

**New York State
Department of Environmental Conservation
Mercury Work Group
Recommendations to Meet the
Mercury Challenge**

December, 2006

Executive Summary

Mercury has been identified as being one of the most important of the persistent, bioaccumulative, toxic (PBT) contaminants of concern for New York State. The large amount of mercury in the environment, combined with its toxic nature, and the ease of exposure make mercury pollution one of the most critical public health threats in our State. This report is offering, for executive consideration, both a summary of our ongoing mercury programs and recommendations for further action. The sequence of discussion in this report follows the path of mercury from mercury-containing products, to mercury releases to the environment, to the final disposition into various environmental media.

The New York State Department of Environmental Conservation (the Department) currently monitors mercury contamination in all media. In ambient air we measure the wet deposition of mercury, and in flue gases at stationary sources, we measure particulate mercury and gaseous elemental mercury. Mercury in sediments is assessed and monitored annually. Contaminant levels are monitored in fish from waterways throughout the state, and in loons, mink and otters in the Adirondack Park. Solid waste facilities are monitored to enforce limits on mercury discharges; as are leachate, compost, biosolids and sludges used in landspreading.

Mercury is present in the solid waste stream due to the disposal of numerous mercury-containing products manufactured over the last several decades. Educational outreach is critically important to inform the public about the dangers of mercury, the availability of non-mercury alternatives and proper disposal. Everyday mercury-containing products, such as automotive and appliance switches, fluorescent and high intensity discharge lamps, automotive headlights, thermometers, thermostats, manometers, and batteries are high priority topics of New York's educational outreach efforts.

When mercury-containing products cannot be eliminated, it becomes important to make purchasers of these items aware that they contain mercury and must be appropriately managed. One of the first major steps to do this is to identify these items through labeling requirements. Labeling is now required by New York law. The development of regulations, outreach and education is needed to provide this awareness.

Sector-Specific Approaches

The Department has moved forward with sector-specific approaches to reduce or eliminate mercury at institutions, industries and in professions. The dental profession (dental amalgam waste), schools (mercury-containing equipment in science classrooms/laboratories, such as thermometers, barometers and spectral tubes), and the health care industry (blood pressure devices and thermometers) have all been targeted in unique, sector-specific programs.

Control measures are being taken to reduce emissions and discharges of mercury to our air and water resources, as well as reducing solid waste discharges.

Air

With regard to air emissions, the State has adopted more stringent mercury emission limits for large and small municipal solid waste combustors and medical waste incinerators. The Department is assessing the need for mercury limitations, emission controls and emission testing at other known significant sources of mercury emissions. The Work Group recommends developing a mercury control strategies that are protective of the environment and public health.

A new air/mercury regulation, Part 246 has been promulgated on December 22, 2006, effective January 27, 2007. This regulation will reduce harmful mercury emissions from coal-fired electric utility power plants by approximately 50% from current levels by 2010 and by 90% by 2015. Under this regulation, in 2010, the State would establish an annual mercury cap of 786

pounds. There will be no trading of emissions or mercury allowances within New York State or between New York power plants and facilities in other states. In the second phase, in 2015, the Department would implement a plant-wide average emission limit for each power plant facility equivalent to 0.6 lb Hg/trillion Btu. This regulation is far more stringent than the proposed Clean Air Mercury Rule cap-and-trade program that was recently proposed by the federal government's Environmental Protection Agency (USEPA).

Water

The Department has derived and promulgated protective numeric water quality standards for mercury. Permit restrictions, pollutant minimization programs, and new technology for detecting mercury and mercury contamination sources are helping to reduce mercury within our water resources. Source reduction strategies can also be achieved through watershed-based strategies such as the New York-New Jersey Harbor Estuary and Onondaga Lake programs. Watershed-based approaches reduce mercury contamination through a comprehensive, multi-media contaminant identification and trackdown program, and support ongoing studies of the water, sediments and biota.

Solid and Hazardous Wastes

Disposal in landfills and combustion of mercury-containing wastes in solid waste incinerators can be significantly reduced through effective Household Hazardous Waste (HHW) collection programs and enforcement of new and existing solid and hazardous waste restrictions under New York's Environmental Conservation law and regulation. The Work Group would like to further promote the Department's HHW collection program to include the participation of all communities around the State. In addition, new and existing HHW collection programs need to be expanded to promote the collection of hazardous mercury-containing wastes from not only homeowners, but from conditionally-exempt small quantity generators, such as schools.

Recommendations

The Work Group strongly supports a national policy to address the ultimate disposition and long-term storage of surplus mercury.

Mercury contamination is a global problem. The Work Group recommends promoting New York State's mercury management agenda at regional, national and international levels. Participation in clearinghouses such as the Northeast Waste Management Officials Association (NEWMOA), Interstate Mercury Education & Reduction Clearinghouse (IMERC), Toxics in Packaging Clearinghouse (TPCH), Northeast Recycling Council (NERC), the Great Lakes Mercury Work Group, and the Environmental Forum of Great Lakes States will ensure that New York State's policies on mercury will be shared at regional, national and international venues.

National and regional forums on mercury management have agreed that a comprehensive approach to managing mercury is necessary to effectively address its impacts on and eventual removal from the environment. This includes all media and in all manifestations of mercury as a product, byproduct and waste. Debates continue in the scientific community on the relative contributions of mercury from different sources and their significance. Choices will, however, still need to be made, even within a comprehensive program, on where to focus limited resources. This report is intended to provide for Executive consideration a menu of possible choices to build on our existing commitments.

The Work Group looks forward to executive support on appropriate direction, priorities and investments in the comprehensive management of mercury in the environment. This group's recommendations can ultimately serve as a reference to the Mercury Advisory Committee required under the mandates of the Environmental Conservation Law and Chapter 145 of the Laws of 2004 (Chapter 145), the Mercury-Added Consumer Product Law.

Mercury Goals

- *Develop a monitoring strategy and network to assess current levels of mercury contamination and assess mercury reduction efforts as they are implemented.*
- *Eliminate the production and use of mercury-containing products wherever possible and require the proper management of the resultant collected mercury.*
- *Adopt consistent labeling requirements of mercury-added consumer products.*
- *Establish programs to further promote the proper management, recycling and elimination of mercury from various industry sectors.*
- *Reduce the impact of mercury on our environment through the development of a comprehensive strategy for the further reduction of emissions and discharges.*
- *Promote Household Hazardous Waste collection programs and pursue additional funding for all communities across the State. Target mercury-containing wastes and expand collections to include mercury wastes from conditionally exempt small quantity generators.*
- *Provide outreach to the regulated community regarding proper management of mercury-containing devices and products as well as the inclusion of additional mercury-containing devices and mercury wastes under the Universal Waste Rule.*
- *Encourage and support the development of a national policy on the establishment of permanent storage or stockpiles for excess mercury.*

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Summary

Introduction

Mercury is a toxic, volatile heavy metal that persists and cycles in the environment. Mercury is released into the air as a result of natural and human activities. It is transported and deposited back onto the earth. The distance of this transport and deposition depends on the chemical and physical form of the mercury. It can exist as a gas, liquid or solid. The most common form of mercury is metallic or elemental. Mercury can combine with other elements to form both inorganic and organic compounds. When mercury particulate matter is precipitated from the air into an aquatic environment, inorganic mercury is transformed by bacterial action into biologically toxic, organic methylmercury.

Methylmercury bioaccumulates up the food chain as animals consume mercury-contaminated organisms. As a result of this bioaccumulation, humans may consume mercury-contaminated fish. Two conditions common in the Northeast, acidified water bodies and elevated ozone levels, promote the mobilization and deposition of mercury into the environment.

Congress required that the USEPA assess the magnitude of U.S. mercury emissions by source, the health and environmental implications of these emissions and the availability and cost of control technologies, as part of the 1990 Clean Air Act Amendments. The sources of mercury emissions required to be studied included electrical steam generating units, municipal waste combustion units, and others, including area sources. The final report developed by USEPA in response to this mandate was a comprehensive eight volume report entitled "The Mercury Study Report to Congress". Issued in 1997, the report evaluated many aspects of mercury emissions, including the rate, mass and environmental fate of such emissions, health and environmental effects, technologies to control emissions and the costs of such controls. The USEPA concluded the available scientific knowledge supports a plausible link between mercury emissions from anthropogenic combustion and industrial sources and mercury concentrations in air, water, sediment and soil, as well as, methylmercury concentrations in freshwater fish.

In 1995, staff from various northeastern states environmental quality programs, including New York State, gathered to discuss the development of a Northeast Regional Mercury Study in a forum sponsored by the Northeast States for Coordinated Air Use Management (NESCAUM). The discussion focused on the development of a comprehensive Mercury Study Report for the Northeast. Staff from the eastern Canadian provinces environmental agencies were invited to join the group in 1996, to provide a greater focus on the mercury issue across Northeastern North America. In February 1998, the *Northeast States and Eastern Canadian Provinces Mercury Study: A Framework for Action* was released. The study represented a cross-media collaboration between the member states of NESCAUM, NEWMOA, the New England Interstate Water Pollution Control Commission (NEIWPC), and the Canadian Ecological Monitoring and Assessment Network (EMAN). One of the major conclusions of the study was that 47% of the mercury deposition in the Northeast is attributable to sources in the region, 30% to US sources outside the region, and 23% comes from the global atmospheric reservoir.

In June 1998, the Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP) adopted a Mercury Action Plan, developed by its Committee on the Environment. The long-term goal of the NEG/ECP Regional Mercury Action Plan was the virtual elimination of anthropogenic mercury releases to the environment. The plan provides a framework in which environmental agencies can coordinate their efforts to reduce mercury releases and advance monitoring, assessment, and education programs to protect public health and improve understanding of mercury pollution in the region. Many of the northeastern states have adopted wholly or in part, the model mercury legislation developed by NEWMOA under the direction of

NEG/ECP. So far, New York State has adopted various portions of the Mercury Education and Reduction Model Legislation.

An October 1, 1998, letter from the Department's Commissioner Cahill to the Conference commended development of the Mercury Action Plan and stated Governor George E. Pataki's commitment to this effort and New York's support of the call for further mercury reductions in the Northeast. In January and February of 2005, the Department collaborated on a document that would become "Mercury Pollution in the Northeast: A Guide for Policymakers". This policy guide was prepared by NEIWPC, NESCAUM, and NEWMOA, interstate organizations serving the New England states, New Jersey, and New York. It is available at: http://www.newmoa.org/prevention/mercury/policymakers_guide.cfm.

The Department's Mercury Work Group, first established to provide input to the NEG/ECP Regional Mercury Action Plan in 1998, has continued to meet in order to share ongoing program developments and has developed recommendations for a comprehensive mercury reduction strategy that will help protect public health and preserve our natural resources.

A. Monitoring

GOAL: *Develop a monitoring strategy and network to assess current levels of mercury contamination and assess mercury reduction efforts as they are implemented.*

Monitoring for mercury occurs in a number of different programs in many different media. Some monitoring plans specify sampling on a routine basis, while others are related to specific projects, locations or facilities. Where technically feasible and appropriate, the Department can use low-level monitoring methods consistent between Divisions (e.g. EPA Method 1631).

1. Air Emissions

Monitoring stack gases for mercury is a permit requirement for specific stationary sources. These facilities are required to test for mercury emissions on an annual basis and others during their initial startup performance testing. This information is reviewed by the Division of Air Resources (DAR) to ensure compliance with federal or State emission standards, and incorporated into the mercury emission inventory.

Recommendations:

- i.** Expand mercury monitoring to other source categories which are not currently regulated for mercury, including Portland cement plants, and crematories and incorporate gathered information into a mercury emission inventory.
- ii.** Continue evaluating trends in mercury releases from municipal waste combustors and medical waste incinerators.

2. Ambient Air

The Department historically measured ambient particulate mercury in total suspended particulate (TSP) samples at two sites, one in the New York City Metropolitan Area and one in Niagara Falls. This method missed most of the mercury mass due to evaporation during the sample collection. These sites have been replaced by low volume PM-10 monitors with sample analysis by XRF. Mercury has also been measured at higher concentrations in the samples collected for the fine particulate (PM-2.5) Speciation Trends Network (STN). The Department operates 7 STN sites within the state. Particulate mercury represents approximately two percent of the total atmospheric burden of mercury.

Two sites in New York State currently monitor the wet deposition of mercury as part of the national Mercury Deposition Network (MDN). One site is at Huntington Forest in the Adirondacks, operated by the State University of New York College of Environmental Science & Forestry and funded by the New York State Energy Research and Development Authority (NYSERDA). The other site at Biscuit Brook in the Catskills (Neversink Reservoir Watershed), started monitoring in January 2004 and will be operated by the United States Geological Survey (funded by NYSERDA through the 2007 calendar year).

NYSERDA has also funded the measurement of a continuous gaseous elemental, divalent and particulate mercury analyzer at Stockton and Potsdam. A third site, operated by the Department was located in Rochester. The sampler for this site was moved to Albany for repairs. A new instrument is due to be installed in Rochester.

The Department will be installing two new continuous gaseous elemental, divalent and particulate mercury analyzers and mercury deposition monitoring sites in Rochester and in New York City. These are the result of an EPA Toxics Community Assessment Grant. This funding is for two years of monitoring and lab analysis.

Recommendations :

- i.** Review existing mercury monitoring data and prepare a comprehensive data summary.
- ii.** Review recent mercury modeling reports and evaluate model predictions with actual measurements.
- iii.** Evaluate the development of a future New York State mercury monitoring network to assess any long-term trends in ambient mercury concentrations as a result of State and federal actions to reduce mercury emissions.

3. Sediment

Sediments in New York State waterways are annually assessed and monitored to document their chemical and biological integrity. Sediment assessment is often useful in the track-down of contaminant sources.

Recommendations:

- i.** Each year sediment samples will be collected (depending on funding) and the resultant analytical data forwarded to the National Sediment Inventory. Chemical analyses, which usually include both total and methylmercury, will be conducted on sediment core subsections and surficial samples.
- ii.** Test surficial sediments for toxicity, bioaccumulation potential and benthic invertebrate community structure as appropriate.
- iii.** Analyze existing aquatic sediment core and surficial sediment datasets, which contain mercury and/or methylmercury measurements, to attain a characterization of spatial and temporal mercury sedimentation patterns, and identify data gaps.
- iv.** Design and implement a low-level mercury sampling plan to fill existing data gaps in aquatic sediments, verify suspicious or inconsistent existing results, document regulatory mercury reduction actions, and establish appropriate locations for permanent mercury trends monitoring stations.

4. Fish, Wildlife and Marine Resources

The Department began monitoring mercury concentrations in fish in 1969, and the program has examined representative waters and fisheries from all major watersheds of the state. The existing mercury database encompasses over 20,000 measurements from over 300 waters, including the marine district.

The New York State Department of Health (DOH) annually issues advisories on eating sportfish and game because some of these foods contain chemicals at levels that may be harmful to health. These advisories are based on information the Department gathers on contaminant levels in fish and game. In a typical year, the Department collects approximately 2000 fish from more than 50 locations/waters and analyzes these fish for various contaminants. Sampling focuses on water bodies with known or suspected contamination, water bodies susceptible to mercury contamination, popular fishing waters and waters where trends in fish contamination are being monitored. The Department has completed much of a large study about mercury in fish from New York State waters. There is considerable variability across the state and between various fish species. Preliminary information about mercury levels in the Adirondack and Catskill Mountain regions suggest that larger, older individuals of chain pickerel, northern pike, smallmouth bass, walleye and yellow perch often have relatively high levels of mercury in their flesh, higher levels than similar fish from other regions in the state; and thus have recommended that infants, children and women of childbearing age should avoid eating these fish. Larger, older predatory fish are higher up on the food chain and frequently have higher mercury concentrations. Freshwater fish species such as bullhead, most trout and sunfish generally have lower mercury concentrations. In the 2006-2007 Health Advisories, fish consumption advisories were issued for 78 site specific locations because of high levels of mercury contamination in fish.

A recent project examined mercury concentrations in fish from New York City reservoirs and found elevated levels in some species in most of the 19 reservoirs. These elevated mercury levels caused DOH to issue health advisory recommendations to restrict consumption of some reservoir fish.

In the New York-New Jersey Harbor Estuary, a biological survey, was designed specifically to: assess chemical contaminant levels in fish, bivalves, crustaceans, invertebrates and zooplankton taken from these waters to relate these contaminant levels to human health and wildlife effects; to create a baseline database for chemical contaminants useful for predicting chemical changes in aquatic biota as a consequence of dredging and other remedial activities; and provide limited information on potential sources of contaminants.

Work thus far shows mean total mercury concentrations for fish were generally below USFDA consumption criteria of 1000 ng/g. (USFDA, 1993). Bird protective criteria of 100 ng/g for mercury, as cited by Eisler 1988, were exceeded for American eel, striped bass and white perch in all areas sampled. Blue crab muscle tissue mercury concentrations exceeded protective bird criteria in Newark Bay, Passaic River, Raritan Bay and Jamaica Bay. Zooplankton mercury concentrations typically exceeded bird protection criteria in Hudson River stations, Passaic and Newark Bays. Percent methyl mercury of total mercury differed by species group. Fish had the highest percent methyl mercury followed by blue crabs, mussels, shrimp, amphipods, clams and zooplankton.

For Onondaga Lake, which received direct discharges of mercury for many years, annual monitoring of fish is documenting changes in mercury as various institutional and remedial actions are being taken. In other long term monitoring projects, (e.g., Finger Lakes, Lake Ontario), temporal changes in mercury are being documented.

Many lakes have never been monitored to determine the mercury content of the fish, and very few lakes have been re-examined to determine any change in mercury concentrations. Pursuant to a grant from NYSERDA, the Department is conducting a four year study ("Strategic Monitoring of Mercury in New York State Fish") to: 1) provide a statewide spatial description of mercury concentrations in freshwater fish; 2) determine temporal changes in mercury concentrations; 3) determine whether a simple model can be used to predict mercury concentrations in fish based on water quality and habitat variables; 4) develop a baseline for future mercury monitoring as a means of assessing success of controls of atmospheric mercury sources; and 5) provide information for assessment of potential public health impacts. The study is in its third year.

The Department is a cooperator in research on the impacts of mercury on reproduction of common loons in the Adirondacks. Loons feed almost exclusively on fish. Because fish are an effective accumulator of mercury (methylmercury), there is a significant potential for high dietary uptake of

mercury. This coupled with the possible synergistic impact between mercury and acid deposition on methylmercury availability, and the ability of mercury to be transferred to the egg, the toxicity of mercury becomes a major concern for the developing embryo. Though the Adirondack Cooperative Loon Program, with major funding from NYSERDA, an assessment of potential links between mercury in forage fish consumed by loons, water and sediment quality parameters, and a variety of loon reproductive parameters is being conducted. The project, titled "Common Loons: An Indicator of Environmental Mercury Contamination and Acid Deposition in Aquatic Ecosystems of the Adirondacks", is examining 40 to 50 Adirondack waters.

During the 2006 breeding season, the Department began a monitoring effort looking at mercury levels in New York State bald eagles, in cooperation with the Bio Diversity Research Institute of Maine. Blood samples were collected from 16 different eaglets and breast feather samples collected from 45 eaglets at their nests during the nesting season. In addition, 41 feather samples and four blood samples from adult eagles were collected during winter and summer of 2006, which will be analyzed for mercury and other contaminants. Samples were collected from disparate geographic locations throughout New York State in order to provide a complete picture of mercury levels across the state, especially within known "hot spots" where previously collected fish data have indicated concern. Results are expected within the year.

The Department is also conducting a study in the Neversink Reservoir watershed to assess mercury distribution, transformation, and accumulation in a variety of aquatic habitats. The Neversink is located in the Catskill Park and is one of six reservoirs west of the Hudson River that are part of the New York City water supply system. Recent monitoring of fish has identified mercury as a contaminant of concern in the reservoir. High mercury levels in smallmouth bass from the Neversink were detected in 1998 and all six New York City reservoirs currently have fish consumption advisories for various species based on elevated mercury levels. The Neversink was selected for further assessment because mercury concentrations in brown trout and smallmouth bass were higher than in any other reservoir and it is also the most acidic of the reservoirs, a characteristic that may be positively influencing mercury transformation to methyl mercury and uptake in the food chain. The distribution of total and methyl mercury in water, sediments, benthic macroinvertebrates, and fish from different aquatic habitat types (streams, ponds, and the reservoir) throughout the upper Neversink watershed are being examined. Also, methylation rates in water and sediment, and accumulation patterns in biota will be documented. The information derived from this study will be useful in determining environmental risk factors for mercury contamination in aquatic systems.

Recommendations:

- i.** Complete the statewide assessment of mercury in fish by 2007, including the assessment of a predictive model for mercury in fish.
- ii.** Complete the assessment of potential mercury impacts on common loons by 2007.

- iii. Continue assessment of mercury concentrations in fish in routine monitoring programs.
- iv. By 2008, establish a periodic long term monitoring program to assess the effectiveness of controls applied to atmospheric emissions of mercury. Seek funding for its accomplishment.

5. Solid Waste Facilities

Monitoring for mercury will continue at a number of different types of solid waste facilities to ensure adequate controls are in place to limit discharges of this material to our environment. Monitoring is required for leachate discharges from landfills, for the use of compost, and for the landspreading of biosolids and sludges. Source controls of mercury products and wastes will produce improving quality trends in these by-products of the solid waste stream.

Additionally, after July 12, 2005, Chapter 145, specifically prohibits the disposal of mercury-added consumer products in normal solid waste (trash) but rather, they be separated, collected and managed, at an approved or permitted facility. Additional provisions were added to these requirements under amendments to Chapter 145, under Chapter 676 of the Laws of 2005 (Chapter 676). Most recently, Chapter 180 of the Laws of 2006 (Chapter 180), set forth additional requirements for vehicle dismantlers to ensure the removal and proper management of mercury-containing switches from vehicles and set forth reporting requirements.

6. Special Studies

Sunday Lake

The DOW continues to participate in a mercury modeling study of Sunday Lake in Herkimer County being conducted by Dr. Charles Driscoll of Syracuse University. DOW scientists will collect and process taxonomic groupings of zooplankton samples from Sunday Lake for mercury analysis at Syracuse University. The study objective is to develop and test a mass balance and biogeochemical model to predict the fate of mercury in drainage lake ecosystems (typical of lakes in the Adirondacks), based on sampling lake sediments, the water column, plants, zooplankton, and fish.

B. Mercury-containing Products

GOAL: *Eliminate the production and use of mercury-containing products and require the proper management of the resultant collected mercury.*

Mercury is present in the solid waste stream due to the discarding of numerous mercury-containing products manufactured and sold over the last several decades. While disposal is still allowable under certain conditions, recent legislation (Chapter 145 and Chapter 676) has changed what is acceptable for end-of-life management of mercury-added consumer products. Even so, the legal disposal can cause mercury to be released into the environment. A comprehensive approach to minimizing the amount of mercury used in products or product formulations will be adopted.

On July 12, 2004, Governor Pataki amended Article 27 of the Environmental Conservation Law by signing into law Chapter 145 of the laws of 2004 “Title 21 Mercury-Added Consumer Products”. The legislation was passed at the state level banning the sale and distribution of mercury-added novelty products, the sale of mercury fever and body thermometers without a prescription, and the use or purchase of elemental mercury by schools. The law addresses manufacturer labeling, proper disposal, prohibitions, establishes an advisory committee on mercury pollution and authorizes an interstate clearinghouse. On September 16, 2005, a bill was signed by the governor to amend the existing ECL Section 27-2101, added by Chapter 676 of the Laws of 2005. The amendment made technical corrections and revisions to Title 21 of Article 27 of the ECL to allow easier implementation of its provisions, remove conflicts with existing statute and regulations and that result in additional restrictions on mercury-added consumer products that are consistent with controls required on such products by other states, especially in the Northeast region. Even with the new law, the Department can take a number of additional steps toward education and further promotion.

1. General Information

New York State citizens and businesses must be educated about the dangers of this toxic material, its proper management and ultimate disposal.

Recommendations:

- i.** Continue to develop a information on the hazards of mercury and post on the Department’s website.
- ii.** Continue to develop informative materials on the proper management of mercury and mercury-containing products and compliance with Chapter 145, Laws of 2004 and Chapter 676, Laws of 2005.
- iii.** Continue to develop lists of alternative, nonmercury-containing product substitutions.

2. Household Hazardous Waste

A hazardous waste is a waste specifically listed because it contains certain chemicals harmful to human health or the environment, or exhibits hazardous properties, such as being ignitable, corrosive, reactive or toxic. Numerous household products containing mercury, including thermostats, electronic switches and fluorescent lamps, are commonly accepted in many local HHW collection programs. The Department provides partial funding to communities for these programs to encourage the proper management of hazardous materials. However, many State residents do not have HHW collection programs available to them and discard these items in their household trash to be incinerated or landfilled. Residents must be informed about HHW programs and have such programs available to them to participate in.

Chapter 145 has added further restrictions on the disposal of mercury-added consumer products. A comprehensive HHW program that includes the acceptance of all household mercury-added consumer products would satisfy the requirements set forth in Chapter 145.

In New York, generators of hazardous waste are required to determine the type and quantity of hazardous waste they generate each month. Based on this determination, they are then classified as a Conditionally Exempt Small Quantity Generator (CESQG), a Small Quantity Generator (SQG), or a Large Quantity Generator (LQG). The amount of hazardous waste generated is the total of all hazardous waste per address, excluding any universal wastes. CESQGs generate no more than 220 pounds per month of listed and/or characteristic hazardous waste. Most often, schools will be classified as CESQGs. Presently, CESQGs can participate in HHW programs with the approval of local organizers, but the state cannot fund their inclusion. State funding for the participation of CESQGs in HHW events would prevent a great deal of mercury from potentially entering the environment.

Recommendations:

- i.** Support legislation to allow State funding to cover CESQG participation in HHW programs.
- ii.** Work with communities to target mercury wastes in their HHW programs.
- iii.** Encourage more communities to conduct HHW programs.
- iv.** Inform municipalities of the requirements of Chapter 145 and how HHW collection efforts interrelate.

3. Universal Waste/Mercury-Containing Equipment

Various mercury-containing equipment have specifically been added to the federal and state Universal Waste Regulations (UWR) under the Resource Conservation and Recovery Act (RCRA) and through enforcement discretion, respectively. The federal Universal Waste provisions are intended to allow a degree of relaxed regulatory control, provided materials are managed appropriately. The Department has issued a Commissioner's Policy, "Use of Enforcement Discretion for Discarded Mercury-Containing Equipment" (CP-39), effective June 16, 2006. This policy allows the regulated community to utilize the new federal requirements until the Department formally adopts the provision in state regulations. "MCE" is defined as a device or part of a device (including thermostats, but excluding batteries and lamps) that contains elemental mercury integral to its function. Various types of MCE waste included instruments that are used in industry, hospitals and households. Some commonly recognized items include, but are not limited to, thermometers, thermostats, barometers, manometers, temperature and pressure gauges, and mercury switches. These requirements facilitate the efficient and environmentally protective management of waste MCE.

Recommendations:

- i.** Continue to support USEPA efforts for mercury management and to formally include all mercury-containing equipment (such as mercury switches, manometers, etc.) in the state UWR.
- ii.** Prepare and distribute educational information on the advantages of the UWR for management of MCE to the regulated community.

4. Automotive and Appliance Switches

Mercury tilt switches have been commonly used in various appliances like freezers and irons, as well as hood and trunk lighting in some automobiles. Although the use of these switches in new vehicles and appliances is declining, there are millions of these switches in existing junkyards, scrap yards, homes and on the highway. Since there are low-cost alternative (nonmercury-containing) switches available, the Department has continued to recommend that manufacturers stop using mercury switches and promote programs to collect existing switches from vehicles and appliances. The Department's Region 9 - Division of Solid and Hazardous Materials has utilized an USEPA grant to pilot a mercury switch collection program for vehicles, which has become a model other states are following. Most recently, vehicle manufacturers have begun a similar program named End of Life Vehicle Solutions (ELVS) to collect these switches and are in the process of trying to nationalize their efforts. While New York now participates in the ELVS program, the State has adopted legislation, Chapter 180, Laws of 2006, to further require that these mercury switches be collected and properly managed before vehicles containing them are crushed or shredded. These types of efforts and activities should be continued, encouraged, and expanded.

Recommendations:

- i.** Eliminate the use of mercury tilt switches in automobiles and other mercury-containing products, such as headlights and navigation systems.
- ii.** Promote and/or establish collection programs for existing mercury switches in vehicles. This would include: working with vehicle manufacturers, the Steel Recycling Institute, scrap metal processors, automotive dismantlers and junkyards to establish efficient collection programs for mercury switches.
- iii.** Educate the automotive and scrap industries of the disposal prohibitions under RCRA, the ECL and New York's Chapter 145, Chapter 676, and Chapter 180.

5. Fluorescent and High Intensity Discharge (HID) Lamps

Mercury is an essential component of fluorescent lamps, high pressure sodium lamps, compact fluorescent and other types of lighting devices. Since these lamps are much more energy efficient than others, the Department continues to encourage their use until alternative technologies become available. Additionally, there are programs in place to recycle used mercury-containing lamps and regulations to encourage this practice. Additional education and outreach efforts are needed to expand these programs. Once these lamps enter the waste stream it is very likely they will be broken during waste transportation and processing and if not properly managed, will be releasing mercury into the environment. Chapter 145 adds further restrictions and allowances for non-hazardous mercury-containing lamps but that information needs to be conveyed to individuals and businesses. If hazardous, these lamps are subject to full RCRA management requirements, or managed as a universal waste. UWR requirements can be found at 6 NYCRR Subpart 373-4 or as a link on the Department's mercury webpage.

Recommendations:

- i.** Promote existing recycling efforts through a link from the Department's website on fluorescent bulb recycling, <http://www.dec.state.ny.us/website/dshm/hzwstman/lamprecy.htm>.
- ii.** Develop and distribute informative brochures on lamp recycling efforts.
- iii.** Promote proper management of mercury-containing lighting products.
- iv.** Continue to participate in NEWMOA's fluorescent light recycling workgroup.
- v.** Encourage manufacturers to research and develop nonmercury-containing alternatives. (The Empire State Development Corporation is responsible for promoting markets for recyclables and pollution prevention under Chapter 70 of the New York State Solid Waste Management Act).
- vi.** Inform residents, businesses and municipalities of the disposal restrictions included under Chapter 145 & 676.
- vii.** Promote guidance to increase compliance with existing hazardous waste regulation and statute.

6. Thermometers

Mercury thermometers are relatively cheap, convenient and very accurate instruments for determining temperature. It is estimated there are millions of these in homes across New York State. Unfortunately, they are very fragile and easily broken. Many of the reports to poison control centers and spill hotlines are the result of broken thermometers. There are nonmercury-containing thermometers available on the market sufficient for home use. A number of states, including New York, effective January 1, 2005, have banned the sale of mercury fever thermometers.

Recommendations:

- i.** Encourage local communities, institutions and private businesses to conduct take-back/exchange programs when possible.
- ii.** Promote the inclusion of thermometers in HHW collection programs.
- iii.** Support regional, national and international efforts to ban the sale of mercury fever thermometers.
- iv.** Establish a mentoring program between communities that have held thermometer take-back programs and those that want to, with examples of successes posted on the Department's website.
- v.** Provide information and guidance to the health care industry regarding the Chapter 145 and RCRA restrictions on the sale and end-of-life management of mercury fever and body thermometers.

7. Thermostats

Mercury-containing thermostats have been widely used in homes and businesses to regulate temperature. A system is already in place, initiated by thermostat manufacturers, to collect out-of-service mercury thermostats. The Thermostat Recycling Corporation (TRC) utilizes the existing Heating, Ventilation and Air-Conditioning (HVAC) wholesaler network by providing collection containers at participating locations. Out-of-service thermostats are returned to the wholesalers

in person, through a dealer or contractor for recycling. This program is possible because mercury thermostats may be managed as universal waste. Mercury-containing thermostats have been included in the UWR category of "Mercury-Containing Equipment", as discussed in section 3, on page 8. The nation's largest supplier of mercury-containing thermostats, Honeywell, has announced the phase out of this product by 2006. Reliable nonmercury-containing thermostats are readily available.

Recommendations:

- i.** Promote the collection & recycling of mercury thermostats, through new or existing program systems.
- ii.** Provide education and outreach information to consumers and manufacturers about the requirements of Chapter 145 and RCRA as they relate to the sale, distribution and end-of-life management of mercury-containing thermostats.
- iii.** Promote the TRC program through a link, http://www.nema.org/index_nema.cfm/624, from the Department's website.
- iv.** Distribute the TRC information to HVAC contractors and equipment suppliers.
- v.** List participating TRC wholesalers on the Department's website.
- vi.** Promote the inclusion of these products in HHW collection efforts.

8. Dairy Manometers

Mercury manometers were used on dairy farms to measure vacuum changes in milking systems. Although there are now alternatives, many farms still have their mercury manometers. The Department's PPU surveyed dairy farms and determined that several hundred manometers still exist. Most are no longer in use, but there are new options available for the proper management of these devices. Manometers are now considered MCE under the UWR and can be managed as such. Some may be taken to CESQG collection programs, but many manometers may be located in communities without such programs.

In the past, dairy manometers had been collected under the Pesticides "Clean Sweep" program for certain eligible farmers. However, manometers can now be managed as universal waste and collected from all farmers at "Clean Sweep" and other programs.

Recommendations:

- i.** Provide farmers in the state with information on cost-effective alternative, nonmercury-containing gauges, and proper management options available for disposal of mercury manometers.
- ii:** Seek funding initiatives and collection system alternatives to assist dairy farmers in the removal of mercury manometers.
- iii.** Continue to include and promote the collection of dairy manometers and other mercury-containing equipment in HHW, "Clean Sweep", and other programs across the State.

9. Batteries

Batteries constructed with mercury oxide have good shelf life and energy density. They have been widely used in military applications, watches, calculators, cameras, and hearing aids for many years. Mercury free technologies for some of these have recently been discovered. As additional technologies emerge, use of these mercury-containing products will continue to decline. However, they are still available and, in some applications, necessary.

Recommendations:

- i.** Work with NEWMOA and other appropriate organizations to identify imported batteries that do not meet existing standards for mercury content.
- ii.** Work with the federal government to ensure that mercury concentrations in imported batteries meet federal standards.
- iii.** Encourage manufacturers to research and develop nonmercury-containing alternatives (Empire State Development Corporation).
- iv.** Promote the use of non-mercury containing batteries
- v.** Promote the collection and proper management of mercury-containing batteries through private and public efforts.

C. Labeling

GOAL: *Adopt consistent labeling of mercury-added consumer products.*

Within the NEWMOA model mercury legislation, NYS Chapter 145 of Laws of 2004 and under a number of other states' legislation, labeling of mercury-added consumer products is now required. In New York State, after July 12, 2005, all mercury-added consumer products must be labeled. To ensure consistent national and regional labeling, we recommend the following action items.

Recommendations:

- i.** Work with the labeling workgroup of IMERC which provides responses to mercury-containing product manufacturers on labeling requirements.
- ii.** Provide consistent determinations on labeling issues and questions from manufacturers.
- iii.** Post on the Department's website information, guidance and links on labeling requirements and determinations to ensure consistent implementation of Chapter 145's labeling requirements.
- iv.** Adopt appropriate regulations to implement the various provisions of Chapter 145, which will allow alternative labeling approaches to be consistent with other state's labeling programs.

D. Sector-Specific Efforts

GOAL: *Establish programs to further promote the proper management, recycling and elimination of mercury from various industry sectors.*

Various sectors of our society continue to use mercury in their programs, offices and supplies. The Department, working in partnership with other federal, state and local agencies and other organizations, will encourage the removal of mercury, whenever practical, and provide the guidance, information and materials necessary to assist those sectors in removing mercury- containing products.

1. Dental Amalgam

Dental amalgam, which contains mercury, has been used by the dental community for decades as an effective filler for cavities. During the filling procedure, which may include the removal of old fillings, small amounts of mercury-laden amalgam enter the wastewater. In addition, some of the amalgam being placed remains unused and becomes waste. These wastes need to be managed properly. Alternative mercury-free composite filling products are now available to dentists for many situations.

Governor Pataki signed legislation, Chapter 506, Laws of 2002, which requires the collection and recycling of any mercury and amalgam waste generated at dental facilities. The Department's Division of Solid and Hazardous Materials (DSHM) completed the rulemaking activities required to implement this law and adopted provisions under Subpart 374-4. The DSHM also partnered with the New York State Dental Association to notify State licensed dentists of their mercury waste management requirements. During the development of Subpart 374-4 of these draft regulations, the DSHM met with groups interested in, or potentially impacted by, these regulations. These groups include State and local dental societies, environmental groups, local pollution prevention and sewage treatment works officials, recycling and collection equipment vendors, as well as other State agencies, such as the DOH and the Department of Education's Dental Board.

The regulations require dentists to install and properly operate dental amalgam separation equipment to remove waste amalgam from any wastewater before being discharged. New dental facilities must install this equipment before opening while existing facilities have to install this equipment by May 12, 2008.

Recommendations:

- i.** Continue education program to promote environmentally sound mercury waste management practices at dental facilities.
- ii.** Continue to inform the dental community about the recently adopted Subpart 374-4 regulations and the related requirements under Chapter 506.
- iii.** Promote the use and funding of dental amalgam alternatives.

2. Schools

Mercury has very unique and interesting properties, some of which are ideal for teaching. It is a silver liquid metal that conducts electricity, expands uniformly with temperature and easily forms alloys with other metals. Many science classrooms possess varying amounts of elemental mercury to use for educational exercises. However, scientific principles can be taught alternatively, through the use of video or other media. Mercury-containing equipment typically found in schools can include thermometers, barometers, hydrometers, spectral tubes, thermostats and gauges.

Mercury in schools is a health and environmental hazard. Chapter 145 specifically restricts the use and purchasing of elemental mercury in primary or secondary schools after September 4, 2004. Mercury must be reduced in the school environment.

The Department is accomplishing this goal with the aid of grants from the USEPA. Educational materials, developed in partnership with Departments of Health and Education, are being distributed statewide. The Department, in conjunction with NEWMOA, has conducted a series of five half-day training workshops to promote the elimination of mercury in schools throughout New York State. These workshops were held in Rochester, Syracuse, Albany, New York City and Long Island.

As a direct result of the Syracuse workshop, the city of Syracuse's health and safety officer spearheaded a campaign to inventory, collect and remove mercury from 46 schools in the Syracuse city school district. So far, 22 pounds of elemental mercury (this amount also includes mercury from mercury-containing devices such as lab and fever thermometers, and mercury switches), approximately 5520 pounds of crushed fluorescent lamps, 845 fluorescent lamps (intact), 222 Metal Halide lamps, 123 High Pressure Sodium lamps, 79 Mercury Vapor lamps have been collected for removal and recycling.

Representatives from the Onondaga County BOCES will be collecting and removing mercury from 14 school districts (60 schools). So far, 9508 Fluorescent bulbs/lamps, 159 Lab thermometers, 4.5 pounds of elemental mercury, 6 mercury switches, 22 multi-vapor flood lamps and 2 fever thermometers have been collected for removal and recycling. As part of an environmental benefit project resulting from a consent order settlement between the DEC and Solvents and Petroleum Service, Inc., \$24,000 was recently awarded to the city of Syracuse and Onondaga county school districts for mercury clean outs.

After the workshop in New York City, the New York City Department of Education committed to a mercury inventory, and ultimate clean out of mercury from its 1,500 schools, beginning in August of 2006

A pilot demonstration project, funded by the USEPA, has been completed for the City of Rochester and the Albany County school districts. 225 pounds of mercury was cleaned out from nine schools in Rochester and 376 pounds of mercury was cleaned out from 39 schools in the Albany County school district. These schools were also furnished with mercury-free alternatives.

With an additional grant from the USEPA, the Department's PPU will be extending their outreach efforts to conduct 15 more workshops. Partnering with NEWMOA and New York's county Board of Cooperative Educational Services (BOCES) organization, PPU will be conducting mercury outreach to close to every county in New York State.

Recommendations:

- i.** Encourage the inclusion of eligible schools in local HHW collection activities and address funding issues.
- ii.** Encourage local communities and businesses to include and assist local schools in mercury clean-out efforts based on their own experiences.
- iii.** Provide contacts and educational materials to schools on the restrictions and appropriate management outlets for elemental mercury and mercury-containing products.
- iv.** Post information on the Department's mercury website and provide links to the appropriate Departments of Health and Education websites.

3. Health Care Industry

Mercury can be found in numerous health care products, including fever thermometers, blood pressure measuring devices, manometers and esophageal dilators. If these products are broken, disposed of improperly, or incinerated, mercury can be released into the environment. With the adoption of Chapter 145, the end-of-life management of these items is more strictly regulated. There are cost-effective, nonmercury-containing alternatives that can replace almost all of these products.

Recent New York State legislation restricts the use of mercury in vaccinations. Any vaccine containing more than 0.5 micrograms of mercury per 0.5 milliliter dose, is prohibited to be administered to any person under the age of three years and to women who know that they are pregnant, with the exception of the influenza vaccine, which may contain not more than .625 micrograms of mercury per 0.25 milliliter dose to children under three years old, and for pregnant women, not more than 1.25 micrograms of mercury per 0.50 milliliter dose. The Commissioner of Health is authorized to grant exemptions in cases of disease outbreaks and vaccine shortages, and exempts influenza vaccines which complies with the provisions of this act.

Recommendations:

- i.** Promote the Memorandum of Understanding (MOU) between the American Hospital Association (AHA) and the USEPA on the reduction and removal of mercury-containing items.
- ii.** Work with DOH and the health care industry to determine needs and information to implement further mercury-containing product removal.
- iii.** Post information on the Department's website and provide links to the DOH website to facilitate mercury removal in the health care industry.
- iv.** Provide information and guidance to the health care industry regarding the Chapter 145 restrictions on the sale of mercury fever and body thermometers.

E. Program Actions

GOAL: *Reduce the impact of mercury on our environment through the development of a comprehensive strategy for the further reduction of emissions and discharges.*

1. Air Resources

A number of State and federal air pollution standards and permit restrictions on air emissions sources are already in place.

On March 15, 2005, EPA announced the final Clean Air Mercury Rule (CAMR). CAMR limits mercury emissions from new and existing coal-fired electric steam generating units, and creates a market-based cap-and-trade program that will permanently cap utility mercury emissions nationwide in two phases: the first phase cap is 38 tons beginning in 2010; the second phase cap set at 15 tons beginning in 2018. EPA believes these mandatory declining caps will ensure that mercury reduction requirements are achieved and sustained. On May 18, 2005, EPA promulgated Emission Guidelines and Compliance Times for Coal-Fired Electric Steam Generating Units. (70FR 28606-28700) Pursuant to 40 CFR 60.4141, all States are required to submit to the Administrator their designated mercury allowances for each coal-fired electric steam generating unit by October 31, 2006. Regardless if a State is adopting the federal program or creating its own State control plan, all States must require applicable sources to limit mercury emissions at or below levels which meet the allocations designated in 40 CFR 60.4140. For New York State, these distributions equal 786 pounds per year of allowable mercury emissions in 2010-2017 and 310 pounds per year in 2018 and beyond.

The Department has promulgated a state mercury regulation which incorporates the Phase I emission cap established in the federal rule for the years 2010-2014 and beginning in 2015 establishes a unit-based emission limit for each applicable unit. Phase I of the proposed State regulation, 6 NYCRR Part 246, will impose facility wide mercury emission caps, based upon the state mercury budget distributed to New York State by EPA. Applicable facilities will not be permitted to generate and trade mercury reductions with other facilities or other States. The Department will distribute to applicable facilities an allowable amount of mercury emissions expressed in pounds per year in total, not to exceed New York's mercury state budget. These distributions will serve as facility-wide emission limitations or caps. The facility wide caps will be in effect from 2010 to 2014. Starting in 2015, Phase II, in conjunction with other electric sector regulations such as the Regional Greenhouse Gas Initiative (RGGI) and the second phase of the Clean Air Interstate Rule (CAIR), the State mercury regulation will establish a unit-based emission limit for each applicable unit. The Department will submit Part 246 for approval in lieu of New York State accepting the model rule requirements of the federal Clean Air Mercury Rule.

DAR has compiled an extensive model-ready mercury emissions inventory for major and area source categories within the State, but data input is ongoing.

Recommendation:

- i. Develop a State mercury inventory to be reviewed and updated biennially. Characterize mercury emissions from stationary sources through source testing, emission factors, or mass balance calculations. Data collection for source characterization is being completed and will be the basis for assessing the need for more stringent permit conditions.

2. Water Resources

Mercury is one of a list of persistent, toxic substances targeted as a pollutant of concern in the development of Watershed Management Plans and Watershed Restoration and Protection Strategies. If mercury is known or suspected to be responsible for impairments of beneficial uses, it becomes the focus of source reduction activities.

a. Watershed Management Plans

New York-New Jersey Harbor Estuary Program

The Department is attempting to reduce toxic chemicals in New York Harbor under the Contaminant Assessment and Reduction Program (CARP), which was a creation of the Harbor Estuary Program, cosponsored with USEPA. The Department developed a comprehensive, multi-media contaminant identification and trackdown program simultaneously with New Jersey and the CARP Work Group (a group of government, academic, and consultant experts). The states, together with the work group, are undertaking a variety of projects. These projects include studies of the water, sediments, and biota in the Harbor, and tracking down contaminant sources of Harbor surface, ground, and wastewater. One of the principal chemicals of concern is mercury.

Mercury exceeds the water quality standard Harbor-wide. The mercury characteristics of the point source discharges to the Harbor are being quantified and the system is being analyzed using a mass-balance model. This work will help to identify current mercury loadings to the Harbor system and refine our understanding of mercury contamination in water, sediments and biota.

Recommendations:

- i. Minimize the discharge of toxic chemicals (mercury) from combined sewer overflow (CSO), storm water, and non-point source, which may include dental (amalgam), among other mercury-containing wastes. Full implementation of the Final National CSO Control Policy and currently planned New York and New Jersey CSO abatement programs are expected to reduce discharges of toxic chemicals (mercury). Action is on-going.
- ii. Reduce industrial discharges of chemicals of concern (mercury). Permits for direct industrial discharges to the Harbor contain technology-based limits expected to minimize the discharge of toxic chemicals (mercury). Indirect industrial discharges to the Harbor are subject to the Industrial Pretreatment Program. Action is on-going.
- iii. Reduce municipal discharges of chemicals of concern (mercury) to New York Harbor. To abate mercury discharges, USEPA, the Department, and the New Jersey Department of Environmental Protection implemented a phased Total Maximum Daily Load (TMDL) approach by incorporating

limits and additional requirements into draft permits. Further progress in the TMDL approach is pending additional atmospheric deposition data from the New Jersey Atmospheric Deposition Network.

- iv.** Develop data to assist in the identification and remediation of continuing sources of toxic contamination to the Harbor (i.e., trackdown).
- v.** Develop information of use in setting TMDLs.
- vi.** Gather data to input into mathematical models designed to predict when sediments and biota will attain certain qualities.
- vii.** Develop data potentially useable in pursuing environmental quality damage litigation.
- viii.** Provide environmentally sound planning for dredging decisions.
- ix.** Use data collected for source characterization as the basis for assessing the need for more stringent permit conditions.

b. Ambient Water Quality Standards

Even at low levels in the water, mercury can accumulate to high concentrations in fish. Mercury in fish tissue can sometimes reach levels high enough to threaten the health of people who eat certain fish from certain waters. To protect the best uses of waters in New York State, DOW, has derived and promulgated protective numeric Water Quality Standards for mercury in all use classifications of ambient waters. These include standards for the protection of:

- potable water;
- aquatic life propagation;
- aquatic life survival;
- human health from consumption of contaminated fish tissue; and
- wildlife.

Recommendations:

- i.** Where mercury is suspected or known to be in discharge in excess of background levels, discharge is regulated through permit restrictions to reduce mercury in the effluent to the maximum extent practical to avoid contravention of water quality standards or use impairments in all ambient waters.
- ii.** If there is reason to believe mercury is present in effluent, a permittee can be required to monitor for mercury in the effluent.
- iii.** Pollutant Minimization Programs (PMPs), multi-step pollutant targeted processes for identifying sources of a pollutant followed by action to minimize that pollutant in the influent to a wastewater treatment facility, required in the Great Lakes drainage basin, will be required for facilities with mercury effluent limits in the remainder of New York. The DOW has developed a draft generic State-wide PMP for mercury.
- iv.** Analyze and evaluate the feasibility of a State-wide Multiple Discharger Variance, as in other Great Lakes States, to reflect discharge levels currently achievable.
- v.** New or expanded dischargers of mercury in the Great Lakes Basin are subject to Antidegradation Review prior to permitting.

3. Solid Waste Management

a. Solid Waste Facilities

Solid waste facilities are now required to comply with additional restrictions under Chapter 145 and Chapter 676 for the end-of-life management of mercury-added consumer products. These requirements need to be appropriately included in regulations and relayed to the regulated community. Implementation of the specific action items below will enable these facilities to meet more stringent mercury emission limits recently adopted for incineration, reduce the cost of mercury air pollution control and encourage compliance with New York's mercury laws.

Recommendations :

- i.** Review waste control plans to identify deficiencies regarding mercury controls now required under Chapter 145.
- ii.** Inform and encourage communities covered by waste control plan provisions to expand such efforts to include all mercury-containing product wastes.
- iii.** Provide communities with information and guidance on appropriate mercury waste management.
- iv.** Determine any appropriate additional controls to be included under comprehensive solid waste rulemaking revisions currently being developed.
- v.** Revise appropriate New York State solid and hazardous waste regulations to reflect recently adopted mercury laws including Chapter 145, Chapter 676 and Chapter 180.

b. Great Lakes Mercury Product Phase-Out Strategy Workgroup

A workgroup has been formed from recommendations within the Great Lakes Collaboration Strategy sent to President Bush this past year. EPA is facilitating this team based on the Great Lakes State's commitment to collaboration. The goal of this workgroup was set forth in the following statement: "The Great Lakes State, Cities and Tribes will develop a basin-wide mercury product stewardship strategy, aimed at managing mercury wastes and reducing the use of mercury-containing products. The Great Lakes Pollution Prevention Roundtable will lead this effort."

High level support for this strategy was offered in a December 12, 2005, letter to President Bush from the Council of Great Lakes Governors and Great Lakes and St. Lawrence Cities Initiative. The letter endorsed a leadership role for the Great Lakes Regional Pollution Prevention Roundtable in this effort. While development of this strategy is a State and Tribal initiative, EPA Region 5 has helped to facilitate this important activity.

Each Great Lake state, including New York, has provided staff to participate in the workgroup to develop the basin-wide mercury product stewardship strategy. The workgroup has also requested and received tribal involvement. Most of the work of this group will be done through a series of conference calls. The outcome should be a product stewardship strategy which will include a mix of measures that all states should commit to, along with recommended options for implementation. New York should continue to participate in this workgroup and promote and implement its adopted outcomes.

Recommendations:

- i.** Continue to develop this mercury product phase out strategy through New York's participation in the Great Lakes workgroup.
- ii.** During development, staff should continue to keep appropriate Department staff aware of efforts.
- iii.** When completed, circulate the draft strategy to appropriate reviewers for endorsement, including Executive and Governor's staff.
- iv.** If endorsed and adopted by the Great Lakes states, implement the strategy as appropriate.

4. RemediationOnondaga Lake

Under the supervision of the Department, Honeywell is currently cleaning up the LCP Bridge Street Site, which has been identified as a significant source of mercury to Onondaga Lake. Cleanup, with the exception of the final cap, is expected to be completed in the 2006 calendar year, and will cost approximately \$16 million. The LCP Bridge Street Site is located approximately two miles west of Syracuse, New York. The 20-acre facility is situated to the south of the New York State Fairgrounds. The site includes a wetland and man-made stream named the West Flume. The West Flume traverses through the northern portion of the facility and discharges to Geddes Brook, approximately 3,100 feet west of the facility. Geddes Brook discharges into Nine Mile Creek, which in turn is a tributary of Onondaga Lake.

In 1953, Allied Chemical (predecessor to Honeywell) constructed a chlor-alkali facility at the site. The chlor-alkali facility produced caustic soda (sodium hydroxide) and liquid chlorine. In 1979, the plant site was sold to LCP Chemicals. LCP operated the chlor-alkali plant until 1988, when manufacturing at the facility ceased. Since 1990, various interim cleanup activities have occurred at the site (*e.g.*, removal of PCB electrical equipment, removal of mercury contaminated equipment). In September 2000, the Department issued a Record of Decision (ROD) outlining the final remedy for the site which, in part, includes the following:

1. excavation and on-site treatment *via* soil washing of approximately 8,000 tons of soil contaminated with elemental mercury from beneath the former Mercury Cell Building foundation slab, Mercury Retort Area and Mercury Still Area (soil washing was completed in 2005, and over 15,000 pounds of elemental mercury were recovered for recycling);
2. excavation of mercury contaminated sediments from the West Flume (20,000 cy) and wetlands (50,000 cy) for consolidation at the facility (wetlands excavation was completed in 2005, the West Flume excavation is scheduled to be completed in 2006, and wetland and stream restoration is expected to be completed in 2006);
3. excavation, cleaning and crushing of on-site sewers (this work was completed in 2005);

4. excavation of over 40,000 cy of brine mud and mercury contaminated soil and fill for consolidation at the facility (this work was completed in 2005);
5. groundwater containment through the installation of a subsurface barrier wall (a soil-bentonite wall keyed into glacial till, 45-65 feet below the ground surface) and groundwater collection system (the barrier wall was completed in 2005, and the groundwater collection system is expected to be completed in 2006); and
6. installation of a low permeability cap over the facility to contain site soils and consolidated sediments, soils, fill, brine mud and demolition debris (a temporary cap will be installed in 2005, and the final cap is scheduled to be installed in 2007).

In order to monitor the effectiveness of the remedy, groundwater, surface water, sediment and biota monitoring will occur after the construction has been completed.

F. Storage & Stockpile Policy

GOAL: *Encourage and support the development of a national policy on the establishment of permanent storage or stockpiles for excess mercury.*

As policies are adopted to reduce and potentially eliminate mercury from products, management of discarded mercury must be addressed. Although there will continue to be a legitimate use of mercury in limited products, such as fluorescent lamps, the amount of retired mercury will increase. A policy will be established addressing ultimate disposition and long-term storage of this surplus mercury.

Recommendations:

- i.** Support efforts to find long-term management options for surplus mercury.
- ii.** Continue to participate in the development of a national storage policy for permanent storage or stockpiles of excess mercury.
- iii.** Evaluate potential implications of proposed storage sites.

Summary

Mercury contamination is a global problem. The Work Group recommends promoting New York State's mercury management agenda at regional, national and international levels. Participation in clearinghouses such as NEWMOA , IMERC, Toxics in Packaging Clearinghouse (TPCH), Northeast Recycling Council (NERC), the Great Lakes Mercury Work Group, and the Environmental Forum of Great Lakes States will ensure that New York State's policies on mercury will be shared at regional, national and international venues. The Department will continue to disseminate information by expanding its website to include up-to-date mercury information (i.e. new mercury legislation and regulations, lists of mercury recyclers, specific product recyclers and links to related sites).