Mercury Reductions in the Northeast: Accomplishments and Future Challenges

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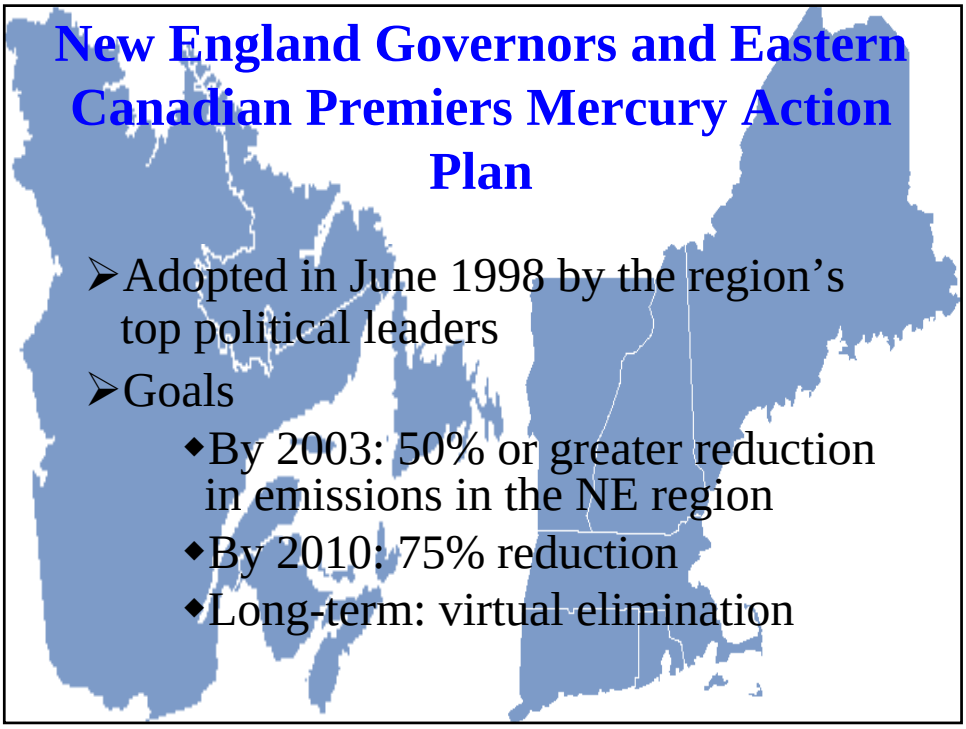
Presentation Overview

- Overview of New England Governors and Eastern Canadian Premiers Mercury Action Plan
- Summary of key accomplishments
- Future priorities and challenges

New England Governors and Eastern Canadian Premiers Mercury Action Plan



- Adopted in June 1998 by the region's top political leaders
- Goals
  - By 2003: 50% or greater reduction in emissions in the NE region
  - By 2010: 75% reduction
  - Long-term: virtual elimination

A Short History

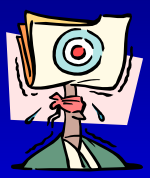
- 1998 Regional NE States/Eastern Canadian Provinces Mercury Study
- Broad political support in both US and Canada
  - ✓ Endorsed by Republican; Democrat and Independent Governors; 3 political parties in Canada
- Regional organizations played key roles:
  - ✓ NEG-ECP/ NESCAUM/ NEWMOA/NEIWPCC
- Core group of state/provincial staff

Principles Behind the Action Plan

- Strategic Approach:
  - ✓ Clean hands, lead by example
  - ✓ Scientifically informed precautionary principle
  - ✓ Comprehensive solutions:
    - Multimedia
    - Pollution control and pollution prevention
  - ✓ Cooperation and collaboration
    - Across agencies, borders

Key Implementation Elements

- Accountability
  - ✓ Measurable goals
  - ✓ Milestones
  - ✓ Reporting framework up
  - ✓ Task Force/Environment Committee



- Adaptive management
  - ✓ Prioritization, coordination through MTF
- Reporting framework: 2-year work plan and reporting cycle to Governors and Premiers
  - ✓ Annual meeting

Elements of the Action Plan

- Six Action Categories/45 Specific Elements
  - Establish regional task force
  - Implement source reduction/pollution prevention
  - Outreach and education
  - Achieve overall /sector specific emission reductions
  - Monitoring to track trends and research
  - Mercury stockpile management

Summary of Key Regional Accomplishments

I. P2

II. Outreach and education

III. Point source emissions reductions

IV. Research and monitoring

I. Pollution Prevention

- Action Plan Objectives
  - ✓ Reduce/eliminate non-essential uses
  - ✓ Segregate, collect and recycle discarded products

Comprehensive Model Legislation

- Developed by NEWMOA under MAP

  First model to address products comprehensively

- Adopted across the region

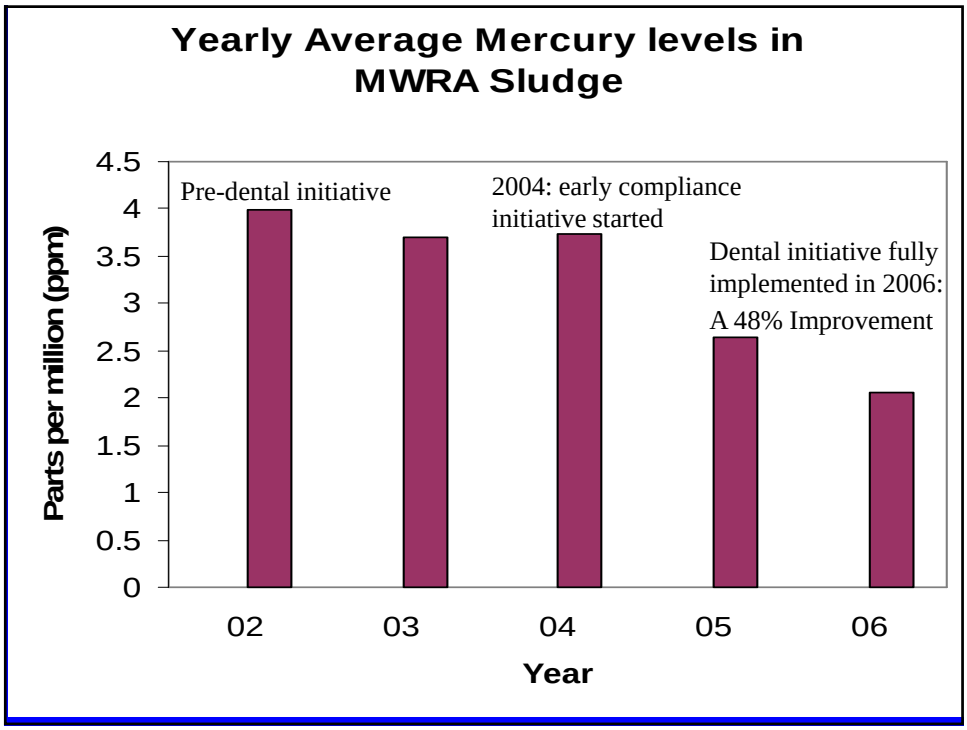
  - ✓ Labeling;
  - ✓ Notification;
  - ✓ Product bans / phase-outs;
  - ✓ Interstate Mercury Education & Reduction Clearinghouse (IMERC)
  - ✓ Downward trends in mercury products

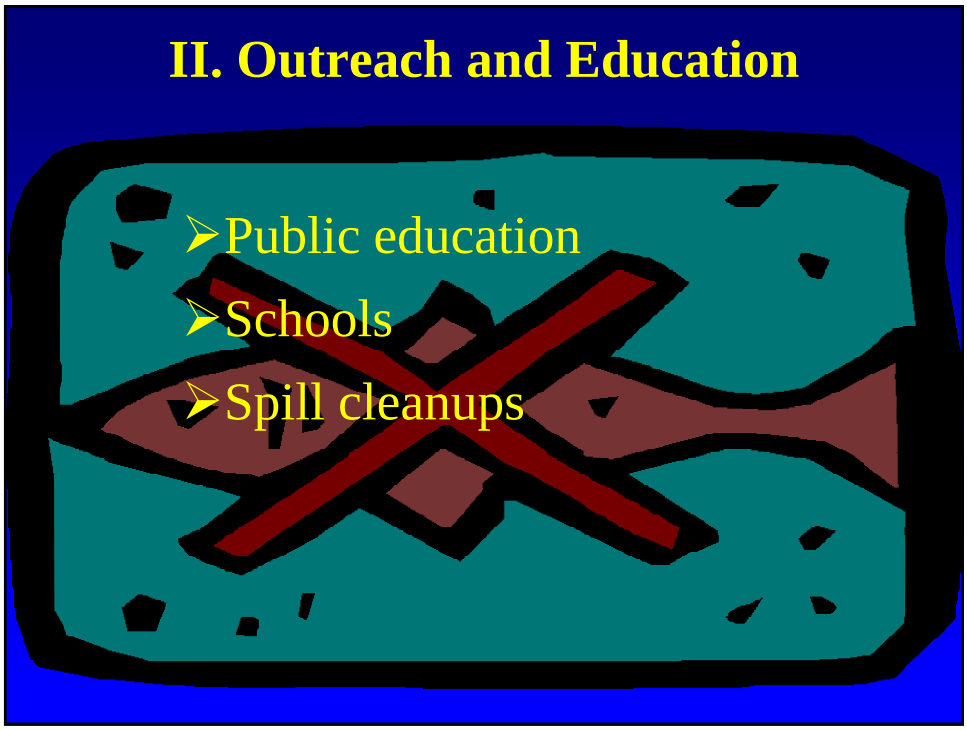
Recycling & Collection

- Many recycling programs: >10,000 pounds in region
  - ✓ Thermometer exchange programs
  - ✓ School clean-outs
  - ✓ Auto switches, thermostats, lamps
  - ✓ Mandatory source separation plans

Controlling Mercury Pollution from Dental Offices

- Regional goals adopted under MAP: 75% amalgam separator use by 2007 (exceeded); 95% by 2010
  - ✓ Amalgam separator controls required in all NE states
  - ✓ Canada-wide Standards required: compliance being assessed
  - ✓ Hundreds of lbs hg pollution prevented
  - ✓ Sludge Hg levels down significantly in MA


Yearly Average Mercury levels in MWRA Sludge
Parts per million (ppm)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Pre-dental initiative
2004: early compliance initiative started
Dental initiative fully implemented in 2006:
A 48% Improvement
02
03
04
05
06
Year


II. Outreach and Education
Public education
Schools
Spill cleanups

Public Education

- Educate the public about health & environmental impacts of mercury and reduction methods
  - ✓ Fish advisory outreach
  - ✓ Outreach on mercury product alternatives
- **Spill Cleanup Harmonization**

Schools

- 2007 goal: 50% of public high schools in the region completed mercury clean-outs
  - ✓ Canadian provinces at 100%
  - ✓ NE states at or above 50%
  - ✓ Resource constraints

Jewelry/trinkets

Thermometers

Flasks- Up to 70 lbs!!

III. Emissions Reductions

- Under MAP
  - ✓maximum feasible reductions
  - ✓specific emission limits included
- Tracking and monitoring by jurisdictions
- Inventory updating and reporting through MTF (NESCAUM)
- Inventory improvements: oil combustion

Overall Results -- The Mercury Is Falling

- **From *mid-1990's baseline* to 2007 (est.)**
  - **✓Regional emissions down > 55%**
  - **✓NE State emissions down > 70%**
- **Next milestone: 2010 75% reduction**

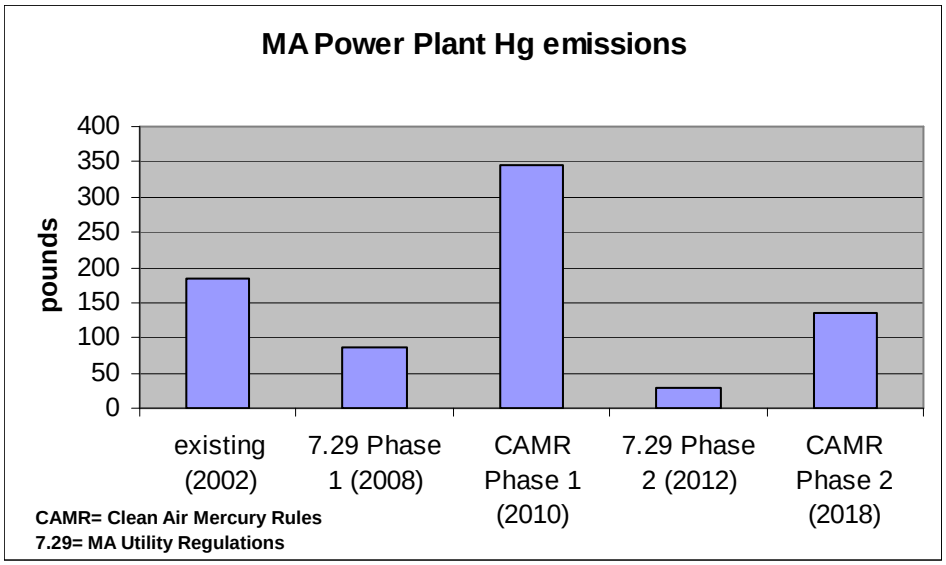
Major Point Source Categories

- Trash incinerators
  - ✓3X more stringent vs USEPA; >85% reduction regionally
- Medical waste incinerators
  - ✓10X more stringent vs EPA; >95% reduction (most closed)
- Chloralkali emissions reduced: plant closures/ BMPs
- Dental amalgam separator requirements: to reduce SSI
- Utilities

Utility Sector

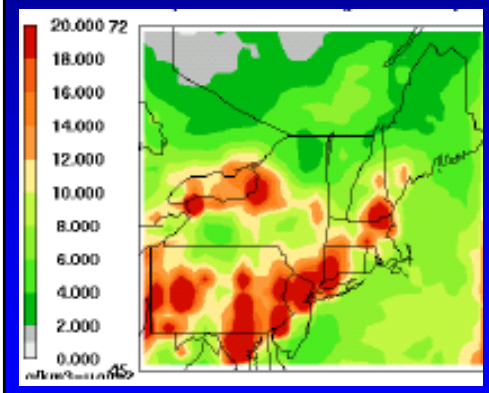
- Action Plan Objective:
  - ✓ Maximal feasible reductions
- Emissions down > 10% regionally: fuel switching in NB and NS
- NE states: stringent regulations ---
  - ✓ CT: 90%
  - ✓ MA: 95% by 2012 (85% by 2008)

Mercury Emissions Under MA vs. EPA Regulations

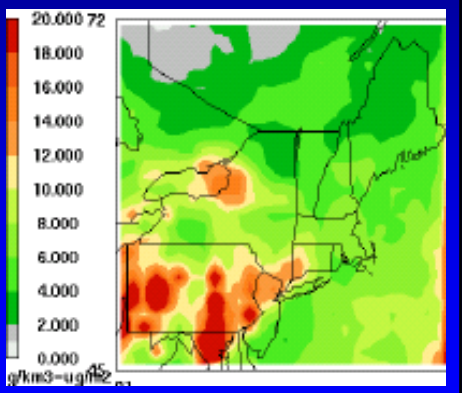


Modeled Mercury Deposition Decreased

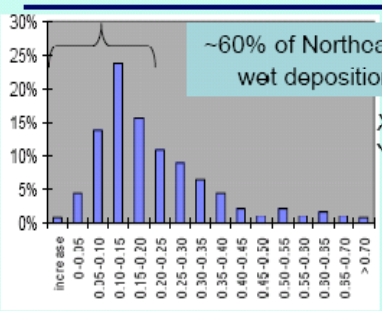
Pre Action Plan (ug/m^2)



Post Action Plan (ug/m^2)



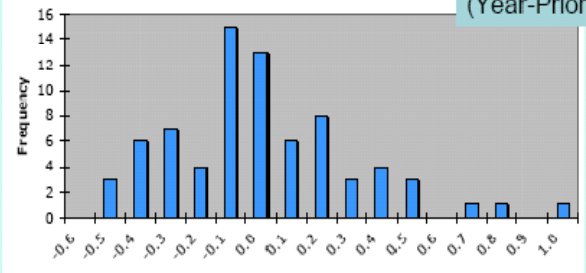
Percent Change in Modeled Wet Deposition & Monitored Year to Year Change



~60% of Northeast grid cells showed modeled wet deposition decreases less than 20%

X-axis = Range of decrease (1996-2002) / 1996;
Y-axis = % of cells in NESCAUM Region

Monitored Percent Change year to year for 16 sites in northeast. Calculated as:
(Year-PriorYear) / PriorYear



Implication: Year to year changes due to differences in meteorology are of the same order or greater than predicted model changes in locations of monitors, which masks the impact of emission reductions.

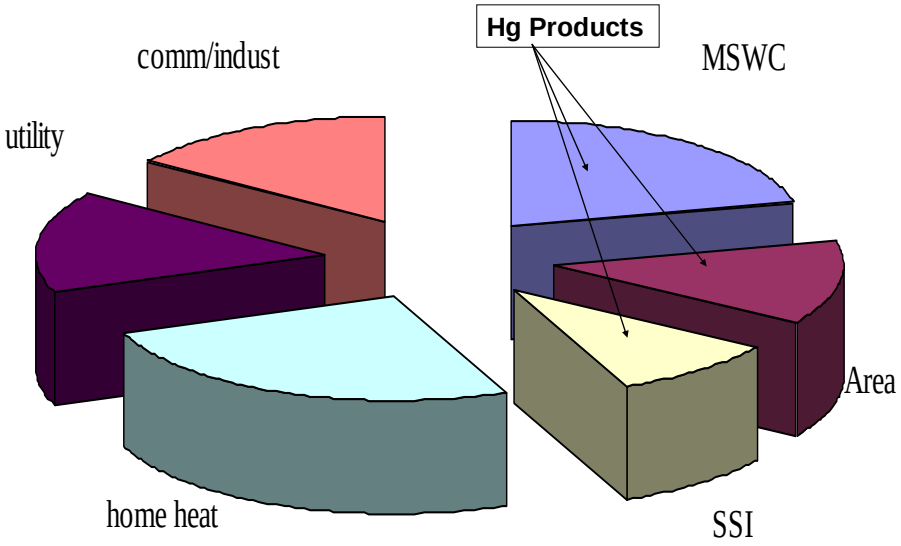
Data Indicate Improvement In Mercury Levels In Biota

- MA fish monitoring data demonstrates statistically significant reductions in mercury levels in freshwater fish (see presentation by Michael Hutcheson)
- Preliminary CT data similar
- Mercury levels in loons also lower

Summary Progress to Date

- Mercury emissions / usage way down across the region
  - ✓ Product bans & collection efforts yielding results
  - ✓ Inventory being updated over 2009 – 2010
- Modeled mercury deposition down: big decrease in "hotspots"
- Mercury levels down significantly in MA freshwater species; CT fish (preliminary); NH loons
- Encouraging results but --- levels still too high
- Further reductions especially from out-of-state sources needed to meet TMDL targets

Remaining NE/ECP Sources (est.)



Ongoing Regional Priorities

- Continue To Implement Key Strategies to Achieve 2010 Goal
  - ✓ Utilities: MA; CT; NB; NS; NH
  - ✓ Products legislation
  - ✓ Dental sector: Canadian provinces
- Continue Strategic Monitoring to Assess Progress
  - ✓ Fish; refine deposition modeling; update inventory
- Use NE Regional TMDL as tool to advance efforts to reduce upwind mercury sources
- Advocate/assist National and International Efforts

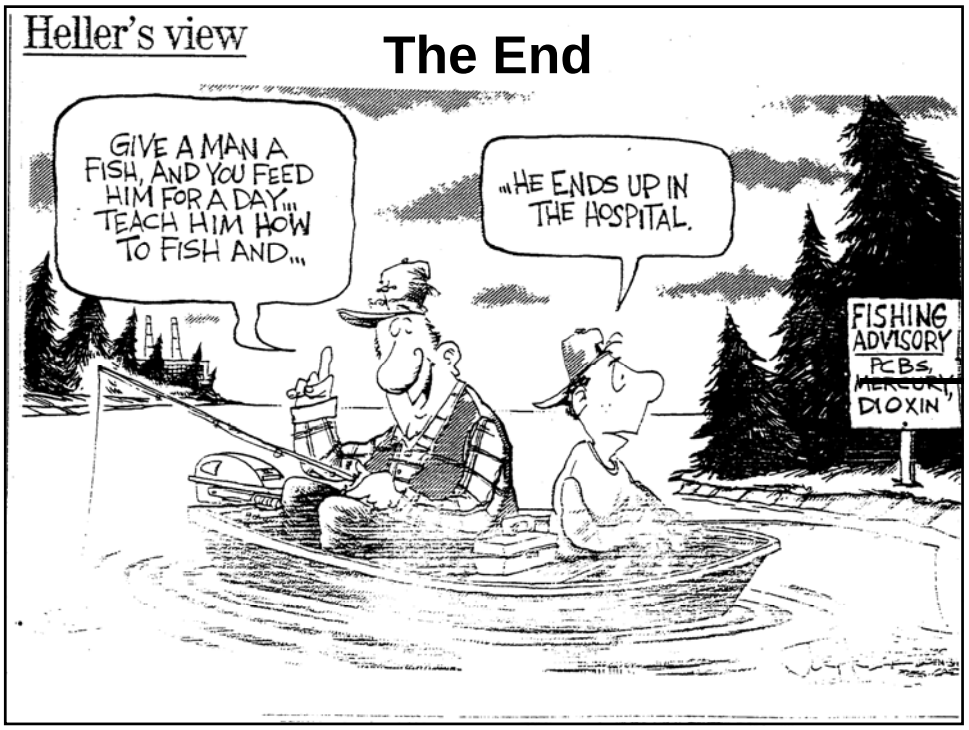
Challenges

- Sustaining progress
- Funding/resource issues
- Tracking trends
  - ✓ Research & monitoring deficiencies
  - ✓ Inventory update
- Achieving needed reductions from out-of-region and global sources Technical barriers
  - ✓ Alternatives to mercury in remaining products
  - ✓ "Legacy" products
  - ✓ New mercury products/uses
- Inhalation exposure & indoor air

Credits

- **MTF CoChairs:** C. Mark Smith (MA), Stephanie D'Agostino, NH and Mark Glynn NB; **Project Director**: John Shea (NEGC) **Representatives**: Robert Kaliszewski & Robert Hannon, CT ; Suzzanne Burrell, Quebec; Ginger Jordan-Hillier, ME; Debbie Johnston, PEI; Ron Gagnon & Beverly Migliore, RI; Gary Gulka, VT; Peter Haring, NF & L; Lynda Rankin, NS; **Partners**: Terri Goldberg, NEWMOA; Margaret Round and John Graham, NESCAUM; Ron Poltack and Susannah King, NEIWPCC; Jeri Weiss, U.S. EPA (New England); Tonya Bender & Marie-Helen LaCasse, Environment Canada; Luke Trip, CEC; Barbara Nuffer & Peter Petit, NY; Sunila Agrawal, NJ; and Dave Evers, Biodiversity Institute/NE Research Collaborative

The End


Heller's view
GIVE A MAN A FISH, AND YOU FEED HIM FOR A DAY... TEACH HIM HOW TO FISH AND...
"HE ENDS UP IN THE HOSPITAL.
FISHING ADVISORY
PCBs,
~~MERCURY,~~
DIOXIN