



**Mercury Switch Removal from Motor
Vehicles in Maine**

Fifth Annual Report

**Maine Department of Environmental Protection
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I. Introduction

This is the fifth annual report on the effectiveness of the mercury switch removal program established under Title 38, section 1665-A of the Maine Revised Statutes Annotated [38 MRSA §1665-A]. A copy of the law is attached as Appendix A.

Section 1665-A requires mercury switches to be removed from motor vehicles before they are crushed and shredded for the scrap metals market. The purpose of this requirement is to reduce mercury emissions from steel mills that use automobile scrap. If the switches are not removed, the mercury is vaporized and released to the air when the scrap metal is melted in furnaces to make new steel.

The most significant historic use of mercury in motor vehicles was in tilt switches used to operate convenience lighting in the engine or luggage compartments. Motor vehicle manufacturers ended their use of mercury switches in new motor vehicles beginning with model year 2003. Many older vehicles still have these switches, and they remain a potential source of mercury emissions when the vehicles are scrapped.

Under section 1665-A, responsibility for removal and recycling of mercury switches is shared as follows:

- Yard operators, auto dismantlers and others in the business of processing end-of-life vehicles (ELVs) must remove the switches and deliver them with a signed log sheet to a participating consolidation facility.¹
- Motor vehicle manufacturers must establish the consolidation facilities to accept delivery of all motor vehicle switches from ELV handlers. In order to receive a “partial compensation” bounty of at least \$4 for each switch removed and delivered, the automobile manufacturers’ plan requires the vehicle identification number (VIN)² of the vehicle from which the switch was removed. The consolidator facilities arrange for the switches to be recycled.
- The Department of Environmental Protection (DEP) must provide guidance on the removal and proper handling of the switches.

The motor vehicle manufacturers have contracted with Wesco Distribution, Inc. (Wesco) to accept delivery of mercury switches at its facilities in Bangor and Portland. It is the responsibility of those removing the switches to transport them to one of these two locations. Providing the mercury switches are accompanied by a signed log sheet, Wesco will accept the

¹ The term "consolidation facility" as used in the Maine Hazardous Waste Management Rules means a facility where mercury switches or other "universal wastes" are collected and temporarily stored while awaiting shipment to a recycling, treatment or disposal facility. See rules of the Department of Environmental Protection, Chapter 850(3)(A)(13)(a).

² Motor vehicle manufacturers began stamping each vehicle with a unique identification number in the 1950's. The practice became standardized in 1981 when the U.S. Department of Transportation required all vehicles to have a 17 character VIN. Each character or digit conveys specific information. The second and third digits specify the manufacturer, e.g. Ford (F), General Motors (G), and Honda (H). The VIN can be obtained from vehicle documents (e.g. the registration form or owner's manual) or from the vehicle chassis. The most common chassis location is the driver side interior dash. On some vehicles, the VIN may be stamped on the front of the engine block or frame.

switches for recycling with or without the VIN from the source vehicle, but will only pay the switch bounty if VINs are provided.

II. Number of switches collected

In past reports, the DEP consulted with the Clean Car Campaign (CCC)³ and the Alliance for Automobile Manufacturers (Alliance)⁴ to estimate the number of switches available for removal per calendar year. In August 2006, an agreement on a national voluntary program to collect mercury switches from automobiles was reached between several environmental groups, vehicle dismantlers, vehicle shredders, steelmakers, states, the auto industry and the U. S. Environmental Protection Agency (EPA). As part of this National Vehicle Mercury Switch Removal Program (NVMSRP) agreement, the CCC, the Alliance and the End of Life Vehicle Solutions Corporation (ELVS) have developed a single data set of number of switches that are available for removal. Using the most recent estimates provided to the DEP by the NVMSRP to calculate a percent recovery rate, the estimated number of mercury vehicle switches expected from Maine dismantling operations are as follows:

Estimated number of mercury switches in motor vehicles dismantled in Maine

Calendar Year	NVMSRP Switch Estimates
2007	26,000
2008	25,000
2009	23,000
2010	22,000
2011	20,000
2012	18,000
2013	17,000
2014	15,000
2015	14,000
2016	12,000
2017	11,000

The downward trend in the number of switches available for collection reflects the fact that the auto industry's usage of mercury switches declined steadily after 1989 and ended altogether with model year 2003. Accordingly, the number of switches available for collection in future years also can be expected to steadily decline as older vehicles disappear from the fleet.

³ The Clean Car Campaign is a national campaign promoting the development and sale of motor vehicles that meet a high standard of environmental performance. The campaign is coordinated by environmental organizations including the American Council for an Energy Efficient Economy, Ecology Center, Environmental Defense, Great Lakes United and the Union of Concerned Scientists. The campaign website is www.cleancarcampaign.org.

⁴ The Alliance of Automobile Manufacturers is a trade association of motor vehicle manufacturers including BMW Group, Chrysler LLC, Ford Motor Company, General Motors, Mazda, Mercedes-Benz USA, Mitsubishi Motors, Porsche, Toyota and Volkswagen of America, Inc. The Alliance's website is www.autoalliance.org.

Alliance manufacturers report that their in-state agent, Wesco, took delivery of the following number of switches since the program began:

Year:	Number of Switches¹	Pounds of mercury collected²	% of estimated switches available³
2003	1,613	4	5 to 6%
2004	3,831	8	13 to 16%
2005	4,520	10	16 to 20%
2006	17,746	39	65 to 90%
2007	3,734	8	14%
Total	31,444	69	24%

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.
3. Beginning in 2007, the capture rate is determined using one data set for number of switches available.

Subaru is not an Alliance member and they have filed an independent plan for recycling their very limited use of ABS G-sensors with mercury switches. To date, Subaru has reported that their in-state agent, Wesco, received no switches, most likely due to the fact that the model years of use, 1990 to 1995 depending on make and model, are still on the road.

Separate switch collection plans also were filed by the Truck Manufacturers Association (TMA) and the Recreational Vehicle Industry Association (RVIA). The TMA plan targets medium and heavy duty trucks that used mercury switches in idle controls and some luggage compartment convenience lights; the RVIA plan targets mercury switches in motor homes and other recreational vehicles that used mercury switches in gas ovens, satellite equipment, automatic leveling jacks and some convenience light switches. TMA's in-state agent, White & Bradstreet Inc. of Augusta, has collected 10 switches in their storage container since they turned in switches in 2006. Wesco has received no switches from RVIA members. Because of the limited number of medium and heavy duty trucks and recreational vehicles that are dismantled in Maine, the low number of switches turned in over the five year period was expected.

DEP's Chapter 850, *Hazardous Waste Management Rules* allow the yards to collect switches for up to 3 years from the date they first place a switch in the storage container after removal. The fact that the number of switches turned in for recycling was substantially greater in 2006 than in other years reflects compliance with this provision as the program began in 2003. Additionally, there was a 45-day time period in 2006 in which the automobile manufacturers were required to pay a \$3 per switch bounty for switches that were turned in without accompanying VINs. The DEP performed significant outreach to ELV handlers to inform them of this limited-time opportunity and to remind them of the requirement to turn in switches after 3 years of collection.

Due to the 3-year storage timeframe allowed under Chapter 850, it can be anticipated that the switch recovery rate may peak every three years. It is not clear whether the \$3 bounty paid for switches without VINs had a significant effect on the success of collection in 2006. Because ELV handlers who redeemed switches in 2006 do not have to redeem their switches again until 2009, there will not be comparative data available to assess this factor until 2010.

III. Compliance and enforcement

The DEP continues to make a concerted effort to ensure that all DEP compliance and enforcement staff are aware of the switch removal law and inspect for compliance when they visit yards in response to citizen complaints, whether or not the complaint is specifically related to mercury switches.

Compliance and enforcement efforts have been facilitated by passage of *An Act to Require That Hazardous Waste Be Removed From Junked Vehicles*, Public Law 2005, chapter 247, which became effective September 17, 2005. This Act amended both the municipally-administered junkyard and automobile graveyard law and the DEP-administered waste law to require that all fluids, refrigerant, batteries and mercury switches be removed from inoperable vehicles within 180 days of acquisition by a yard. ELV handlers are informed of these requirements by DEP staff whenever they visit a yard to conduct a routine inspection or investigate a citizen complaint.

In addition, DEP Air and Solid Waste program staff were successful in obtaining approval of Maine's Vehicle Mercury Switch Removal Program (MVMSRP) as a federally approved program for EPA's new Electric Arc Furnace (EAF) rule and the Iron and Steel Foundry rule aimed at reducing mercury air emissions. Under these new federal rules aimed at controlling mercury emissions from these industries, EAFs and foundries can utilize scrap from sources that participate in an approved program; otherwise they have to have a site-specific plan approved by EPA to utilize scrap from other sources. **The MVMSRP is the only state program to receive this approval.** This means that EAFs and iron and steel foundries can obtain scrap from Maine facilities without having to prepare and operate pursuant to a site-specific EPA-approved plan. This is an example of how meeting stringent environmental regulations provides a market advantage for Maine businesses.

IV. Conclusion

Maine's program to remove mercury switches from motor vehicles continued operating smoothly during 2007, its fifth year of existence. The overall capture rate has been acceptable to date, with 31,444 mercury switches, collectively containing nearly 69 pounds of mercury, recovered. During field compliance visits DEP staff check to ensure that ELV handlers are continuing to remove the switches.

Reported switch collection rates dropped significantly from 2006 to 2007, at least in part due to rules that allow on-site storage for up to 3 years. However, the collection program continues to be worth the effort as thousands of these switches remain in the vehicle fleet and are available for capture when the vehicles are junked. The switches are relatively easy to remove and, if not removed, the mercury will be released to the environment and contribute significantly to our mercury pollution problem. The DEP will continue to evaluate the program capture rate to determine if additional resources need to be dedicated to ensure that the capture rate remains acceptable.

The DEP does not at this time recommend adjusting the partial reimbursement payment of a minimum of \$4 per switch or adding other motor vehicle components to the State's program. As additional states implement vehicle mercury switch collection programs through the NVMSRP agreement or through separate legislative action, the DEP will review these programs and collection results to determine if improvements to Maine's program are indicated.

APPENDIX A

38 MRSA §1665-A. Motor vehicle components

Notwithstanding sections 1663 and 1664, this section applies to a mercury-added product that is motor vehicle component.

1. Prohibition on sale of a new motor vehicle with mercury switches. A person may not sell a motor vehicle manufactured on or after January 1, 2003 if it contains a mercury switch. A motor vehicle manufacturer may apply to the commissioner for an exemption from this prohibition. The commissioner may grant an exemption upon finding that:

A. The manufacturer has provided assurance that a system exists for the proper removal and recycling of the mercury switch; and

B. Either of the following applies:

(1) Use of the mercury switch is necessary to protect public health or safety; or

(2) There are no technically feasible alternatives to the mercury switch at comparable cost.

2. Prohibition on replacement mercury light switches. Effective January 1, 2003, a person may not sell or distribute a mercury light switch for installation in a motor vehicle.

3. Removal of certain mercury components when vehicle use ends. A person may not flatten, crush or bale a motor vehicle for the purpose of sending it to a scrap recycling facility, or arrange for a motor vehicle to be flattened, baled or crushed for that purpose, without first removing all mercury switches and mercury headlamps, except that a scrap recycling facility may agree to accept a motor vehicle that has not been flattened, crushed or baled. If a scrap recycling facility accepts such a motor vehicle, the scrap recycling facility is responsible for removing the mercury switches and mercury headlamps before the vehicle is flattened, crushed, baled or shredded. Upon removal, the components must be collected, stored, transported and otherwise handled in accordance with the universal waste rules adopted by the board under subsection 8.

4. Voluntary removal of mercury light switches prior to end of vehicle use. A motor vehicle dealer or any person engaged in motor vehicle repair or maintenance may participate in the mercury light switch removal and collection effort pursuant to subsection 5, as long as the person notifies the department before commencing removal and receives such training as may be required by the department. Any person who removes a mercury light switch from a motor vehicle before the motor vehicle is removed from service shall affix an official sticker to the motor vehicle to indicate that the switch has been removed. The stickers may be obtained from the department and must be affixed to the doorpost or other location specified by the department. A person may not install a mercury light switch into a motor vehicle to which the sticker is affixed.

5. Motor vehicle manufacturer responsibility. Manufacturers of motor vehicles sold in this State that contain mercury switches or mercury headlamps shall, individually or collectively, do the following:

A. By January 1, 2003, establish and maintain consolidation facilities geographically located to serve all areas of the State to which mercury switches removed pursuant to this section may be transported

by the persons performing the removal. A consolidation facility may not be a facility that is licensed in the State as a new or used automobile dealership;

B. Pay for each mercury switch brought to the consolidation facilities as partial compensation for the removal, storage and transport of the switches a minimum of \$4 if the vehicle identification number of the source vehicle is provided. If the vehicle identification number of the source vehicle is not provided, no payment is required;

C. Ensure that mercury switches redeemed at the consolidation centers are managed in accordance with the universal waste rules adopted by the board under subsection 8; and

D. Provide the department and persons who remove motor vehicle components under this section with information, training and other technical assistance required to facilitate removal and recycling of the components in accordance with the universal waste rules adopted by the board under subsection 8, including, but not limited to, information identifying the motor vehicle models that contain or may contain mercury switches or mercury headlamps.

The goal of this collection and recycling effort is to collect and recycle at least 90 pounds of mercury per year from mercury switches removed from motor vehicles. By September 30, 2002, motor vehicle manufacturers shall provide the department with a plan as to how they intend to comply with the requirements of this subsection.

In complying with the requirements of this subsection, manufacturers of motor vehicles shall establish a system that does not require a person who removes a mercury switch to segregate switches separately according to each manufacturer of motor vehicles from which the switches are removed.

6. Department responsibility. The department shall:

A. Assist those subject to the source separation requirements of this section by providing training on the universal waste rules adopted by the board under subsection 8 and by taking other steps as deemed appropriate to provide for the safe removal and proper handling of motor vehicle components;

B. Design and distribute stickers required under subsection 4; and

C. Make available to the public information concerning services to remove mercury light switches in motor vehicles.

7. Labeling. Effective July 15, 2002, the labeling requirements of section 1662 apply to motor vehicles components. In approving an alternative compliance plan for labeling motor vehicles under section 1662, the commissioner shall require a motor vehicle manufacturer to apply a doorpost label listing the mercury added products that may be components in the motor vehicle. The commissioner may not require a manufacturer to affix a label to each mercury-added component.

8. Rulemaking. The board shall revise the universal waste rules adopted pursuant to section 1319-O, subsection 1, paragraph F as necessary to establish standards by which mercury switches in motor vehicles may be handled as universal waste.

9. Reporting. Before January 1, 2003, and annually thereafter, motor vehicle manufacturers doing business in the State shall report to the joint standing committee of the Legislature having jurisdiction over natural resource matters on any fee or other charge collected on the sale of new motor vehicles for the purpose of paying the cost of carrying out the manufacturer responsibilities under subsection 5. The report must specify the amount of the fee or charge collected and how it was determined. Before July 1, 2004 and annually thereafter, motor vehicle manufacturers shall report in writing to the department on the

results of the source separation required under this section. The report must include, at a minimum, the number of mercury switches removed and recycled from motor vehicles during the previous calendar year; the estimated total amount of mercury contained in the components; and any recommendations to improve the future collection and recycling of motor vehicle components. Before January 1, 2004, and annually thereafter, the department shall report to the joint standing committee of the Legislature having jurisdiction over natural resources matters on the effectiveness of the source separation required under this section, whether the partial reimbursement payment under subsection 5, paragraph B should be adjusted to increase the number of switches brought to consolidation facilities, whether other motor vehicle components should be added to the source separation efforts and whether the program should be terminated and, if so, when.