Coordinating Mercury Reduction Programs: A Meeting of National and Local Government Officials

March 20 - 21, 2000

Baltimore, MD

Notes prepared by Terri Goldberg, NEWMOA; Julie Thomas, U.S. EPA Chesapeake Bay Program, and Jeri Weiss, U.S. EPA New England.

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MONDAY, MARCH 20, 2000

Plenary Session: Federal and State Perspectives on Mercury Reduction

Moderator:
Chris Recchia, Vermont Department of Environmental Conservation

Panel:
Greg Susanke, U.S. Environmental Protection Agency
Luke Trip, Environment Canada
Mike Aucott, New Jersey Department of Environmental Protection

***Opening Remarks*, Presented by Chris Recchia, VT DEC**

Challenged the group to help promote proper respective federal, state, and local governmental roles that would achieve mercury reductions. Need efficient, coordinated, and effective programs at all levels to get mercury out of our environment. Ideally those roles would be –

- Local government's role: collection and public education.
- State government's role: provide tools and funding to local government, statewide information

and education on health effects of mercury, and promote pollution prevention approaches to mercury reduction.

- Federal government's role: Work with manufacturers; educate consumers; address mercury emissions from energy generation and utilities; control and guide global trade; fund states to educate and run programs; and address permanent retirement issues.

However, right now:

- Locals are deciding what they can do at the least cost.
- States are addressing manufacturers on labeling and bans.
- The Federal government is trying to decide what to do.

At this meeting we have an opportunity to bring these efforts together. We have representatives from all levels of government, and we can help each other and build on the relationships and information sharing from the meeting. We all have regional support – EPA regions and Canadian regions. We have good interstate coordination.

This conference was designed to pull all of this together. We can drive mercury policy by working together; we have an opportunity to cooperate to more effectively implement our programs.

***National Mercury Strategy*, Presented by Greg Susanke, U.S. EPA**

U.S. EPA's Draft Mercury Action Plan Priorities

- Regulatory determination on utilities due on December 15, 2000
- National Academy of Sciences (NAS) report due out in June 2000
- EPA's utility air toxic study
- Ongoing rule development for chlor-alkali due at the end of 2001
- Evaluate permanent mercury stabilization and disposal restriction
- Evaluate land disposal and eliminate incineration as an option
- Evaluate mercury at abandoned mines and support abandoned mine remediation
- Support voluntary activities that reduce releases and uses of mercury
- Influence reductions in other countries to decrease transboundary deposition
- Reduce exposure to sensitive subpopulation with education and outreach
- Update EPA's reference dose for methyl mercury
- Revise mercury water quality criteria for human health
- Develop mercury research strategy and workplan and then conduct research
- Develop a routine monitoring strategy for mercury and other persistent, bioaccumulative, and toxic (PBT) pollutants

EPA has allocated $442K for PBT grant activities with the following funding focus:

- Regional PBT activities
- PCBs, mercury, targeted pesticides, dioxins, B(a)P, HCB, alkyl-lead, OCS

- Proposals must be submitted by May 1, 2000
- Final Funding Decisions by June 15, 2000
- Proposals should support voluntary mercury activities that reduce the release and use of mercury
- Collection programs by industry/manufacturers
- Mercury recovery programs for wastes and products
- Next steps for retirement or recycling
- Evaluate impacts of mercury at abandoned mines and support abandoned mine remediation
- Reduce exposure to sensitive sub-population, ritualistic use, and high end fish consumers

Current EPA Recycling Policy:

- Where substitutes are available, EPA is urging their use
- Favoring any type of recycling would be contrary
- EPA studying the effects of recovering mercury for reuse in commerce
- Need to discuss supporting recycling versus not supporting recycling

***Canada's Mercury Program*, Presented by Luke Trip, Environment Canada**

Environment Canada is coordinating its efforts among a number of groups and entities – developing Canada-wide Standards with the provinces, Great Lakes Binational Toxics Strategy, New England Governors/Eastern Canadian Premiers (NEGC/ECP), Commission on Environmental Cooperation (CEC), and internationally with other countries

Background

Environment Canada figured out in the mid 1960s that there was a problem. Began to be addressed under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act. These bills address water and deleterious substances. Fairly recently Environment Canada looked at mercury as a long range transport issue. They have found that atmospheric deposition in lake sediments is rising two to five percent per year. Arctic lifestyles have been effected by this increase in mercury. Mercury concentrates in colder atmosphere and settles out and does not re-volatilize and go back up into the atmosphere. Canada is finding that loons and otters are being effected by mercury – there are no old otters in Ontario.

Environment Canada is involved in the following mercury programs:

- Developing Canada-wide standards for mercury
- Actively pursuing precautionary approach
- Reducing anthropogenic inputs
- Influencing international reductions

- Tracking through the National Pollutant Release Inventory
- Would like to get more and better information out to the general public
- Bilateral - Canadian/US activities: Great Lakes Binational Toxics Strategy with a focus on reductions in Great Lakes Basin; NEG/ECP 50 % reduction, and influencing North American reductions
- Trilateral – Canadian/US /Mexico activities: CEC's phase II NARAP on mercury, including six major action items: (1) Reduce mercury in emissions, processes, and products; (2) build North American capacity; (3) influence global reduction; (4) convention on long range transboundary air pollution; (5) protocol on heavy metals, cadmium, lead and mercury; (6) international monitoring program.
- Northern contaminants program – first nations traditional foods/lifestyle and have high levels of PCBs and mercury– switching food sources results in medical problems and a deterioration of their traditional lifestyle, which is harmful

Environment Canada's Mercury Management Program Initiatives are the following:

- Conducting an analysis of socio-economic impacts of continued mercury use
- Evaluating mercury recycling and retirement options
- Assessing mercury loading to the environment from dental amalgam waste
- Evaluating mercury emissions from the petroleum refining sector
- Studying mercury in sewage sludge and landfills – propensity of elemental to transform to methyl mercury in the sewage sludge and landfills
- Extending Mercury Deposition Network – extending to a total of eight monitors and trying to establish a monitor in Mexico

Retirement issue

- No clear justifiable need for many uses of mercury. Still used in chlor-alkali industry
- Need to retire the mercury
- Economics involved–you pay for taking it out of the pool? If you do not take it out of system, price drops, and people just throw it away; we are not the biggest generators of mercury; we must work together

***New Jersey's Mercury Reduction Program*, Presented by Mike Aucott, NJ DEP**

NJ's Mercury Program has been focusing on:

- Understanding sources of mercury in order to hone controls
- Protecting human health and the environment
- Integrating into the Performance Partnership program
- Integrating sub-goals of protecting fish and wildlife

Background

- In March 1988 NJ DEP reviewed current science on impacts and assessed current sources
- Focused on impacts on ecosystems and current policies
- Developed mercury action plan for NJ

New Jersey has formed two Mercury Task Force Groups that meet monthly and hope to complete tasks by late summer

The Task Force's focus:

- New Jersey DEP's Division of Science, Research, and Technology – Improve outreach to subsistence fishermen, quantify poorly characterized sources
- Department-wide staff workgroup
- Identify, characterize, and quantify sources
- Build a mercury flow diagram for New Jersey

Findings to Date:

- Emissions to air is more than emissions to water and land
- Estimated 4000 pounds air emissions in NJ
- Estimated 600 pounds of water discharges
- Large flow goes to solid waste
- Iron and steel manufacturing facilities are large sources in NJ, from scrap ferrous metals
- Coal utility combustion, municipal waste combustion, oil refining, sludge incineration, thermal treatment of contaminated soils are also major sources
- There is uncertainty with these estimates of how much these sources are, and the level of uncertainty is uncertain as well
- Aluminum scrap processors is a fairly large source
- Volatilization during use and municipal solid waste handling and processing (i.e., fluorescent lamps break during transport and storage before getting to the landfill)
- Religious and ceremonial uses may also be significant sources and lead to direct exposure
- Large POTWs can be a big source, and many are discharged to the ocean
- Solid waste and medical waste incineration emissions have been reduced in the last ten years – down by a factor of ten – as a result of source reduction and carbon injections controls
- Oil refining and refined fuels are relatively small sources in New Jersey
- Landfills are relatively small sources; not sure if mercury methylates, though, in landfills
- Questions remain about certain sources, including aluminum processors using heat (i.e., scrap processing)
- Better data is needed on species of all emissions; need this data to determine fate and transport, and for methylated mercury
- Dredged materials may be an important source – finding levels of 3 ppm; could amount to

15,000 or more pounds per year. 100 times lower in unpolluted sediments; more information is needed about fate of dredged material

Source specific reduction programs:

- Estimate ash and stack emissions from incinerators. All three incinerators in the state use carbon injection, which captures most of the mercury. You can calculate the amount in the original amount of trash if you analyze the mercury content in the ash and what comes out of the stack. Ranges from 0.5 ppm to 4 ppm, depending on what programs are in effect in each county.
- One NJ county has an appliance de-manufacturing program; and another county has a battery collection program and hazardous waste collection day; those two did better than the county with no programs. Collection programs DO work. Also shows mercury does not go down without some program in effect. Still need more work to figure out where mercury is coming from.
- Reduction goals are important: even if you do not have all the information, based on achievable results and technology
- Solid waste and medical waste has been reduced dramatically by use of technology
- Coal combustion in New Jersey predicts a decrease by 2010
- Other sources continue to decline, but NJ Mercury Task Force is considering setting goals there, as well
- Lamp breakage is a source to work on

Panel on Reduction Strategies: Legislative and Voluntary Efforts

Moderator:
Alexis Cain, U.S. EPA Region 5

Panel:
Bruce Hicks, National Oceanographic and Atmospheric Administration (NOAA)
Terri Goldberg, Northeast Waste Management Officials' Association (NEWMOA)
Randy Case, Wisconsin Department of Natural Resources (WI DNR)
John Wachtler, Minnesota Pollution Control Agency (MN PCA)
Joy Taylor, Michigan Department of Environmental Quality (MI DEQ)

***Shared Resources Program,* Presented by Bruce Hicks, NOAA**

Share Resources Program

- Joint program with EPA and NOAA, began many years ago

- Opportunity to bring air and water regulators together, at the same table; this has been accomplished
- Focused first on nutrients, trying to put the documents out as a community
- Sediment cores are coming from Canada and date back from 1800s, have a long term background level aggravated by human activities
- See big changes in 1940s
- Rain gauge, MDN stations
- Deposition is a summer event, spatial variation is very great
- Shared Resource approach has been taking place in Florida and Alaska
- Mercury travels to high latitudes
- FL has found local impacts of mercury levels
- Program supports aircraft that flies low and slow, with techran instruments that measure reactive gases and speciation for mercury and can locate reactive gaseous mercury
- Cannot tell where it is coming from; likely to come from different sources

***Legislative Efforts in the Northeast*, Presented by Terri Goldberg, NEWMOA**

Proposed Model Mercury Education and Reduction Act

Background
- Mercury Report to Congress showed high levels in the Northeast
- Mercury Study in the Northeast modeled major sources of mercury
- Found mercury emissions from incineration the largest source within the Northeast
- States examined what is in the waste and developed strategies for reductions
- States developed Mercury Action Plan
- Goal of Action plan – virtual elimination of the discharge of anthropogenic sources of mercury
- Mercury Action Plan included a number of actions that contributed to working on the model legislation

Model legislation drafting process
- NEWMOA formed workgroup summer 1998
- Held stakeholder summit in January 1999
- Drafted model February 1999 to November 1999
- Released draft model November 1999
- Held two public meetings in December 1999
- Reviewed verbal and written comments January 2000 to present
- Present to Governors Summer 2000
- Hopefully revised version will be available in the next month on the Internet

Caveat: model is still under reveiew, not final, subject to commissioners comments/review,

Introduction to the Draft Model:

- Comprehensive: designed to achieve virtual elimination goal and respond to recommendations
- Synthesis: best available approaches known to work group
- Regional consistency
- Menu – states could work on selected provisions

Major sections of the legislation:

- Clearinghouse for interstate cooperation
- Notification: require manufacturers to submit information on mercury-containing products
- Phase-out with exemptions for products where mercury is intentionally added; phase-out mercury-added products from 1 or more grams to 10 milligrams
- Exemption criteria: mandatory health and safety; beneficial to the environment; no feasible alternatives; or no comparable non-mercury alternatives
- Exemption requests must include collection system for the products at the end of useful life
- Labeling: no mercury-added products sold unless the product, component, and packaging are labeled; some exemptions and product specific provisions; must inform user that mercury is present and how to disposes of properly; responsibility of manufacturer
- Allows for applications for alternative labeling and notification
- Disposal ban: mercury-added products can only be disposed in hazardous waste and recycling
- Proposed collection system plan: manufacturer must submit a plan for collection system subject to state approval
- Collection plan components: public education; targeted capture rate; program for implementation and financing
- Manufacturers must submit reports on effectiveness of collection system
- Restrict sale of frivolous mercury products – novelties including games, toys, apparel and other frivolous products
- Restrict mercury fever thermometers, require prescription and include spill management information
- K - 12 schools would not be able to use bulk mercury or mercury compounds in the classroom
- Restrict sale of dairy manometers
- Disclosure provisions: manufacturers must submit to health care facilities and the state certificate of analysis of the mercury content of acids, alkalies, bleaches, cleaners, pharmaceuticals, and other common products used by health care facilities
- Limit availability of elemental mercury and require MSDS
- Proposed education and outreach program
- Adoption of the universal waste rule for mercury-added products, regional cooperation
- State procurement of low or no mercury products – priority for energy efficiency lighting, state contracts for dental insurance for reimbursement for non-mercury same as mercury fillings

Finalize discussion document and response to comments paper, obtain approval to release revisions on the Internet, submit recommendations to Governors in Summer 2000

Every single state has proposed or discussed introducing parts of this legislation. The following is a list of what the states have undertaken to date:
CT passed a labeling law last year and recently published a report to the legislature with recommendations on the model legislation
MA legislature currently considering disposal ban and collection program
VT is implementing a labeling law and has a task force that is examining the model legislation
ME legislature is considering a disposal ban and other provisions
NH has proposed the entire package and may pass portions this year
NY examining model and considering introducing it as a bill

***Wisconsin's Cap and Trade Program*, Presented by Randy Case, WI DNR**

- Health advisories restricting consumption of fish have been issued for over 300 water bodies
- Elevated levels in fish restricts pursuit of traditional practices of certain ethnic groups
- Can adversely impact recreation and tourism
- Impact on wildlife–loons in Northern Wisconsin; significant impacts on young loons
- Direct discharge from industrial and municipal sources has been greatly reduced leaving atmospheric deposition as the main source
- Current state and federal standards, while adequate to protect against direct inhalation effects, are not sufficient to address bioaccumulation
- WI DNR issued a concept paper to stimulate discussion in January 1999
- Convened a stakeholders group and met throughout 1999
- Mercury stakeholder group: industries, environmental groups, lakes associations, governors office

Strategy
- Develop a mercury cap, trading, banking, and offset program for mercury releases exceeding 10 pounds/year. Mercury reduction fund, regional Total Maximum Daily Loads (TMDL)
- Promote regional and national actions
- Proposed mercury cap and trade program for air emissions could reach no consensus
- Utilities would not negotiate this issue; used every excuse
- DNR had reasonable responses on all these issues, but even so, utilities will not talk about a cap

- Broad support by all participants for a mercury reduction fund for action, for TMDL development, just disagreement on capping
- Legislation was voted down in March by state joint finance committee, but voted it back to the senate
- By the end of this month, DNR hopes a decision will be made
- Reductions required, would be 25 percent by 2005, 50 percent by 2010, 60-90 percent by 2015

- Trade for existing sources given an allocation for their mercury; they can buy reductions from other sources if they cannot meet their appointed goal
- Offset is 1:1; up to 2005 can be used to achieve 50 percent of cap; then reduces by 25 percent in 2010, and again in 2015. By/after 2015, you could not use offsets to achieve cap

***Encouraging Voluntary Efforts,* Presented by John Wachtler, MN PCA**

Minnesota's voluntary efforts initiated in.1999 through legislation

- Original idea was a cap and trade program, but consensus was not there– environmental groups as well as utilities
- Compromise was mercury reduction goal– 60 percent by this year, and a 70 percent reduction (i.e., same as Canada-US agreement) by 2006 from 1990 baseline
- Voluntary approach came out of Council because industry and utilities agreed to participate in a voluntary strategy
- Strategy is focused on the big emitters in the state – more like the Memorandum of Understanding with hospitals; agree, then interpret what the agreement means
- Has evolved into a formal document
- Simple, flexible, incorporate new information
- A challenge program where facilities have maximum flexibility to trade, to try new technology; to buy new products (mercury-free)
- State is the coordinator, advertiser of the program, technical advisor

Problems

- Free rider program–no specific goal for any specific industry; no consequence
- Regulatory conflicts: Total Maximum Daily Loads (TMDL), agency culture, new sources/goals
- Inventory complexity
- Environmental groups thought there was a hidden agenda
- Too big a leap of faith?
- Achieved an agreement on a goal and that they would work together
- Does not address water quality, and how to you apply these policies in permitting
- Potential NPDES permitting using mercury in the interim from now to TMDLs
- Why participate? Cost effective options, positive publicity, test case–non command and control; early reduction

***Voluntary Programs for Action,* Presented by Joy Taylor, MI DEQ**

Michigan's Voluntary Mercury Reduction Program

- Thermometer exchange
- Dairy farm mercury manometer exchange
- Outreach to health care and dental facilities

- Program for utilities
- Program for automobile manufacturers

Michigan also has a mercury monitoring and research program underway

Panel on Collection Programs

Moderator:
Julie Thomas, U.S. EPA Chesapeake Bay Program

Panelists:
Tom Corbett, New York State Department of Environmental Conservation (NYS DEC)
Judy Shope, Massachusetts Department of Environmental Protection (MA DEP)
Cynthia Hyland, Association of Municipal Recycling Coordinators (AMRC)

***Auto Switch Collection Program*, Presented by Tom Corbett, NYS DEC** (This presentation included a viewing of a video tape showing how to remove a mercury switch and replace it with a non-mercury switch in a car)

- Two types of mercury switches used in cars
- Arc furnace emissions of mercury from automobile scrap
- Working with manufacturers to get mercury switches out of new cars
- Mercury switches have been put in cars for 50 years – 300 tons of mercury; 150 tons of mercury that is still in vehicles that we can address
- Multifaceted program working with fleet vehicles, yards, and inspection programs
- Mechanics can replace the mercury switches very easily
- Can change a mercury switch to a ball bearing switch in less than a minute
- 90 percent of the mercury can be removed from a car in two minutes
- Ford's switch is difficult to take apart because they are molded switches; General Motors switches are easy to take apart
- Voluntary program

***Community Grant Program*, Presented by Judy Shope, MA DEP**

Overview of the Massachusetts Mercury Collection Program

- MA does not have a county government
- MA Universal Waste Rule passed in 1997; stream-lined regulations so there is more state contracts for recycling mercury containing waste
- Availability of funds from the state's Clean Environment Fund for recycling – money from abandoned soda cans

- Municipal Waste Combustor (MWC) Regulations require facilities to develop, fund, and implement mercury segregation program
- Requires inlet testing for four quarters to know what the baseline is so you can evaluate progress
- Municipal small business collection programs
- Residential household hazardous products collection programs
- Collection grants
- School laboratory clean out and collection program
- Clean sweep collection partnering with businesses/institutions
- Technical inspections at schools to see how they were doing
- Mercury shed grants - made 65 grants, including spill kits and safety training
- Universal Waste Rule program for battery recycling in 21 Western Massachusetts towns
- Extend this with a course and voluntary projects with towns to expand to dentists and hospitals, the cost of the program is 1 to 10 cents per year per capita
- Mercury collected under state contract: manufactured articles – 34 pounds, elemental mercury – 223 pounds, mercury lamps – 247,218; batteries – 16,425 pounds
- Expect an expansion with the MWC rule;
- Collection plans are due in July; the MWC should supply data

***Community Collection Program*, Presented by Cynthia Hyland, AMRC**

Collection Program in Ontario

- Population 11 million
- Collection of household hazardous waste (HHW) a municipal responsibility
- 58 HHW programs that serve 275 municipalities or 9.9 million people
- Half of the HHW programs accept mercury or mercury-containing products
- Most of non-collecting programs do not collect due to cost or regulatory barriers (which are perceived)
- Barriers: cost, regulatory grey areas, public awareness, public demand, product stewardship.
- Having to expand the certificate of approval, for including more products
- Public demand is low, this may be due to lack of education
- Green Communities: partnership environmental initiatives with a green home audit, intense audit of energy efficiency, mercury awareness
- Other community based programs – Thunder Bay 2002 MercDivert; button battery take back, Bring ‘em Back thermostat program; fluorescent lamps
- Toronto/Honeywell program: receives all the thermostats from the province
- Green communities, more retail take back programs, flourescent lamp collection
- Information flow across the border
- Next step is product stewardship

Summary of the Break Out Groups on Collection Programs

Key Factors – Success

- Having a vector to work through
- Communities to implement local reduction programs
- Need a vehicle for getting the work done
- Need willing or active partners to work with
- Be open; transparent about what you are doing and why
- Involve stakeholders early in the process to build trust and reduce fear
- Be persuasive; the facts support the program, so use them; do a media blitz; seize opportunities when they arise
- Find the means; need funding, need active and willing partners, find/invent tools
- Collaborate; share information especially across the states
- Manufacturer take back program (hospital)
- Administrative support
- Regulations that combine emissions control; source reduction
- Funding (schools programs)
- Collection facilities and infrastructure
- Universal Waste Rule (U.S.)
- Community program – Earth Day, amnesty, advertising
- Education, motivation, outreach
- Repeat the message
- Simplicity

Challenges/Barriers

- Missing links – funding, lack of tools, potential partners unwilling
- Perception problem – regulatory confusion/misunderstanding, lack of awareness, especially chronic, long term aspects
- Management problems – inconsistency within and between states; lack of clarity vis a vis issue or mercury retirement
- Sector that does not want to participate
- Put all the facts on the table – be open and up front from the beginning
- Lack of tools; provide mercury reduction information for hospitals, school, heating, ventilation and air conditioning (HVAC) contractors; people need to be told what to do and how to do it; without that, implementation will not occur
- Share information amongst states
- Need "peer pressure"
- Apathy
- Funding
- Time
- Misinformation

- Liability concern-risk
- Need labeling law – difficult to know mercury levels
- Opposition by large manufacturers
- No alternative products available
- Lack of permanent collection sites
- Too much to do; to few to do it
- Too few manufacturers with voluntary take back programs
- No control over waste flow
- Lack of people to run programs
- Barrier for public-private programs is regulatory issues and misunderstanding
- Work with regulators before you develop a program so you work out all issues ahead of time
- There is a lack of awareness, lack of public drive; not that visible; the river has not caught fire
- Waiting on the results of the scientific debate
- Hard to explain to the public what you are doing with the mercury you collect; re-use versus retirement
- EPA is not sure what strategy to take–retirement or recycling of mercury
- From a volunteer aspect, if programs collect enough mercury, it is taken off their hands for free
- Close loop on recycling, so force the economics by buying only from places that recycle
- Must have a collection program that is consistent statewide
- Lack of control on coal-fired utilities (important mercury source); contextual loophole
- Consistency is important among states; federal agency needs to be consistent
- Opportunity to sell recycled mercury only to manufacturers that have a take-back program

Program Evaluation

- Need suite of data – pounds of mercury collect; data on "harm prevented;" sector participation rates; environmental endpoints: levels in fish
- Need more and better monitoring – stack emissions testing; indicators in the environment that respond quickly; emission release inventories with chemical speciation
- 5 schools (West Virginia) – 200 pounds of mercury
- Tracking of mercury collected and water quality discharge, incinerator emissions changes
- 25 schools (Vermont) – mercury and acids, bases, cyanides, chromium, and other compounds – 5000 pounds
- Schools in Massachusetts – recycling facility provides information on mercury collected
- One-time collection (Kansas): schools, homeowners, hospitals, government agencies – about 2000 pounds of mercury
- 2 collections (Pennsylvania): 1500 pounds of mercury/manufacturer began voluntary mercury assessment
- Hospitals (Florida): some hospitals are mercury free; some hospitals are resistance; about 75 percent are mercury free
- Tracking (Michigan): $/pound of mercury at the end of the pipe at the treatment system
- Pounds of mercury avoided going into products also a measure

- Sector participation rates – for example, how many hospitals are mercury-free? how many schools have done a cleanup?
- Need more monitoring of air deposition to know what's coming down
- Need to know not just at what is coming out the stacks, but what is going into the stack (incinerators)? Need to see less mercury wasted
- States need to develop more standardized protocols for measuring- indicators for knowing degree of success
- With certain short-lived species of fish, you may see improvement in a short time
- Prevent accidents and spills that expose people to indoor air mercury pollution; need help from public health agencies; focus on acute and chronic exposures
- Need better emissions inventories that reflect reality and include speciated mercury

Other Comments

- Did community collection–bombarded the press with articles and advertisements over six weeks; mercury spill occurred at a household, program did not advertise and take advantage of the situation – the people had to move – had a "teachable moment" and did not use it to teach; seize the opportunities
- States' collaborating and developing joint strategies; has worked in the northeast
- Motivator: having good data to share; having actual data on precipitation, ambient data, share with industries, management; can lead to action

Next steps/future

- Close the loop; recycle mercury back into new products with a take back program
- Institutionalize monitoring approaches across the regions
- Solve coal combustion problem
- Move forward into more comprehensive bans
- Need study to evaluate cost effectiveness of various approaches
- Need highly effective manufacturer-based collection programs
- Need money from EPA or elsewhere
- Need mercury free products
- Improve public awareness
- Manufacturer responsibility
- Elimination of private citizen stockpiles
- Innovative technologies, i.e., coal plants
- Resolve what to do with collected mercury
- Mercury is a world problem; coordinate/communicate with other initiatives worldwide
- No more import-exporting of mercury
- Require sequestration of collected mercury
- Need some group to house collected mercury, transport it to the sequestration; need funds to do this program
- Study types of collection programs to see which are most effective in getting mercury out of the

environment
- Product bans

TUESDAY, MARCH 21, 2000

Panel on Mercury Reduction in Schools

Moderator:
Jeri Weiss, EPA Region I

Panelists:
Steve Skavroneck, Wisconsin
James Rutkowski, Erie Pennsylvania
Tom Metzner, Connecticut Department of Environmental Protection
Richard Phillips, Vermont Department of Environmental Conservation

***Mercury Curriculum,* Presented by Steve Skavroneck, Wisconsin**

- Schools represent about six percent contribution of the mercury discharges to the Milwaukee Metropolitan Sewerage District
- $300K cleanup in Green Bay, WI
- One incident with kids putting mercury from school in a bowling ball
- City has selected schools as a target sector on which to focus

Curriculum Developed in Wisconsin

- Offers seven different exercises
- Case study with questions
- One activity focuses on how to read fish consumption advisories and map fish advisories; they learn why the fish have mercury
- Conduct school and home audits
- Trade-offs exercise
- Community service projects

Developed workshops for teachers, also connected the curriculum with state guidelines, that is very helpful for the teachers.

- Do mercury jeopardy game with teachers
- Mercury K-12 Project

Have received a grant from Great Lakes National Program Office to develop a web site that will be up

and running in the next couple of months

***Prevention Strategies*, Presented by James Rutkowski, P2 Partnership for Environmental Responsibility in Erie, PA**

- Pollution Prevention Partnership for Erie (P3 Erie) is a volunteer organization – group of pro-active folks from Erie – including many partners from the public and private sectors
- Project Goals: reduce persistent toxics with P2
- Started with public collection – 1,240 pounds in about 6 months – 2,000 pounds collected in total
- P3 school collection – not using the administration, but through a proactive person in the school system
- Developed a workshop – notice to superintendents, principals, inventory sheets, evaluated inventories, used college interns to assist with the inventory
- Contacted school by mail, two days later faxed notice, day of collection visited 14 schools in 6 hours, everyone was waiting used the state hazardous materials information
- Set up follow-up self audit
- Next they had a follow up workshop with the POTW, health department, hazardous material management
- Mercury removed from school: glass, plastic, ceramic, squirt top, barometers, intact and broken, mercury compounds that are very hazardous – some around 40 years old, and other hazardous chemicals
- Lessons Learned: No one was in charge of chemicals at the schools; need a responsible person to maintain program

***Spill Management*, Presented by Tom Metzner, CT DEP**

- Overview of seven recent mercury spills/accidents at Connecticut schools
- Costs for cleanup and recover have ranged from about $6,000 to over $200,000
- Lawsuit pending from one of the spills/accidents
- Insurance companies will not pay for cleanup of spills

***School Clean-Outs*, Presented by Rich Phillips VT DEC**

- Conducting one time clean out for all Vermont middle and secondary schools
- Partnering with household hazardous waste programs and others on the project
- Many problems lead up to this project (had two emergency releases in schools prior to program)
- Participants sign an agreement to do the following: have mercury free school science laboratories, eliminate toxic and hazardous chemicals, have a primary contact go to training (and an administrative person), establish a line item in budget for future planning, develop chemical management plan for laboratories, and pay a small fee based on the size of the student body

- Vermont DEC workshop covers how to: identify laboratory hazards, review OSHA requirements, conduct chemical inventory, establish a safe storage system, manage chemical spill planning and response, and implement specifics of the agreement
- 2nd follow-up workshop covered: chemical inventory and clean out summary, indoor air quality issues (i.e., identifying problems and improving ventilation), waste disposal (by solid waste districts) and purchasing strategies, lab chemical management plan, and introduction to Microscale chemistry.
- Have about 100 schools to get into project; 60 have signed up; 27 schools have completed the 1st workshop and their chemical inventories; 2nd workshop to take place in March
- Cost are projected $26,000 for personnel and disposal costs for the first 27 schools and is less expensive than initially anticipated
- Chemical Management Plan Books are available

Summary of Break Out Group On School Clean Outs (Session A)

Key Factors for Success

- Funding
- Awareness of liability
- Awareness of chemical safety
- To initiate clean-out administrators are usually the best place to start – superintendents and principles; contact chemistry teachers at the same time; bottom/up and top down saturation of knowledge, i.e., every level can take credit for ideas and no one can ignore problem
- Sweden has had success working with local governments
- Sweden have also had success with the mercury sniffing dog to promote green schools; 60 percent of schools acceptable already, 20 percent awful, and 20 percent on their way; have received excellent and positive media positive with the dog
- Two dimensions: laboratory waste management and facilities management, both need funding
- Need a point of contact
- Need a pledge sheet signed by all strata of the school: teachers, principal, and superintendent
- Some manufactures are willing to take back their products
- Associations: teachers' associations publications, parent/teach associations (PTA) or parent teacher organizations (PTO), National Science Teachers' Association (NSTA)
- Use parenting magazines to educate parents
- Research and comparative studies to show the accuracy of mercury alternatives
- Boston area schools required to test water near buildings; not finding this to be a problem.

Challenges/Barriers

- Funding: if cost incurred by schools
- Mercury is not always the major hazardous chemical problem, but can be a good way to get a foot in the door at the school and get them to look at hazardous chemicals that are problems in schools

- Sweden: no time for the teachers to address mercury, no support, and no knowledge that anything is wrong
- School structures and organizations are barriers
- Schools are not regulated, there are no checks and balances; the inspectors only check cleanliness of cafeteria and if the exit signs are working but will not go into laboratories
- Different types of problems, need to handled them differently
- Mercury alternatives are perceived to function less well
- Teachers do not learn about hazardous waste at the teaching colleges and programs.

Results/Evaluation

- Link to entire hazardous materials programs (i.e., EPA Clean Sweep program)
- Link to other programs – RCRA inspections at university level.
- Violations are part of the remedy
- Develop a pharmacy system for the schools: one person is in control of buying and purchasing and is accountable for everything
- EPA Tools for Schools: indoor air quality focus but could be a great place to have a mercury message component (i.e., messages going to schools that already interested in doing the right thing)
- Swedish Model: voluntary and cooperative approach in collaboration with local authorities – 90 percent participation; cost evaluation/economic cost savings of being preventative (i.e., cheaper to prevent accidents than pay for the proper clean up)
- Use existing outreach vehicles, such as teachers' newsletters
- Work issue into teacher training
- Research/verify accuracy of alternatives
- Pledge Sheet – signed by all school staff

Future (Priorities and Opportunities)

- Use Community Right to Know to require inventory
- Other players need to show schools that society takes this issue seriously
- Clear about rules
- Go beyond shelves and into drain traps

Summary of Break Out Group On Prevention Strategies (Session B)

Key Factors for Success

- Not sure yet whether focus on students or teachers works best
- Talk to health and science teachers
- Focus on liability issues, spill costs, legal problems
- Teacher poisoning incident in Michigan
- Need more outreach to administrators; point out insurance may not cover costs of spills and cleanup

- Teachers who have attended workshops are using at least some of the Wi curriculum
- Use science teachers association meetings
- Need to convince teachers that mercury is a real problem; get data on spills and present it; get health department to present health data
- Data/anecdotes on what has happened when fever thermometer breaks at home
- In Vermont started with school administrators and asked them to help develop clean out strategies; education commissioner sent a letter, which was very effective
- Clean up and liability costs are most persuasive
- Attend science teachers meetings; get to grass roots level
- Develop a central points of focus for information and data
- Include all dangerous chemicals in outreach
- Get better curriculum in universities
- Get principal and teachers to work together; sign commitment to follow through
- Evaluate EPA/AHA agreement as a possible model for a national schools program
- Work with suppliers

Challenges/Barriers

- Need a Website with links to good information sources
- School cleanups are time consuming
- Need all levels of school involved
- Need legislation passed to ban mercury
- Focus on mercury and include all other hazardous chemicals
- Need a tutor to talk to students and teachers
- Where is most of the mercury in the schools? stop buying the mercury; most mercury found in the laboratory
- Need guidelines for chemistry teachers on what to order
- Offset the costs of clean out by partnering with state university; can also do SEPS with universities
- Think about opportunities for coordination and leveraging national and local agreements

Summary of Break Out Group on Spill Management (Session C)

Key Factors for Success

- Communications coordinator
- Identifiable lead for response calls
- Quick response
- Funding available
- Consistent answers, procedures
- Funding to address spills and cleanup
- Central emergency response
- State programs

Barriers/Challenges

- Definitions of what is a mercury spill program
- Lack of awareness on how to use a spill kit
- No basic education for science teachers, janitors, doctors, dentists, hospitals, and the general public
- When to call, when not to call, not clear
- EPA standards/state standards; where is the overlap? need consistency
- No tracking system for small spills

Future

- Internet site
- State to state outreach
- Combine mercury and other hazardous waste response protocols
- Remove mercury from schools/focus on supply points/prevention
- Better tracking of small spills
- Educate public, school personnel, commercial facilities personnel more fully
- Coordinate with Local Emergency Planning Committee (LEPC)
- Keep it simple stupid (KISS)/local level
- Coordinate with other federal agencies and states
- Be careful not to expose volunteers during household hazardous waste days and cleanup

Spill management program definitions

- Awareness of hazards; need to educate
- What to do about a spill; what not to do
- Who to contact
- Local knowledge by county health department
- Voluntary versus regulatory compliance programs
- Is spilled mercury a waste?
- How is hazardous waste defined state by state?
- Establish coordinated program with schools, fire departments, states agencies – who to call?
- Cost of spill kit?

Panel on Mercury Reduction in Health Care/Dental Facilities

Moderator:
Douglas Grosse, U.S. EPA Office of Research and Development

Panel:
Chen Wen, U.S. EPA Headquarters
Laurie Tennace, Florida Department of Environmental Protection

Tim Tuominen, Western Lake Superior Sanitary District

***Update on MOU with AHA*, Presented by Chen Wen, U.S. EPA Headquarters**

Background
- 1998 Report to Congress found hospitals fourth largest source of mercury releases from medical waste incinerators
- EPA estimates 25 percent of children receive exposures of mercury that exceed recommended levels

EPA's Voluntary Agreement with the American Hospital Association (AHA)
- Signed agreement in 1998
- 33/50 percent reduction of solid waste by 2005/2010
- Ethylene oxide elimination by 2010
- Elimination of mercury
- Future and additional substances clause
- Patient interface

AHA has a membership of 5,000 healthcare facilities

Examples of Actions Taken Under the Agreement
- Northeast and Midwest have had successful facilities
- Many hospitals have sponsored thermometer take back programs
- Many hospitals have shut down medical waste incinerators (more cost effective than putting on controls)
- California Medical Association has sponsored its own mercury program
- Some areas have targeted stores to encourage them to stop carrying mercury thermometers and to institute a take back program

EPA has a major concern about the recycling and reuse of mercury – what should EPA's policy on recycling be?

States and Regions Can Help EPA Implement the Agreement
- Implement and enforce the Medical Waste Incinerator Rule
- Reach out to landfill operators and recycling facilities
- Outreach to the hospitals
- Encourage more research
- Encourage development and use of mercury free products

***Hospital-Based Programs*, Presented by Laurie Tennace, FL DEP**

Hospital Outreach Project has been underway for three years

Focuses on how hospitals can help keep mercury out of the environment

Helps individual facilities by conducting facility visits and audits

Where is the mercury in the hospitals?

- Laboratories are a large sources
- Sphygmomanometers
- Baumanometers have a faulty design that can easily cause spills of mercury; can get a simple locking system that addresses problem
- Thermometers
- Infrastructure– batteries, thermostats, gauges, barometers, drain pipes, fluorescent lamps
- "Savory Dilator" is a good alternative to mercury esophageal dilator (red) and the tungsten alternative (green)

Advice

- Never assume that people really know what they are doing concerning mercury
- Make mercury reduction fun for participants
- Housekeeping staff is an important group to reach
- Never put thermometers in medical waste red bags/boxes
- Education is key– especially children

***Dental Programs Mercury Reduction*, Presented by Tim Tuominen, MN WLSSD**

Cooperative program with local dental society

Conducted a literature review of studies/projects in Europe, Seattle, Pima County, Brooks Air Force Base in Texas

Sampled clinic discharges – found 50 times higher below dental facilities

Held meeting or made contact with local dental society, state dental society, and American Dental Association

At WLSSD mercury in sludge has dropped from 2.5 to 0.5 ppm since 1995

Treating soluble mercury costs about $15,000

Progress to Date

- Surveyed dentists (70 percent return) to inform and gain information
- Developed materials and made presentations

- Conducted tests (found 1/3 reduction in wastewater discharges at largest dental building)
- Working on other research with the University of Illinois in Chicago

Pollution Prevention Grant for Dental Offices

- Audit
- Did very simple recycling card to promote recycling and proper handling of amalgam waste
- Targeting improvements in waste management practices
- Focus on education

Offering a collection site for dentists

Need continuous education effort

Evaluating Wastewater Systems
- Tested six different types of systems
- Found that costs go up as efficiency improves for mercury removal
- Finding decreasing levels of mercury in sludge

Results
- Partnership with local dental society
- Virtually all dentists say they recycle dental amalgam
- First year 15 practices brought in 25 pounds of chemical mercury and 40 pounds of amalgam scrap to clean shop program

Great Lakes Dental Mercury Reduction Program
- Collaborative project
- Collecting mercury
- Improving management of mercury waste
- Improving education and information
- Promoting collaboration

Summary of Break Out Group on Health Care/Dental (Session A)

- Schedule for release of EPA/AHA MOU products? How can we build on that effort?
- Chapters finalized by June 2000; different workgroups have written portions; not sure if EPA needs an editor to make reading smoother
- Baseline survey is almost completed; not sure of date to go out
- Recognition materials still being designed; comments from hospitals staff; trying to get all products done by June
- Make information available about environmentally preferable products for hospitals

- Any costs of MOU to EPA? gave a small grant to AHA to help defray some costs; number of EPA employees working on project, travel, and other program costs – EPA has two full time people at Headquarters and a couple of part time people.
- Not all facilities are part of AHA (AHA has about 5000 hospital units members; about 6500 hospitals total in US, so they cover about 85 percent of facilities)
- Need information on mercury releases from alternative sterilization methods
- Evidence does not support the perception that mercury gauges are better
- Each state has a hospital association and sometimes they are not affiliated with AHA
- Working with EPA regional offices, and they are working with the state associations
- Veteran and other federal hospitals had a roundtable meeting in Region 2
- Sweden: Checking spills in hospitals; knowledge level is very uneven right now
- Boston: historical contamination of water pipes; changing out the pipes
- Go through the "elbow" drains under the sinks, and remove settled mercury amalgam from there

- Sweden –dogs found traces in patients rooms, everywhere
- How widespread is resistance to mercury free devices (i.e., blood pressure cuffs)? mostly anecdotal; may be older doctors who are resistance; both mercury and analog blood pressure gauges need maintenance to stay calibrated
- There is not going to be a substitute for everything yet, but getting there
- Disposal of mercury in vaccines and other pharmaceutical; if/when we find an acceptable substitute, we recommend it, but if not, we say stay with the method that works
- MOU with other organizations – issue of perceived liability, because everyone has amalgam in their mouth
- Insurance will not cover non-mercury amalgam; higher cost of non-mercury fillings is a disincentive to consumers; need consumer education
- Why the extra cost? equipment? what mechanisms are available to reduce price differential?
- Impediment to removing mercury manometer is the cos; a 50 gallon drum will hold about 50 manometers
- A trained person can get the mercury out of the manometers, and safely put it into a flask; in Buffalo staff took mercury out of 500 manometers in one day
- One-time cost to the hospital
- Case study coming out soon
- Any residual mercury in original containers? yes, but the volume is still reduced; it is only the glass reservoir holding the mercury
- Need to document storage of mercury, so it will not be "lost"
- State personnel working directly with hospitals good idea; establishes a good relationship
- Encourage continuing dialog with Dental Association on a national level; states are trying, but seems like a role for federal government on the national level; whole issue of liability has been the block; address mercury as a disposal problem, not a health problem

Summary of Break Out Group on Hospital/Dental (Session B)

Keys to Success

- Collaborate with hospitals
- Disseminate information at all levels
- Share successes
- Find champion in the hospital
- Find a champion hospital
- Hospitals are different–be flexible
- Need a non-regulatory advocate
- Need a regulatory back stop

Barriers/Challenges

- Smaller facilities need to be included; difficult to regulate; no safety managers
- Some people like their mercury products and they may be the "experts"
- Need steps and locations for proper disposal
- Inadequate time on the part of hospital personnel
- Manufacturers resistant, even though hospital wants to give up mercury equipment
- Funding
- Purchasers may have to use certain vendors
- Product information may be inaccurate, incomplete, or not available
- Incinerators must meet standards
- When replacing incinerators with autoclave – what are the emissions?

Results/Tracking Evaluations

- Mercury reductions in wastewater discharges in Boston-area hospitals
- Award/recognition of hospitals in EPA Region I
- AHA evaluation report due
- Health Care Without Harm program
- Incinerators must meet standards; checking inlet concentration prior to incinerating
- Auditing biomedical waste to cut cost and regulate disposal

Future

- Mercury management hospital policies (including purchasing)
- Mercury free technology development
- JCAHO accreditation – integrate mercury reduction into JCAHO materials and audit practices
- Include smaller health care organizations and offices, home health care programs
- Incorporate into educational curriculum for directors, nurses, and other medical personnel
- Educate housekeeping personnel
- View mercury reduction as an opportunity and not a threat
- Incorporate environmental management into hospital tracking system; software available
- Need state support for on-site advocates

Summary of Break Out Group on Dental Programs/Issues (Session C)

- Costs dentists money to send mercury amalgam to retorters
- Should amalgam be part of universal waste rule?
- ADA is not a top down organization, so most effective at a local level; find champions
- The profession does not want to call waste amalgam a hazardous waste
- Dentists want to know what happens to mercury in sewers; what is bioavailability and risk?
- Need good definitive research on fate and threat
- Study on bioavailability found that it depends on conditions
- Need articles in dental journals
- Have dental society send out materials
- Consider success/compliance to be enrollment with a disposal contractor
- Leaders need to get recognition; picture in the paper; environmental star designation
- $150/200 per quarter for dentists to manage properly
- What about crematories?
- What work is being done on alternatives to mercury amalgam?
- Minnesota is producing a video
- Need consistency between states

Panel on Looking Towards the Future

Panel:
Bruce Englebert, U.S. EPA
Mark Smith, Massachusetts Department of Environmental Protection
Luke Trip, Environment Canada
Alexis Cain, EPA Region V
John Gilkeson, Minnesota Office of Environmental Assistance

***Facilitator's Recap*, Presented by Bruce Englebert, U.S. EPA**

Barriers

- Money- not always a real barrier but just a perceived problem
- Perception- Mercury not perceived as a real problem
- Dentist have been doing this for years why is it a problem now? get their attention, overcoming inertia
- Time- on all levels how do you find the time?
- Information and misinformation
- Lack of alternatives - are not any, too far away, too costly for the alternatives
- Overlapping jurisdictions and multiple jurisdictions and inconsistencies across the states
- How much of an issue is retirement versus recycling of mercury?

Key Factors of Success

- Low hanging fruit first
- Networking with other states organizations
- Pick a piece to start with
- Do not try to solve the whole problem at once
- Partnerships
- Early involvement and cooperation
- Buy in and champions within facilities and organizations (internal rather than external)
- Creative solutions (i.e., Sweden mercury sniffing dog), curriculum (i.e., jeopardy game), expand household hazardous waste to include small business
- Education – raise awareness, simple message and target to audience, convenient materials, useful antidotes
- Focus on bottom line- cost analysis (i.e., liability– clean up versus preventative measures)
- Be realistic and optimistic

Results/Tracking

- Recovery of pounds of mercury measured
- Number of mercury free hospitals
- Results motivate manufacturers
- Mercury collection raises awareness of other hazardous materials
- Healthcare without Harm evaluation
- AHA report
- Suite of data - sector participation rates, levels in fish
- Increase of indicators
- Emission inventory

Future

- Collaboration and coordination
- Need to work up stream (look at curriculum at elementary and university levels)
- Piggyback on other programs
- Education
- Centralize data
- Institutionalize - at what point does mercury become a waste?
- More money, more resources
- More public education
- What do we do with it once we collect it?
- Advocacy and champions are needed, combined with backstop of regulation
- Non-mercury technology
- Global issue

***Six Cs for Success*, Presented by Mark Smith, MA DEP**

Six Cs are important:

- Collaborative efforts
- Comprehensive approaches, look at complete mercury cycle
- Communication- better and more on all levels and between levels
- Cost- need more resources
- Creative approaches- low hanging fruit and keep eye on all branches
- Challenging goal setting

***Virtual Elimination*, Presented By John Gilkeson, MN OEA**

- Need mandates
- Notification of sales (i.e., manufacture label plans, reporting limit on TRI)
- Recyclers notification of receiving and resale
- Phase outs and alternatives – manufacturers and original equipment manufacturers (OEMs) still want to use it, the users do not really care; need tangible goals or regulatory enforcement to make this happen
- Non-mercury products need to be promoted
- Manufacturers need to be on board
- Successful voluntary reduction hinges on mandatory disclosure and a means of measuring progress against a goal
- If goals are not met, move to mandated actions

***The Installed Base*, Presented by Alexis Cain, EPA Region V**

- What causes the most accidents? (health department need to be involved)
- Inventories are insufficient outside of incineration (i.e., collection, processing)
- Have enough information to justify action
- Household mercury collections have been successful
- Thermometer exchanges- success
- Hospital collection- success
- School clean out- success
- Mercury sources in car switches, and other pilot programs
- Construction and demolition industry how much is released with destruction of buildings?
- Industrial equipment (i.e., steel mills) need reduction plans
- What will be done with it after collection?

***Future Challenges*, Presented by Luke Trip, Environment Canada**

Unsolved Issues:

- Ultimate disposal; there is enough mercury for recycling; what to do with excess mercury, HGS, HgCl2?
- Obstacles; think about radioactive waste problems (no permanent sites)
- Are old mercury mines a solution?
- Intermediate disposal– collection/storage- must have assurance that it is only temporary facility must have long range plan
- Control of coal combustion sources
  - major objection is cost
  - too many pollutants, not enough coordination
  - energy efficient 30-37 percent (from today's coal plants) to 80 percent (in Europe)
  - do not tie this sector to climate change agenda
  - Do link to acidifying emissions/particulate matter
- International Controls
  - how do we push the envelop when domestic policies are weak (huge barrier)
  - promote an international mercury action plan/protocol
- Communications
  - message needs to go to the public
  - public needs to influence the politics
  - North America should set an example for other emitting nations
  - Cannot pick on one emitter look at all sources and treat equally
  - have all arguments ready to substantiate the mercury issue

Summary of Large Group Discussion: Action Planning for the Future

Focus on interregional efforts that are:
Collaborative
Comprehensive
Foster Communication

Next Steps

The following is a list of next step ideas that the meeting participants proposed. The level of government best able to take responsibility for implementing the idea is shown in parentheses and italics; where a person volunteered to help with the effort their name and affiliation follows the hyphen:

- Assessment and removal of disincentives and development of financial incentives for industry (e.g., grants, loans, and tax credits); strategize ways to use the economy for mercury reduction *(Federal & State)* – Kevin McManus, MWRA

- International treaty for the elimination of mercury *(Federal)* – Luke Trip, Environment Canada
- Research on mercury substitution in manufacturing processes *(Federal)*
- Collect and disseminate information on mercury substitutes in manufacturing processes and products (i.e., chlor-alkali, switches, pharmaceuticals) *(Federal and State)*
- National educational video (*Federal, Regional, State)*
- Coordinate support for model legislation (*State)* – Terri Goldberg, NEWMOA
- Prevention as a priority approach *(All)*
- Sector-specific, concrete, coordinated content reduction; hold conference calls *(All)*
- Use federal/state/local purchasing power to affect mercury markets and alternatives *(All)* – Terri Goldberg, NEWMOA and Jeri Weiss, EPA Region I
- Convene users and producers to develop specific standards *(All)*
- Facilitate government setting the example for mercury reduction *(All)*
- Develop an EPA Memorandum of Understanding on mercury reduction for schools *(Federal)* – Alexis Cain, EPA Region V
- EPA should reduce utility, sewage sludge and boiler emissions of mercury; draft a letter to send to EPA *(Federal)* – Joy Taylor, MI DEQ
- EPA should go beyond MACT *(Federal)*
- Regulate sewage sludge incinerators (*Federal)*
- Establish online tracking system for mercury reduction activities *(NEWMOA)*
- Try to establish use of dogs for mercury detection *(All)* – John Wachtler (MN PCA)
- Provide specific incentives to industry to develop non-mercury products (i.e., funding, grants, loans, investment tax credits) *(Federal and State)*
- Establish a national mascot (i.e., "Murphy the mercury sniffing dog) and link with the video project *(All)* – Laurie Tenace, FL DEP

- Provide financial support for the mercury reduction advocates in the states *(Federal and State)*
- Promote the awareness of the methyl mercury fish consumption advisories to sensitive populations *(Federal and State)*
- Establish a temporary repository for mercury and high mercury content waste, until a retirement and permanent disposal methods area available *(Federal)*
- Research stabilization for mercury products and waste *(Federal)*
- Federal government should buy and store mercury pending development of permanent disposal methods *(Federal)*
- Tie mercury reduction to energy efficiency programs, particularly for promoting reduction of coal emissions *(All)* – David Gibson, GA P2 Program
- Accelerate decommissioning of old power plants that have no controls *(Federal and State)*
- Develop and publish standardized testing requirements for mercury containing products; publicize the results *(Federal and State)*
- Develop routine press releases on mercury *(All)*
- Promote community stewardship *(State and Local)*
- Help manufacturers evaluate mercury use *(Federal)*
- View mercury reduction as an opportunity to solve an historical problem– get everyone involved *(All)*
- Develop incentives for insurance companies to facilitate use of non-mercury dental fillings *(State)*

- Expand chlor-alkali MOA to prohibit mercury export *(Federal)* – Alexis Cain, EPA Region V
- Coordinate and expand clean sweeps programs *(State and Local)*
- Work with school science supply companies to eliminate mercury *(Federal and State)* – Mark Smith, MA DEP

- Get mercury out of public commerce
- Identify unnecessary uses and phase-out *(All)* – John Gilkeson, MN OEA
- Share methods, literature, and experiences on mercury reduction programs for targeted sectors *(All)*

Action Items/Groups for Follow-up

- Letter from governors on the model legislation – Terri Goldberg, NEWMOA, Stephanie D'Agostino, NH DES, and Mark Smith, MA DEP
- EPA MOU for schools and work with schools and supply companies to eliminate mercury – Alexis Cain, EPA Region V, Mark Smith, MA DEP, and Judy Shope, MA DEP
- Identify unnecessary mercury uses/alternatives – John Gilkeson, MN OEA; Peter Pettit, NYS DEC; Judy Shope, MA DEP
- Utility emissions reductions – Joy Taylor, MI DEQ
- 1-800 Clean-up/Video – David Gibson, GA P2
- Create listserve for the participants – Terri Goldberg, NEWMOA
- Assess and remove disincentives and create incentives – Kevin McManus, MWRA; Mark Smith, MA DEP; Judy Shope, MA DEP
- Develop international treaty – Luke Trip, Environment Canada and Folke Dorgelo, Netherlands
- Develop mercury detecting dog program – John Wachtler, MN PCA; Stephanie D'Agostino, NH DES; Peter Pettit, NYS DEC; Mark Smith, MA DEP
- Develop mercury mascot – Laurie Tenace, FL DEP; Peter Pettit, NYS DEC
- Tie-in with energy efficiency initiatives – David Gibson, GA P2
- Examine state/federal purchasing power – Jeri Weiss, EPA Region I; Terri Goldberg, NEWMOA; and Stephanie D'Agostino, NH DES
- Create improved incentives for dental insurance for non-mercury fillings – Tim Tuominen,

WLSSD

- Expand Chlor-alkali MOU to include exports – Alexis Cain, EPA Region V
- Mercury retirement and stabilization – Luke Trip, Environment Canada; Mark Smith, MA DEP