Department of the Environment

Collection of Mercury Switches and Mercury Switch Assemblies from Vehicles

September 1, 2013 – August 31, 2014

Prepared by:
Land Management Administration

Prepared for:
The Maryland General Assembly

October 1, 2014

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard | Baltimore, MD 21230 | www.mde.maryland.gov/recycling
410-537-3314 | 800-633-6101 x3314 | TTY Users: 800-735-2258
Martin O'Malley, Governor | Anthony G. Brown, Lt. Governor | Robert M. Summers, Ph.D., Secretary

TABLE OF CONTENTS

APPENDIX

Background

In the 2009 session, the Maryland General Assembly passed House Bill 1263 – Mercury Switch Recovery from Vehicles, Chapter 713. The bill amends Environment Article, Annotated Code of Maryland, Sections 6-904 and 6-905.

The impetus for the law was concern that processing scrap metal from motor vehicles was causing releases of mercury to the environment from mercury-containing switches. The law requires removal of mercury-containing switches from end-of-life vehicles by vehicle recyclers and by scrap processing facilities. Manufacturers of vehicles with mercury switches are required to develop and implement a "mercury minimization plan" that will assist entities required to remove mercury-containing switches from vehicles.

Section 6-905.5(j) of the Environment Article, Annotated Code of Maryland, requires the Maryland Department of the Environment ("Department" or "MDE") to submit a report on the implementation of the law to the General Assembly by October 1 of each year. The report is to include information on:

1. The number of mercury switches and mercury switch assemblies recovered from vehicles;
2. The capture rate of switch recovery achieved;
3. The number of switches projected to be recovered;
4. The amount and use of funds paid into the State Recycling Trust Fund for the administration of the law; and
5. Any recommendations to improve the provisions of the law or to increase the capture rate of mercury switches from vehicles.

This document is submitted in fulfillment of the requirement of Section 6-905.5(j) of the Environment Article, Annotated Code of Maryland. **This report covers the period from September 1, 2013 through August 31, 2014.**

Overview of Mercury Switch Collection Program

Under Maryland law, vehicle manufacturers that sold vehicles containing mercury switches in Maryland must develop a mercury minimization plan. The plan ensures that manufacturers will be responsible for removal and collection of mercury switches from end-of-life vehicles before the vehicles are processed at vehicle recycling and scrap processing facilities. Processing includes intentionally flattening, crushing, bailing, or shredding of vehicles. The plan is required to include information on the location of mercury-containing switches in vehicles by make, model, and model year; information on the safe and environmentally responsible removal and handling of mercury-containing switches; a plan for implementing and financing the removal, collection, and recovery of mercury-containing switches; payments to vehicle recyclers for each mercury-containing switch collected in accordance with the mercury minimization plan; and maintenance of appropriate record-keeping systems associated with implementation of the plan.

Vehicle manufacturers that installed mercury-containing switches have established a nationwide collection program for automotive mercury switches. This program is being implemented by the End of Life Vehicle Solutions Corporation (ELVS), an entity created by a

consortium of motor vehicle manufacturers. The ELVS website (http://www.elvsolutions.org) states that ELVS was created by the automotive industry to promote the industry's "environmental efforts in recyclability, education and outreach, and the proper management of substances of concern."

Automobile manufacturers are relying on the ELVS mercury switch collection program to serve as the core of the Maryland approved "mercury minimization plan" that the manufacturers were required to develop and implement under Maryland law. Under the program, ELVS provides vehicle recyclers and scrap processing facilities with specially designed containers for collection, temporary storage, and shipping of mercury switches removed from end-of-life vehicles. Pre-paid shipping is included with containers that are provided to program participants.

ELVS has developed educational materials that identify which vehicles have mercury switches, where the switches are located on the vehicles, and how the switches should be removed. These educational materials are provided to program participants, and are also made available on the ELVS website (http://www.elvsolutions.org).

Maryland participants are eligible for bounty payments from ELVS of $4.00 per mercury light switch or mercury light switch assembly and $6.00 per mercury-containing antilock braking system (ABS) unit, provided the switches are delivered to ELVS in accordance with requirements specified in the program plan. The plan also provides for a payment from ELVS to MDE of $1.00 for each mercury switch delivered to ELVS in accordance with the plan.

ELVS submitted its mercury minimization plan for review by MDE on September 27, 2009. On October 27, 2009, ELVS submitted a revised plan that addressed issues arising from the General Motors bankruptcy and reorganization. The Department reviewed the plan and provided ELVS with written comments on October 30, 2009. ELVS provided MDE with a revised plan on November 23, 2009 and MDE approved the plan on January 25, 2010.

As of August 31, 2014, 158 of 158[1] active facilities from Maryland have registered in the ELVS collection program. As new facilities become known, either by field inspection or additional database information, these additional facilities, by means of MDE contact, will be made aware of the requirements of Maryland's mercury switch law.

Report of Required Information

This section of the report presents information required by Section 6-905.5(j) of the Environment Article, Annotated Code of Maryland, to be reported to the General Assembly. The information is presented in the order it is listed in Section 6-905.5(j).

- Number of mercury switches and mercury switch assemblies recovered from vehicles:

  From September 1, 2013 through August 31, 2014, a total of 10,950 mercury switches, yielding 24.09 pounds of mercury were delivered to the ELVS recycling contractor from

[1] This may differ slightly from the registered number shown in the January 31, 2014 ELVS Manufacturer's Annual Implementation Report (Appendix A) due to the existence of out-of-business and duplicate facilities in the ELVS database.

Maryland vehicle recyclers and scrap processing facilities. This is an increase of approximately 3.19% compared to the previous twelve months (10,612 switches). From January 1, 2014 to August 31, 2014, a total of 7,628 mercury switches, yielding 16.78 pounds of mercury, were delivered to the ELVS recycling contractor from Maryland.

Appendix A: The 2014 ELVS Manufacturers' Implementation Report required from vehicle manufacturers details collection activities for the previous CY of 2013. Note that there is a lag between the time that participants remove switches from vehicles and the time that the switches are delivered to ELVS because it takes time to accumulate enough switches to fill the collection/shipping container. During each MDE inspection, the facility is made aware that mercury switches cannot be kept on site for more than one year from beginning collection, regardless of the number of switches collected, to remain in compliance with hazardous waste regulations, Code of Maryland Regulation (COMAR) 26.13.10.17 B(1), which references the "Universal Waste Rule" with respect to the storage of hazardous waste.

Data from 2007 – 2014 is presented in the following table and chart:

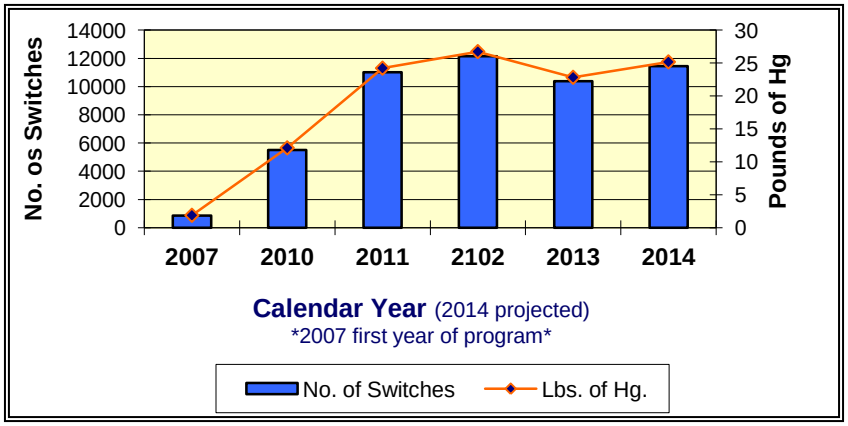
Calendar Year	Number of Switches Collected	Pounds of Mercury Collected **
2014 ^ (projected)	11,442	25.17
2014*	7,628	16.78
2013	10,376	22.83
2012	12,151	26.73
2011	11,011	24.22
2010	5,509	12.12
2009	10,052	22.11
2008	4,625	10.23
2007	860	1.89
TOTAL ••	**62,212**	**136.91**

^ 2014 projected switches equal to (7,628 ÷ 8) x 12.

* 2014 data for period January 1, 2014 through August 31, 2014, period covered by report.

** Per ELVS, 454.54 switches = 1 pound of mercury.

•• Actual total through August 31, 2014. 2014 projected **not** included in Total.



Month-by-month data on the number of switches turned in to ELVS from September 1, 2013 through August 31, 2014, are shown in the following table:

Month-Year	Number of Switches
Sept-2013	366
Oct-2013	771
Nov-2013	1,153
Dec-2013	1,032
Jan-2014	1,577
Feb-2014	143
Mar-2014	851
Apr-2014	505
May-2014	462
Jun-2014	549
Jul-2014	1,896
Aug-2014	1,645
TOTAL	**10,950**

- Number of switches projected to be available for recovery:

The National Vehicle Mercury Switch Recovery Program (NVMSRP) Switch Retirement Model, available on the ELVS web page at http://elvsolutions.org/?page_id=1298 provides the following estimates for the number of end-of-life vehicle mercury switches available in Maryland through 2017:

Year	Estimated No. Switches Available from Vehicles Scrapped in Maryland
2007	61,000
2008	51,000
2009	51,000
2010	51,000
2011	48,000
2012	44,000
2013	41,000
2014	38,000
2015	34,000
2016	31,000
2017	27,000
Total	**477,000**

- Capture rate of switch recovery achieved:

  ELVS uses the Switch Retirement Model developed by the NVMSRP Measurement Committee to identify switch populations and estimate mercury switch retirement rates through 2017. The NVMSRP was developed through a collaborative effort involving the U.S. Environmental Protection Agency, states, environmental organizations, and several industry sectors. More information on the NVMSRP is available at http://www.epa.gov/mercury/archive/switch/index.html.

  The Switch Retirement Model uses historic information on vehicle sales by state, estimates of vehicle scrappage rates as a function of vehicle age, and information on the average number of mercury switches per vehicle to estimate the number of switches expected to be in vehicles scrapped each year, by state.

  The model estimates the total number of mercury switches installed in vehicles manufactured before automobile model year 2003 to be 169,185,000 in vehicles sold in the United States. The 2002 model year was the last year that mercury switches were installed in vehicles. Most of the vehicles manufactured prior to 2003 containing these switches have already been taken out of service. The model estimates that 11,797,000 mercury switches nationally will be taken out of service from 2013 through 2017. The number of mercury switches available for collection from vehicles taken out of service in Maryland from 2013 through 2017 is estimated at 171,000. The model estimates that 38,000 mercury switches were available for collection from vehicles taken out of service in Maryland in calendar year 2014.

  The Maryland Mercury Switch Model table on pages 6 and 7 present estimates for switches available for recovery, by year, as estimated by the Switch Retirement Model:

  To determine the capture rate (CR) in Maryland for the reporting period September 1, 2013 through August 31, 2014, the number of switches available during this period was calculated as follows:

  September 1 through December 31, 2013, the number of switches available was 41,000 x (4/12) = 13,667
  January 1 through August 31, 2014, the number of switches available was 38,000 x (8/12) = 25,333

  Therefore, the Capture Rate from September 1, 2013 through August 31, 2014 was:

$$\frac{Number\ of\ Switches\ Turned\ In}{Number\ of\ Total\ Switches Available} = \text{Capture Rate } \therefore \frac{10{,}950}{39{,}000} = 0.2808\ or\ 28.1\%$$

Maryland Mercury Switch Model

Year Model	Scrappage Rate	No. Switches in Operation as of 7/06	No. Scrapped 2007	2007 Switches In Operation	2008 No. Scrapped	2008 Switches In Operation	2009 No. Scrapped	2009 Switches In Operation	2010 No. Scrapped	2010 Switches In Operation	2011 No. Scrapped	2011 Switches In Operation
1973 & Older	20.2	21,818	4,407	17,411								
1974	20.2	2,485	502	1,983	3,918	15,476						
1975	20.2	2,328	470	1,858	375	1,482	3,426	13,533				
1976	20.2	3,541	715	2,826	571	2,255	455	1,799	3,097	12,235		
1977	20.2	5,058	1,022	4,036	815	3,221	651	2,570	519	2,051	2,886	11,400
1978	19.3	6,318	1,219	5,098	1,030	4,068	822	3,247	656	2,591	523	2,067
1979	18.5	7,687	1,422	6,265	1,209	5,056	1,021	4,034	815	3,219	650	2,569
1980	17.7	4,186	741	3,445	637	2,807	542	2,266	458	1,808	365	1,443
1981	16.9	4,465	755	3,711	657	3,054	565	2,489	480	2,009	406	1,603
1982	16.1	5,205	838	4,367	738	3,629	642	2,987	553	2,434	470	1,964
1983	15.2	8,546	1,299	7,247	1,167	6,080	1,028	5,052	894	4,158	769	3,389
1984	14.5	15,242	2,210	13,032	1,981	11,051	1,779	9,272	1,567	7,705	1,364	6,341
1985	13.6	20,847	2,835	18,012	2,612	15,400	2,341	13,059	2,103	10,957	1,852	9,105
1986	12.9	34,873	4,499	30,375	4,131	26,244	3,805	22,438	3,411	19,028	3,063	15,964
1987	12.1	32,462	3,928	28,534	3,681	24,853	3,380	21,473	3,114	18,359	2,791	15,569
1988	11.4	41,449	4,725	36,724	4,444	32,280	4,164	28,116	3,824	24,292	3,522	20,770
1989	10.6	56,526	5,992	50,534	5,761	44,773	5,418	39,356	5,077	34,279	4,662	29,617
1990	9.9	46,336	4,587	41,749	4,425	37,323	4,255	33,069	4,001	29,067	3,750	25,318
1991	9.2	48,654	4,476	44,177	4,374	39,804	4,219	35,585	4,057	31,528	3,815	27,713
1992	8.5	42,356	3,600	38,756	3,566	35,190	3,484	31,706	3,361	28,345	3,231	25,114
1993	7.8	53,606	4,181	49,425	4,201	45,224	4,161	41,063	4,065	36,998	3,922	33,076
1994	7.3	66,074	4,823	61,250	4,778	56,473	4,800	51,672	4,754	46,919	4,645	42,274
1995	5.6	47,409	2,655	44,754	3,267	41,487	3,236	38,251	3,251	35,000	3,220	31,780
1996	4.6	38,912	1,790	37,122	2,079	35,044	2,558	32,485	2,534	29,952	2,546	27,406
1997	3.4	13,580	462	13,118	603	12,514	701	11,814	862	10,951	854	10,097
1998	3.1	14,115	438	13,678	465	13,213	608	12,605	706	11,899	869	11,031
1999	2.5	22,655	566	22,089	685	21,404	728	20,676	951	19,725	1,105	18,620
2000	2.3	8,317	191	8,125	203	7,922	246	7,677	261	7,416	341	7,075
2001	1.8	9,551	172	9,379	216	9,163	229	8,934	277	8,657	294	8,363
2002	1.7	29,114	495	28,619	515	28,104	646	27,458	686	26,771	830	25,942
	Total	713,713	66,016	647,697	63,102	584,595	59,909	524,687	56,333	468,354	52,745	415,609
		Switches Newly Available in MD for Collection:	**61,000**		**51,000**		**51,000**		**51,000**		**48,000**	

Note: Switches available for collection estimated by subtracting inaccessible switches due to vehicle damage, end of life vehicle exports, and lost or stolen vehicles which do not enter the recycling stream from total switches,

Year Model	Scrappage Rate	2012 No. Scrapped	2012 Switches In Operation	2013 No. Scrapped	2013 Switches In Operation	2014 No. Scrapped	2014 Switches In Operation	2015 No. Scrapped	2015 Switches In Operation	2016 No. Scrapped	2016 Switches In Operation	2017 No. Scrapped	2017 Switches In Operation
1973 & OLDER	20.2												
1974	20.2												
1975	20.2												
1976	20.2												
1977	20.2												
1978	19.3	2,721	10,747										
1979	18.5	519	2,050	2,585	10,212								
1980	17.7	291	1,151	233	919	2,249	8,883						
1981	16.9	324	1,279	258	1,021	206	815	1,959	7,738				
1982	16.1	397	1,568	317	1,251	253	998	202	797	1,724	6,811		
1983	15.2	654	2,735	552	2,182	441	1,742	352	1,390	281	1,109	1,600	6,320
1984	14.5	1,173	5,168	997	4,170	842	3,328	672	2,656	536	2,119	428	1,691
1985	13.6	1,612	7,494	1,386	6,107	1,179	4,929	996	3,933	794	3,139	634	2,505
1986	12.9	2,698	13,266	2,348	10,918	2,020	8,898	1,717	7,181	1,451	5,730	1,158	4,573
1987	12.1	2,507	13,062	2,208	10,855	1,921	8,933	1,653	7,281	1,405	5,876	1,187	4,689
1988	11.4	3,157	17,613	2,836	14,777	2,497	12,280	2,174	10,106	1,870	8,237	1,590	6,647
1989	10.6	4,294	25,323	3,849	21,473	3,457	18,016	3,045	14,972	2,650	12,322	2,279	10,042
1990	9.9	3,443	21,874	3,172	18,703	2,843	15,860	2,553	13,306	2,249	11,058	1,957	9,100
1991	9.2	3,575	24,138	3,283	20,855	3,024	17,831	2,710	15,121	2,434	12,686	2,144	10,542
1992	8.5	3,039	22,075	2,848	19,227	2,615	16,613	2,409	14,204	2,159	12,045	1,939	10,106
1993	7.8	3,771	29,305	3,546	25,759	3,323	22,436	3,051	19,385	2,811	16,574	2,519	14,055
1994	7.3	4,481	37,793	4,308	33,484	4,052	29,433	3,797	25,636	3,486	22,149	3,212	18,938
1995	5.6	3,146	28,634	3,035	25,598	2,918	22,680	2,744	19,936	2,572	17,364	2,362	15,003
1996	4.6	2,521	24,884	2,464	22,421	2,377	20,044	2,285	17,759	2,149	15,610	2,014	13,597
1997	3.4	858	9,239	850	8,389	830	7,558	801	6,757	770	5,987	724	5,262
1998	3.1	860	10,170	864	9,306	856	8,450	837	7,613	807	6,806	776	6,030
1999	2.5	1,359	17,261	1,346	15,915	1,353	14,562	1,340	13,222	1,309	11,913	1,263	10,651
2000	2.3	396	6,678	488	6,191	483	5,708	485	5,223	481	4,742	469	4,273
2001	1.8	385	7,978	447	7,532	550	6,982	545	6,437	547	5,890	542	5,348
2002	1.7	882	25,060	1,153	23,907	1,339	22,568	1,647	20,921	1,632	19,289	1,640	17,649
	Total	49,063	366,546	45,372	321,173	41,627	279,546	37,973	241,573	34,117	207,456	30,436	177,020
	Switches Newly Available in MD for Collection:	**44,000**		**41,000**		**38,000**		**34,000**		**31,000**		**27,000**	

As mentioned before, there can be a significant lag time before a switch that has been removed is turned in for recycling. Also, economic concerns related to the recession may have reduced the number of switches available as vehicle owners kept vehicles in operation longer. There may be some uncertainty in the model's estimate of the number of switches available because the model assumes that a vehicle that was purchased in Maryland will be scrapped in Maryland. That does not take into account such factors as vehicles being taken out of State by persons who relocate, and trade-in vehicles being sent out of State by new car dealers. However, this could be happening in other states as well, resulting in vehicles originally purchased elsewhere being scrapped in Maryland.

- Amount and use of funds paid into the State Recycling Trust Fund:

  For State Fiscal Year 2014 (*i.e.*, July 1, 2013 through June 30, 2014), MDE was paid $9,120 by ELVS. As stated in the manufacturers' mercury minimization plan, ELVS pays the State the $1.00 required under the law only upon receiving proper documents from program participants. The switch recovery plan MDE approved includes the statement "ELVS will further authorize the payment of $1 for each *form verified* (emphasis added) mercury convenience light switch or mercury containing ABS assembly to the Maryland Department of the Environment." The amount of money the State received from ELVS ($9,120) vs. the number of switches received by ELVS (10,950) from vehicle recyclers and processing facilities reflects the challenges related to the submission of the proper documents. Additionally, once switches are shipped by a State participant in the program, the delay within ELVS for reimbursement of funds to the State may take between 60-90 days. This delay may result in mercury counted during the fiscal year coming from switches collected during the previous year, or, vice versa. Further details on the challenges are available in the Implementation Challenges Section on Page 10 of this report.

  The limited funds received are being applied toward program staff costs and outreach activities. These expenditures include mailings to vehicle recycling facilities and staff contacts by phone and in person with regulated facilities.

  In State FY 2014, $91,614.66 was charged for mercury switch recovery program activities. Details on these expenditures are provided in the following financial statement on Page 9 of this report.

Highlights of MDE Activities

During the period covered by this report, MDE performed outreach activities to inform vehicle recyclers and scrap processing facilities of their obligations to remove and collect mercury switches from end-of-life vehicles. Outreach activities included telephone calls and site visits.

RECYCLING TRUST FUND
MERCURY AUTO SWITCH ACTIVITY

July 1, 2013 to June 30, 2014

A. Beginning Balance 7/01/13 $0.00

B. FY 2014 Receipts

Mercury Vehicle Switch Payments from ELVS $9,120.00

C. Total Receipts Available FY 2014 (A+B) **$9,120.00**

FY 2014 Expenditures

D.

Salaries and Wages	$72,109.14
Technical and Special Fees	0
Communications	0
Travel	0
Utilities	0
Motor Vehicle Operations and Maintenance	0
Contractual Services	0
Supplies and Materials	0
Equipment	0
Grants	0
Fixed Charges	0
Subtotal	**$72,109.14**
Indirect Costs (27.05%)	$19,505.52
Total Expenditures	**$91,614.66**

E. Balance for Mercury Switch Activities June 30, 2014 **($82,494.66)**

MDE made 152 site visits to vehicle recyclers and scrap processing facilities to gather information on program implementation, provide compliance assistance, and when necessary issue Site Complaints for non-compliance with the Environment Article, Annotated Code of Maryland, Section(s) 6-904, 6-905, 6-905.4, 6-905.5, and/or 6-905.6. As a result of the site visits, Site Complaints were issued to 5 different vehicle recyclers and/or scrap processing facilities. Specifically, one (1) Site Complaint was issued to a scrap processing facility for failure to register with ELVS as well as failure to pull switches, three (3) Site Complaints were issued to auto parts dismantlers for failure to pull switches in order to remain in compliance with the 180 day timeframe given to pull switches, and one (1) Site Complaint was issued for failure to handle mercury switches as required by the approved Mercury Minimization Plan.

Follow-up inspections will be performed at facilities that have previously received Site Complaints from MDE. These inspections will focus on whether or not the facility has satisfied the terms of the Site Complaint, thus bringing the facility into compliance with Maryland's mercury switch law. MDE plans to issue a Notice of Violation (NOV) to each specific facility that has failed to correct a previous Site Complaint issued to their operation as a result of non compliance. These NOV's will include monetary penalties as well as a facility agreement to come into compliance with Maryland's mercury switch law.

Implementation Challenges

Payment to the State by vehicle manufacturers of $1.00 per switch recovered, as mandated in the law, is a concern because the manufacturers are only making payments for switches accompanied by complete and accurate documents required by ELVS. As a result, the State received $9,120 in payments in FY 2014, reflecting a slight increase over monies received in FY 2013, even though 10,950 switches were returned. Also, some program participants may not consider the burden of filling out the ELVS documents worth the bounty of $4.00 or $6.00 per switch that ELVS will reimburse for properly documented switches. Since the switch bounty is considered income for tax purposes, some participants are foregoing the bounty so as not to complicate their tax filings.

An observation from site visits is that participants are frequently slow to turn in switches they have collected. The Department's outreach efforts will continue to encourage the timely shipment of switches once the collection buckets are approaching "full, or approaching the "one year Universal Waste Rule limit" for having the mercury switches on site.

The electronic record-keeping requirement of the law continues to be a difficult requirement for some facilities. While many of the vehicle recyclers and scrap processing facilities are large with sophisticated inventory control, others are small operations with limited computer capability.

Future Activities

MDE will continue outreach activities, concentrating on site visits to ensure vehicle recyclers' and scrap processing facilities' compliance with Maryland's mercury switch recovery law. The Department has assigned another inspector, on a part time basis, to perform additional mercury switch inspections and address scrap tire permit issues as part of the inspection. The highest priority will be on those facilities that have previous Site Complaints issued by the

Department. Upon final determination that a facility has not satisfied a previously issued Site Complaint, an NOV will be issued to the facility by the Department. As previously stated, this NOV will include a financial penalty as well as an agreement for the facility to come into compliance with the Maryland mercury switch law. MDE's goal is to conduct 16 site visits per month. Enforcement action will continue to be taken against facilities that fail to comply with Maryland's mercury switch law.

Appendix A

THIS PAGE INTENTIONALLY LEFT BLANK

ELVS end of life vehicle solutions

P.O. BOX 3282
Farmington Hills, MI. 48333-3292

January 31, 2014

Ms. Hilary Miller
Program Manager
Technical Services and Operations Program
Land Management Administration
Maryland Department of the Environment
1800 Washington Boulevard - Suite 610
Baltimore, MD 21230-1719

Subject: End-of-Life Vehicle Solutions Corporation "Manufacturer's Annual Implementation Report"

Dear Ms. Miller,

The Annotated Code of Maryland Section 6-905.5(G) Mercury Switch Removal from Vehicles, Chapter 713 requires vehicle manufacturers to report annually to the Maryland Department of the Environment on the progress of their mercury minimization plan including:

- the number of mercury switches collected
- a description of the capture rate achieved
- a description of actions that may be implemented to improve the plan if a capture rate of at least 90% for the previous calendar year is not achieved
- the number of end-of-life vehicles containing mercury switches
- a description of how the mercury switches were managed
- a description of the costs of implementing the program

This report is provided by End of Life Vehicle Solutions Corporation on behalf of its member automotive companies. The participating members of ELVS are: Chrysler Group LLC; Ford Motor Company; Mack Trucks Inc; Mercedes-Benz USA, LLC; Mitsubishi Motors North America, Inc; Navistar, Inc.; Nissan North America, Inc; PACCAR, Inc; Porsche Cars North America Inc.; Subaru of America, Inc; Toyota Motor Sales USA, Inc.; Volkswagen Group of America, Inc; Volvo Cars of North America; and Volvo Trucks North America. This report also includes switches from the former MLC (old GM).

Mercury Switches Collected

A total of 10,376 mercury switches were delivered to the ELVS recycling contractor from Maryland dismantlers during calendar year 2013, yielding 22.8 pounds of recovered mercury. There were 163 registered dismantlers, 65 of which submitted switches.

Mercury Switch Capture Rate

The estimated number of switches available for recovery in Maryland during 2013 was 41,000. The number of switches collected (10,376) yields an annual capture rate of 25% (28% for 2012).

Vehicle / Switch Estimates

ELVS uses the National Vehicle Mercury Switch Recovery Program (NVMSRP) Switch Retirement Model (www.elvsolutions.org/model.html) approved by the U.S. EPA and program partners to estimate mercury switch populations. The model was developed to identify switch populations and estimate mercury switch retirement rates through 2017. Therefore, the model focuses on mercury switch counts rather than vehicle counts.

The model estimates that the national total number of mercury switches historically manufactured in vehicles to be 169,185,000. Most of the vehicles containing these switches have already been scrapped, with an estimated 8,925,000 switches remaining in today's national fleet for collection (CY 2014 – 2017). Maryland's portion of these switches remaining for collection (CY 2014 - 2017) is estimated to be 130,000.

For reference and according to the model, the number of mercury switches that were available nationally for recovery in 2013 was estimated to be 2,872,000 units. In Maryland 41,000 switches were available for recovery in 2013.

For your convenience, regularly updated collection information is available through our contractor's (Environmental Quality) website, http://www.eqonline.com/services/ELVS-Mercury-Switch-Recovery-Program/annual-report.asp?year=all, portions of which are now downloadable into Excel. This web-based data tracking system is part of ELVS' commitment to data accessibility, and will be available at least until 2017.

Processing of Vehicles

ELVS does not have data on the actual number of end of life vehicles processed. Our estimate is based on data from the latest Ward's Motor Vehicle Facts & Figures. According to Wards, the number of vehicles retired from use nationally in 2012 (the latest year given) is 11,781,000. The total registrations for Maryland for 2011 (again, the latest year given) are 3,785,507 out of 244,778,179 registered nationally. We estimate approximately 182,194 end of life vehicles were processed in Maryland in 2012 (11,781,000*(3,785,507 /244,778,179)). This does not include end of life vehicle imports or exports from the state or the effect of recessions. We realize that the number of vehicles retired annually varies year to year depending on many conditions. Our estimate is therefore based on the best available data.

Improvement Actions

Throughout 2013, ELVS participated in a number of regional and national automotive recycling conventions, some of which were attended by Maryland recyclers. In 2014, ELVS will continue to attend these kinds of events to encourage recycler participation and mercury switch collection.

NVMSRP member organizations have scheduled full-program review meetings in January and February, 2014 to discuss the overall progress of automotive mercury switch collections in the U.S. including a review of which collection program features have proven to be most effective. The group will also consider possible additional steps to enhance switch collections such as renewed outreach and communications to recyclers, and the role switch collections could play in complying with certain federal air quality rules.

Mercury Switch Management

Mercury switches received by ELVS are generally managed as follows:

- Dismantlers remove the switch assemblies and place them in the collection bucket, or extract and place the mercury pellets in the collection buckets. ABS assemblies with multiple pellets are returned as units.
- Once the buckets are full, the dismantler contacts EQ Industrial Services, Inc. which pays for the shipping of the buckets to its facility in Michigan.
- EQ records the number of pellets and enters them into its database. The pellets are then sent to a retorting facility where the mercury is recycled.

Program Costs

The total implementation cost for the program including bounties, bucket charges, and program maintenance was $44,314 for calendar year 2013.

We look forward to a steady increase in the number of switches returned to ELVS for recycling in 2014. If you have any questions or comments regarding this report, please contact me at brelvs@yahoo.com.

Sincerely,

Brian H. Rippon

Brian Rippon
End-of-Life Vehicle Solutions
Project Manager