



P.O. Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Item No. Information 3
Environment and Sustainability Committee
March 5, 2015

TO: Environment and Sustainability Committee

SUBMITTED BY: Original signed

Jane Fraser, Director, Operations Support

DATE: January 12, 2015

SUBJECT: Diverting Light Bulbs - Halifax Owned and Operated Facilities

INFORMATION REPORT

ORIGIN

This report originates with a motion from Environment and Sustainability Committee on October 28, 2014, requesting a report on diverting from the landfill all spent light bulbs used in municipal buildings by recycling at an appropriate facility.

LEGISLATIVE AUTHORITY

HRM has no legislative authority with respect to the requirement for designating the generator of mercury waste to properly manage spent products. This authority rests with both the Provincial and Federal governments in terms of the management of Mercury Containing Products (Federally Regulated) and Extended Producer Responsibility legislative framework (Provincial Authority).

Halifax Charter Section 34 (4) states that "Council shall provide direction on the administration, plans, policies and programs of the Municipality to the Chief Administrative Officer."

BACKGROUND

In May, 2013, an information report was prepared and presented to the Chair and Members of the Environment & Sustainability Standing Committee. A motion was passed requesting staff prepare a report investigating the possibility of recycling spent bulbs used in municipal facilities and have Halifax Regional Council prepare a letter to other levels of government to gain clarity on regulations relative to the disposal of mercury light bulbs from municipal buildings.

In preparing this report, staff reviewed other jurisdictional initiatives related to the development and implementation of programs for the recycling of mercury containing lamps/bulbs/tubes in the provinces of Manitoba, British Columbia, Quebec, and Ontario.

The May 2, 2013, Information Report, "Recycling Spent Bulbs", prepared by Solid Waste Resources, is attached.

In all cases, the programs for lamp recycling were industry funded with third party monitoring to measure and report on capture of materials and proper recovery for recycling.

Environment Canada had taken the lead to introduce new regulations that would limit the amount of mercury in products. The process for these new regulations was scheduled to commence in the spring of 2013 for potential implementation in 2014.

It was learned that the Federal Government has backed away from a plan for mandatory recycling of compact fluorescent light bulbs, which contain the toxic element mercury. Recently, the Federal Government posted regulations that will create a voluntary code of practice for companies that sell the bulbs.

DISCUSSION

The Provincial Environment Department has proposed a new regulation that would require manufacturers of light bulbs that contain mercury to set up their own collection and recycling system.

Each year, the Halifax Regional Municipality would change out 2,000 – 3,000 CFL bulbs. The majority of staff who would change these light bulbs include Electricians, Building Service Technicians, Contractors and Custodians. A location such as the Halifax Forum would change out, on average, 400 per year. There are recycling measures that can be established within service provider contracts which require the electrical companies to recycle spent bulbs from Halifax change outs. Staff can also utilize a bulb recycling service based on the successful proponents operating plan which will be a key input to a successful bid for this service. A critical component to the program is end use monitoring to ensure the materials are truly being recycled.

FINANCIAL IMPLICATIONS

The estimated cost to recycle bulbs is 19 cents per foot, an average of 80 cents per bulb. If Halifax was to replace 3,000 bulbs annually the total cost would be \$2,400 (2,502.86 net HST included). A tender or RFP process would be required to identify a proponent who can deliver the appropriate recycling program for Halifax.

Staff will prepare a proposal call and move forward with the recycling of spent light bulbs.

ENVIRONMENTAL IMPLICATIONS

Every four-foot florescent bulb has 22 milligrams of mercury, and 22 milligrams of mercury can contaminate 220,000 litres of water. Therefore, eliminates risks to environment including water.

ATTACHMENTS

Attachment 1 - Environment & Sustainability Standing Committee – Information Report, May 2, 2013.

A copy of this report can be obtained online at <http://www.halifax.ca/commcoun/index.php> [or other appropriate Committee link] then choose the appropriate [Community Council/Board] and meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

Report Prepared by: Diane Moulton, Manager, Municipal Facilities Maintenance & Operations
(902-490-1536)

Report Prepared by: Matthew Keliher, A/Manager, Solid Waste Resources (902-490-6606)

**Environment & Sustainability Standing Committee
May 2, 2013**

TO: Chair and Members of the Environment & Sustainability Standing Committee

Original Signed

SUBMITTED BY: Ken Reashor, P.Eng. Director, Transportation & Public Works

DATE: January 28, 2013

SUBJECT: Recycling Spent Bulbs

INFORMATION REPORT

ORIGIN

October 4, 2012, Item 6.3.1, Motion was passed requesting staff to prepare a report investigating the possibility of recycling spent bulbs used in municipal facilities and have Halifax Regional Council prepare a letter to other levels of government to gain clarity on regulations relative to the disposal of mercury light bulbs.

LEGISLATIVE AUTHORITY

HRM has no legislative authority with respect to the requirement for designating the generator of mercury waste to properly manage spent products. This authority rests with both the Provincial and Federal governments in terms of the management of Mercury Containing Products (Federally Regulated) and Extended Producer Responsibility legislative framework (Provincial Authority).

HRM Charter, Part XIII, Section 335, By-law regarding Solid Waste, Item (a) The Council may make by-laws respecting solid waste, including, but not limited to (a) prohibiting persons from depositing any solid waste except at a solid-waste management facility and (b) regulating the disposal, collection and removal of solid waste and (c) prescribing the materials that may or may not be deposited at a solid-waste management facility of the Municipality or in which the Municipality participates; and (g) requiring the separation of solid waste prior to collection.

BACKGROUND

At the October 4, 2012, Environment and Sustainability Standing Committee, Dan-X Recycling Limited representatives presented to Committee on their fluorescent light bulb/tube processing operation in Burnside. On a per unit fee, the Burnside business operation disassembles light bulbs/tubes into component parts (metal, glass and phosphorus powder from mercury containing bulbs) and stores/prepares the individual component materials for shipment for further processing or end market opportunities.

Dan-X provides collection and processing services for all types of light products with a focus on mercury containing lamps/bulbs/tubes. As a processor, Dan-X dismantles, disassembles and separates the spent fluorescent light products into constituent components. Dan-X packages these parts/materials for shipment for further processing or to end market facilities. HRM has confirmed from Dan-X that they have secured markets for the higher value commodities such as metal and aluminum; however, markets for the less valuable or more challenging commodities, including the crushed glass and phosphorus powder which are not revenue generating commodities, are a greater challenge. The cost of shipping and processing by a third party has a net direct impact on the business bottom line. As a result, Dan-X has been storing this glass and phosphorus powder until such time as they obtain enough materials for cost effective transportation shipment to markets. HRM is currently unaware that Dan-X has secured guaranteed markets for this material which is a Council standing practice, in terms of environmental stewardship, for recycling programs.

Mercury is a naturally occurring element that is found in air, water and soil. It exists in several forms: elemental or metallic mercury. Elemental or metallic mercury is a shiny, silver-white liquid commonly used in thermometers. Mercury is also an essential component of most energy efficient lighting (lamps) and is contained in minute quantities (milligrams) as phosphorus dust composition. Mercury is commonly secured in the manufacture of products and is not currently regulated by either the Federal or Provincial government in terms of its disposal. Mercury containing lamps/bulbs/tubes include fluorescent tubes, high pressure sodium street lamps, compact fluorescent lighting (curly light bulbs or CFLs).

The US Environmental Protection Agency (EPA) reports that mercury can be a health concern when exposed to water where fish may ingest and certain microorganisms can change it into methyl mercury. The food chain is the main source of exposure to humans. Both the US Environmental Protection Agency (EPA) and Canadian Natural Resources Canada can regulate industry to reduce mercury content and properly dispose of wastes. Most EPA environmental regulations are implemented by individual states. In 2008, Natural Resources Canada established a National Mercury-Containing Lamp Recycling Technical Working Group and has recommended Extended Producer Responsibility (EPR) Regulations. The Canadian Council of Ministers of the Environment (CCME) working group on EPR has identified compact fluorescents and other lamps in accordance with Environment Canada Mercury Containing Products Strategy and the National Technical Working Group as noted above and has identified these as priority products and those EPR regulations to be adopted and implemented by provinces.

DISCUSSION

In preparing this report, staff reviewed other jurisdictional initiatives related to the development and implementation of programs for the recycling of mercury containing lamps/bulbs/tubes as noted below:

- **Province of Manitoba**

In February 2010, Manitoba introduced the "*Household Hazardous Material Stewardship Regulation*". The regulation identifies certain wastes including fluorescent lighting as a "designated material" for industry stewardship. In this case, the industry association Product Care (PC), whose membership includes manufacturers, retailers and wholesalers of lighting and other designated hazardous waste products, are responsible to develop and implement a program (<http://www.productcare.org/manitoba-accepted-products-lights>) for the collection and recovery of spent lighting products including compact fluorescent light bulbs and tubes. A network of collection depots (both municipal and private sector) operate throughout the province. The collection and processing program is funded by environmental handling fees levied on PC member's products remitted by PC members based on the number of units sold. There is no charge to drop off spent products. This program is in response to the provincial Household Hazardous Material and Prescribed Material Stewardship Regulation enacted by the Manitoba provincial government.

- **Province of British Columbia (BC)**

The "*BC Recycling Regulation*" requires the "producers" (typically first importers, including retailers, distributors and manufacturers) of all lamps, ballasts and fixtures sold into the residential, institutional, commercial and industrial sectors to be part of an approved stewardship program. The program must be funded by these producers to provide a collection and recycling option for all generators of lamps, ballasts and fixtures in BC. Recycling fees are applied to the sale or supply of new lamps and ballasts sold in BC. A stewardship plan for lamps and lighting equipment has been developed by the industry association, "Product Care". Product Care launched the "Light Recycle" program in 2010 (<http://www.lightrecycle.ca/>). Product Care collects all fees to fund program costs including collection, transportation and recycling of end-of-life products. Members have the option to pass along fees to their customers. A network of depots is available for drop off of materials.

- **Province of Quebec**

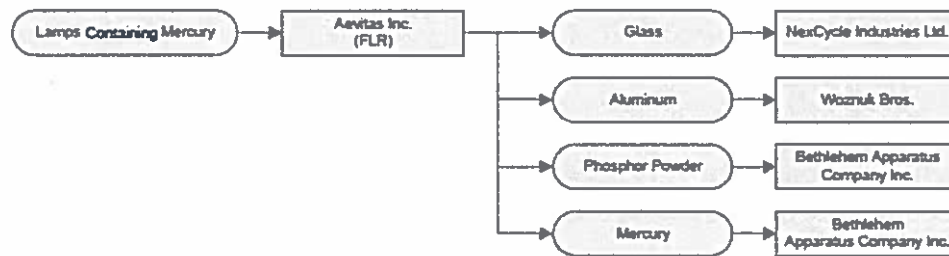
In Quebec, a "*Regulation Respecting the Recovery and Reclamation of Products by Enterprises*" makes businesses responsible for the recovery and reclamation of certain products marketed by them. These products include electronics, batteries, mercury lamps, paint and paint containers as well as used oils, coolants, antifreeze and their filters, and containers. (<http://www.productcare.org/Quebec>)

- **Province of Ontario**

In Ontario, "*Take Back the Light Program*" was developed with financial support from the Ontario Ministry of Environment and is administered by the Recycling Council of Ontario (RCO). The Take Back the Light program is a voluntary program designed for the non-

residential sector to collect florescent lamps generated from the commercial and institutional sectors to encourage the recycling of mercury-containing fluorescent lamps and bulbs. Distributors pay an annual fee based on gross sales, which covers part of the cost of the recycling program, which includes collection and transport to material processor, program monitoring and reporting. The RCO program includes standards for processor documentation of downstream flow and handing of lamps from receipt at its facility through to each point of further processing or disposition, including details on how the lamp materials are managed at each point. The flowchart below depicts the chain of custody for lamp recycling with an approved recycler who has Certificates for Approval to transport and recycle the lamp waste. This depicts the material components and where they are sent for processing and final recovery and/or disposition:

Downstream Flow



In all cases, the programs for lamp recycling are industry funded with third party monitoring to measure and report on capture of materials and proper recovery for recycling. Most industry recovery programs have been instituted by Regulations - "Extended Producer Responsibility" (EPR) regulations. These regulations make industry responsible for the cost of collection and recycling of these products they manufacture or sell, including mercury-containing lamps. Manufacturers are responsible for developing and funding mechanisms for diversion away from landfill.

Legislative Landscape

In terms of legislative authority in dealing with mercury containing bulbs, the Federal government through Environment Canada is the jurisdictional lead. Environment Canada has taken the lead to introduce new regulations that would limit the amount of mercury in products and require EPR as part of 'The Mercury Contained Products Regulation'. The legislative approval process for these new Regulations is currently scheduled to commence this spring (2013) for potential implementation in 2014.

The Province of Nova Scotia, NS Environment, has initiated discussions with NS Municipalities with respect to a framework for Provincial EPR programming. Discussions have been underway to have mercury containing lamps and other such materials identified as first priorities for materials designated under EPR. NS Environment is currently undertaking a regulatory review process which has sought and received input from stakeholders (municipalities, public, and ICI sector) through a preliminary assessment phase. NS Environment has indicated that further input

from stakeholders will be required as the regulatory review process evolves. Municipalities will have input into the process through the Regional Chairs and Regional Coordinators committees.

A Provincial or Federal Regulatory Framework for EPR of these products would hopefully secure appropriate funding and environmental monitoring mechanisms for a fluorescent lamp/bulb/tube recycling program to include collection, processing and marketing of all material components in mercury bearing light products.

Currently, these materials remain classified as residual waste as a result of the absence of Provincial/Federal regulations to the contrary. The diversion of fluorescent lamps/bulbs/tubes away from HRM landfill disposal occurs on a voluntary basis as part of best business practices. In 2010, HRM Solid Waste Resources instituted a policy to no longer receive commercial loads of fluorescent tubes at the landfill where technologies were available for the processing and capture of mercury vapours generated from fluorescent light tubes. This preprocessing of the mercury vapours was then captured for special handling waste disposal.

Many businesses and institutions have accommodated provisions for separation of tubes for recovery as part of lighting retro-fit programs. The recovery and recycling of the lamps/bulbs/tubes is now commonly built into most third party contractor provisions for procurement of lighting retro-fit services.

In HRM, the Street Lighting Department replaces approximately 3,000 street-lamp fixtures a year. These are high pressure sodium bulbs. HRM currently recycles the aluminum shell, the glass lenses and the internal parts of the fixture. The bulbs are disposed by the company that recycles the lamp and components. In the future plan for the comprehensive LED lighting retro-fit for street lamps, HRM plans to include provision for the cost of recovery and recycling as part of the project costs in discussions with proponents.

FINANCIAL IMPLICATIONS

There are no cost implications to this information report. If HRM approves best management practices for the recovery of fluorescent lights/bulbs/tubes in corporate facility/building lighting retro-fits, recovery of the lights/bulbs/tubes for proper recycling management would be considered in the sustainable green practices policy and the language built into the overall contract provision of service within a third party service agreement. This element of materials management would be a component of the overall project management cost and at that time would be subject to normal budgetary process considerations. SWR staff are currently developing a proposal for a best practices corporate policy for HRM facilities and building for the stewardship management of fluorescent lights/bulbs/tubes.

COMMUNITY ENGAGEMENT

Both the Federal and Provincial governments provide opportunities for public and industry stakeholder input built into the public process prior to implementing proposed Mercury Containing Products Regulation and Extended Product Stewardship Regulation.

ATTACHMENTS

N/A

A copy of this report can be obtained online at <http://www.halifax.ca/boardscom/SCenv/index.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Laurie Lewis, Diversion Planning Coordinator, 490-7176

Original Signed

Report Approved by: Gord Helm, Manager, Solid Waste Resources, 490-6606
