INTRODUCTIONS

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Division of Water Quality, NC DENR

May, 2012

Purpose of the Meeting

- Get feedback
- Answer Questions
- (not a public hearing)

Documents

- Draft NC Mercury TMDL
- Draft Wastewater Permitting Strategy
- Reduction Options for Nonpoint Sources

Comments

- Submit written comments on TMDL sooner than later, By June 11, 2012.
- Response to comments on TMDL will be included in the package for EPA approval.
- Informal comments to wastewater permitting and nonpoint source reductions are welcomed.

NC MERCURY TMDL

Jing Lin
Modeling & TMDL Unit
Division of Water Quality, NC DENR

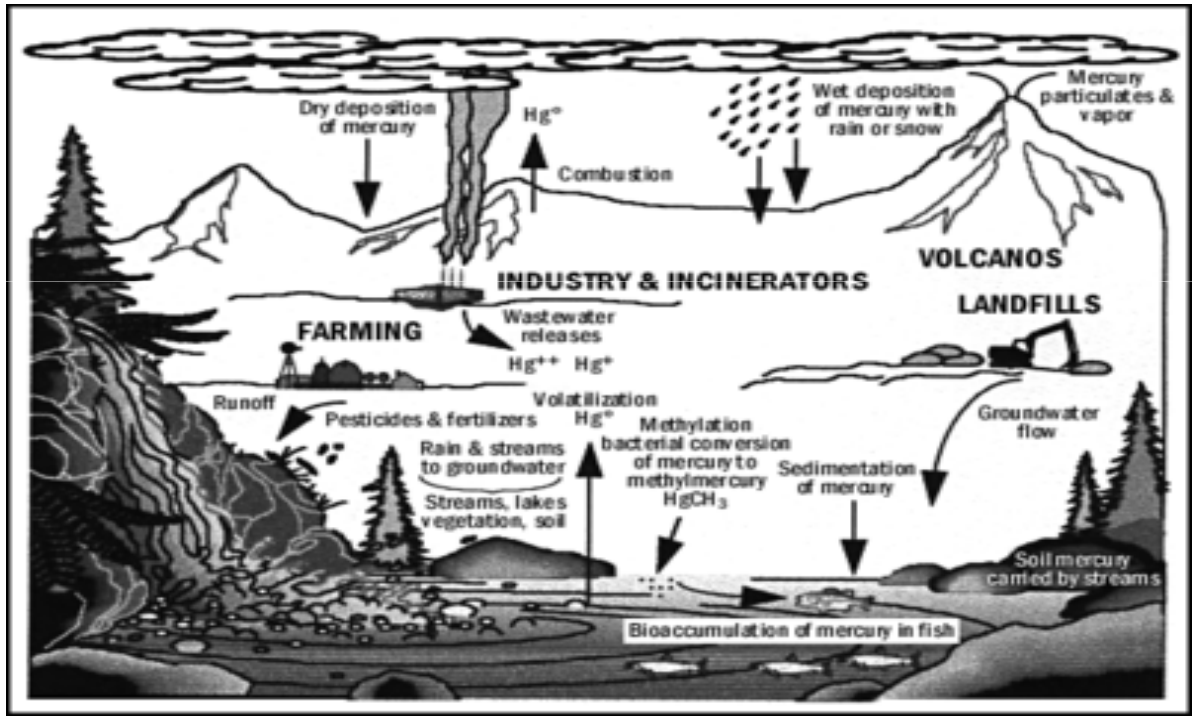
May, 2012

Content

- The Mercury Problem
- The Components of Mercury TMDL
- TMDL Results

The Mercury Problem

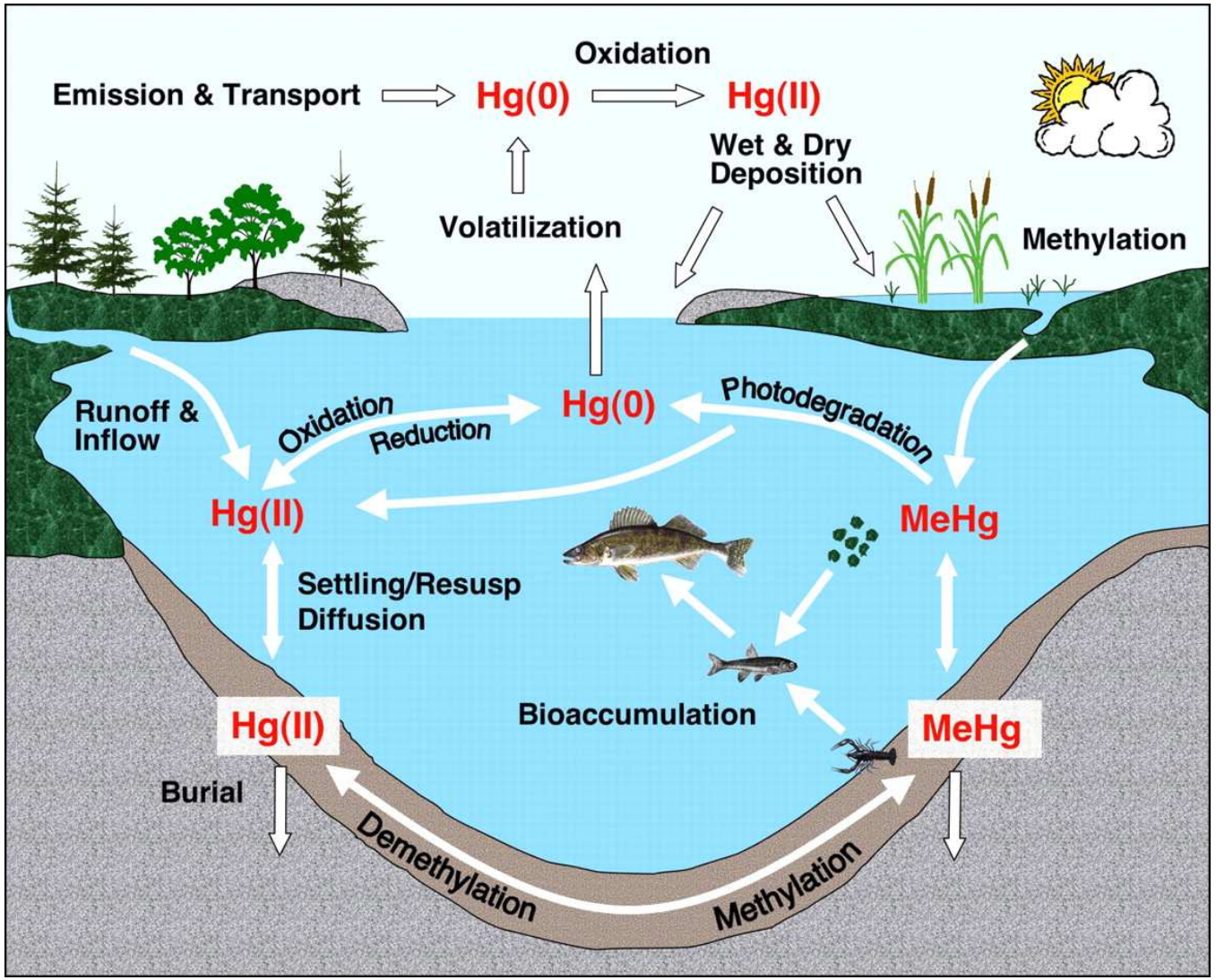
- Mercury Cycling
  - Natural element
  - Human activity increased mercury release



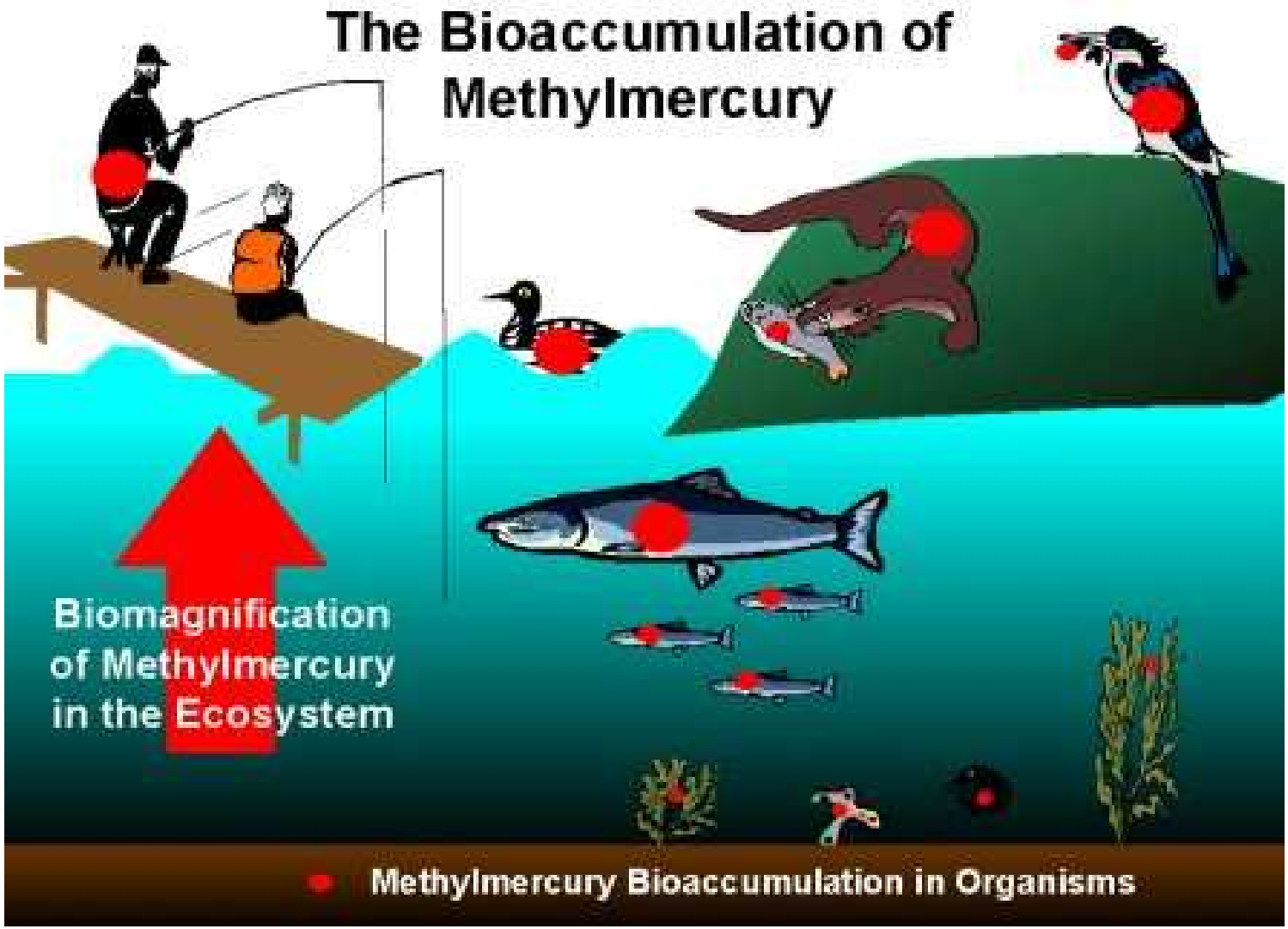
(EPA, 1997; EoE; Selin, 2009)

The Mercury Problem- Mercury Forms and Concern

- Air
- Soil
- Water: Methylation



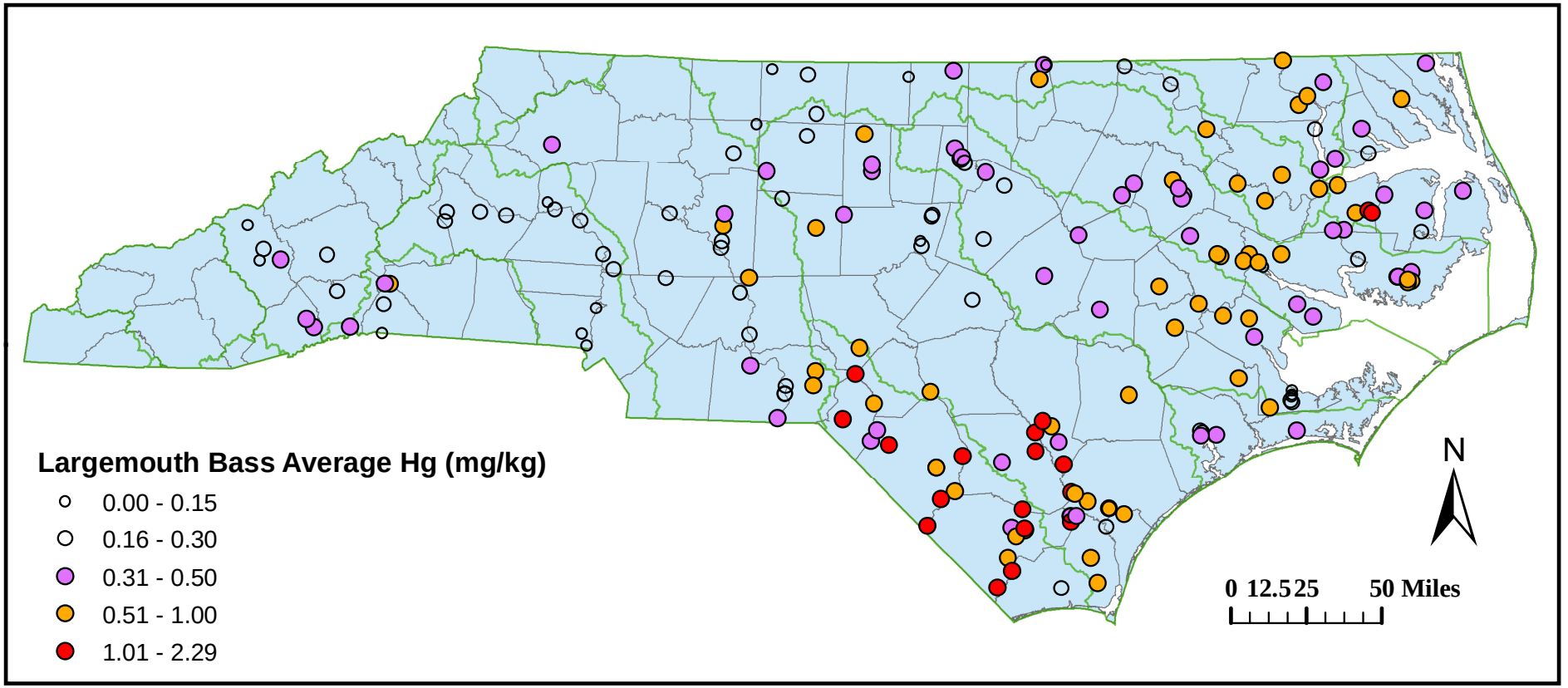
The Mercury Problem - bioaccumulation



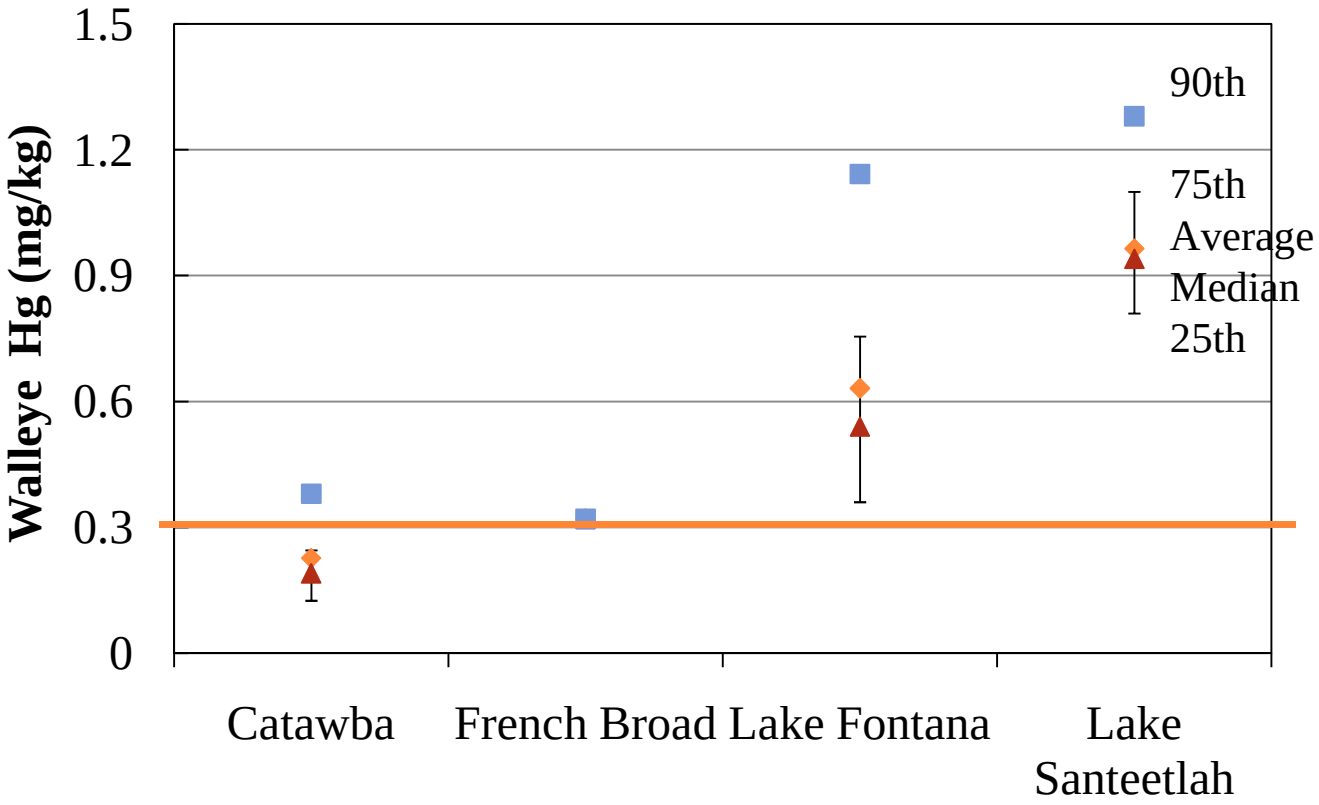
The Mercury Problem

- Mercury Concern
  - Wild Animal
    - "*Environmental exposure may impair reproduction in wild bird populations*" (Jayasena et al., 2011)
  - Human: Neuro-toxin

The Mercury Problem – Mercury in NC



The Mercury Problem – Mercury in NC



The Mercury Problem- Mercury in NC

- NC DHHS Statewide Fish Consumption Advisory

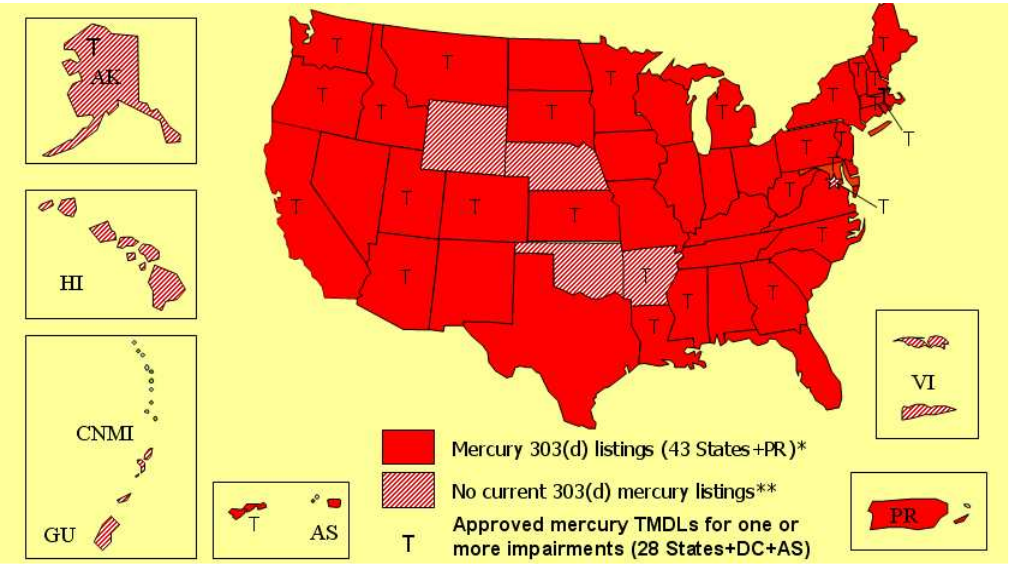
  http://epi.publichealth.nc.gov/fish/current.html

	Fish Low in Mercury	**Fish High in Mercury**
Women of Childbearing Age (15-44 years), Pregnant Women, Nursing Women, and Children under 15	Eat up to two meals per week	**Do not eat**
All Other Individuals	Eat up to four meals per week	**Eat no more than one meal per week**

The Mercury Problem

- Mercury in NC
  - NC DHHS Statewide Fish Consumption Advisory
  - Clean Water Act 303(d) List
  - NC Statewide Mercury TMDL

- National Concern
  - Northeast
  - Minnesota
  - New Jersey
  - Florida
  - Michigan



Content

- The Mercury Problem
- **The Components of Mercury TMDL**
- TMDL Results

Federal Clean Water Act (1972) §303(d)

- **Total Maximum Daily Load (TMDL)**
  - *amount of pollutant waters can receive and still meet standard*
  - **TMDL = WLA + LA + MOS**
    - **WLA** (waste load allocation): Allowable load from point sources
    - **LA** (load allocation): Allowable load from nonpoint sources
    - **MOS**: margin of safety

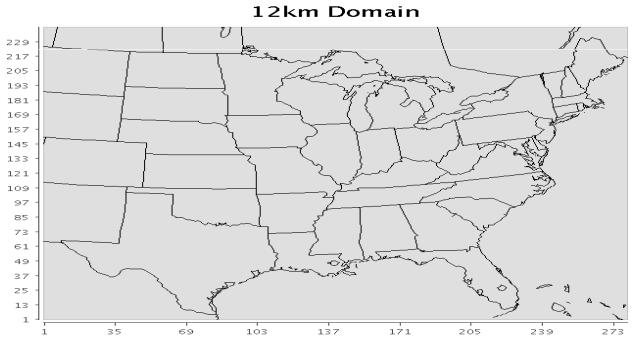
Total Maximum Daily Load (TMDL)

- **TMDL Components**
  - Source Assessment
  - Current and Reduced Load
  - TMDL = WLA+LA+MOS
  - Reasonable Assurance

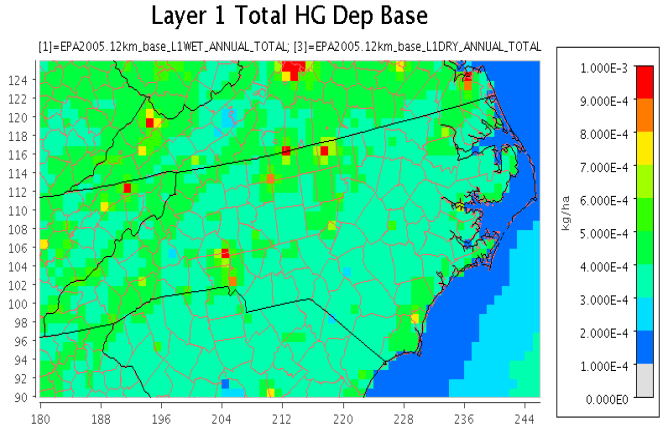
  - Public Review and Comment
  - EPA approval

Mercury Sources

- **Air Quality modeling**
  - **Total Hg air deposition within NC**
  - **Relative contributions in-state & out-of-state**



- **Sources of mercury in NC fish (2002 estimate)**
  - **Wastewater discharges (~2%)**
  - **Atmospheric deposition (~98%)**



Estimated Reduction Needed in NC

- **Existing Fish tissue mercury 0.9 mg/kg**
- **Target 0.3 mg/kg**
- **~67% reduction in <u>total</u> loading to surface water**
  - ***From 2002 baseline***

Content

- The Mercury Problem
- The Components of Mercury TMDL
- **TMDL Results**

Total Maximum Daily Load (TMDL)

- TMDL = WLA + LA + MOS

- *NC Mercury TMDL =*

  81 lbs/yr + 3948 lbs/yr *+ implicit MOS*

Wasteload Allocation

- Statewide aggregate load for wastewater
- Per-facility maximum in permitting strategy
- No reductions from NPDES stormwater

Load Allocation

- 3,948 lb/yr from air deposition
- Reduction from state, regional and global air emission sources is needed

Thank You

- Submit your written comment to Jing.Lin@ncdenr.gov by June 11, 2012

- Questions?

Mercury Permitting Strategy Post TMDL

May 23, 2012

Jeff Poupart
Point Source Branch
NC Division of Water Quality

Locking In Gains Already Achieved

- Current point sources make up only 2% of total mercury load to waters
- Significant reduction already made since baseline year 2002
- Monitor using very sensitive 1631 Method
- Current Water Quality Standard is 12 ng/L
- Decision to place a limit in a permit follows current Reasonable Potential Analysis look and data and predict highest value

Limit Currently Achieved

- Two ways Limits can be calculated
  - Water Quality based
  - Technology Based
- Permittee will get the lower of the two limits
- Reviewed existing NC data from the last five years to find out what level NC Dischargers are already achieving

Limit Currently Achieved

- 47 ng/L was established as the Level Currently Achieved that almost everyone could meet already
- TMDL will establish a aggregate load to be shared by all point sources 81 lb
- Add all the flow times the limits and subtract from 81 lb/ yr
- Every point sources loading is subtracted from aggregate 81 lb will be calculated annually

Some Permitting Basics

- New industries and municipal expansion are allowed as long as
- State total does not currently exceed aggregate 81 lb/ year
- Without TMDL because waters are listed as impaired no dischargers get a limit above 12 ng/L (EPA oversight)
- Those with new mercury limits will use minimization plans to find and eliminate sources

Some Permitting Basics

- Limit will be an annual average to smooth out blips
- If a more stringent limit assigned will get time for phase in
- Water will no longer be listed as impaired so EPA will approve backlogged permits
- New permits with mercury would be allowed to move forward.

NONPOINT SOURCE REDUCTIONS

Laura Boothe
Division of Air Quality, NC DENR

May, 2012

Nonpoint Source Impacts

- Atmospheric deposition accounts for ~98% of mercury in waters
- Based on Air Quality Modeling
  - NC sources contribute ~16%
  - Nearby states contribute ~14%
  - Global pool contributes ~70%
- US Mercury Air Emissions
  - 49% Electric generating facilities
  - 44% Other industrial sources
  - 5% Area sources
  - 2% Mobile sources

Expected North Carolina Air Emissions Reductions

Expected Reductions in NC's Total Mercury Air Emissions (lbs/year)

Source Type	2002	2010	Projected 2016	2002-2016 Reduction
Electric Generating	3,500	963	700	80%
Other Air Sources	1,800	881	800	56%
Total	5,300	1,844	1,500	72%

Expected Reductions in NC's Deposition-Prone Mercury Air Emissions (lbs/year)

Source Type	2002	2010	Projected 2016	2002-2016 Reduction
Electric Generating	1,645	655	125	92%
Other Air Sources	1,050	440	400	62%
Total	2,695	1,095	525	81%

Existing Sources

- Expected reductions in NC's air mercury emissions will result in 72% total mercury and 81% in deposition-prone mercury
  - Co-benefits from implementing the 2002 Clean Smokestacks Act,
  - USEPA's Mercury and Air Toxics Standards for electric generating facilities,
  - USEPA's finalized Maximum Achievable Control Technology rule for industrial boilers
- Since NC facilities contribute only 16% to the overall mercury deposition in the state, DENR does not believe that existing facilities should be required to achieve further reductions.

Implementation Options for Nonpoint Sources

- Option 1 – DENR develops statewide comprehensive mercury strategy
  - Expand state commitment to use alternative energy sources
  - Explore feasibility to require sorting/separation of mercury containing materials at steel facilities, municipal waste combustors and hospital, medical & infectious waste incinerators
  - Encourage the USEPA to require for national and press for international actions in order to effectively address mercury emissions originating outside the state

Implementation Options for Nonpoint Sources

- Option 2 – Section 319(g) Petition
  - Consider filing a petition under Section 319(g) of the Clean Water Act to focus attention on sources of mercury air emissions located outside of North Carolina

Implementation Options for Nonpoint Sources

- Option 3 – Emission Reduction Credit Program
  - Establish an emission reduction credit program so that emission reductions not required by state and federal rules could be entered into an account and then purchased by any new facility or existing facility undergoing a modification that would result in an increase of mercury emissions
    - Requires action to cap current mercury emissions
    - Similar to nonattainment new source review permitting program
    - Program operated on statewide basis

Implementation Options for Nonpoint Sources

- Option 4 – Case-by-Case Evaluation
  - Establish through rulemaking a case-by-case technology evaluation as part of the permitting requirements for any new facility or modifications at existing facilities resulting in increases in mercury emissions

Implementation Options for Nonpoint Sources

- Option 5 – Cap-and-Trade Program
  - Establish through rulemaking cap-and-trade program that would apply to existing facilities and any new facilities.
    - Work similar to the nitrogen oxides trading program
    - Statewide cap on mercury emissions is established and the existing facilities are assigned an allocation of emissions based on the baseline operating conditions
    - New source set aside pool so that some growth is allowed while the overall environmental benefit is achieved

Implementation Options for Nonpoint Sources

- Option 6 – Energy Efficiency Project Funding
  - Establish through rulemaking an option for a new facility with mercury emissions to fund an energy efficiency project in the community that would result in less electricity demand or would create a new source of electricity that has low or zero mercury emissions.
    - Examples are a lighting project for a neighborhood school, or installation of solar panels on a community property

Implementation Options for Nonpoint Sources

- Option 7 – Mercury Mitigation Fund
  - Establish through legislation a mercury mitigation fund that would be used to implement energy efficiency and renewable energy projects that would result in low-to-zero mercury emissions electricity projects

- Option 8 – Other Ideas
  - Any alternatives provided by stakeholders for the state's consideration

Questions??

- Submit comments by June 11, 2012 to Laura Boothe

  Laura.Boothe@ncdenr.gov

  (919) 707-8721