



# Implementing Product Stewardship in Maine

**2012 Report to the Joint Standing  
Committee on Environment and  
Natural Resources**

**Maine Department of Environmental Protection**  
17 State House Station  
Augusta, Maine 04333-0017

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## **Executive Summary**

The Maine Department of Environmental Protection (the Department) is charged with administering the product stewardship program and may report on the products and product categories to the legislature annually. The Department has undertaken a review of the five mandated take-back programs housed under the product stewardship program framework.

As part of its evaluation of each of the five programs for the 2012 report, the Department specifically reviewed the effectiveness of each program, taking into account the length of time since the implementation of each program, the net result of recycling or diversion of products or toxins of concern from the waste stream, trends of the effectiveness of each program, and the cost of the resources expended to implement each program. Based on the conclusions drawn from this review, the Department recommends reevaluation of the way that these programs are managed and whether certain programs, as currently administered, are appropriate; taking into consideration relatively low recycle rates of product categories, accounting for innovations which have resulted in manufacturer process changes, and allowing the opportunity for private sector leaders to maintain management of program operations and outcomes.

Based on the cost-benefit analysis and data presented within this report, the Department believes there is opportunity to improve recycling rates while reducing costs. Recommendations to modify program management include:

- The Department seeks to reduce program costs and create economies of scale among the product stewardship programs by combining outreach, permitting and other program areas wherever possible.
- The Department will develop a unified marketing and promotional initiative with private sector leadership focused on inclusionary participation with existing programs.
- The Department will collaborate with industry groups where possible, and encourage public participation and cost-effective efforts. The Department will develop draft legislation for 2013, aimed at sun-setting select product categories where appropriate.
- Given the Department's desire to improve existing programs within the Product Stewardship Framework, no new products or product categories will be proposed within the current legislative session.
- The Department recommends the development of improved metrics during 2012. Metrics should include quantity of toxin removed from the environment and a total cost assessment.

Finally, the Department will report back to the Legislature in FY 2013 on program progress and advise of any needed statutory changes.

## **Introduction**

Pursuant to the Product Stewardship Framework Law (38 MRSA § 1772(1)), the Maine Department of Environmental Protection (the Department) submits the following report to the Joint Standing Committee. It is the policy of the Department to promote programs that remove recyclable products from the waste stream, and to realistically manage resources and measure program success in meaningful terms. This report presents an evaluation of the five existing product stewardship programs and provides recommendations for their future management.

### **Statutory Mandate**

It is the policy of the State, consistent with its duty to protect the health, safety and welfare of its citizens, to promote consumer product recycling to support the State's solid waste management hierarchy (38 MRSA§1772(1)). From 1991 to 2009, the Maine Legislature enacted five product-specific laws which require manufacturers to establish programs to recover their products from Maine's waste stream, and ensure proper handling and recycling or disposal of these products. These products include and are presented in the following order:

- 1) mercury-added lamps (38 MRSA §1672);
- 2) mercury switches in motor vehicle components (38 MRSA §1665-A);
- 3) mercury-added thermostats (38 MRSA §1665-B);
- 4) electronic waste (38 MRSA §1610);
- 5) dry cell mercuric oxide and rechargeable batteries (38 MRSA §2165)

## **Review Process 2011**

In its evaluation of the effectiveness of the product stewardship programs, the Department has reviewed each regulated product category utilizing the following approach:

### **Program Objectives**

The Department reviewed individual program objectives. Each program was established to provide for the collection and recycling of products, and must be consistent with the Department's duty to protect the health, safety and welfare of Maine citizens, enhance and maintain the quality of the environment, conserve natural resources, and prevent air, water, and land pollutions. Establishing such a system is consistent with the overall State solid waste management policy and its intent to pursue and implement an integrated approach to promote waste reduction, reuse, and recycling as the preferred methods of waste management.

### **Waste Diversion**

For each program, the Department measured the amount of waste diverted from landfills (recycled waste measured by total weight).

Data sources used for this measurement include the following:

- Annual Solid Waste Management Reports for Municipalities and DEP-licensed Transfer Stations and Landfills;
- Department-generated reports;
- Industry-submitted memoranda

### **Costs**

From this measurement, the Department reviewed known agency costs, including educational outreach, program management, and data collection, all relative to the stated program objectives.

As detailed further in this report, other costs, such as municipal operations and labor, and inter-agency expense, were not included in this review. The Department acknowledges there are other costs associated with implementation and operation of these programs. Therefore, it is important to note the conservative nature of cost estimates within this report.

**Review Process 2011** (continued)

**Manufacturing Process Improvements**

Where applicable, the Department identifies industry improvements within this report, leading to the reduction of the regulated waste.

**Conclusions**

The Department evaluated the effectiveness of each program measured against program objectives. The Department identified the measurement of success by evaluating the return on investment of public resources expended. This evaluation was conducted by assessing the resources used to manage these programs, compared with the volume of toxins recycled. The cost of implementing product stewardship programs is balanced against the evaluation of program effectiveness. The Department provides results of this assessment in the report that follows.

## **Mercury-added Lamps (Title 38 § 1672)**

### **Program Objectives**

Between July 2002 and January 2005, Maine banned the disposal of mercury-added products. The disposal of mercury-added products generated by households were specifically exempted from this ban until January, 2005 (38 MRSA § 1672). In 2009, the Legislature enacted the current manufacturer recycling program for household mercury-added lamps (38 MRSA § 1672).

Department responsibilities related to the operation and implementation of the CFL take-back program are:

- 1) to establish mercury content standards for lamps sold or manufactured in the State on or after January 1, 2012 (38 MRSA § 1672(2)(A));
- 2) beginning in April 2013, the Department must calculate the percentage of mercury-added lamps recycled from households and report these results and program recommendations to the joint standing committee (38 MRSA § 1672 (4)(E)); and
- 3) the Department is responsible for ensuring compliance with manufacturer collection requirements (38 MRSA § 1672(4)(F)).

Department expenditure for the implementation of this program includes several years of dedicated staff resources, as well as education and outreach since the mid-1990's.<sup>1</sup> Department resource expenditure is detailed in the Program Conclusions and Recommendations section of this report and begins at fiscal year 2002 through the present.

In 2007, the Department, in joint venture with the Maine Public Utilities Commission (PUC), launched the first comprehensive “cost-free” household CFL recycling program.<sup>1</sup> Retail stores participating in the PUC program do not currently charge a fee, but are not precluded from doing so in the future.<sup>2</sup>

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<sup>1</sup> Joint Standing Committee on Environment and Natural Resources (Joint Standing Committee), *Report Regarding Recycling of Fluorescent Lamps and Consumer Education Efforts* (January 2008), page 1.

<sup>2</sup> Joint Standing Committee, *Mercury-Added Lamps, A Strategy for Improving Recycling Rates* (February 2010), page 5.

**Mercury-added Lamps (Title 38 § 1672)** (continued)

**Waste Diversion**

As discussed above, product stewardship programs must focus on the recovery of materials posing a risk of adverse impact to the environment and/or public health. Therefore, the success of the program should be measured by the removal of the toxin, instead of the number of vessels recycled (such as the total number of mercury-added lamps). The toxin of concern within the CFL product is mercury.

In order to measure the amount of toxin removed from the waste stream, a method of measurement and quantification was developed and is detailed below.<sup>3</sup> The State Planning Office (SPO) began CFL-specific collection of data in 2008 (prior to 2008, the data was collected in measurement of “Mixed Tons”, which included all fluorescent lamps collected), derived from the Annual Solid Waste Management Report for Municipalities and DEP-licensed Transfer Stations and Landfills. According to (SPO), the reported category of “Mixed Tons” contains an assortment of fluorescent lamps. The average four foot lamp contains approximately 12 milligrams of mercury; each linear foot can be calculated to contain approximately three milligrams of mercury. Therefore, in Table 1, the Department’s calculations of mercury for the “Mixed Lamp” category is based on three milligrams per linear foot.

Research conducted by SPO concluded the average household CFL can be assumed to contain approximately five milligrams of mercury for the years detailed (2008-2010). Table 1 shows all CFL specific data calculated at five milligrams of mercury per unit collected. Using these conversion factors “three milligrams of mercury per linear foot for mixed lamps” and “five milligrams of mercury per CFL unit collected,” the estimated amount of mercury collected for reuse is illustrated in Table 1.

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<sup>3</sup> For the purposes of this analysis the State Planning Office collection numbers are provided, which are based on amounts collected in pounds. Although the Department has previously reported results in percentage rate recycled, those numbers may not be as accurate as data available from the State Planning Office, because the base calculation of lamps available was extrapolated, estimated, and averaged.

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**Table 1**

<b>Municipal Universal Waste Report Data (Mixed Units) provided by SPO</b>			
<b>Year</b>	<b>CFL Units Collected</b>	<b>Mixed Lamp Units Collected*</b>	<b><i>Estimated Mercury Collected in Pounds</i></b>
2004		285,653	<b><i>1.88</i></b>
2005		671,893	<b><i>4.44</i></b>
2006		643,840	<b><i>4.25</i></b>
2007		602,133	<b><i>3.98</i></b>
2008	55,680	802,133	<b><i>5.30</i></b>
2009	33,440	671,360	<b><i>4.44</i></b>
2010	24,160	558,080	<b><i>3.69</i></b>
		<b><i>Estimated Mercury Collected in Pounds</i></b>	<b><i>32.23**</i></b>

\*Units in this category are calculated at: one unit equals one linear foot, and units in this category does not necessarily equal the number of lamps collected. \*\*Calculated at three milligrams per non-CFL unit, and five milligrams per CFL unit 2008-2010.

Despite expenditures in public outreach, and efforts undertaken by the State, the Department reported that in 2007 “CFL sales dropped significantly,” in part due to confusion in messaging regarding mercury content and disposal concerns.<sup>4</sup> The Department-generated report *Implementing Product Stewardship in Maine*, (January 15, 2011) notes that recycling rates remain “very low despite extensive educational and outreach efforts.”<sup>5</sup>

<sup>4</sup> Joint Standing Committee, *Report Regarding Recycling of Lamps* (January 2008), page 9.

<sup>5</sup> Joint Standing Committee, *Implementing*, (January 15, 2011), page 28.

**Mercury-added Lamps (Title 38 § 1672)** (continued)

**Costs**

Department expenditure and staff services are discussed in Mercury Product Category Conclusions and Recommendations.

**Manufacturing Process Improvements**

In response to the concern for disposal of waste mercury, industry has made a concerted effort to reduce the amount of mercury used in the manufacture of CFL bulbs. According to NEMA (National Electrical Manufacturers Association), as of March 2007 members capped the maximum allowable mercury content at 6 milligrams in 25 to 40 watt bulbs, and a reduced amount for bulbs with less wattage. Manufacturers outside of NEMA often produce CFL bulbs with even lower mercury standards. Phillips Lighting, Ecobulb, Sylvania, Lights of America, were producing bulbs containing less than three milligrams of mercury per bulb, some with as little as 1.23 milligrams of mercury as of 2008.<sup>6</sup>

As described in NEMA's announcement in October 2010, the maximum allowable mercury content in CFL bulbs continues to decline. At the time of that announcement the new voluntary commitment of its members was capped at a total maximum mercury content for CFLs at 5 milligrams per unit in 40 watts and lower.<sup>7</sup> Continuing the trend of reducing mercury in this product is illustrated by the U.S. Environmental Protection Agency stating that currently marketed CFLs contain about four milligrams of mercury.<sup>8</sup>

For the purposes of the Department's evaluation, a factor of five milligrams for each CFL unit collected is specified for the years CFL lamps were sorted out of the "Mixed Lamps" category (2008 through 2010). This multiplier is the standard amount of mercury estimated to be collected from a recycled CFL lamp for the years detailed in Table 1.

**A summary of the conclusions and recommendations is located on page 22.**

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<sup>6</sup> Joint Standing Committee *Report Regarding Recycling of Lamps* (January 2008), page 6.

<sup>7</sup> NEMA *Press Release* (October 4, 2010)

<sup>8</sup> U.S. Environmental Protection Agency, [www.epa.gov/cfl/cfl-hg.html](http://www.epa.gov/cfl/cfl-hg.html)

## **Motor Vehicle Components (38 MRSA § 1665-A)**

### **Program Objectives**

In January 2003, a prohibition on the sale of new motor vehicles made with mercury switches became effective (38 MRSA § 1665-A). Additionally, as of January 2003, manufacturers were responsible for establishing a system to collect and recycle mercury switches removed from vehicles at the end of each component's useful life (38 MRSA § 1665-A(9)). Specifically, the requirements of manufacturers include:

1. manufacturers are responsible for financial reimbursement at a minimum of \$4.00 for each mercury switch brought to a consolidation facility (provided the vehicle source is specified);
2. manufacturers must provide the Department and persons who remove these motor vehicle components with information, training and technical assistance to facilitate the removal and recycling of these components; and
3. manufacturers are required to report to the Department any fee collected or charged for the purpose of paying the cost of program operation.

Effective July 2006, the sales prohibition was extended to a mercury switch or mercury relay sold individually or as a product component (38 MRSA § 1661-C) in the State of Maine.

The Department's responsibilities (38 MRSA § 1665-A(6)) include the following:

- 1) assisting those subject to source separation requirements by providing training on Maine's universal waste rules and safe handling of mercury vehicle components;
- 2) designing and distributing stickers to be affixed to a motor vehicle indicating the switch has been removed;
- 3) making information available to the public regarding services to remove mercury light switches in motor vehicles.

The Alliance for Vehicle mobile Manufacturers (Alliance), a trade association of motor vehicle manufacturers, whose members include BMR Group, Chrysler LLC, Ford Motor Company, General Motors, Mazda, Mercedes-Benz USA, Mitsubishi Motors, Porsche, Toyota and Volkswagen of America, Inc., reports that their in-state agent, Wesco,<sup>9</sup> collected switches between 2003 and 2010 which resulted in approximately 112 total pounds of mercury recovered as illustrated in Table 2. The Truck Manufacturers Association (TMA) in-state agent, White & Bradstreet, reports having collected 10 switches between 2006-2008.<sup>10</sup>

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<sup>9</sup> Joint Standing Committee, *Mercury Switch Removal from Motor Vehicles in Maine* (January 2008), page 3.

<sup>10</sup> Joint Standing Committee, *Mercury Switch Removal* (January 2008), page 3.

**Motor Vehicle Components (38 MRSA § 1665-A)** (continued)

**Waste Diversion**

**Table 2**

<b>Year</b>	<b>Number of Vehicle Switches<sup>1</sup></b>	<b>Pounds of mercury collected<sup>2</sup></b>
2003	1,613	4
2004	3,831	8
2005	4,520	10
2006	17,746	39
2007	3,734	8
2008	6,972	15
2009	6,868	15
2010	5,685	13
<b>Total</b>	<b>50,969</b>	<b>112</b>

1. The data used includes all Alliance member motor vehicle makes of automobiles and light trucks.
2. Using an average of one gram per switch, as calculated by the Alliance of Automobile Manufacturers.

When processing end-of-life vehicles, dismantlers remove switches and deliver them to a participating consolidation facility such as Wesco Distribution, Inc. which is contracted to accept delivery at facilities in Bangor and Portland.<sup>11</sup> Various independent management plans also exist within this program and include: Subaru, the Truck Manufacturers Association (TMA) and the Recreational Vehicle Industry Association (RVIA), further complicating the tracking of results.

**Costs**

Department expenditure and staff services are discussed in Mercury Product Category Conclusions and Recommendations.

**Manufacturing Process Improvements**

The vehicle industry's usage of mercury switches declined steadily after 1989 and ended altogether with model year 2003.<sup>12</sup>

**A summary of the conclusions and recommendations is located on page 22.**

<sup>11</sup> Joint Standing Committee, *Mercury Switch Removal* (January 2008), page 1.

<sup>12</sup> Joint Standing Committee, *Mercury Switch Removal* (January 2008), page 2.

## **Mercury Thermostats (38 MRSA § 1665-B)**

### **Program Objectives**

Although not required by law until 2004, the Thermostat Recycling Corporation began operations in 2001. With the passage of PL 2003, c. 640, Maine's Legislature required wholesalers to participate in a manufacturer-funded recycling program effective July 30, 2004. The manufacturer incentive existing today began in 2009. The Thermostat Recycling Corporation (TRC), located in Arlington, Virginia, functions as the main collection facility of mercury-added thermostats. TRC membership includes 29 industry partners which pay membership fees to fund program operation.

The Department is responsible for development of a plan to include a monetary incentive to address collection of mercury thermostats in two phases (38 MRSA § 1665-B(4)):

- Phase I is focused on collection from contractors and technicians and was scheduled to be implemented by January 2007;
- Phase II dedicated attention to collection from homeowners and had a specified deadline of August 2007.

Statutory collection goals were required to be at a minimum of 125 pounds per year within two years of Phase I (by 2009), and a minimum of 160 pounds per year within three years of Phase II (by 2010). This represents a mandated 28% increase in collection over a single 12 month period. (38 MRSA §1665-B(5))

The manufacturer, or a collective representation of manufacturers, is responsible for the design and implementation of Maine's out-of-service thermostat collection program, which must work cooperatively with the Department and others to ensure municipalities and regions requesting collection resources are approved waste collection sites (38 MRSA §1665-B(2)(2-B)). Industry management was designed, in part, to relieve the Department of costs associated with program operation; however, the Department has dedicated staffing resources to manage all aspects of this thermostat take-back program.

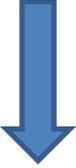
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**Mercury Thermostats (38 MRSA § 1665-B)** (continued)

**Waste Diversion**

The following Table summarizes the number of thermostats collected and the amount of mercury collected between the years 2001-2010, the total mercury collected in all years is 263.70 pounds. In a letter to the Joint Standing Committee on Natural Resources, (March 15, 2010), the Department calculated the recycle rate for thermostat removals at 25.8 percent (2009) at its highest.

**Table 3**

	2001	2002	2003	2004	2005	2006	2007	2008	2009*	2010**	Total All Years
<b>Number of Thermostat Units Collected</b>											
<b>Total</b>	486	1136	1880	1414	1991	3285	5686	6731	7029	6523	
<i>Change from previous year</i>		650	744	-466	577	1294	2401	1045	298	- 506	
<b>Pounds of Mercury Collected</b>											<b>263.70 lbs</b>
<b>Total</b>	3.17	7.45	13.73	11.62	19.71	24.4	43.73	46.24	48.75	44.90	
<i>Change from previous year</i>		4.28	6.28	-2.11	8.09	4.69	19.33	2.51	2.51	-3.85	

\*Letter to Joint Standing Committee on Natural Resources (March 15, 2010)

\*\*TRC Report to the Department (January 31, 2011)

TRC’s 2010 Annual Activities Report notes that Department marketing efforts had “no appreciable impact on retail collections for 2010. Retail collections increased by 14 thermostats last year.”<sup>13</sup>

**Program Concerns and Department Management Follow-up 2011**

Documented in the 2009 Annual Report (January 30, 2010), the Thermostat Recycling Corporation (TRC) estimated that 20 percent of thermostat incentive payments have gone to people the law did not intend. In September of 2011, TRC submitted another letter to the Department suggesting that Department staff were conducting compliance assistance services in a manner that was inconsistent with the TRC program.

<sup>13</sup>Maine Department of Environmental Protection, Thermostat Collection Report Form for Calendar Year 2010 Activities, (January 31, 2011), page 9.

**Mercury Thermostats (38 MRSA § 1665-B)** (continued)

The Department has assessed the TRC concerns, and is continuing to address staff practices. In addition, the Department conducted an internal review during 2011 to determine if thermostats had been processed and paid for by TRC in a manner that was inappropriate. The Department assessed the concerns and took appropriate action. The Department is continuing to address TRC concerns with a focus on improving efficiency and maximizing recycling rates.

**Costs**

Department expenditure and staff services are discussed in Mercury Product Category Conclusions and Recommendations.

**Manufacturing Process Improvement**

According to a report published in January 2010, by the Northeast Waste Management Officials Association subcommittee IMERC (Interstate Mercury Education and Reduction Clearinghouse), mercury use in thermostats has decreased approximately 73 percent since 2001. Many companies no longer manufacture mercury thermostats or have stopped selling these products in response to state mercury product bans and phase-outs. The National Electrical Manufacturer's Association (NEMA) represents some of the largest thermostat manufacturers in the country. According to NEMA, by October 2009 all three of NEMA's member companies (General Electric, Honeywell, and White-Rogers) stopped manufacturing mercury-added thermostats; several other manufacturers had already eliminated this product from their production lines by this time.<sup>14</sup> These include:

Marvair – discontinued the manufacture of air conditioning units with mercury thermostats in December 2003;

Coachmen Recreational Vehicles – reported a phase-out of mercury thermostats in recreational vehicles in 2004;

Sunline - reported a phase-out of mercury thermostats in recreational vehicles in 2004;

Princo Instruments, Inc – phased-out the manufacture and sale of products containing mercury, including mercury-added thermostats as of January 22, 2007.

**A summary of the conclusions and recommendations is located on page 22.**

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<sup>14</sup> IMERC, *Fact Sheet, Mercury Use in Thermostats* (January 2010), page 3-4.

**Electronic Waste Product Category (38 MRSA §1610)**

**Program Objectives**

In 2004, Maine adopted the extended producer responsibility (EPR) law (38 MRSA § 1610), requiring television and computer monitor manufacturers to ensure their products are recycled when generated as waste (known as e-waste) by households. Management of recycling programs for these product categories is owned by the product manufacturer. The Department's program responsibilities are:

- 1) calculating annually each manufacturer's recycling share based on readily available national market share data;
- 2) annually approve consolidators within the State;
- 3) receipt of an annual registration fee of \$3,000 paid by a manufacturer that offers or has offered a listed product category for sale in the State;
- 4) evaluation of compliance on the part of manufacturers, consolidators, and retailers.

**Costs**

Program costs within the Department have, to date, been covered by the annual manufacturing fee. However, the cost of Maine's program is high in comparison with other states. Factors driving this cost may include: low population density; greater distances from recyclers and commodity markets; rigorous regulatory licensing requirements for the in-state processing of cathode ray tubes (CRT) as hazardous waste.<sup>15</sup>

The Department operating budget for this program is limited by annual fees collected. These fees are collected at the beginning of each fiscal year. The total of all fees collected by the Department are as follows:

Annual Fee Collected:	FY2010	\$114,000
	FY2011	\$198,000
	<u>FY2012</u>	<u>\$185,000</u>
Total Collected To Date		\$497,000

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<sup>15</sup> Joint Standing Committee, E-waste Recycling, (January 15, 2010), page 17.

**E-waste Product Category** (continued)

**Waste Diversion**

In measuring program outcomes, a comparison is drawn from four other states with similar mandates. According to the Report on Maine’s *Household E-waste Recycling Program* (January 15, 2010), for those states that reported pounds per capita Maine ranks lowest, at 3.99 pounds of e-waste recycled. A notable distinction in program management is the responsible party assigned to manage the program; in states with higher per capita collection, the manufacturer is the administrator of the program. See Table 4, as reported in the *Household E-waste Recycling Report* (January 15, 2010),<sup>16</sup> data measured from collection start date to time of publication in 2009.

**Table 4**

<b>E-waste Collection Data</b>					
<b>State</b>	<b>Collection Start Date</b>	<b>Covered Sectors</b>	<b>Program Administrator</b>	<b>Collection Managed By</b>	<b>Pounds per capita recycled</b>
ME	January 2006	Household Only	Consolidator/Recycler	Municipalities & Consolidators	3.99
MN	August 2007	Consumer	Manufacturer	Anyone	6.46
OR	January 2009	Households, Small Businesses	Manufacturers Plans and State contractor program	Manufacturers (with default state contractor program)	Projected 5.17 at time of reporting
WA	January 2009	Consumers, small business, schools, small governments, charities	Manufacturer Represented Board	Independent Organizations	5.63

<sup>16</sup> Joint Standing Committee, *E-waste Recycling*, (January 15, 2010), page 13

**E-waste Product Category** (continued)

The Department report, *Implementing Product Stewardship in Maine* (January 15, 2011), specifies pounds of e-waste recycled shown in the unshaded areas of Table 5. The total amounts collected differ from that reported by SPO in the Annual Solid Waste Management Report. It is likely this difference accounts for retail participation, and may show a quantification of that program segment’s success (see Table 5).

**Table 5**

	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Amount of e-waste recycled (pounds) <sup>17</sup>	4,160,574	4,688,552	5,274,419	7,912,292	Not reported
Pounds of lead diverted from disposal*	436,075	520,645	584,075	872,970	
<b>Municipal Data Source: Annual Solid Waste Management Report</b>					
Municipal pounds Collected <sup>18</sup>	2,777,320	3,919,900	5,821,176	5,965,053	5,407,835
<i>Difference in amount reported recycled during same year</i>	<i>1,383,254</i>	<i>768,652</i>	<i>546,757</i>	<i>1,947,239</i>	

\*Assumes 5 pounds of lead per unit collected for recycle.

**Manufacturing Process Improvements**

Television manufacturers have focused on creating flat-panel televisions based on liquid crystal display (LCD) or plasma technology in recent years. Additionally, high-definition quality is standard with flat-screen televisions but not with CRT televisions. High-definition digital displays appear to be overtaking CRT models as their cost and space reductions entice consumers.

**A summary of the conclusions and recommendations is located on page 22.**

<sup>17</sup>Joint Standing Committee, *Implementing* (January 15, 2011), page 4.

<sup>18</sup>SPO Annual Municipal Universal Waste Tonnages for Maine.

## **Dry Cell Mercuric Oxide and Rechargeable Batteries (38 MRSA § 2165)**

### **Program Objectives**

In 1991, the legislature mandated manufacturer responsibility for dry cell mercuric oxide or rechargeable battery collection at the end of a battery's useful life. Beginning in January 1994, manufacturers became responsible for establishing and maintaining the proper collection, transportation, and processing of waste dry cell mercuric oxide and rechargeable batteries purchased in the State of Maine. Additional manufacturer responsibilities included:

- 1) clearly informing each purchaser that intends to use this product category of the disposal prohibition and of the available systems for proper collection;
- 2) identification of a collection system; and
- 3) the option to include the cost of proper collection, transport and processing of the waste batteries in the sales transaction between the manufacturer and purchaser.

### **Costs**

Department responsibilities are limited to technical rulemaking. For this reason a cost analysis is not provided.

### **Waste Diversion**

Data regarding the recovery of specific battery categories for reuse and recycling and the costs of waste management to local governments is unknown. The State Planning Office reported collection of "Batteries" as a broad range category beginning in year 2008 as follows:

<b>Year</b>	<b>Tons of Batteries Collected within Maine</b>
2008	2.03
2009	3.18
2010	1.84

### **Manufacturing Process Improvements**

According to the U.S. Environmental Protection Agency (EPA), battery manufacturers have touched on every stage of the product life cycle of reusable batteries to reduce or eliminate the use of toxic constituents, exemplified by a 98 percent reduction in the use of mercury. In fact, consumer demand for rechargeable batteries is growing twice as fast as that for non-rechargeables, and is interpreted as an environmental benefit as fewer single-use batteries are entering the waste stream.<sup>19</sup>

**A summary of the conclusions and recommendations is located on page 22.**

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<sup>19</sup> U.S. EPA, <http://www.epa.gov/wastes/conservation/materials/battery.htm#batteryrecycle>

# **Summary of Product Stewardship Program Analysis**

### **Analysis Summary**

The preceding sections of this report reflect the Department's evaluation of the results and status of each of the five product stewardship programs. As reflected in the evaluation, there have been varying degrees of success for each program: some programs have worked so well that the remaining risk or existence of harm to the environment has been minimized (such as mercury vehicle components) and some programs, despite efforts, have failed to produce expected results (such as the thermostat collection requirements specified in statute).

In order to determine the appropriate recommended approach regarding the administration of these programs in the future, the Department believes an assessment of the cost to run and implement each program should be made, along with a full accounting of the environmental benefits. The results of our initial assessment is provided below.

#### **Human Resource Cost**

Dedicated human resources within the Department have included three full-time positions, whose sole focus is product stewardship management. In addition, as many as four additional Department employees are frequently utilized to administer aspects of these programs. Department program reports specify an extensive education and outreach campaign beginning in the mid-1990's, and a training program for municipal solid waste operators which began in 2001.<sup>20</sup> However, the full historical expenditure has not been included in this estimate. An estimate of known costs to the Department is included in Table 3, covering fiscal years 2002 through 2012 (See page 21).

#### **Other Department Program Costs**

#### **Estimated Cost of Mercury Programs within DEP**

In 2008, the Department reported having developed and distributed more than 40,000 brochures specifically for household disposal of mercury, although no cost to the Department is provided in that year's report to the Committee.<sup>21</sup> This, in addition to the many training sessions for municipal employees and retail locations conducted by Department staff, adds to the long term costs to the State of Maine for this program (as described on page 4 of the *Report Regarding The Recycling of Fluorescent Lamps and Consumer Education Efforts* (January 2008).

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<sup>20</sup> Joint Standing Committee, *Mercury-added Lamps* (February 2010), page 9.

<sup>21</sup> Joint Standing Committee, *Report Regarding Recycling of Lamps* (January 2008), page 4.

## **Analysis Summary** (continued)

### **Funds Disbursed by SPO**

SPO is reported to have disbursed \$750,000 during 2001-2006 to municipalities for collection infrastructure, averaging \$150,000 for each of those years.<sup>22</sup>

### **Estimated Cost to PUC/Efficiency Maine**

The *Report Regarding The Recycling of Fluorescent Lamps and Consumer Education Efforts* (January 2008) (developed jointly by PUC and the Department) states that the PUC has fully funded the collection costs of this program from the Efficiency Maine Residential Lighting Program budget.<sup>23</sup>

In 2008, PUC costs were reported by the Department as a one-time fee to Veolia of \$21,373.50 to provide CFL recycling drums along with staff and marketing costs estimated at over \$20,000.<sup>24</sup>

PUC 2010 annual operating budget for retailer CFL collection alone is reported at approximately \$70,000.<sup>25</sup>

### **Estimated Cost to Municipalities**

The report *Mercury-added Lamps A Strategy for Improving Recycling Rates*, (February 2010) identifies a cost to municipalities in FY 2009 for the collection of 221,000 lamps, at a total of \$90,000.<sup>26</sup> This cost estimate reflects a single fiscal year period, and does not include labor. Local municipalities can be assumed to have been required to implement a tracking system and use staff time to manage this new collection program for a period of more than one fiscal year.

Table 3 illustrates historically reported costs specified by the Department and submitted to the legislative committee to manage mercury specific collection programs from fiscal years 2002 to 2012. The shaded column represents the Department accounting of known costs to manage mercury specific programs. These costs include: staff salary, telephone service, office supplies, rent of State vehicle, multiple meals and gratuities, multiple hotel room and lodging, miscellaneous professional fees and special services at Maine Medical Center, printing and binding, miscellaneous repairs, repairs to equipment, out-of-state conference charges, extended day meals out-of-state, eye exam VDT operator, State share lenses VDT operator, purchase of books, training sessions, auto mileage, HealthWorks Medical Group, and grants to a private organization.

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<sup>22</sup> Joint Standing Committee, *Mercury-added Lamps* (February 2010), page 9.

<sup>23</sup> Joint Standing Committee, *Report Regarding Recycling of Lamps* (January 2008), page 10.

<sup>24</sup> Joint Standing Committee, *Report Regarding Recycling of Lamps* (January 2008), page 10.

<sup>25</sup> Joint Standing Committee, *Mercury-added Lamps* (February 2010), page 8.

<sup>26</sup> Joint Standing Committee, *Mercury-added Lamps* (February 2010), page 7.

**Analysis Summary** (continued)

**Table 3**

<b>Reported Totals for Mercury Collection Programs</b>					
Fiscal Year	Estimated Cost Mercury Programs within DEP*	Funds Disbursed by SPO**	Estimated Cost to PUC/Efficiency Maine***	Estimated Cost to Municipalities****	CFL, Thermostat, and Vehicle Switch Programs Total Mercury Collected
Salaries	1,229,461				<b>408 to 429 lbs</b>
Other	331,602				
<b>2002-2012 Total</b>	<b>\$1,561,063</b>				
<b>2001-2006</b>		<b>\$750,000</b>			
<b>2008</b>			<b>\$41,373</b>		
<b>2009</b>				<b>\$90,000</b>	
<b>2010</b>			<b>\$70,000 annually</b>		

\*Estimated DEP costs detailed on page 20.

\*\*This estimate does not include SPO costs for dedicated staff to manage annually reported data and formulate reports to the Department or other interested parties for all years the program exists.

\*\*\*This estimate does not include PUC/Efficiency Maine costs of educational outreach, staff time, travel, and program management for all years the program exists.

\*\*\*\*This estimate does not include municipal labor costs such as operational, implementation, tracking, and reporting costs for all years the program exists.

Total Estimate of Mercury Program Costs (listed in Table 3): \$2,512,436

32.23 to 52.89 lbs mercury lamps (page 7)

112.00 lbs mercury switches (page 10)

263.70 lbs mercury thermostats (page 12)

408 to 429 lbs Total Hg Reused

**Estimated Amount of Mercury Removed from Environment: 408 to 429 lbs**

**Estimated Cost of Mercury Collected for Reuse: \$5,856 to \$6,158 per pound**

**Analysis Summary** (continued)

For a product category to be included in a product stewardship program, the product must be demonstrated to, “*reduce the costs of waste management to local governments and taxpayers*” (38 MRS §1772(2)(C)).

Based on the data presented, and the cost-benefit analysis within this report, the Department believes there is opportunity to improve the recycling rate of certain product categories within the product stewardship framework.

Some programs, such as mercury vehicle components, should be reevaluated due to the success of the program, and other programs, such as the thermostat program, should be reevaluated in light of the discrepancy between the expected and actual results of the programs.

This report utilized data supplied in past legislative reports, as well as State Planning Office data, and industry-submitted memoranda. This report does not quantify homeowner, local or municipal costs, or reach into inter-agency expenditures. It is, therefore, reasonable to assume the cost in dollars represented in this report is conservative. Based on the cost-benefit analysis provided within this report, the following recommendations are presented to the Joint Standing Committee for its consideration.

**Recommendations for Product Stewardship Programs 2012**

- 1) The Department recommends reducing program costs to create economies of scale among the product stewardship programs by combining outreach, permitting and other program areas wherever possible.
- 2) The Department recommends development of a unified marketing and promotional initiative with private sector leadership focused on inclusionary participation with existing programs, identifying ways to reduce program costs and increase recycle rates.
- 3) The Department recommends collaboration with industry groups to encourage public participation and cost-effective efforts.
- 4) The Department recommends the development of draft legislation for 2013, aimed at sun-setting select product categories where appropriate.
- 5) The Department recommends no new products or product categories be proposed within the current legislative session.
- 6) The Department recommends the development of improved metrics during 2012. Metrics should include quantity of toxin removed from the environment and a total cost assessment.