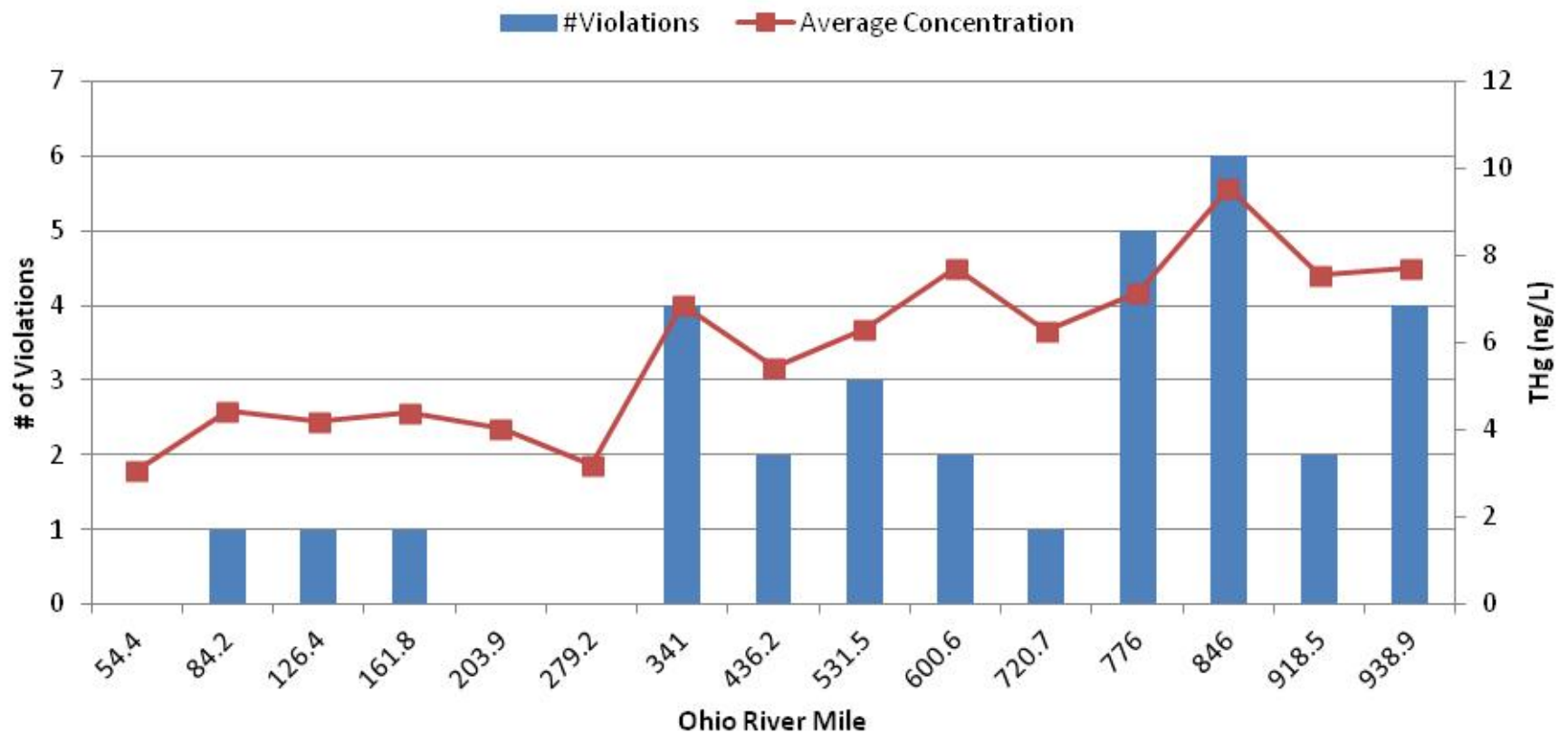


Mercury

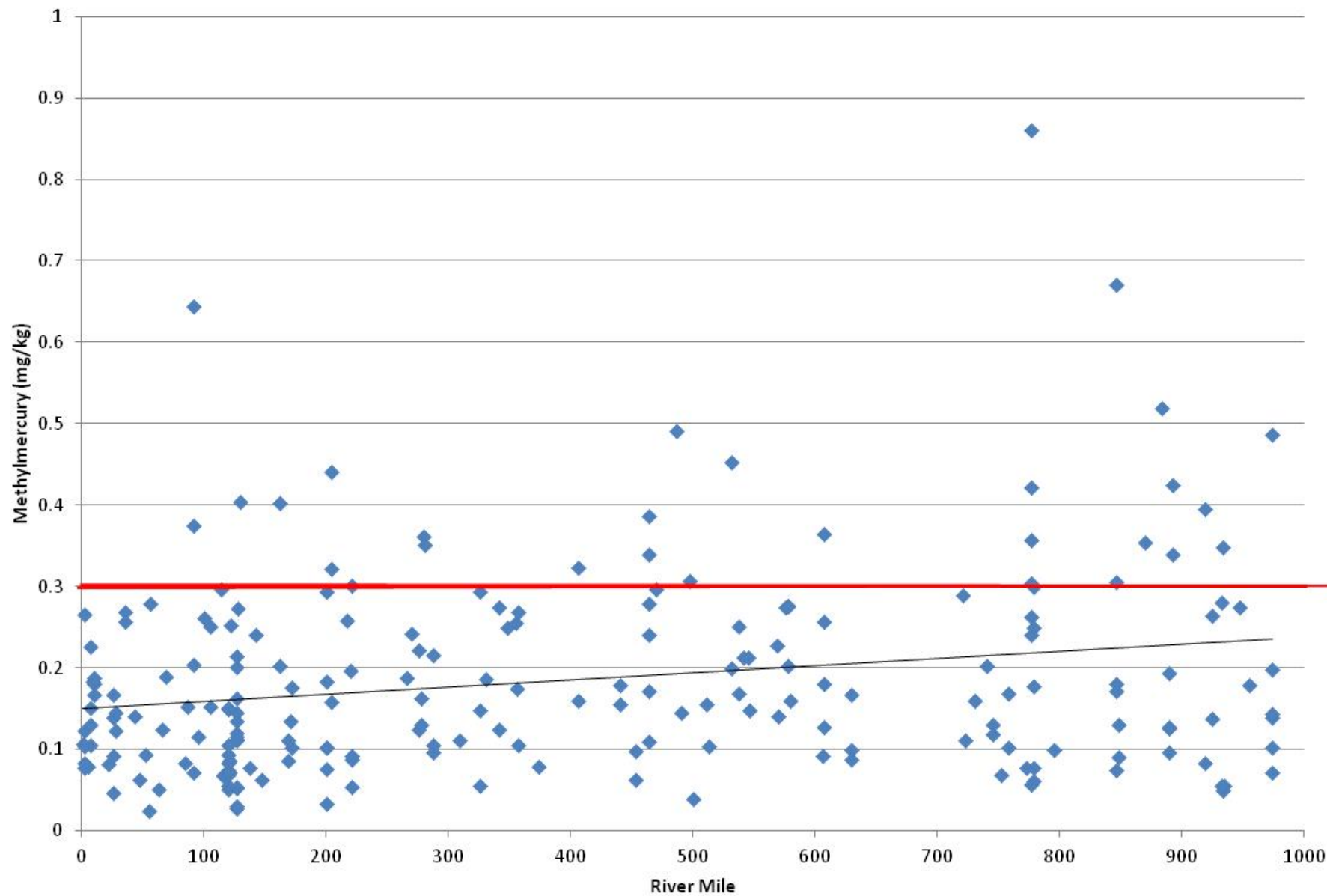
June 2015 Roundtable

THg Water Concentrations Increase in Downstream Direction

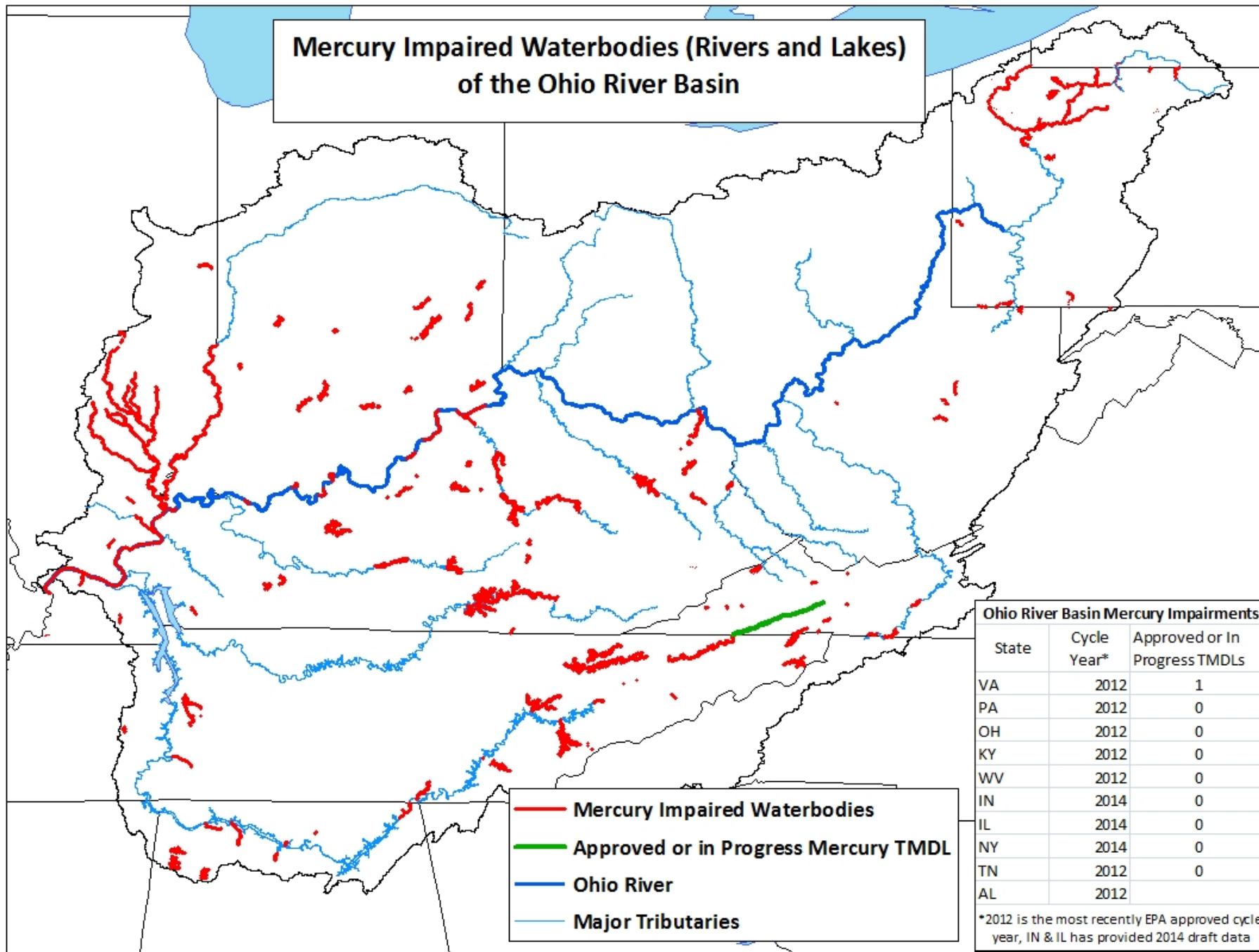
THg Violations (>0.012 ug/L) and Average Concentration by River Mile 2010-2015



Methylmercury in Ohio River Fish Tissue by River Mile



Mercury Impaired Waterbodies (Rivers and Lakes) of the Ohio River Basin



Fish Consumption Advisories for Hg Ohio River Main Stem

- mi 0 – 31.7
 - 1 species @ 1 ml/mo (also for PCBs)
- mi 31.7 – 203.9
 - 2 species @ 1 ml/mo (both also for PCBs)
- mi 203.9 – 846
 - 3 species/species groups @ 1 ml/mo (all also for PCBs)
- mi 848 – 981
 - 5 species/species groups @ 1 ml/mo
 - 2 also for PCBs
 - 3 specifically for Hg (PCBs would be 1 ml/wk)
- Overall = 15 advisories for 9 species

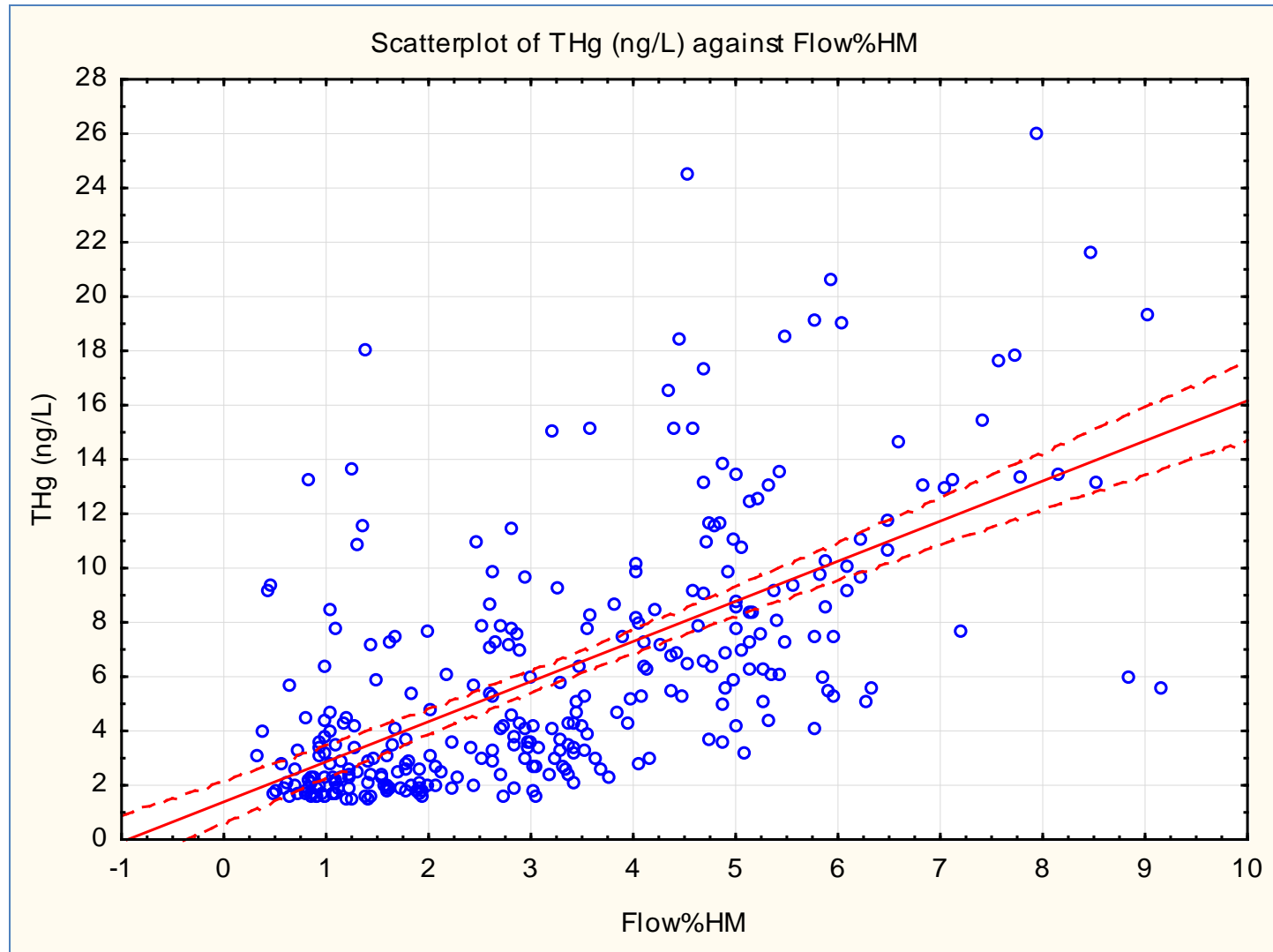
* All advisories issued for the sensitive population

Statewide Fish Consumption Advisories

		<u>Statewide Advisories</u>		
<u>State</u>	<u>Population</u>	<u>Advisory</u>	<u>Causes</u>	<u>Comments</u>
Illinois	sensitive	1 ml/wk	Mercury	applies to predator fish only
Indiana	general	1 ml/wk	untested fish due to unknown concentrations of any contaminant	less restrictive advisories exist
	sensitive	1 ml/mo		
Kentucky	sensitive	1 ml/wk	Mercury	
Ohio	all	1 ml/wk	Mercury	several species with 1 ml/mo statewide advisory; less restrictive advisories exist
Pennsylvania	all	1 ml/wk	untested fish due to unknown concentrations of any contaminant	
West Virginia	all	1 ml/wk	Mercury & PCBs	more restrictive statewide for some species
Ohio River	all	1 ml/wk	Mercury & unknown concerns	

*More restrictive site/species specific advisories for Hg exist within every state, typically at the 1 ml/mo level

All Stations THg Increases with Flow



ORSANCO, USEPA, and Compact State Mercury Criteria

• ORSANCO

Two Water Criteria:

- 0.3 mg/kg MeHg in tissue
- 0.012 ug/L THg in water

• USEPA

Single Criterion:

- 0.3 mg/kg MeHg in tissue
- *Water concentration criterion dropped in 2001*

Compact State	THg in Water (ug/L)	MeHg in Tissue (mg/kg)	Compact State	THg in Water (ug/L)	MeHg in Tissue (mg/kg)
New York*	0.0007	-	West Virginia**	0.012	0.5
Illinois	0.012	-	Pennsylvania	0.05	-
Indiana	0.012	-	Virginia	0.77	0.3
Ohio	0.012	-	Kentucky	0.51	0.3
NY criterion is dissolved			** WV water criterion is MeHg		

50 States Hg Criteria

Minimum Water Criterion	No. of States	Tissue Criterion	State(s)
0.0007	1	NO	New York*
0.0013	1	NO	Michigan
0.0015	1	NO	Wisconsin
0.0069	1	YES	Minnesota
0.0100	2	NO	Arizona, Colorado
0.012	16	3/16	AL, AR, FL, GA, IL , IN , LA, MS, NC, OH , OR, UT, VE, WA, WV**
0.0122	1	NO	Texas
0.025	1	NO	California
0.047	1	NO	Hawaii
0.050	12	NONE	AK, CT, IA, MT, NH, NJ, OK, PA , SC, SD, TN, WY
0.051	1	YES	Kentucky
0.140	1	NO	Rhode Island
0.146	1	NO	Kansas
0.500	1	NO	Missouri
0.770	6	5/6	(Nevada) DE, MD, NE, NM, VA
0.910	1	YES	Maine
NONE	2	YES	Idaho, Massachusetts

* New York criterion is dissolved

** West Virginia criterion is methyl mercury

50 States Mercury Tissue Criteria (n=13)

State	MeHg Tissue (mg/Kg)
Oregon	0.04
Maine	0.2
Minnesota	0.2
Nebraska	0.215
Delaware	0.3
Georgia	0.3
Idaho	0.3
Kentucky	0.3
Maryland	0.3
Massachusetts	0.3
New Mexico	0.3
Virginia	0.3
West Virginia	0.5

ORSANCO Studies/Data/Info

- Bimonthly grab sampling at 15 sites.
 - Can generate loads where good flow-conc. correlations.
- BAF
 - Investigate validity of 0.012 ug/L criterion.
 - One completed, two additional studies beginning.
- FGD – did not show significant mercury loads from 4 facilities.
- Tribs
 - Monthly, 1 year, 14 major tribs (81%).
 - Mercury load, composition of total & methyl.

ORSANCO Studies/Data/Info (cont.)

- Ohio River mercury loads calculated at Greenup and Cannelton (ORM 720).
- Point source mercury loads calculated based on DMR data and TRI data. Both data sets are incomplete but to an unknown extent.
- Point source loads are a small percentage of the total Ohio River load.

What Do We Need?

- TMDL-Type Analysis.