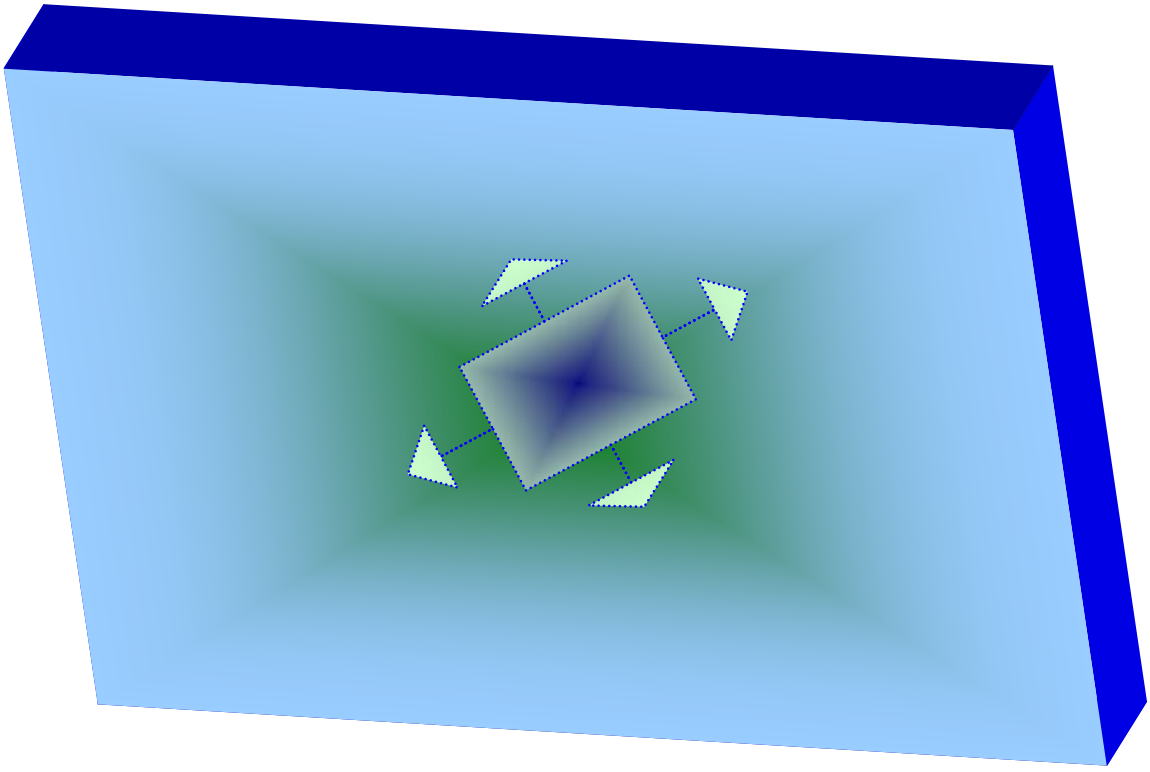
GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR



Management of Waste Dangerous Goods/Hazardous Waste (WDG/HW) 2003-2013 For Newfoundland and Labrador

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Executive Summary

This report provides information on the movement of Waste Dangerous Goods/Hazardous Waste (WDG/HW) in Newfoundland and Labrador for the calendar years of 2003-2013. This information is based on data extracted from shipping manifests submitted on behalf of generators/transporters/receivers. These records of manifested shipments are received and kept on file by the Department of Environment and Conservation (the Department). The data documents the amount of WDG/HW diverted from solid waste landfills and managed via appropriate recycling/treatment and/or disposal.

A breakdown by sector (residential, commercial, industrial, provincial and federal government) along with specific WDG/HW types (biomedical wastes, waste batteries, waste/used oil and polychlorinated biphenyls (PCBs) is provided below. In addition, a section on Household Hazardous Waste (HHW) is included.

The majority of WDG/HW transported in the Province is stored temporarily at licensed storage sites/transfer station(s) and exported to authorized facilities, for treatment/destruction/landfill or recycling outside the Province. In some cases the material is transported directly out-of-Province without temporary storage.

1.0 Introduction

The Pollution Prevention Division (PPD) of the Department has a legislated responsibility for the management and control of WDG/HW via various Provincial Acts and Regulations. The legislation is supplemented by policies and guidelines that have been adopted by the Department. In addition, the Waste Management Section (WMS) of the PPD participates in various activities and programs of the Canadian Council Ministers of the Environment (CCME), with Environment Canada (EC) and other Provincial Environmental Departments in the delivery of its mandate.

Under the *Canadian Environmental Protection Act (CEPA*), Export and Import of Hazardous Waste and Hazardous Recyclables Regulations (EIHWHRMR), *Transport of Dangerous Goods Act* (TDGA) and Regulations and *Provincial Dangerous Goods Transportation Act* and Regulations, all WDG/HW for transport must be manifested and/or be accompanied by shipping documents.

The transportation *manifest* is an environmental control document and records (or is a written record of) the movement of WDG/HW and recyclables between provinces tracked from point of origin to the authorized site of treatment, recycling or final disposal. In addition, WDG/HW transporters operating in NL are required to possess a valid Certificate of Approval from the Department.

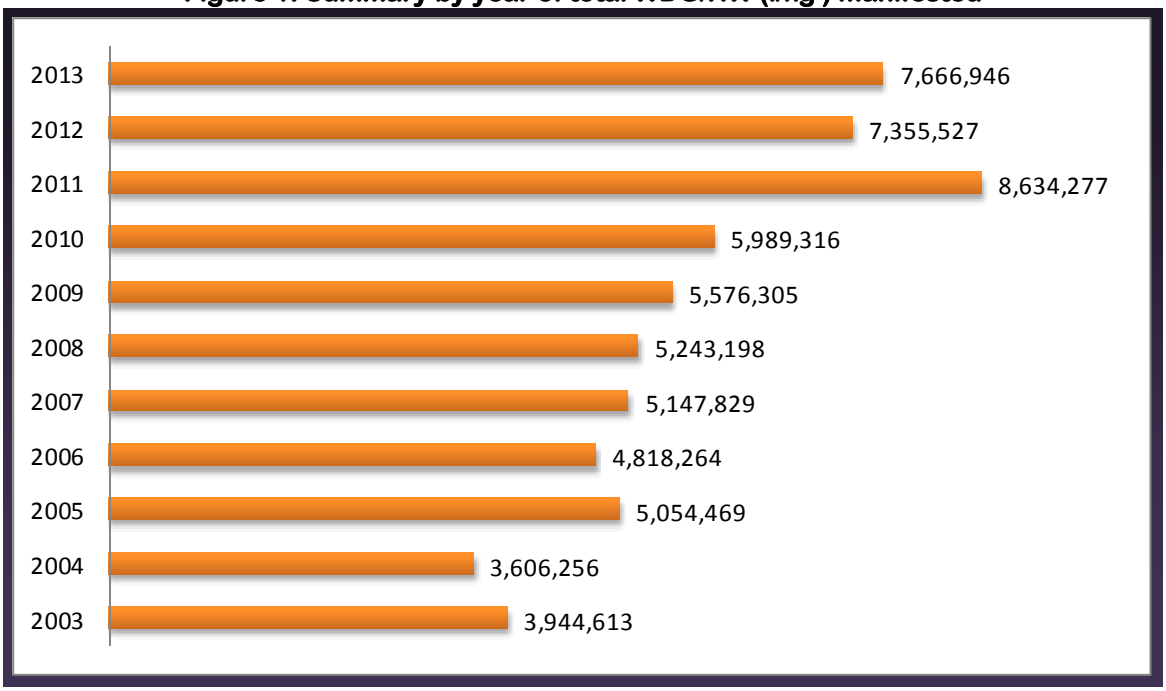
The term hazardous waste, defined as "waste dangerous goods" in the Environmental Protection Act (EPA), enacted in Newfoundland and Labrador in May, 2002, encompasses a wide range of environmentally hazardous

substances or constituents which due to their nature and quantity, are potentially hazardous to human health and/or the environment and which require special disposal techniques to eliminate or reduce the hazard.

2.0 Methodology/Data Collection/Observations

This section summarizes the amount of WDG/HW generated/transported in Newfoundland and Labrador. It is based solely on data collected from transport manifests. The data presented in **Figure 1** is the total by volume/ weight combined as reported on manifests.

Figure 1: Summary by year of total WDG/HW (l/kg) manifested



- ✓ 2011 represented a peak year for WDG/HW generated/transported in the Province.
- ✓ There are **18** approved WDG/HW transporters currently operating in the Province.
- ✓ There are **88** companies *outside* the province, receiving transported WDG/HW from the Province for treatment, processing and disposal.
- ✓ The Province has **859** WDG/HW generators registered from various sectors.
- ✓ Volumes of PCB contaminated soil generated/transported and removed for treatment were not included in these numbers. Refer to the section on PCBs for these quantities.

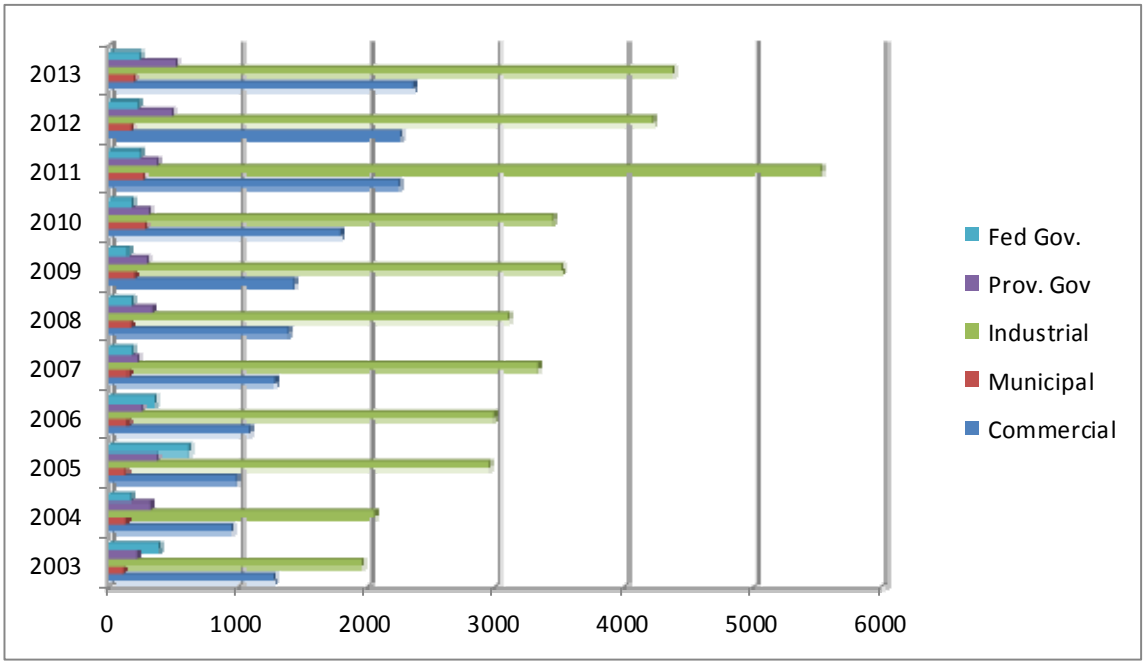
For the purpose of this report**, Figure 2** represents a breakdown of wastes manifested within the Province categorized by the following five sectors:

- ✓ The ***industrial sector*** represents the largest quantity of WDG/HW manifested, 5,521,668 l/kg with a peak year in **2011**. There are **100** generators included in this sector, including: pulp and paper,

mining, and oil industries. Examples of WDG/HW from this sector are: drilling waste, sludge, leachable waste, flammable and corrosive waste.

- ✓ The ***Federal Government sector*** has **41** generators with 622,782 l/kg of WDG/HW manifested on an annual basis. Peak year of generation was in **2005**.

Figure 2: Sector summary by year of WDG/HW (l/kg) manifested



- ✓ The ***Provincial Government sector*** includes government departments, hospitals, schools and universities. Peak year of generation was in ***2013*** with a total of **98** registered generators. This was attributed to the massive collection/removal of wastes from schools throughout the Province. There was approximately 517,434 l/kg manifested.

- ✓ The ***commercial sector*** has the largest number of generators with a total of **557**. The main generators include: stores, aviation services, car dealerships, garages and hotels. The peak year was in ***2013*** with 2,365,038 l/kg.

- ✓ Numerous communities in the ***municipal/residential sector*** participate in Household Hazardous Waste (HHW) programs. Examples of hazardous wastes from this sector are: paint related material, pesticides, solvents, waste oil and other types. Peak year of generation was 2010 with 274,662 l/kg.

3.0 Management Methods for WDG/HW

There are a wide variety of waste management methods used for control and disposal of WDG/HW. Below is a summary of selected waste types and the associated management options applied to these wastes (based upon

manifests records). Once the manifested waste is collected by a certified transporter, it will follow one or more of the following management methods/protocols;

a. exported to hazardous waste landfill outside the province
b. stored at transfer station for bulking; to be exported to authorized facilities outside province
c. exported for recycling
d. exported for pretreatment/treatment
e. exported for destruction (incineration) and or sterilization

Table 1: Management Methods for WDG/HW types

Waste Type	Management Method
infectious substances (biomedical waste)	a, d and e
gases (propane) corrosives (lime & potash) flammable liquids & substances(ethanol & oily rags/debris)	b, c and e
corrosive substances (waste batteries wet and dry)	c and d
toxic solids/liquids (pesticides and mercury compounds & (polychlorinated biphenyls)	a, b, c and e

4.0 Selected WDG/HW Types

Below are selected types of highlighted WDG/HW, based on the noted criteria:

1. to examine waste that is recycled or diverted from landfill under corporate initiatives in response to market driven forces only, no regulations: *waste batteries*
2. to summarize volumes of selected types of waste: *biomedical waste* and *waste/used oil*
3. to summarize a regulated hazardous waste compound : *Polychlorinated Biphenyls (PCBs)*
4. to summarize waste being collected by municipalities: *Household Hazardous Waste*

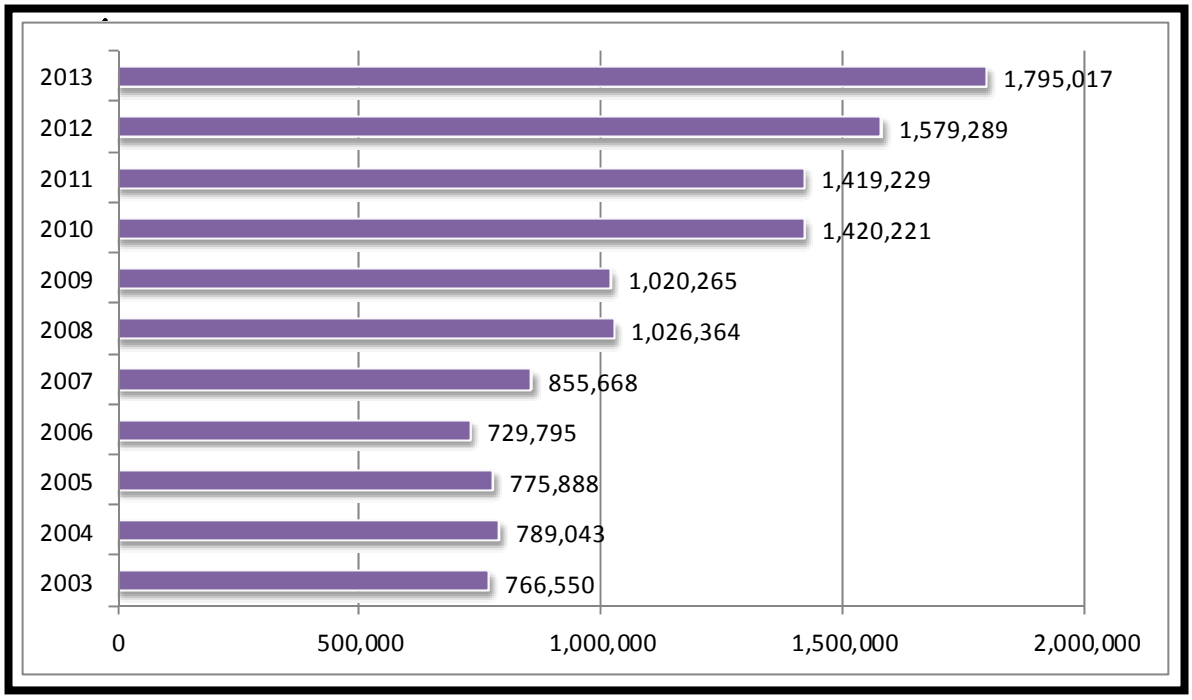
4.1 Summary of Waste Batteries

This is a corporate initiative and has been accomplished by market driven forces without explicit regulation or programs.

Waste batteries (dry) consist of several classes of batteries including rechargeable batteries and lithium batteries. Many rechargeable batteries are now covered under a Rechargeable Battery Recycling Corporation (RBRC), a battery stewardship program. The program allows participants to collect used rechargeable batteries and return them for recycling. Waste wet batteries (from cars and trucks) consist

of lead acid batteries which may contain up to 80 % recyclable lead and plastic. Battery acids are treated and neutralized.

Figure 3: Summary by year of waste batteries (l/kg) manifested



4.1.1 Waste Batteries Observations

- ✓ The peak year for generation/transportation/ of batteries was **2013**.
- ✓ There are several companies storing and collecting waste wet lead acid filled batteries from various locations throughout the province.
- ✓ The battery summary in **Figure 3** include a combination of various types of batteries: waste wet and dry batteries, alkaline and rechargeable batteries.
- ✓ There are a number of retail stores participating in battery rechargeable programs. A majority of batteries , by weight are waste wet batteries generated from automobiles.

4.2 Summary of Biomedical Waste

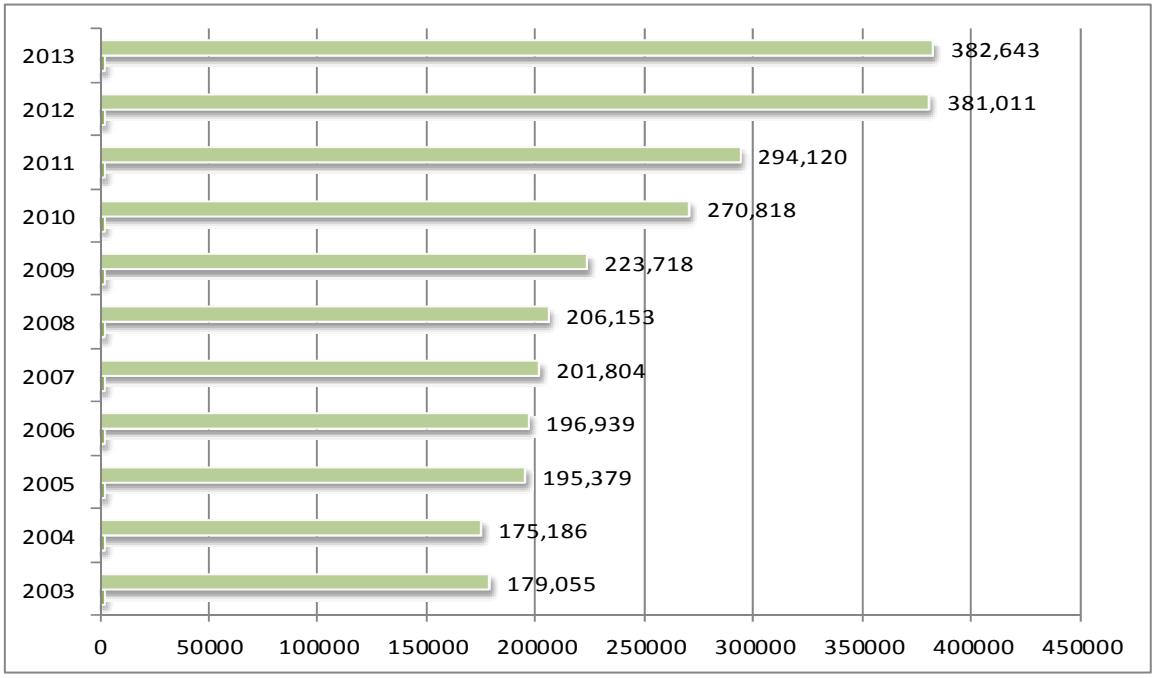
This section represents biomedical wastes transported from the following sectors throughout the province: hospitals, clinics, companies and laboratories. Biomedical waste includes the following: sharps, anatomical/non-anatomical waste, cytotoxic and pharmaceutical waste. **Figure 4** provides a summary of biomedical waste manifested in the Province.

4.2.1 Biomedical Waste Observations

- ✓ There has been an increase in biomedical/ pharmaceutical waste collected from the drugstores, medical offices and pharmacies.
- ✓ A majority of biomedical wastes come from Regional Health Care Boards and there has been an increase in pharmaceutical waste collected by these facilities.

- ✓ **The majority of biomedical waste is transported out of the province for treatment and disposal. Non-anatomical waste and sharps are sterilized and disposed to an authorized landfill; cytotoxic, anatomical and pharmaceutical wastes are incinerated.**
- ✓ **Various programs exist dealing for the collection of pharmaceutical waste and sharps: some include; great drug round (RCMP and Pharmacy partnership); Ecoship - programs geared for small generators.**
- ✓ **Peak year for generation/transportation of biomedical waste was 2013.**

Figure 4: Summary by year of biomedical waste (l/kg) manifested.

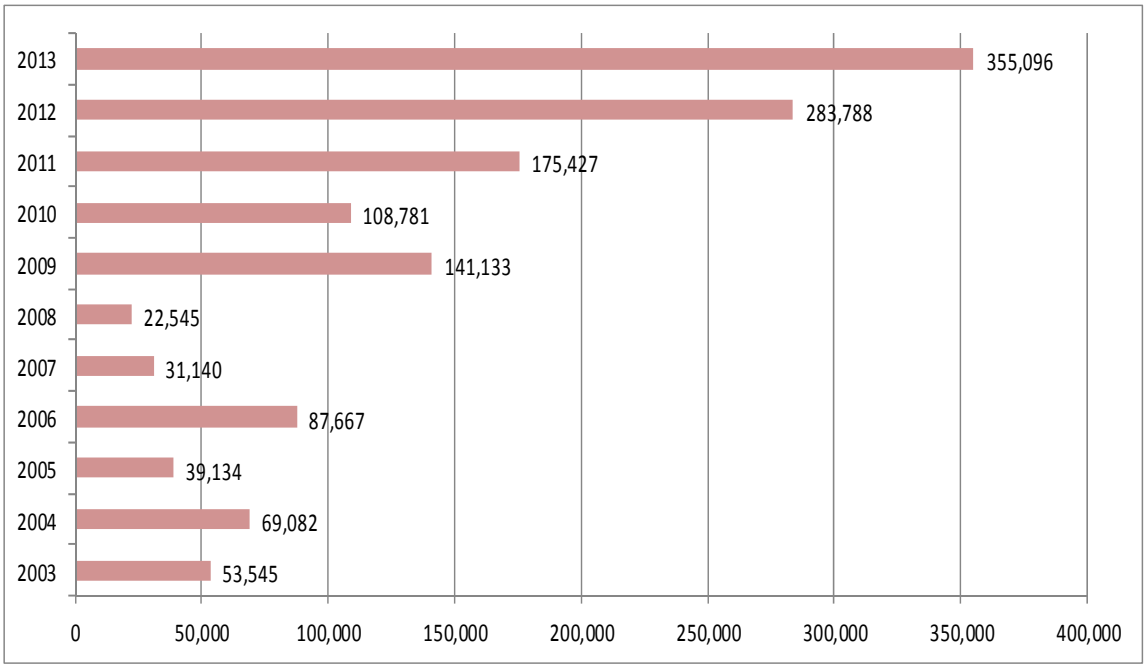


4.3 Summary of Waste Polychlorinated Biphenyl(s)

Polychlorinated Biphenyls (PCBs) are synthetic chemicals, known to be persistent in the environment and to accumulate in living organisms.

These substances continue to be removed from in-use electrical systems and from contaminated sites. Refer to Figure 5 for PCB summary.

Figure 5: Summary by year of PCBs (l/kg) manifested



4.3.1 Waste Polychlorinated Biphenyl(s) observations

- ✓ PCB waste in the province has been generated from various sectors, including: commercial, industrial (utilities and private companies), provincial and federal governments.
- ✓ Based on the statistical results, PCBs transported for destruction reached a peak in the year **2013**.
- ✓ Used oil contaminated with any detectable amount of PCBs is regulated under the provincial *Used Oil Control Regulations*. Used oil containing PCBs is not burned in NL. Depending on the concentration, used oil containing PCBs is shipped out of the province and burned in approved cement kilns.
- ✓ PCB contaminated material/equipment include: transformers, bushings, capacitors, ballasts and other PCB electrical equipment. This material is sent for decontamination and destruction out of the province. Once PCB oil is removed from transformers the scrap metal is recycled.
- ✓ An estimated **62,953 tones** of **PCB contaminated soil** was diverted from landfill and exported out of the Province for destruction between 2003-2013. The source is mainly from federally/provincially owned properties undergoing clean-up/remediation of contaminated sites. ***Note: PCB-contaminated soil is not included in Figure 5.***

4.4 Household Hazardous Waste

Various types of WDG/HW are generated by households on a daily basis. Many of these products are harmful to our health and environment and require special methods for collection/transport/disposal. Throughout the province residents can drop off their HHW to HHW transfer stations and/or trailers or by participating in HHW days

partnered with the MMSB or regional waste management offices. Additional information can be obtained from MMSB or local municipality council offices or regional waste management offices.

4.4.1 Household Hazardous Waste Observations

- ✓ During the period from 2003-2013 an estimated **1,897,804** l/kg HHW was diverted from landfills.
- ✓ As of 2008, **63** municipalities have participated in the collection of HHW in the Province. It is anticipated that, as municipalities become familiar with the program there will be an increase in participation.
- ✓ Peak year for HHW manifested was 2010.
- ✓ Although an estimated 85 % of residential waste is solid waste, the remaining 15% is estimated to be potentially hazardous wastes.
- ✓ The Government of Newfoundland and Labrador has implemented a paint recycling program as of 2012. The program involves an Extended Producer Responsibility (EPR) approach, meaning that paint producers will be responsible for the paint from the point of production through to post consumer recycling. This was the first EPR-based recycling program for the province. Based upon reports received by the Department, the volume for 2012 (1/2 year) was 67,497 l/kg and for 2013 (full year) was 135,738 l/kg.

Figure 6: Summary by year of Household Hazardous Waste manifested