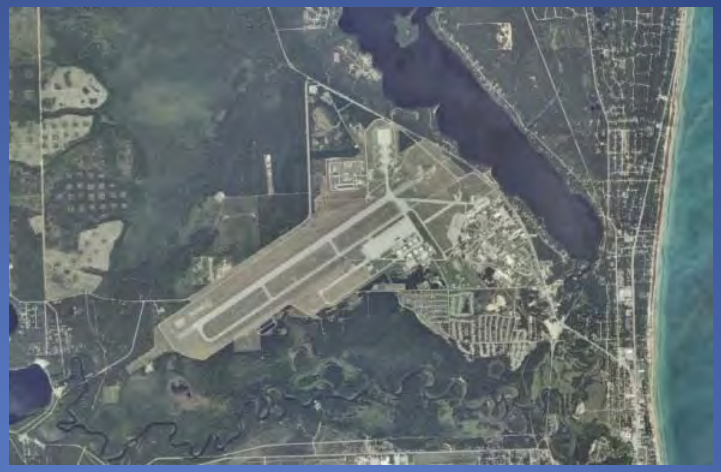



# Former Wurtsmith Air Force Base – Activity Update: PFCs

February 12, 2014 Community Meeting

Oscoda, Michigan

# Agenda

- “Housekeeping”
- Introductions
- Presentations
  - Review of PFC issue
  - Where we are
  - What’s next
- Questions after each speaker and at end

# PFCs (Perfluorinated Chemicals)

- Uses
- “Emerging contaminant”
- PFCs at Wurtsmith
- Chemistry
- Toxicity
- PFCs in fish

# Uses of PFCs

- Personal/household products
  - Fabric treatments (stain resistance, water proofing)
  - Soaps & other cleaning products
  - Shampoos
  - Cosmetics
  - Dental floss
  - Waxes
  - Cookware coatings

# Uses (cont.)

- Commercial/industrial uses
  - Leather treatments
  - Tires
  - Paints and special coatings
  - Airplane hydraulic fluid
  - Fire fighting foams (AFFF)

# PFCs – “Emerging Contaminants”

- EU banned most uses of PFCs in 2006
- PFCs still used in the US
- 3M and other US manufacturers phasing out production of long chain PFCs by 2015
- Chinese companies producing long chain PFCs

# PFCs – "Emerging contaminants"

- Michigan regulations
  - Water quality standard for PFOA only
- Other states
  - Minnesota – drinking water values for PFOA, PFOS, 2 other PFCs
  - New Jersey – drinking water value for PFOA
  - North Carolina – drinking water value for PFOA
- EPA
  - soil screening levels (Region 4)
  - provisional short-term drinking water values

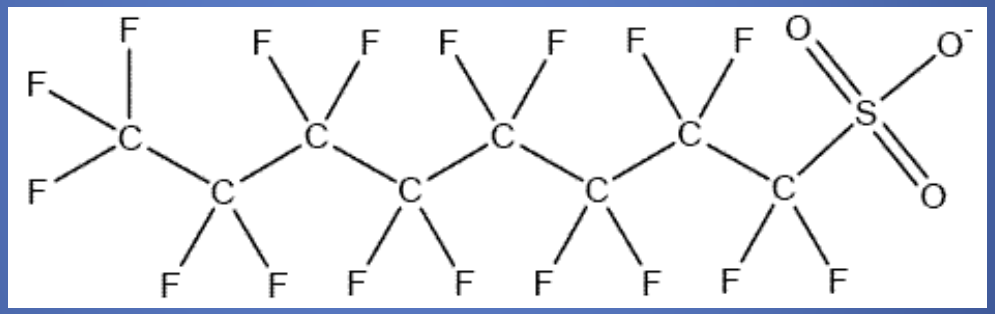

Legend
TOTAL_PFCs
Not Analyzed
0
> 0 - 15
> 15 - 60
> 60 - 400
> 400 - 1,000
> 1,000 - 5,000
> 5,000 - 25,000
> 25,000 - 100,000
> 100,000 - 1,000,000
> 1,000,000

# USAF Presentation

# PFCs - Chemistry

- Carbon-fluorine bond extremely strong
- PFCs resist breaking down in environment
  → persistent

**PFOS**



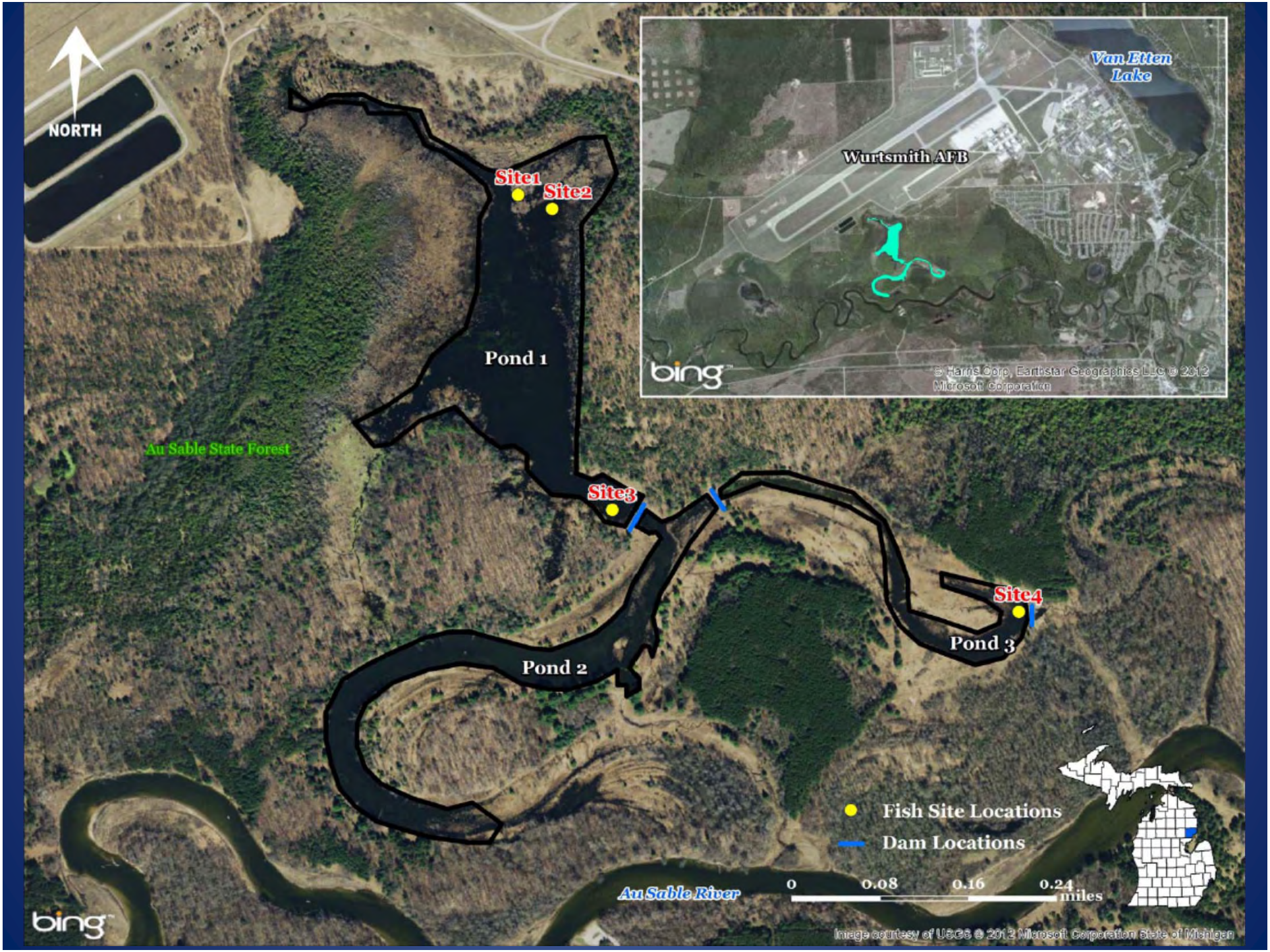

- PFOS bioaccumulates (builds up) in food chain
  → usually highest in liver, then muscle

# PFCs - Toxicity

- Most studies on PFOA and PFOS
- PFOS health concerns:
  - Thyroid
  - Liver
  - Immune system
  - Development (fetus, child)

# PFCs in Fish

- Where we are
  - Screening values
  - Contamination
  - Guidelines
  - Outreach so far
- What's next
  - Report
  - More outreach


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

# Public Health Advisory

- Standard method of risk assessment
  - fish
  - wild game
  - drinking water, soil, air
- Goal:  provide guidance that is safe for everyone, including sensitive individuals
- Challenges with PFOS, sources

# Screening values

**State of Michigan**
**Provisional Fish Consumption Screening Value Ranges for PFOS**

| Meal Category | FCSV Ranges | Parts per billion (ppb) |
|---|---|---|
| *meals per month*[a] | *µg/g (ppm)*[b] | |
| 16 | ≤ 0.05 | **≤ 50** |
| 12 | >0.05 to 0.07 | **> 50 to 70** |
| 8 | >0.07 to 0.11 | **> 70 to 110** |
| 4 | >0.11 to 0.21 | **> 110 to 210** |
| 2 | >0.21 to 0.43 | **> 210 to 430** |
| 1 | >0.43 to 0.85 | **> 430 to 850** |
| 6 meals per year | >0.85 to 1.7 | **> 850 to 1,700** |
| Do Not Eat | >1.7 | **> 1,700** |

[a] Units are in months unless otherwise stated.
[b] micrograms of chemical per gram of fish tissue (µg/g) that is the same as parts per million (ppm).

From "Michigan Fish Consumption Advisory Program" Guidance Document, available under "Reports and Science" at www.michigan.gov/eatsafefish

# Clark's Marsh fish

| Waterbody | Species | Collection Year(s) | No. detected / No. samples | PFOS Concentration Range (ppb) |
|---|---|---|---|---|
| Clark's Marsh - Upper Pond | Largemouth Bass | 2012 | 4 / 4 | 3,110 - 8,720 |
| | Perch | 2012 | 2 / 2 | 2,750 - 2,930 |
| | Pumpkinseed | 2011, 2012 | 19 / 19 | 1,990 - 9,580 |
| Clark's Marsh - Middle Pond | Perch | 2012 | 1 / 1 | 1,770 |
| | Pumpkinseed | 2012 | 4 / 4 | 2,760 - 4,500 |
| Clark's Marsh - Lower Pond | Bluegill | 2011 | 1 / 1 | 1,290 |
| | Largemouth Bass | 2012 | 4 / 4 | 683 - 1,100 |
| | Pumpkinseed | 2011, 2012 | 7 / 7 | 334 - 828 |

**Guideline: Do not eat any fish from Clark's Marsh ("Do Not Eat" level is > 1,700 ppb)**

# Van Etten Lake fish

| Waterbody | Species | Collection Year(s) | No. detected / No. samples | PFOS Concentration Range (ppb) |
|---|---|---|---|---|
| Van Etten Lake | Perch | 2012 | 2 / 2 | 6 - 13 |
| | Pumpkinseed | 2012 | 10 / 10 | 6 - 13 |
| | Rock Bass | 2012 | 10 / 10 | 5 - 18 |
| | Walleye | 2010 | 10 / 10 | 4 - 46 |
| | White Sucker | 2010 | 10 / 10 | 1 - 28 |

**Guidelines: None regarding PFOS.**
**See "Eat Safe Fish" guidelines for other chemicals.**

# Lower Au Sable River fish

| Waterbody | Species | Collection Year(s) | No. detected / No. samples | PFOS Concentration Range (ppb) |
|---|---|---|---|---|
| Lower Au Sable River | Bluegill | 2012 | 1 / 1 | 41 |
| | Pumpkinseed | 2012 | 3 / 3 | 35 - 2,956 |
| | Rainbow Trout | 2013 | 10 / 10 | 7 - 28 |
| | Rock Bass | 2012 | 8 / 8 | 7 - 49 |
| | Smallmouth Bass | 2011, 2012 | 20 / 20 | 14 - 424 |
| | Walleye | 2013 | 7 / 7 | 10 - 30 |
| | White Sucker | 2011 | 10 / 10 | 6 - 143 |

**Guidelines: Do not eat non-migratory fish.**
**See "Eat Safe Fish" guidelines for other chemicals and for migratory fish.**

# Why “do not eat” for non-migratory in the lower river??

- Following protocol in the Michigan Fish Consumption Advisory Program guidance document
  - “Emerging” chemical → evolving science
  - Uncontrolled source
  - Other sources?
  - Levels in some fish quite high but cannot be explained

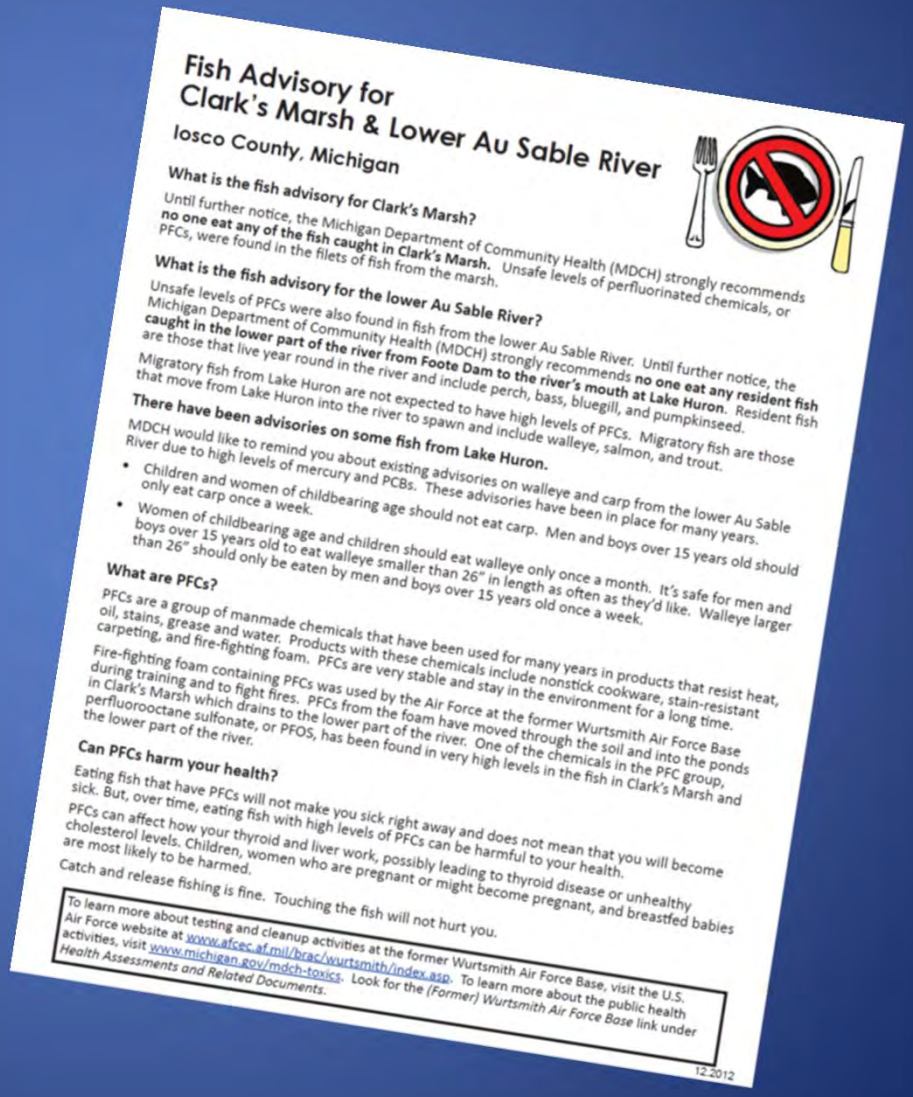
# Lake Huron fish

| Waterbody | Species | Collection Year | No. detected / No. samples | PFOS Concentration Range (ppb) |
|---|---|---|---|---|
| Northern and central Lake Huron (between Upper Peninsula and tip of Michigan's "thumb") | Brown Trout | 2010 | 1 / 1 | 49 |
| | Channel Catfish | 2010 | 1 / 1 | 73 |
| | Freshwater Drum | 2010 | 3 / 3 | 13 - 25 |
| | Lake Trout | 2010 | 17 / 17 | 3 - 43 |
| | Lake Whitefish | 2010 | 1 / 1 | 7 |
| | Rainbow Trout | 2010 | 4 / 4 | 4 - 23 |
| | Smallmouth Bass | 2010 | 1 / 1 | 17 |
| | Walleye | 2010 | 1 / 1 | 23 |

**Guidelines: None regarding PFOS.**
**See “Eat Safe Fish” guidelines for other chemicals.**

# MDCH Outreach - to date

- Fact sheets
- Meetings
- Signs



## 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 Lake Huron.**

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

- Children and women of childbearing age should not eat carp. Men and boys over 15 years old should only eat carp once a week.
- Women of childbearing age and children should eat walleye only once a month. It's safe for men and boys over 15 years old to eat walleye smaller than 26" in length as often as they'd like. Walleye larger than 26" should only be eaten by men and boys over 15 years old once a week.

**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.

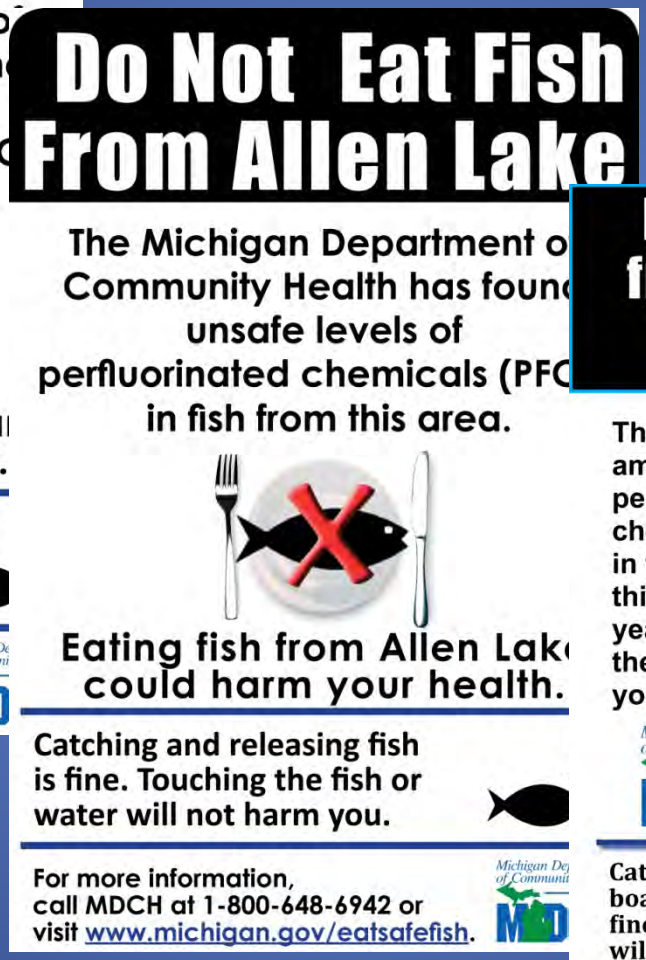
PFCs can affect how your thyroid and liver work, possibly leading to thyroid disease or unhealthy cholesterol levels. Children, women who are pregnant or might become pregnant, and breastfed babies are most likely to be harmed.

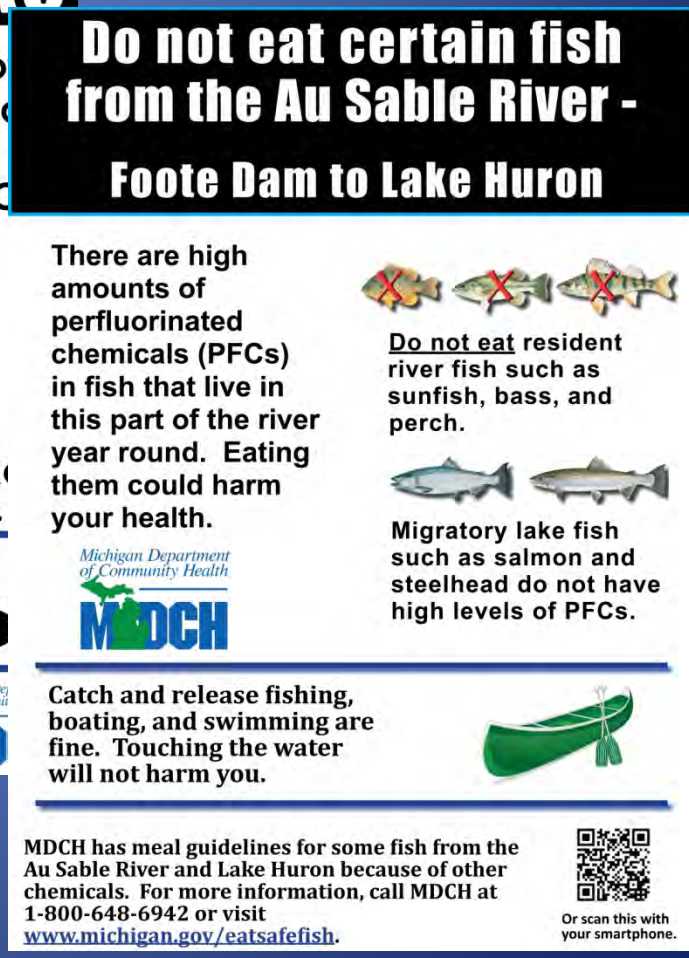
Catch and release fishing is fine. Touching the fish will not hurt you.

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

# Signs*


***Find a missing sign? Please drop it off at the U.S. Forest Service station near the base.**

# Health consultation report

- Formally documents public health assessment and activities
- Process
  - Agency review
  - Public comment
- Timing
- At any time, if action is needed, it is taken

# What's next

- More fish data
  - More panfish (pumpkinseed) from lower river?
  - More walleye from lower river
  - Sampling fish before / after remedial work
- More outreach
  - Brochure
  - Other? (community input)

# MDCH Contacts

- Christina Bush, Toxicologist
  - 517-335-9717 or 800-648-6942
  - bushc6@michigan.gov
- Sue Manente, Health Educator
  - 517-335-0003 or 800-648-6942
  - manentes@michigan.gov

# Resources

- MDCH webpage for Wurtsmith work:
  - www.michigan.gov/mdch-toxics → "Health Assessments and Related Documents" → "(Former) Wurtsmith Air Force Base"
- "Eat Safe Fish" website
  - www.michigan.gov/eatsafefish

Questions / Comments