

ADVISORY COMMITTEE ON MERCURY POLLUTION



2006 ANNUAL REPORT

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

January, 2006

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EXECUTIVE SUMMARY

This is the eighth annual legislative report of the Advisory Committee on Mercury Pollution which was established in 1998 by the Vermont Legislature 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 recent mercury education and reduction efforts; (2) mercury environmental and health update; (3) Committee work plan for 2006; and (4) Committee recommendations on reducing mercury exposure and risk.

Committee Recommendations

Dental Mercury

Dental clinics should provide information to patients about the advantages and disadvantages to human health and the environment from using fillings containing mercury and other materials to be developed by the Vermont Department of Health in consultation with the Vermont State Dental Society and the Advisory Committee on Mercury Pollution. In addition, the Committee recommends that the Legislature consider whether or not amalgam should be placed in pregnant women or children.

Mercury in Fish Sold at Retail

Retail stores should provide appropriate consumption guidelines for mercury in fish purchased in stores in Vermont, provided by the Vermont Department of Health.

Thimerosal in Vaccines

Vermont should prohibit the use of thimerosal, a mercury-containing preservative, in children's vaccines, except in the case of an emergency.

Fish Mercury Monitoring

The Committee supports the recommendations for a proposed fish mercury monitoring program for Vermont's freshwaters in the legislative report of the Vermont Departments of Environmental Conservation, Fish and Wildlife, and Health. The proposed fish mercury monitoring program will enable the Vermont Fish Contaminant Monitoring Committee (consisting of the three above-mentioned departments) to document the occurrence of and trends in mercury contamination in fresh water fishes in Vermont's lakes and rivers and relate trends to mercury reduction management actions. This monitoring program is essential to understanding and managing the risk of mercury contamination from fresh water fish consumption. The cost of an ongoing fish mercury monitoring program is slightly more than \$30,000 per year. Adequate funding should be available to the Departments of Environmental Conservation and Fish and Wildlife to perform this important and necessary task.

Mercury-Containing Auto Switches

The Advisory Committee supports the Agency of Natural Resources' recommendations in its legislative report on mercury auto switches - a mandatory switch removal requirement on vehicle recyclers and salvage yards prior to vehicle crushing; a requirement for auto makers to fully fund a switch collection and recycling program and provide outreach and education to salvage yards on switch removal; and an Agency requirement to provide outreach to salvage yards and monitor compliance and program effectiveness through reports to the Legislature. In addition the Advisory Committee strongly recommends that in order to evaluate the effectiveness of the auto switch recovery program, auto makers should be required to report on the number of switches collected and recycled from each of the participating vehicle recyclers. This will allow the Agency to determine participation rates and capture rates of switches. The Agency should report annually to the Legislature and the Advisory Committee on program effectiveness and should recommend other actions, including a defined incentive-based system, if the program does not succeed in achieving high participation rates and switch capture rates sufficient to assure that a majority of switches are collected.

Mercury Switches, Gauges, and Relays in Appliances, Heating Devices and Other Equipment

The Committee supports the Agency's recommendations to amend the mercury product law (10 V.S.A. Chapter 164) to require removal of mercury-added components from appliances and other devices prior to being offered for recycling. This would complement the existing ban on disposal of mercury-added products as solid waste and prevent a significant amount of mercury release to the environment in the future.

Mercury-Thermostats

The Committee supports the Agency's recommendations on mercury thermostats, including use of its special fund for mercury reduction projects for a pilot program to determine whether or not incentive-based programs work to increase recycling rates. The Agency should also report to the Legislature and Advisory Committee by January 2008 on recommendations to increase thermostat recycling.

INTRODUCTION

This is the eighth annual report of the Advisory Committee on Mercury Pollution, which was established in 1998 by the 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 to Vermonters.

The Committee met eight times in the past year. Since 1998 the Committee has met 66 times.

This report is divided into the following sections:

- I. Background for This Year's Report
- II. Mercury – Environmental and Health Update and Highlights
- III. Recent Mercury Education and Reduction Efforts
- IV. Committee Recommendations
- V. Committee Work Plan for 2005

I. Background for This Year's Report

In 2005, the Vermont Legislature passed comprehensive mercury product legislation (S. 84, Act 13) to reduce the amount of mercury released to the environment through the discard of mercury-added products. This law bans the sale of certain-mercury-added products such as thermostats, fever thermometers, and dairy manometers and restricts the sale of numerous other measuring devices containing mercury and mercury-added switch and relay components in thousands of products. The law further prohibits the use of mercury in schools, requires reduction in mercury releases from dental clinics, and requires mercury reduction plans from hospitals. The law clarifies the product labeling requirements for mercury-added products and bans the discard of mercury-added products in landfills and municipal waste incinerators.

Unfinished business remained after passage of this comprehensive legislation – the Agency of Natural Resources was charged with developing two legislative reports – one report on recommending a fish mercury monitoring program and another report on recommending programs to limit the disposal of mercury-added switches and other components from autos, appliances, and other products. Other issues related to human health from mercury exposure also remain to be addressed – specifically, patient information and education on exposure to mercury-containing dental amalgam; consumer information on mercury content of fish sold at retail; and the use of thimerosal, a mercury-containing preservative found in some vaccines administered to children. This report provides recommendations to the Legislature on these issues.

The health and environmental effects of mercury pollution have been detailed by the Advisory Committee in previous reports (this can be accessed at www.mercvt.org). The main route of exposure of the general public to methylmercury is through the consumption of fresh water and marine fish and shellfish. The Food and Drug Administration (FDA) has issued stringent advisories for pregnant women and children to limit consumption of all fish to twelve ounces per

week and canned white albacore tuna to six ounces per week. The federal Center for Disease Control and Prevention found that one in six, or 16 percent of American women of childbearing age had amounts of mercury in their blood above levels considered safe.

II. Mercury – Environmental and Health Update and Highlights

The following is an update of noteworthy environmental and health issues regarding mercury that is of relevance to the Advisory Committee and its charge.

Significant Mercury emissions reductions in the northeast region

The Northeast States for Cooperative Air Use Management (NESCAUM) has finalized a new mercury emissions inventory for the region. As compared to a similar inventory developed in 1998, mercury emissions from the Northeast have been reduced from 15,900 kg to 4,700 kg; a 71% reduction. The New England Governors and Eastern Canadian Premiers have set a goal of virtual elimination of mercury releases and have an interim goal of 75% reduction by 2010. Point emission sources of mercury comprise 76% of the current total emissions. This includes municipal waste combustors, sewage sludge incinerators, and electrical utility boilers and steel and cement manufacturing as major point sources of mercury. Area sources comprise the remainder of mercury releases and include releases from products and fluorescent bulbs, home heating, dental discharges, and crematoria. Presently, out-of-region emission sources comprise 85% of the Hg deposited to the northeast, and in-region sources comprise 15%.

Mercury Levels in Commercial Fish

The FDA has come under fire for not testing adequate numbers and types of commercial fish sold at retail and is also re-evaluating and re-testing some sources of light tuna, amidst reports that mercury levels are higher than reported (for one species of fish classified as light tuna).

EPA Regulations on Mercury in Coal-Fired Power Plants

On March 15, 2005, EPA issued its rule to regulate mercury emissions from coal-fired power plants. The so-called Clean Air Mercury Rule (CAMR) creates a program that will cap utility mercury emissions in two phases. The first phase sets an initial cap beginning in 2010 at approximately 30 percent of 2004 emissions, said reductions to be concomitant with existing requirements on sulfur reductions. The second phase establishes a cap at 69% of 2004 emissions by 2025, to be achieved by the market-based “cap and trade” approach. States will be required to develop implementation plans for CAMR implementation. Vermont, along with 13 other states not satisfied with the timeframe nor the amount of mercury reduction to be realized by the rule, petitioned EPA for reconsideration of the rule. In October 2005, EPA granted requests to re-consider some aspects of the rule that are of concern.

Release of Ecotoxicology Studies and Mercury Connections Report

The issue of environmental mercury contamination received a considerable boost in profile in March of 2005 with the release of the studies on mercury contamination across northeast North America published in the journal *Ecotoxicology*, and summarized in the report entitled *Mercury*

Connections. These studies quantified the extent and magnitude of mercury contamination of all types of biota, including fish, loons, other aquatic biota, and even terrestrial birds. The House Committee on Fish, Wildlife and Water Resources was briefed on the content of *Mercury Connections* in April of 2005.

Forthcoming Important Synthesis Studies by Hubbard Brook Research Foundation

The Hubbard Brook Research Foundation has convened a team of scientists who have further analyzed the northeastern mercury database summarized by *Mercury Connections*. They have written two new important publications that will stand as statements on the overall footprint of the mercury problem in the northeast. The first study describes the mechanisms by which mercury moves from emissions source to northeastern biota, and projected improvements based on reductions in air emissions under several scenarios. The second study identifies the locations and causes of biological mercury hotspots on the landscape. There are two such hotspots formally identified in Vermont. These studies will be published during early-mid 2006 in the journal *BioScience*.

New Measurements of Dry Deposition at the Underhill Mercury Monitoring Station

The mercury monitoring station at Underhill was shut down temporarily when a major windstorm toppled the tower on which many physical sensors were attached. The tower was restored during fall of this year, and measurement of wet and dry mercury deposition continue thanks to appropriations from Vermont's congressional delegation. Using new techniques, researchers at Underhill have developed stronger evidence that certain mercury deposition events measured at Underhill are directly attributable to mercury emissions from Midwestern sectors.

First Accounting of Mercury Inputs and Outputs to Lake Champlain

A team of regional scientists recently published a comprehensive accounting of mercury inputs to Lake Champlain. This project quantified mercury loads to the lake from river inputs as well as from direct atmospheric deposition to the lake surface. Tributary inputs of mercury accounted for 56.4% of the total annual load, followed by direct deposition at 38%, and directly-discharging wastewater treatment at 5.6%. As part of this project, the team reconstructed the history mercury deposition to lake at several locations. Mercury accumulation to lake sediments is presently 2.8 times the pre-industrial background. The Lake Champlain project is continuing, with additional focus on improving wastewater release estimates, and on the biological pathways that control mercury accumulation into fish and fish-eating wildlife.

Terrestrial Mercury Contamination is Becoming More Evident

Researchers at Vermont Institute of Natural Sciences (VINS) are continuing to identify the mechanisms by which the Bicknell's thrush and other upland songbirds are contaminated with mercury. VINS carried out field testing on Stratton Mountain, Mount Mansfield, and East Mountain in East Haven, on several species of birds along with the food that they eat.

Continuation of Mercury Monitoring by USGS and the Loon Recovery Project

The United States Geological Survey (USGS) is continuing to support studies of mercury cycling in Lake Champlain and in the Sleepers River watershed. Additional results from the Lake Champlain project beyond those discussed above suggest that stormwater may be a significant source of mercury export from urban areas. Discussions are currently underway to make mercury monitoring a routine element of the overall water quality monitoring activities of the VTDEC and Lake Champlain Basin Program. In addition, a steady stream of abandoned loon eggs and feathers from Vermont lakes continues to be analyzed for mercury in conjunction with the Loon Recovery Project.

Field Sampling of Northeastern Reservoirs is Complete

In an effort to understand the role played by water-level management on the bioaccumulation of mercury in fish, researchers have recently completed a two-year field project on northeastern reservoirs. This project is aimed at answering the question of to what degree are fish-mercury concentrations enhanced by the management of water levels? The project investigators are presently working on processing these data and anticipate findings to be released during 2006.

III. Recent Mercury Education and Reduction Efforts

Implementation of Recent Mercury Product Legislation

The Department of Environmental Conservation (DEC) has started work on implementing certain provisions of last year's mercury product legislation, much of which takes effect later in 2006 and in 2007. These provisions deal with mercury product manufacturer notification and labeling, mercury product bans on sale (dairy manometers, novelties, thermostats, fever thermometers), bans on use of mercury in schools, disposal ban on mercury-added products, and requirements on hospitals and dental offices to reduce mercury use or release.

Efforts are ongoing to notify mercury-added product manufacturers of new requirements and to identify users and distributors of products for which there are bans or restrictions on future sale in Vermont. Outreach is being developed to identify specific discarded mercury-added products for which collection and recycling can be increased through incentives, exchanges or education and outreach efforts.

DEC has developed draft Dental Best Management Practices (BMPs) as a procedure to be utilized to reduce mercury waste and emissions from dental clinics. These BMPs would require a self-certification of compliance with BMPs every two years by all dental clinics. These BMPs also address the requirement to install amalgam separators to reduce wastewater discharges of mercury. DEC expects to finalize these BMP procedures by winter 2006.

DEC is developing a mercury reduction planning process that Vermont hospitals must implement in the coming year.

15 Mile Falls (Hydroelectric Dam) Mercury Reduction Fund

DEC received \$150,000 for mercury reduction projects from a settlement agreement with TransCanada, the owner/operator of the 15 Mile Falls hydroelectric facility. These funds will be used over the next few years to implement various projects to reduce mercury release in Vermont. One project was initiated this year – a project to remove mercury dairy manometers on active and inactive farms and replace manometers on active farms with a mercury-free manometer. Funds will be used to purchase and install new manometers and cover the costs for proper disposal and recycling. This project will complete dairy manometer removal and replacement that was initiated several years ago but was not completed due to lack of funds. These manometers contain a half-pound or more of mercury each.

In conjunction with new legislation that bans the sale of mercury thermostats, a new initiative is being considered to promote replacement and proper disposal and recycling of mercury thermostats. A pilot project will be developed in the coming year.

Outreach to Sensitive Populations on Mercury in Fish

Extensive efforts were made in 2005 to duplicate previous direct mailings to physicians' offices, childbirth educators and other healthcare providers to provide first-hand information on mercury in fish to pregnant women and nursing mothers. Last year's efforts also included outreach to pediatricians' offices, newlyweds, postings at fishing access areas, and surveys of parents of newborns on mercury awareness. Other outreach included presentations and information dissemination (posters and brochures) to ethnic populations such as Vietnamese, African, and Bosnian refugee groups, who may consume mercury as a staple in their diets. Additional efforts were made to reach various groups of Abenaki in the state through tribal events and direct contact with educational groups. These outreach efforts were conducted by DEC and the Department of Health (DOH).

A 20-minute educational video and video games were developed as a part of *Project Mercury*, targeted to middle and high school-age students. Distribution of the video and games will begin in February 2006.

Fluorescent Lamp Recycling

Two major media campaigns were conducted in 2005 to promote residential and business recycling of spent fluorescent lamps containing mercury through funding provided by EPA. Newspaper and radio ads promoted proper recycling of spent lamps. DEC is monitoring recycling of Vermont's lamps through several specialized lamp recyclers. Early indications are that lamp recycling is increasing due to these efforts, thus reducing mercury releases to the environment.

A two-year pilot project was initiated in August 2005 at True Value hardware stores throughout Vermont to serve as collection points for spent fluorescent lamps from households and small businesses. The program allows for up to six mercury-added lamps to be brought per visit to the store by a customer, at no cost. At present there are over 30 participating stores. The goal of the project is to increase the convenience of lamp recycling. Participation rates are being monitored, including surveys of program users.

Municipal Collection of Mercury –Containing Wastes

The table below shows the amount of mercury collected through municipal household hazardous waste programs over the last five calendar years from households and businesses. Municipal solid waste districts and other municipal entities continue to play a significant role in the proper management of mercury-containing wastes. Wastes typically collected include thermometers, thermostats, mercury-containing switches and mercury spill clean-up debris. Due to recent outreach to encourage fluorescent lamp recycling, it is anticipated that lamp collection will continue to increase, although some lamps will be diverted to the True Value hardware store pilot collection program and will not be counted in municipal collection programs. DEC believes that decreases in elemental mercury collected may reflect the decreasing amounts available over time.

Mercury Collection in Municipal Programs						
Type of Mercury Waste	2000	2001	2002	2003	2004	2005
Mercury Products/Debris* (thermometers, measuring devices, switches)	972 lbs	1675 lbs	1740 lbs	1740 lbs	2049 lbs	1696 lbs
Elemental Mercury **	25 lbs	161 lbs	168 lbs	204 lbs	234 lbs	35 lbs
Mercury-added Lamps ** (fluorescent and HID)	0.8 lbs (141,000 linear ft)	1.4 lbs (248,200 linear ft)	1.9 lbs (339,000 linear ft)	2.1 lbs (378,000 linear ft)	2.3 lbs (411,711 linear ft)	2.5 lbs (446,455 linear ft)

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

** Represents actual weight of mercury collected

IV. Committee Recommendations

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

- **Mercury exposure reduction** – A subcommittee of the Advisory Committee on mercury exposure reduction was formed and reported to the full Committee on dental mercury, mercury in fish sold at retail, and mercury in vaccines (thimerosal).
- **Mercury reduction from discarded products** – The Advisory Committee reviewed the Agency of Natural Resources legislative report on collecting and removing mercury-containing switches and other components in autos, appliances, thermostats, and other consumer products.
- **Fish mercury monitoring program** – The Advisory Committee reviewed the legislative report developed by the Fish Contaminant Monitoring Committee that proposes a fish mercury monitoring program to document the occurrence and trends in mercury contamination in freshwater fishes.

MERCURY EXPOSURE REDUCTION RECOMMENDATIONS

- **Dental Mercury**

Dental clinics should provide information to patients about the advantages and disadvantages to human health and the environment from using fillings containing mercury and other materials to be developed by the Vermont Department of Health in consultation with the Vermont State Dental Society and the Advisory Committee on Mercury Pollution. In addition, the Committee recommends that the Legislature consider whether or not amalgam should be placed in pregnant women or children.

Rationale: Dental amalgams are approximately 50 percent mercury and there is worldwide concern about potential effects on human health and the environment. The State of Vermont's policy is to reduce mercury releases to the environment and to eliminate the use of mercury where viable and less toxic alternatives are available – as in the case of amalgam. The Advisory Committee asked the Department of Health about how to best advise Vermonters about the risks and benefits of amalgam and other filling materials. In response, the Department advised that "... The Maine brochure (Maine Dept. of Health, Fillings: The Choices You Have, Mercury Amalgam and Other Fillings) seems to provide more information and acknowledges that the U.S. Public Health Service stance regarding the safety of dental amalgam is not universally accepted by sister agencies in other developed countries." The Committee also consulted at one of its meetings with a federal health official from one of those agencies. The minutes of that Advisory Committee meeting are summarized as follows. Norway discourages amalgam use for several reasons, one of which is that amalgam replacement requires the removal of more tissue. The lifetime perspective is to save as much of the tooth as possible, so amalgam is not the most desirable in the long run. Norway's recommendations are based on both the public health and environmental perspective by first recommending a reduction in use and subsequent environmental release of dental mercury, and second, by reducing exposure in patients. One of the more problematic issues identified was the total exposure to mercury detected in pregnant women and children. Over the last decade, releases of mercury into the body, due to amalgam, are much higher than previously believed. Primary studies have indicated that mercury was detected in the mother's milk and fetus. Therefore, it is imperative to have this population's exposure to mercury at the lowest possible levels. Norway (and several other countries, including Canada) recommends that mercury fillings not be placed in pregnant women and children, the most vulnerable populations. Finally, a new study, "Mercury-free Dental Fillings, Phase-out of Amalgam in Sweden," indicates that "amalgam has more or less become irrelevant" in Sweden since it is used in less than 5% of dental restorations.

- **Mercury in Fish Sold at Retail**

Retail stores should provide appropriate consumption guidelines for mercury in fish purchased in stores in Vermont, provided by the Vermont Department of Health.

Rationale: Vermonters have a right to know which fish have mercury levels of concern. The Vermont Department of Health and U.S. Food and Drug Administration (FDA) have issued consumption advisories for mercury in fish to help Vermonters reduce their exposure to mercury. Advisories for recreationally-caught fish are provided in fishing guides and are posted at boat landings, but there are certainly few advisories posted in stores where most of the fish Vermonters consume is purchased. Yet point-of-sale postings could be effective at reducing exposure to methylmercury, especially among high risk Vermonters. In 2003, FDA

Commissioner McClellan wrote that “One of the key needs for an advisory to be successful is for it to be clear and well communicated. There are many ways that this can be achieved, including the use of printed materials at the point of purchase.” Several national grocery store chains have either started posting advisories in their stores or are planning to do so, but these are not consistent and the size and content of the messages vary. Therefore, the Committee believes that the Legislature would be performing an important public service by providing a standard public health mercury fish advisory that all retailers can use.

- **Thimerosal in Vaccines**

Vermont should prohibit the use of thimerosal, a mercury-containing preservative, in children’s vaccines, except in the case of an emergency.

Rationale: A preservative, known as thimerosal, which contains 49% ethyl mercury (a known neurotoxin), is commonly added to vaccines to prevent contamination, yet single dose vaccines are generally available that do not require this mercury preservative. In 1999, vaccine manufacturers began removing thimerosal as a preservative from the vaccines administered to children from birth to age four at the request of the American Academy of Pediatrics and the U.S. Public Health Service. However, thimerosal continues to be used in the optional flu vaccine that is annually administered in Vermont. From a precautionary viewpoint, enough concerns have been raised to justify not allowing thimerosal to be injected into sensitive populations. This concern is based on both the fact that organic mercury is a known neurodevelopmental toxin and because there are viable, non-toxic alternatives that are generally available. However, at this time mercury-free flu vaccines may only be available in Vermont upon request. Yet six states, including California, Iowa, Illinois, Delaware, and New York have passed legislation banning thimerosal use. Consistent with these other states, the Committee recommends that Vermont should use a similar precautionary approach. Surely, Vermont does not want to be a state where mercury-containing vaccines are dumped when other states are passing laws to keep it away from their citizens.

MERCURY REDUCTION FROM DISCARDED PRODUCTS RECOMMENDATIONS

- **Mercury-Containing Auto Switches**

The Advisory Committee supports the Agency of Natural Resources’ recommendations in its legislative report on mercury auto switches - a mandatory switch removal requirement on vehicle recyclers and salvage yards prior to vehicle crushing; a requirement for auto makers to fully fund a switch collection and recycling program and provide outreach and education to salvage yards on switch removal; and an Agency requirement to provide outreach to salvage yards and monitor compliance and program effectiveness through reports to the Legislature. In addition the Advisory Committee strongly recommends that in order to evaluate the effectiveness of the auto switch recovery program, auto makers should be required to report on the number of switches collected and recycled from each of the participating vehicle recyclers. This will allow the Agency to determine participation rates and capture rates of switches. The Agency should report annually to the Legislature and the Advisory Committee on program effectiveness and should recommend other actions, including a defined incentive-based system, if the program does not succeed in achieving high participation rates and switch capture rates sufficient to assure that a majority of switches are collected.

Rationale: Mercury-containing auto switches in end-of-life vehicles (trunk and hood convenience lighting and some anti-lock brake systems) will lead to hundreds of pounds of mercury release in the region just from Vermont when these vehicles are processed as scrap metal, unless an effective switch collection program is implemented. Immediate action is necessary to avoid ongoing mercury release, which is at or near its peak based on the model years of cars now being scrapped. Many other states have now acted to establish switch collection programs. These switches are simple to remove in most end-of-life vehicles. Each switch contains about 1 gram of mercury and there is approximately one switch for every two scrapped vehicles. Vehicle recyclers and salvage yards should be required to remove the switches prior to crushing. Vehicle recyclers and salvage yards should be provided with a convenient no-cost collection and removal program funded by the auto makers, who were responsible for the presence of these mercury switches in some vehicles. The Agency role should be to monitor compliance and program effectiveness.

- **Mercury Switches, Gauges, and Relays in Appliances, Heating Devices and Other Equipment**

The Committee supports the Agency's recommendations that the Vermont Legislature should amend the mercury product law (10 V.S.A. Chapter 164) to require removal of mercury-added components from appliances and other devices prior to being offered for recycling. This would complement the existing ban on disposal of mercury-added products as solid waste and prevent a significant amount of mercury release to the environment in the future.

Rationale: There are many thousands of mercury-added products on the market and in circulation today that will become discarded. This represents a dispersed but much larger source of potential mercury release than the auto switch issue. These products include gas ranges, chest freezers thermometers, sump pumps, pressure gauges, and all sorts of mechanical and medical equipment with a mercury switch or relay. Vermont law prohibits mercury-added product disposal in solid waste landfills and municipal waste combustors. But many of these mercury-added products will be destined for scrap metal recycling (like motor vehicles) where there is no requirement to remove mercury switches and relays and properly recycle them. The Vermont Legislature should close this loophole for recycled products by requiring removal of mercury components from all discarded products prior to being offered for recycling. The Agency needs to provide outreach to the general public, including households, and commercial and institutional entities to raise awareness on mercury-containing products and proper handling. Although Vermont's mercury product labeling law will help to identify products with mercury, there are numerous unlabeled mercury-added products in circulation which pre-dated the labeling requirement. There are many key players that will need to perform mercury removal, including municipal solid waste districts, appliance retailers and repair businesses, HVAC contractors, manufacturers, general equipment sales and repair businesses and many others.

- **Mercury-Thermostats**

The Committee supports the Agency's recommendations on mercury thermostats, including use of its special fund for mercury reduction projects for a pilot program to determine whether or not incentive-based programs work to increase recycling rates. The Agency should also report to the Legislature and Advisory Committee by January 2008 on recommendations to increase thermostat recycling.

Rationale: Mercury thermostats are a significant source of mercury in the waste stream and recycling rates are currently very low despite disposal bans and convenient recycling opportunities for contractors. Mercury thermostats that are currently in use and ones that are replaced each year with newer mercury-free models represent a significant single product category source of potential mercury release. Mercury thermostats will be banned from sale in Vermont by mid-2006 and are already banned from disposal as solid waste. Yet programs that collect thermostats for recycling and proper handling seem to be somewhat dormant, as has been the case in other states. The Agency of Natural Resources should closely follow the results of relatively new pilot programs in other states to enhance thermostat collection and recycling and develop a pilot project of its own that creates incentives for proper handling and recycling. Further public outreach and education is necessary on proper handling of discarded mercury thermostats.

FISH MERCURY MONITORING RECOMMENDATIONS

The Committee supports the recommendations for a proposed fish mercury monitoring program for Vermont's freshwaters in the legislative report of the Vermont Departments of Environmental Conservation, Fish and Wildlife, and Health. The proposed fish mercury monitoring program will enable the Vermont Fish Contaminant Monitoring Committee (consisting of the three above-mentioned departments) to document the occurrence of and trends in mercury contamination in fresh water fishes in Vermont's lakes and rivers and relate trends to mercury reduction management actions. This monitoring program is essential to understanding and managing the risk of mercury contamination from fresh water fish consumption. The cost of an ongoing fish mercury monitoring program is slightly more than \$30,000 per year. Adequate funding should be available to the Departments of Environmental Conservation and Fish and Wildlife to perform this important and necessary task.

Rationale: Vermont needs a more rigorous fish tissue monitoring program that can assess trends in freshwater fish mercury levels over time. Mercury in fish poses the greatest exposure potential to methylmercury in the general public and in wildlife, and there are already proven health impacts at the environmental mercury levels seen. Therefore, it is imperative to monitor the risk over time, by monitoring mercury levels over time. Hopefully through state, regional, and federal management actions being implemented to reduce mercury releases to the environment, we will begin to see reduced mercury levels and reduced risk to humans and wildlife. A more rigorous fish tissue monitoring program will allow us to set more accurate fish consumption advisories at the state level and thus provide a greater level of protection to the fish-eating general public.

The State's Fish Contaminant Monitoring Committee has proposed a scientifically sound and affordable fish mercury monitoring program consisting of three biennially recurring rounds of fish tissue sampling. The first round of sampling targets fishes from Lake Champlain and Lake Memphremagog, Vermont's largest lakes. The second round (two years later) targets similar fish species in specified size ranges from 15 inland lakes and 15 larger rivers. The third round (two years after the second round and in year six) of fish mercury sampling would be randomized sampling in 15 lakes and 15 streams to provide a statistical assessment of statewide fish mercury contamination levels. The assessment cycle then repeats, starting with Lake Champlain and Lake Memphremagog sampling. Adequate funding should be available to the Agency at the earliest possible date to initiate and then maintain this important project.

V. Committee Work Plan for 2006

The Advisory Committee has identified the following priority areas of work in 2006.

- Legislative Recommendations – The Committee will respond to inquiries and requests for legislative testimony on any of its recommendations in this report.
- Status of implementation of mercury product law – The Committee will assess the status of implementation of the mercury products law passed last legislative session and identify any implementation issues needing attention.
- Outreach to sensitive populations – The Committee has identified outreach to sensitive populations as a continued high priority area. The Committee will continue to review efforts by DEC and the Department of Health to inform the general public and those populations most sensitive to mercury exposure from fish consumption. The Committee will assess new information and scientific studies that come to its attention on human exposure and risk of mercury. The Committee will assure that efforts to post state fishing access areas with mercury in fish advisories and other educational materials continue.
- 15 Mile Falls Mercury Reduction Fund – The Committee will review and advise DEC on priority uses of its special mercury reduction fund.
- Mercury Education and Reduction – The Committee will continue to evaluate and monitor ongoing mercury education and reduction efforts in DEC and DOH. In particular, the Committee will review mercury reduction efforts in dental clinics and hospitals.
- Mercury in the Environment – The Committee will continue to evaluate and assess environmental monitoring and mercury emissions inventory data to better understand potential impacts and trends and further steps that can be taken to reduce the risk of mercury exposure.
- Exposure Reduction Initiatives – The Committee will monitor and review developments, and identify additional opportunities to raise awareness and further reduce exposure to mercury.

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