

ADVISORY COMMITTEE ON MERCURY POLLUTION



2004 ANNUAL REPORT

to the Governor, General Assembly
and Citizens of the State of Vermont

January, 2004

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EXECUTIVE SUMMARY

This is the sixth annual legislative report of the Advisory Committee on Mercury Pollution, established to report on mercury contamination in the environment, health risks posed, and to review programs and methods to reduce contamination and health risk.

This report reviews: (1) the status of mercury education and reduction efforts and work of the Committee; (2) status of mercury monitoring and research and monitoring needs; (3) Committee recommendations on reducing mercury contamination and exposure risk; and (4) Committee work plan for 2003.

SUMMARY OF COMMITTEE RECOMMENDATIONS

- **Mercury Reduction Initiatives** - The Committee strongly feels that adequate funding should be provided (\$20 – 25,000) through the Agency of Agriculture, Food and Markets, in cooperation with Vermont Department of Environmental Conservation, to remove and/or replace the remainder of mercury-containing dairy manometers on Vermont farms. These devices typically containing one-half pound or more of mercury. More than 80 mercury dairy manometers have been replaced, however, the task was never completed due to a lack of funding. Dollar-for-dollar, dairy manometer replacement is a cost-effective means to remove mercury that may be a high risk of future environmental release.
- **Legislation** - The Advisory Committee on Mercury Pollution strongly recommends that mercury product legislation, introduced as S.111, be passed by the Legislature this session. Vermont was one of the first states to pass mercury product legislation in regard to product labeling and voluntary mercury education and reduction. However, since the Northeast states developed “model” mercury product legislation, Vermont has lagged behind most New England states in adopting controls on mercury products. Vermont has been the leader in the nation in implementing mercury product labeling since the law was passed in 1998. However, there are many additional actions that will reduce human health risk to mercury that are included in this bill. This report identifies those sections of S. 111 which are of highest priority.
- **Monitoring and Research Needs** - The Committee recommends that funding be provided to better characterize mercury contamination in Vermont by (1) enhancing fish tissue monitoring for mercury and establishing a new air mercury monitoring site in southern Vermont.

WORK OF THE COMMITTEE IN 2004

- The Committee has identified outreach on mercury contamination in fish as a high priority in 2004 and will oversee efforts by the Departments of Environmental Conservation, Health, and Fish and Wildlife.
- The Committee will continue to examine research and monitoring information on mercury in Vermont’s environment and areas of critical need for additional studies and information
- The Committee will review work being done to reduce mercury release in dental and health care sectors and efforts to increase fluorescent lamp recycling.

INTRODUCTION

This is the sixth annual report of the Advisory Committee on Mercury Pollution, which was established by the 1998 Vermont Legislature to address and report on mercury contamination in the environment, health risks posed, and to review programs and methods to reduce contamination and health risk of mercury.

The Committee met five times in 2003. Since 1998 the Committee has met 49 times.

This report is divided into the following sections:

- I. Background on the Mercury Problem: Health Risks, Sources, and Emissions (intended as a synopsis of the mercury problem).
- II. Recent Mercury Education/Reduction Efforts In Vermont
- III. Mercury in the Environment – Recent Studies
- IV. Committee Recommendations
- V. Committee Work Plan for 2004

I. BACKGROUND ON THE MERCURY PROBLEM – HEALTH RISKS, SOURCES, EMISSIONS

Human Health and Wildlife Impacts of Mercury Exposure

Human exposure to methylmercury results mainly from the consumption of fish and shellfish. Chronic low-dose methylmercury exposure from maternal consumption of fish is common and has been associated with neurodevelopmental effects in children. Infants may also ingest methylmercury from breast milk; children, whose nervous systems continue to develop until about age 14, are exposed through their diet. Additionally, there is evidence that exposure to methylmercury can adversely affect the developing and adult cardiovascular system and may contribute to heart disease in adults. Methylmercury contamination of fish is so pervasive in the U.S. that health departments in 45 states and American Samoa have issued fish consumption advisories. Limitations on fish intake pose public health impacts of their own, in light of the beneficial role of fish intake in a healthy diet.

Different government and international health agencies have developed health standards for methylmercury exposure. There is substantial agreement among these agencies on the level of methylmercury exposure that causes adverse effects. To the extent that the standards diverge, it is largely a consequence of scientific debate as to how to quantify uncertainties. A national survey conducted by the Centers for Disease Control and Prevention found that 1 in 12, or 8 percent of American women of childbearing age had amounts of mercury in their blood above levels that EPA considers safe. A number of other studies in the U.S. document even higher exposures.

Studies of the environmental effects of mercury have focused almost exclusively on wildlife impacts. Although the studies do not generally signal the decline of entire species, they do illustrate the adverse impacts on wildlife of mercury contamination in different regions of the U.S. For example, loon chick production in Wisconsin has shown a decline on lakes where the methylmercury content of chick blood

was elevated. Southeastern New Hampshire and the Rangeley Lakes area of Maine show the greatest concentration of mercury in loons in the nation, and loon studies in Vermont found that 20 percent of the loons tested are at high risk from methylmercury exposure. In mammals, mercury has been found in the highest concentrations in fish-eating mink and otter. There is also evidence of reduced survivorship in otters in areas where mercury deposition levels are high. Some studies have shown reproductive effects in fish also.

Mercury Emissions and Deposition in the U.S.

Mercury in the global inventory continuously cycles – it is mobilized, deposited on land and re-mobilized. Of the total mercury releases worldwide (4,840 tons), about 60 percent is from anthropogenic sources and the remainder is from natural sources that cannot be controlled. Coal-fired power plant emissions are the largest single source of anthropogenic emissions at over 40 percent of the total anthropogenic load. Mercury occurs as an impurity in fossil fuels, particularly coal and to a lesser extent in oil. Other industrial combustion sources such as municipal and medical waste combustors, residential and industrial boilers, and mercury cell chloralkali plants (that manufacture chlorine and other chemicals, using mercury in the process) also contribute significantly to anthropogenic releases (although regionally, waste combustion sources have been significantly curtailed). Other anthropogenic releases of mercury are derived from mercury used intentionally in products (such as fluorescent lighting, thermostats, dental amalgam, measuring devices, and electrical switches), and released during manufacturing or product use or disposal. Nationally, mercury deposition is highest in the Northeast and parts of the Midwest and Southeast.

Mercury Reduction Policy

Reducing domestic sources of mercury emissions is key to reducing mercury contamination within the U.S., particularly in fish populations. Recent scientific studies suggest that reducing mercury emissions can result in measurable decreases in mercury deposition and subsequent reductions in fish mercury concentrations in a relatively short period of time (several years). This observation is encouraging to policy makers, suggesting that real mercury risk reduction can be realized soon after reduction measures are taken.

In 1998, the New England Governors and Eastern Canadian Premiers (NEG/ECP) adopted a regional Mercury Action Plan that established a science-based, integrated regional strategy intended to reduce in-region mercury emissions by: 50% in 2003, 75% in 2010; and virtually eliminate anthropogenic releases over the long term. As of 2003, the region has achieved a 55% reduction in mercury emissions. The interim goal of 50% was reached largely through controlling mercury emissions from municipal waste combustors and other industrial sources. Achieving the next goal of 75% will require aggressive controls on power plants which are now the largest source of mercury in the region. Several states in the region have already taken regulatory steps to enact stringent mercury emissions controls. However, since about one-third of mercury deposition in the Northeast is attributable to out-of-region sources, primarily power plants, a strong national standard on mercury emissions is critical to reducing mercury exposure and risk.

USEPA has just released new regulations on control of mercury emissions from coal-fired power plants. These rules call for a two-step implementation, with essentially no new controls required until 2010, and a total emissions cap of 15 tons/year by the year 2018. One of the most controversial elements of this new regulation is the implementation of “pollution trading.” Under this scenario, mercury emitters that reduce emissions below their target levels can sell excess emission credits to others, who then can use these credits to continue to emit mercury above their own target levels. While this approach is amenable to certain air pollutants, the Advisory Committee views this as inappropriate for mercury. Power plants that

purchase pollution credits that are available, instead of reducing their emissions, can result in regional or localized hotspots of mercury contamination. EPA is accepting comments on the new rules for a 90-day comment period beginning December 15, 2003.

II. RECENT MERCURY EDUCATION/REDUCTION EFFORTS IN VERMONT

The following are summaries of recent mercury education and reduction efforts in Vermont that the Committee has reviewed or with which Committee members have been directly involved. The Vermont Department of Environmental Conservation (DEC) and Vermont Department of Health (VDH) have been the two state government agencies involved in these efforts.

Outreach to Sensitive Populations Grant Project:

EPA has provided grant funding to DEC to continue the outreach efforts to sensitive populations regarding mercury exposure through fish consumption. The two-year program will include information dissemination through health care professionals and targeted mailings to newly married couples and parents of newborns. Fish consumption information and advisories will be provided through brochures and posters. A survey will be conducted near the end of each year to determine the effectiveness of outreach efforts.

Posting of Fish Consumption Advisories/Warnings:

In a collaborative effort between DEC and VDH in 2003, a mercury fish consumption poster and a companion information poster was provided to Town Health Officers to post at each fishing access location in their respective towns. Over 150 access areas were posted and many of the town health officers requested additional posters to place at locations not on the access area list. The willingness and enthusiasm of the town health officers made this effort a success.

Advisory Committee member, Michael Bender, approached two food cooperatives in Vermont, seeking their cooperation in posting a warning on the consumption of fish with high levels of mercury. This warning is similar to the wording of the warning used in the State of California and voluntarily posted by several natural food retail chains. This is the first retail posting in Vermont and an attempt to “test the waters” for a voluntary posting by grocery stores.

The Committee also advised DEC on the development of a poster that pictures fresh and saltwater fishes and their relative mercury levels, for both fish that are typically caught in Vermont and fish that are purchased at retail stores. DEC and the Dept. of Fish and Wildlife will mail these posters to retailers that sell fishing licenses in early 2004.

Web Site Redevelopment:

DEC’s web site for mercury (www.mercvt.org) will be improved in early 2004. In addition to easier navigation, the site will now include information on proper disposal and general information about mercury, health effects, and a direct link to the VDH fish consumption advisories.

School Presentations:

Elementary and middle schools continue to request presentations through DEC on mercury in the environment. As part of the grant funding for outreach to sensitive populations, a video will be developed to convey much of the same information now provided in on-site presentations. These videos will be distributed to all Vermont middle and high schools.

Fluorescent Lamp Recycling Outreach

DEC received an EPA grant in 2003 to provide outreach to businesses and institutions to encourage recycling of mercury-containing lighting (fluorescent bulbs and tubes, HID lamps) rather than disposal. The goal of the project is to at least double the current rate of lamp recycling in the next two years. Outreach will include mass mailing of lamp recycling brochures to businesses, newspaper insert of brochures, and media campaigns (radio, TV, and newspaper). DEC is partnering with the Vermont Small Business Development Center and the Association of Vermont Recyclers (for outreach to schools). The Association of Vermont Recyclers is also a recipient of funding from the National Electrical Manufacturers Association (NEMA) to educate the general public and businesses about product labels on fluorescent and other mercury-containing lighting. This outreach and education will consist of media campaigns, newsletter articles, and direct mailings. This funding was required as a condition of DEC's approval of a labeling plan in which these lights are labeled with the "Hg" symbol (mercury's scientific designation on the periodic table of elements).

Hospital Mercury Reduction

DEC is completing a voluntary mercury reduction project with Vermont's 15 hospitals, in which the hospitals have pledged to reduce mercury use and develop voluntary reduction plans through the year 2005. It is expected that by this time, Vermont hospitals will have reduced mercury use by over 90 % from baseline mercury use in the 1990s. DEC has also received EPA grant funding to provide outreach to physician's offices and clinics to inform and educate Vermont physicians about mercury reduction opportunities.

Dental Amalgam Separator Pilot Project

DEC is conducting a pilot project to evaluate dental amalgam separator performance and operational issues in 19 dental clinics across the state. The pilot project results will be used to better inform the Vermont dental community of their options and considerations for amalgam separators to remove mercury from wastewater. DEC worked in collaboration with the Vermont State Dental Society to organize and implement the pilot project as a means to provide the dental community with first-hand knowledge and experience with the technology and to verify vendor claims on unit performance. Six types of amalgam separators were provided by vendors, installed in the summer of 2003, and will be monitored by DEC until April 2004. The focus of the pilot is on amalgam separator operational aspects and will not involve testing the units for mercury removal efficiency (this latter testing is already done following international testing standards).

The pilot project will culminate in a report that objectively compares specific amalgam separators on several attributes, including space and utility requirements, ease and flexibility of installation, maintenance requirements, operational costs, quality of the unit, vendor services, convenience of waste handling and recycling, dentist satisfaction, and other factors specific to a particular separator unit.

Thermostat Recycling

Despite the fact that about 30 plumbing and heating wholesale establishments provide collection boxes for the recycling of old thermostats, the number of thermostats collected statewide remains very small, representing less than a pound of mercury. Although the program is relatively new, the recycling rates are disappointing despite direct outreach done by DEC to HVAC contractors informing them of the program. More outreach is planned by DEC.

Municipal Collection of Mercury –Containing Wastes

The table below shows the amount of mercury collected through municipal household hazardous waste programs overseen by DEC over the last four calendar years from households and businesses. Wastes typically collected include thermometers, thermostats, mercury-containing switches and mercury spill clean-up debris. The only notable difference from previous years is the amount of mercury products and debris collected in 2003. It is significantly less than the previous year (700 lbs vs 1740 lbs). This decrease may be attributable to successful past efforts that have removed a significant proportion of the mercury product pool in households. In addition, outreach efforts are planned to promote the recycling of fluorescent lamps in the commercial, industrial and institutional sectors, where recycling rates are believed to be relatively low. This should lead to a significant increase in the amount of fluorescent tubes and compact fluorescent bulbs collected in the coming years.

Mercury Collection in Municipal Programs				
YEAR				
Type of Mercury Waste	2000	2001	2002	2003 (as of 1/7/04)
Mercury Products/Debris* (thermometers, measuring devices, switches)	972 lbs	1675 lbs	1740 lbs	700 lbs
Elemental Mercury **	25 lbs	161 lbs	168 lbs	204 lbs
Mercury-added Lamps ** (fluorescent and HID)	0.8 lbs (141,000 ft)	1.4 lbs (248,200 ft)	1.9 lbs (339,000 ft)	1.8 lbs (345,000 ft)

* Includes the weight of mercury and non-mercury containing components

** Represents actual weight of mercury collected

Vermont’s Product Labeling Law

The Second Circuit Court of Appeals ruled in Vermont’s favor over the National Electrical Manufacturers Association regarding the injunction that was previously in place prohibiting the labeling of mercury-containing bulbs. Lamp manufacturers began submitting labeling plans to implement product labeling with the chemical symbol “Hg” enclosed in a circle for bulbs manufactured after November 30, 2003. All of the major lamp manufacturer plans have been approved and labels will start to appear after unlabeled inventories have been depleted. NEMA, as a part of their approval to use the symbol on the lamp, has provided third-party funding in the amount of \$40,000 over two years for an educational campaign to promote the meaning of the symbol on the lamp in Vermont. (See Fluorescent Lamp Recycling Outreach in Section II.) This labeling will trigger a landfill disposal ban on the lamps as provided in the mercury labeling law.

Manufacturers of mercury products other than lamps are still, three years after the effective date of the labeling law, finding out about Vermont’s law and submitting labeling plans. Vermont is the only state that requires written information be provided by the manufacturer in the form of a labeling plan to identify how and where their products are labeled. Vermont has become a regional hub for the collection of labeling information from manufacturers across the nation and overseas. This information is placed in DEC’s database that is accessible to other states.

III. MERCURY IN THE ENVIRONMENT – RECENT STUDIES

A number of recent studies (including Vermont-specific studies as well as regional and national studies) in regard to mercury in the environment and environmental monitoring are summarized below.

Regional study of Mercury in Lakes

DEC's regional study of mercury contamination in lakes of Vermont and New Hampshire is completed. A manuscript describing results of the study will be published in 2004 in the journal *Environmental Toxicology and Chemistry*. The results of the study have been reported in prior ACMP annual reports, but in brief indicate the following:

- At least 25% of lakes across Vermont show Hg contamination above new EPA criteria limits.
- The likelihood that tissues of fish exceed the EPA criterion in any individual lake can be predicted from readily measured lake characteristics. The strongest predictors of tissue contamination include lake acidity, lake algal productivity, and lake size.
- While waters of lakes in more heavily developed watersheds have more mercury and methylmercury, this methylmercury is not readily bioaccumulated to fish tissue.
- Loons are excellent indicators of watershed mercury contamination. Twelve percent of Vermont lakes sampled are sufficiently mercury-contaminated to produce high or extra-high risk of adverse impacts to loons.
- The amount of mercury accumulating in lake sediments has declined significantly in recent years, but the annual rate of sediment Hg accumulation remains at four times pre-industrial levels.

Vermont Mercury Emissions Inventory

DEC has recently completed revisions to the statewide mercury emissions inventory. Vermont's emissions are the lowest of all New England states, with major sources including residential heating (75%), industrial fuel burning (12%), crematoria (8%), and mercury products (18%).

Lake Champlain Modeling

St. Lawrence University is continuing to refine its model of mercury accumulation in Lake Champlain. This model will be useful to determine the influence of changes in atmospheric deposition rates and wastewater discharges on the concentrations of mercury in the lake's waters.

United States Geological Survey Watershed Monitoring

The United States Geological Survey continues to actively monitor mercury in selected Vermont watersheds. The newest research findings indicate that upland areas of small streams may be important areas for the methylation (toxification) of mercury. This is a new finding which may bear national relevance. For 2004, USGS will place more of its mercury monitoring emphasis on Lake Champlain.

Vermont Institute of Natural Sciences (VINS) Avian Studies

VINS is presently making measurements of mercury in the blood of the threatened Bicknell's thrush, an insectivorous neotropical bird of the high-elevation montane forests. Results of this work suggest that mercury in these birds is elevated in some sites, and that the birds acquire additional mercury burdens as they age. This indicates that the mercury problem is not limited to aquatic environments. The purpose of this work is to establish an upland biological indicator of mercury contamination.

Northeast Ecosystem Research Center (NERC) Comprehensive Mercury Assessment

The Northeast Ecosystem Research Center's mercury workgroup is finishing a three-year assessment of mercury contamination across northeastern North America. The goal of that effort has been to amass as much existing mercury contamination data as practical, from monitoring and research projects across northeast North America. These data are being synthesized to create a comprehensive picture of mercury contamination for the study region. Results of these analyses will be published in a dedicated edition of the journal *Ecotoxicology*, towards the end of 2004. This research group is also initiating a new study to identify the effects of hydropower reservoir management on mercury bioavailability. This new study will begin in 2004, and is designed to answer the question "what is the increase in fish mercury levels attributable to water level management in power generating reservoirs?"

Southeast New Hampshire Mercury Hotspot

Southeast New Hampshire is a known mercury hotspot. The region is surrounded by several municipal waste combustors and coal-burning power plants. Recent monitoring of fish and loon tissues in this region indicate that fishes and loons there are among the Nation's most contaminated by mercury. Routine annual measurements of mercury in loons have, however, shown a decline in contamination, coincident with the mercury reductions from municipal and medical waste combustion. The levels of contamination in this area are still too high, and controls on the nearby coal-fired plants in New Hampshire and Massachusetts will be necessary to restore this area.

EPA Fish Tissue Criterion

In 2001, EPA promulgated a new fish tissue criterion under §304(a) of the Clean Water Act. States are required by this section of the Act to either adopt the EPA recommended criteria, or to propose criteria that are more stringent, to be adopted into the state's Water Quality Standards. Vermont has not yet adopted a specific criterion for mercury.

Wildlife Criterion Value for Mercury

The State of Maine is actively developing a wildlife criterion value (WCV) to protect wildlife from mercury they consume through the food web. A WCV is essentially a water-column mercury concentration above which fish are expected to bioaccumulate mercury to levels considered unsafe for humans and wildlife that consume the fish. Maine's WCV, to be formally promulgated in March of 2004, is expected to be approximately one-tenth Vermont's current most conservative criterion. Vermont should keep apprised of the work being done in Maine, as it may provide a suitable and simple approach to managing mercury in Vermont waters.

Underhill Mercury Monitoring Station

A stable funding source has finally been obtained to keep the Underhill mercury monitoring station running for the next five years. Vermont will benefit from the continued participation of Dr. Jerry Keeler from University of Michigan in operation of the site. In addition, Dr. Eric Miller (Ecosystems Research LTD, adjunct at Dartmouth) will begin working with the Vermont Monitoring Cooperative in 2004 to implement new monitoring approaches at Underhill. Underhill is currently Vermont's only air monitoring site. A second, more simplified site should be established in southern Vermont.

Collaborative Regional Mercury Modeling Project

During 2003, USEPA initiated a project with several partners to develop a comprehensive model predicting mercury reductions based on emission reduction strategies. This effort is still in its early stages, but should provide useful estimates of watershed recovery given a range of mercury emission control scenarios. As part of this effort, a comprehensive New England emissions inventory is being derived. Information is now emerging from this effort on new mercury sources. The most important of these appears to be steel manufacturing, a previously unaccounted source of mercury. This emissions inventory and modeling initiative will provide critical information for deriving mercury control plans that are required by § 303(d) of the Clean Water Act.

Florida Everglades

New findings are available from long-term monitoring of mercury in the Florida Everglades, indicating that mercury emission controls can and do reduce mercury contamination. The Florida work indicates that following implementation of mercury emission controls on municipal and medical waste combustors and efforts to reduce mercury products in the waste stream, Florida environmental officials have noted: (1) a reduction in sediment mercury accumulation rates; (2) a two-fold reduction in mercury in largemouth bass; and, (3) a nearly a five-fold decrease in mercury in egret feathers.

IV. COMMITTEE RECOMMENDATIONS

The Advisory Committee's recommendations for reducing mercury risk and exposure are divided into the following three categories:

- Mercury Reduction Initiatives
- Legislation
- Monitoring and Research Needs

Mercury Reduction Initiatives

The Committee strongly feels that adequate funding should be provided (\$20 – 25,000) through the Agency of Agriculture, Food and Markets, in cooperation with DEC, to remove and/or replace the remainder of mercury-containing dairy manometers on Vermont farms. These devices typically containing one-half pound or more of mercury. With funding through the Lake Champlain Basin Program, over 80 dairy manometers were removed from active farms in the Lake Champlain basin several years ago and replaced with mercury-free manometers in a highly successful project. Other states have initiated projects based on the Vermont experience. However, statewide removal in Vermont was never completed on active and inactive farms. Dollar-for-dollar, dairy manometer replacement is a cost-effective means to remove mercury that may be a high risk of future environmental release.

Legislation

The Advisory Committee on Mercury Pollution strongly recommends that mercury product legislation, introduced as S.111, be passed by the Legislature this session. This bill is essentially the same as H.14 that was passed by the Senate in 2002 and progressed no further in the House. Vermont was one of the first states to pass mercury product legislation in regard to product labeling and voluntary mercury education and reduction. However, since the Northeast states developed “model” mercury product legislation, Vermont has lagged behind most New England states (with the exception of Massachusetts) in

adopting controls on mercury products. Vermont has been the leader in the nation in implementing mercury product labeling since the law was passed in 1998. However, there are many additional actions that will reduce human health risk to mercury that are included in S. 111.

The Committee supports all of the provisions of S.111, which from a scientific or technical standpoint will contribute to mercury risk reduction in Vermont. All of provisions in this bill have been adopted by one or more New England states (see summary chart of state legislation in Appendix). In particular, the Committee feels that the following sections of S.111 are of *highest priority*:

7105 Restriction on the sale of certain mercury added products – Bans the sale of novelties and toys that contain mercury, mercury fever thermometers, and mercury-containing dairy manometers. In addition to these bans, the Committee feels strongly that the sale of mercury-containing thermostats for residential, commercial and institutional space heating systems should be added to this restriction, as viable non-mercury alternatives are readily available and often better choices in promoting energy conservation. The Committee also feels that the restriction on mercury fever thermometers should be extended to include use of mercury thermometers in food preparation establishments.

7106 Interstate Clearinghouse – Authorizes Vermont to participate in the Interstate Mercury Education and Reduction Clearinghouse, which coordinates information sharing among states with similar provisions, and enhances ability of product manufacturers to comply with multiple state laws.

7107 Labeling of Mercury-Added Products – Vermont has had mercury-product labeling provisions since 1998 (one of the first states in the nation) This section of S.111 would modify and improve Vermont's labeling provisions by providing for labeling consistency with other states, improve the State's ability to implement product labeling with fewer resources, and impose fewer regulatory and administrative burdens on manufacturers. The Committee recommends that the 10 million population trigger be removed, so that improvements can be phased in without delay.

7108 Discarded Mercury-Added Products – This section expands on the responsibilities of individuals, businesses, contractors, waste haulers, and waste management facilities to assure that discarded mercury products are removed from the solid waste stream. It places responsibility on salvage yard operations and other handlers of scrap metal to remove mercury-containing switches from white goods (appliances) and automotive switches. These contain a significant amount of mercury and can be readily removed. Mercury in auto trunk and hood light switches has been identified as one of the largest reservoirs of waste mercury in the solid waste stream.

7113 Mercury-Added Products Used in Dental Procedures – Use of mercury in dental procedures has been identified as the largest single source of mercury release to municipal wastewater. This section allows for the monitoring of mercury used by dental facilities and the control of its release by giving the Agency of Natural Resources the authority to develop best management practices that must be followed by dental facilities. The Vermont State Dental Society has been supportive of this section.

7115 Mercury in Schools – Bans purchase and use of elemental mercury, chemicals containing mercury, and mercury-added measuring devices in primary and secondary schools. Most Vermont schools have already taken steps to eliminate mercury use by adopting policies and plans for lab chemical use that includes mercury elimination.

Section 2: Landfill Disposal Requirements 6621(a)(7) – This section changes and expands the existing prohibition on disposal of *labeled* mercury-added products to include unlabeled products as well. Since many readily identifiable mercury-added products were manufactured before the effective date of

Vermont's labeling law and will eventually be discarded, there is a significant amount of mercury-added products that can legally be disposed of in solid waste in the future. Therefore, the Committee feels that this statutory change is necessary to effectively reduce disposal of mercury in products. Educational programs in the past, as well as future ones, can educate Vermonters on those types of products that typically contain mercury and cannot be discarded as solid waste.

Monitoring and Research Needs

This short list of monitoring and research needs is important to better characterize Hg contamination in Vermont, in order to further reduce risk to Vermonters and to wildlife:

- 1) Recent short-term fish tissue monitoring projects have suggested a need to develop a longer-term fish tissue-monitoring program, to serve as an indicator of changes in environmental mercury contamination. This need was first elaborated in the 2003 ACMP report, and remains a high priority. Resources are needed to assist the Department of Fish and Wildlife in acquiring and processing tissue samples, for the Department of Environmental Conservation to analyze the tissue samples and evaluate the data, and for the Department of Health to perform risk assessment calculations on new data. Such an effort is vital to refining our present fish consumption advisories, and especially to identifying lakes where fish tissue mercury may be low enough to favor consumption of fish above rates established by the present consumption advisory.
- 2) In conjunction with 1) above, establish, collect, and analyze data necessary to derive a Vermont-specific wildlife criterion value (WCV) (see Section II). This would require minimal additional resources, and yield a large additional benefit.
- 3) Establish a new air mercury monitoring site in southern Vermont, under the Federal Mercury Deposition Network monitoring program.

V. COMMITTEE WORKPLAN FOR 2004

The Advisory Committee has identified the following priority areas of work in the coming year:

- Outreach to Sensitive Populations – The Committee has identified this area as a high priority. The greatest mercury exposure to the general population is through fish consumption. The level of public awareness is still relatively low. The Committee will continue to review efforts by DEC and DOH to inform the general public and those populations most sensitive to mercury exposure about limiting their exposure by following the state's fish consumption advisories. The Committee will continue to discuss methods to inform Vermonters about mercury exposure from commercial fish purchased at retail stores. The Committee will continue to examine methods that can be employed to further reduce the risk of Vermonters' exposure to mercury through fish consumption.
- Mercury in the Environment – The Committee will continue to evaluate and assess environmental monitoring and mercury inventory data to better understand potential impacts and trends and further steps that can be taken to reduce the risk of mercury exposure. The Committee will arrange for a presentation to the Legislature on the impacts of mercury exposure to wildlife.

- Dental mercury – Review and discuss voluntary initiatives that dentists may employ to inform and educate patients about mercury-containing dental amalgam and mercury-free alternatives. Review DEC’s amalgam separator pilot project (which will be completed in 2004) that addresses mercury removal from dental wastewater discharge.
- Mercury Education and Reduction Projects – The Committee will continue to review ongoing programs of DEC and DOH, including DEC’s grant funded fluorescent lamp recycling outreach project and grant funded project on outreach to sensitive populations.

APPENDIX

Status of Mercury Education and Reduction Legislation in the Northeast as of June 2003

Requirement	CT	ME	MA	NH	NJ	NY	RI	VT
Mercury-added Product Notification	★	★	✓	★		✓	★	✓
Interstate Clearinghouse	★	★	✓	★			★	✓
Bans on Certain Hg-Added Products	★	★	✓	★	✓	✓	★	✓
Novelty ban	★		✓	★		✓	★	✓
Thermometer ban	★	★	★	★	✓	✓	★	✓
School ban		★	✓	★			★	✓
Manometer ban	★	★	✓	✓		✓	★	✓
Phase-Out & Exemptions	★	★	✓	✓		✓	★	✓
Labeling	★	★	✓	✓		✓	★	★
Disposal Ban	★	★	✓	✓		✓	★	✓
Collection System Plans	★		✓	✓		✓	★	
Disclosure		★	✓			✓	★	
Control on Sale of Elemental Mercury	★	★	✓	★		✓	★	✓
Public Education and Outreach	★	★	✓	★		✓	★	★
Universal Waste Rule	*	*	*	*	*	✓	★	✓
State Procurement		*	✓	✓			★	✓
Education on Dental Amalgam		★	✓	★		★		
Dental Amalgam Separators Required		★	✓	★				
Dental Amalgam Collection						★		
Mercury Auto Switch Phase-out & Removal		★		✓		✓	✓	

★ = Provisions that have been passed this year or previous years

✓ = Provisions proposed in 2002 and/or 2003

* = Authority exists to implement under existing laws or policies

Note: Chart developed by New England Waste Management Officials' Association

By the Advisory Committee on Mercury Pollution:

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Chair of Advisory Committee on Mercury Pollution

Date

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