

Household Hazardous Waste Baseline Composition Study, 2004

Final Report



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1.0 Executive Summary

The Association of Municipal Recycling Coordinators (AMRC) was contracted by Product Care Association to carry out a Household Hazardous Waste Baseline Study in the summer and fall of 2004. The baseline study incorporates both HHW composition (materials as received at HHW sites), and HHW categorisation (materials as shipped from HHW sites).

The programs that participated in the study were: the Essex Windsor Solid Waste Authority, the Regional Municipality of Halton, the Regional Municipality of Niagara, the Ottawa Valley Waste Recovery Centre, the Regional Municipality of Peel, Quinte Waste Solutions, the City of Greater Sudbury, the City of Toronto, and the Regional Municipality of York.

This report summarises the data from a total of 44 sampling days over the summer and fall of 2004.

The results presented in this report include composition by material category or waste class (e.g., flammables, oxidizers, oil, paint, etc.), composition by product type (e.g., pool chemicals, wood preservatives, etc.), most commonly found brand owners for each material category, reuse activities and estimated residual quantities.

The present study has built on information and findings from previous HHW composition studies completed by the AMRC in 1995 and 2001. New elements of the current study include weights for each sampled item, and an assessment of the HHW Quick Translator. The latter will allow a comparison of sampled items with the criteria developed for the CSA Standard Z752, to assess which items are actually captured by the criteria.

Of the 12,611 items analysed for this report, 5,739 or 45.5% of the total were caught by the HHW Quick Translator. Seventy-five percent of the items not caught by the HHW Quick Translator were latex paint and alkaline household batteries. If latex paint and alkaline household batteries are removed from this total, then the proportion of

items received during the study and not caught by the HHW Quick Translator is 13.8% (1,735 items of a total of 12,611). Translated to container volume for liquids, and weight for solid items, this becomes 528 litres and 187 kilograms, respectively. Discussion and recommendations on how the HHW Quick Translator may be improved based on study findings have been included in the report.

For the liquid portion of materials sampled (by product category/waste class), paints and coatings represent the highest proportion of container volume at 65%, followed by oil (17%), flammables (10%), sum of remaining items (6%) and antifreeze (2%). By residual volume, (the quantity of material estimated to be in each container), paints and coatings comprise the highest proportion at 56%, followed by oil (26%), flammables (10%), sum of remaining material (6%) and antifreeze (2%).

Vehicle batteries are the highest proportion by weight (51%) of the materials sampled, followed by propane tanks and cylinders (34%), dry cell batteries (5.6%) and fluorescent tubes/compact fluorescents (1.8%). The remaining items, syringes, gas cylinders and pharmaceuticals, comprise 2.1%. "Other" items comprise 5.3%.

All sampled materials have been weighed in this study, allowing, for the first time, comparison and analysis of the combined liquid and solid portions. By weight, paints and coatings comprise 51.2% of the total, followed by oil (17.8%), sum of remaining items (14.5%), vehicle batteries (8.3%) and flammables (8.2%). It should be noted that weights for the liquid items include containers, while most of the solid items have no packaging.

The product types found in the highest proportion by weight are latex paint, motor oil, alkyd paint vehicle batteries and propane tanks.

Reuse/use-it-up programs are important components of seven of the nine HHW programs in the

Acknowledgements

This study would not have been possible without the support of Product Care Association and the cooperation of the nine participating HHW programs that contributed space, staff time, additional contracted staff, and materials for the completion of the work. The AMRC gratefully acknowledges this support.

study. Ten percent of the total materials sampled (1,308 items) were designated for reuse. Of these, 40% were caught by the HHW Quick Translator.

Information on the brand owners found in the highest proportion for each material category/waste class is also provided.

For the categorisation portion of the study out-bound materials were examined to record the product type, name, container size and fullness, and brand owner for all of the items in the containers. A total of 14 lab packs were evaluated at sites in Peel, Halton, Niagara and Essex-Windsor. These included oxidizers (1), paint (3), bases (1), dry cell batteries (2), flammables/miscellaneous organics (6), and aerosols (1).

2.0 Introduction

The AMRC has worked closely with Ontario municipalities on household hazardous waste (HHW) programs and issues since 1990. Under the direction of its HHW Committee and Board members, the AMRC has completed two previous HHW composition and characterisation studies in 1995 and 2001.

As part of the groundwork preparing for designation of HHW under the Waste Diversion Act in Ontario, and the resulting stewardship program, tracking of the items received at municipal HHW sites with respect to waste category, brand owner and residual quantity has become increasingly important. The AMRC was contracted by Product Care Association to carry out a HHW baseline study in the summer and fall of 2004. The study incorporates both HHW composition (materials as received at HHW sites), and HHW categorisation (materials as shipped from HHW sites).

Nine Ontario HHW programs participated in the 2004 study. These are:

- Essex-Windsor Solid Waste Authority
- Regional Municipality of Halton
- Regional Municipality of Niagara
- Ottawa Valley Waste Recovery Centre
- Regional Municipality of Peel
- Quinte Waste Solutions
- City of Greater Sudbury
- City of Toronto
- Regional Municipality of York

HHW sampling was carried out at ten permanent depots and six one day collection events from July through November, for a total of 44 sampling days. This time period is important given the “seasonality” of HHW program use and items received.

2.1 HHW Composition Study

This baseline study followed up on the previous two composition studies. Study design and sampling protocols were similar to those used previously and detailed items as received from residents to document:

1. product name
2. brand owner/manufacturer
3. product type
4. product category/waste class
5. container volume
6. residual volume
7. item weight
8. container type
9. container condition, and
10. whether the product was segregated for reuse.

2.2.1 HHW Quick Translator

An additional element of the 2004 study was a comparison of sampled items with the criteria developed for the CSA Standard Z752, to allow an assessment of what items are actually captured by the criteria.

2.2 HHW Categorisation Study

This study also follows up on work done by the AMRC in 2001 in which shipping containers (primarily lab packs/drums) were examined at some of the participating HHW sites to evaluate residual quantities of material in each of the waste classes commonly used by the programs. The focus of this study was on the quantity of material (actual) and waste type in each shipping container.

2.3 Household Hazardous Waste Collection in Ontario—Background

Household hazardous waste programs were first implemented by a number of Ontario municipalities over 15 years ago, often as a result of landfill certificate of approval requirements. Many programs began as one-day collection events which were later replaced by permanent drop off depots. However, programs and service levels in Ontario still range from nil to single day annual events to permanent depots open almost every day of the year.

In general, there are three types of HHW collection programs provided by Ontario municipalities:

- 1) Permanent depots allow residents to drop off materials at set times and vary from being open six days a week throughout the year to being open on a seasonal basis (spring, summer, fall) on specific weekends or week days.
- 2) One-day collection events can range in frequency from one to several events per season, often in different locations within a county or region.
- 3) Combination programs have both permanent depots and one day events.

The most significant difference between these programs is the resulting level of service available to residents: in most Southern Ontario urban areas, residents have access to HHW collection programs on a regular, if not daily basis. In many of the less urban areas outside of the GTA, residents have access to collection just a few days per year.

Materials accepted can also range from basic materials such as oil, glycol and paint to the full com-

plement of consumer products that are flammable, acidic, basic or toxic. There are no specific Ministry of Environment regulations requiring municipalities to have HHW programs in place (as is the case for blue box programs), nor is there a list of hazardous materials or waste classes that municipalities are required to accept. On the other hand, the list of items that HHW programs are prohibited from accepting includes radioactive materials, explosives, ammunition, pathological waste (other than syringes), PCBs (other than residential-source ballasts) and materials generated by the IC&I sector (with the exception of a few programs).

In 2003, there were 83 HHW programs in Ontario serving 11.7 million residents. There were 87 permanent depots, and 216 one day collection events that together received a total of 13,130 tonnes of HHW.

2.4 Final Report

This final report summarises the data from 44 sampling days over the summer and fall of 2004.

Section 3 provides background on the HHW programs of the nine participating municipalities. Section 4 outlines the project sampling procedure and study methodology. Section 5 provides the study results. Section 6 details the HHW Quick Translator findings and Section 7 discusses the categorisation study results.

3.0 HHW Programs

All of the nine programs participating in the study have well-established HHW programs, many of which were implemented in the 1980's. Collection is via permanent depots, one-day collection events or a combination of the two.

Statistics for HHW programs, such as participation rates and quantities received, are not as straight forward as those for blue box programs. For example, a single vehicle visiting a HHW depot may be bringing material from more than one household. It may also visit the depot a number of times per year. The number of repeat visits is not commonly tracked. Therefore it can't be assumed that one vehicle represents the annual participation of one household.

Quantities of material collected vary between HHW programs for a number of reasons, including local consumption patterns, program maturity, location/frequency of collection events, weather on collection event days and program promotion.

The following summaries provide background on each of the programs, with 2003 tonnages and vehicle participation numbers included to provide context. Materials collected are generally consistent across all of the programs and include the full range of household flammables, miscellaneous organics, corrosives, oxidizers, batteries, aerosols, used oil products, paints, pesticides, propane tanks/cylinders, fluorescent tubes and pharmaceuticals. In addition, some programs accept syringes. No program is permitted to accept explosives (e.g., flares), radioactive materials, ammunition, PCBs or material from the industrial, commercial or institutional sectors, except by special arrangement (see 3.6: Quinte Waste Solutions). Additional program operating details can be found in Appendix 6.

3.1 Essex Windsor Solid Waste Authority (EWSWA)

EWSWA's HHW program, established as collection events in 1988 and with a permanent depot in 1995, serves the area's 374,400 residents. The area is both urban and rural, with an approximate 65:35 split. There are two permanent depots, one in Windsor, and the other near Leamington, which are open year round (as of April, 2004) on Mondays, Wednesdays and Saturdays. Unique to EWSWA's program is the ability for residents to put used oil (in sealed 4 litre containers) out for collection with their blue boxes. They can also bring used oil to the two depots.

EWSWA Program Summary—2004

Depots	Two: Windsor and Leamington; open Mon., Wed. & Sat. year round (as of April 2004).
Events	N/A
Materials accepted	All, excluding syringes
Total number of residents served by program	374,400
Total number of days open in 2004	337

There is a well established reuse program located at the Windsor depot with the following materials available: paints, stains and varnish, automotive products, pastes, grouts and other repair products, household cleaners, windshield washer fluid and unused motor oil. Criteria for reuse materials are: original container, more than half full. Paint is inspected prior to setting out for reuse.

In 2003, residents disposed of 194,510 kilograms of HHW at the two facilities, which served over 7,620 vehicles.

3.2 Regional Municipality of Halton

Halton Region's HHW collection program is one of the oldest in the province, having been established in 1984. The Region's 400,900 residents are in a mixture of urban areas (Oakville and Burlington) and rural communities (Halton Hills and Milton).

The single permanent depot is located at the region's Waste Management site in Milton. The site is open year round, Monday through Saturday. The depot's drop off facility is supplemented by an annual environment day held in different communities across the Region on a rotating basis. A collection event was held earlier this year in Oakville.

Regional Municipality of Halton HHW Program Summary—2004

Depots	One: Regional Rd 25, Milton, Mon.—Sat.
Events	One
Materials accepted	All, excl. sharps/syringes and fluorescent tubes
Total number of residents served by program	400,900
Total number of days open in 2004	303

Paint and stains in good condition and close to full are set aside for reuse in spring, summer and fall.

The total number of vehicles that used Halton's HHW site in 2003 was 30,740. Total HHW collected was 656,556 litres and 6,493 kilograms (excluding items reported as units, e.g., car batteries).

3.3 Regional Municipality of Niagara

The Regional Municipality of Niagara's HHW program combines event days with one full service permanent HHW depot at the Niagara Road 12 Landfill Site in West Lincoln and one limited service permanent depot at the Humberstone Landfill Site in Welland. The Niagara Road 12 Depot is open year-round, operating five days per week, while the event days operate on 40 selected Saturdays throughout the year. The Humberstone Depot is open six days a week, also on a year-round basis, and accepts propane tanks, car batteries and used motor oil only.

The Region is comprised of 12 municipalities, with approximately 80% of its total population of 410,574 residing in urban areas while the remaining 20% of the population resides in rural areas. Household hazardous waste collection programs have been offered by local municipalities since the early 1990's. In 1996, the Region assumed responsibility for waste management services, and set out to enhance the service to residents.

There is a limited reuse/use-it-up program at the Rd. 12 depot, whereby items are set aside, mostly as requested. At the events, reuse is seasonal, with unopened items set out for reuse during the warmer months.

Regional Municipality of Niagara Program Summary—2004	
Depots	Two: Grimsby (Rd.12) and Welland (Humberstone); Grimsby open Tues.-Sat.; Welland open Mon.-Sat.
Events	40 events through spring, summer, fall across region: Wainfleet, Niagara Falls, Ft. Erie, Pt Colborne, St. Catharines, Niagara on the Lake
Materials accepted	All (Humberstone accepts oil, propane tanks and car batteries only)
Total number of residents served by program	410,574
Total number of days open in 2004	600 days

In 2003, approximately 11,000 vehicles brought HHW to the depots, for a total of 239,000 kilograms. Approximately 12,000 vehicles used the events, for a total of 506,000 kilograms. The combined total for 2003 was 745,000 kilograms of HHW.

3.4 Ottawa Valley Waste Recovery Centre (OVWRC)

OVWRC manages a household hazardous waste program/depot formerly established on behalf of a group of area municipalities in 1991. The current program serves 45,000 residents in the communities of Petawawa, Pembroke, Laurentian Valley, North Algona Wilberforce, Bonnechere Valley and the former communities of Westmeath and Beachburg. There are seven collection events in 2004, three at the depot (May 1, September 18 and October 23) and four mobile HHW events through the summer, one in each of Petawawa, Pembroke, Eganville and Cobden. Residents can also bring HHW to the waste recovery centre, year round. There is currently no reuse/use-it-up program in place.

OVWRC Program Summary—2004	
Depots	One: Woito Stn Rd. Pembroke; open May 1, Sept 19, Oct. 23; Drop off at waste recovery centre: Mon-Sat
Events	Four: Petawawa, Pembroke, Eganville and Cobden
Materials accepted	All
Total number of residents served by program	45,000
Total number of days open in 2004	307

In 2003, 114,000 kilograms of HHW was shipped from the site, received from 2,191 vehicles.

3.5 Regional Municipality of Peel

The Region of Peel's HHW program was established in 1987. It serves a population of 940,000 which is a mix of urban (Mississauga, Brampton, Bolton, Caledon East) and rural (Caledon) communities. Permanent depots, which are open from five to seven days per week, year round, are located in Mississauga, Brampton, Bolton and Cale-

don. The Brampton, Bolton and Mississauga depots are located in Community Recycling Centres (CRC) which are operated in partnership with non-profit community organisations (such as Goodwill) and provide the public with a full range of waste diversion opportunities, including recycling and drop off/purchase of reusable items. In addition to the permanent depots, there were two Environment Day collection events in 2004 located at sites in Mississauga.

Regional Municipality of Peel Program Summary—2004	
Depots	Four: one in each of Brampton, Bolton, Mississauga and Caledon; open 5-7 days per week, year round.
Events	Two, Mississauga
Materials accepted	All
Total number of residents served by program	940,000
Total number of days open in 2004	1,289

The HHW reuse program is an integral part of the CRCs with space dedicated in a portion of the CRC to make materials available to the public. Criteria for reuse are that the container be original, in good condition and at least half full. No pesticides or oxidizers are put out for reuse.

In 2003, 42,301 vehicles brought in a total of 1,169,410 kilograms of HHW.

3.6 Quinte Waste Solutions (QWS)

QWS is responsible for all waste reduction programs for a group of municipalities that includes Belleville, Quinte West, Tyendinaga, Prince Edward County, Centre Hastings, the municipalities of Tweed and Marmora & Lake. On behalf of these municipalities, QWS operates blue box and hazardous waste collection programs as well as programs to divert organic materials including food scraps and leaves and brush from landfill. Quinte's HHW program began in 1993 with a permanent depot located in Belleville, and a mobile event-based program to service more distant communities. The HHW program runs from April to October and serves some 110,000 residents.

Quinte Waste Solutions Program Summary—2004	
Depots	One: in Belleville, open April-October, one day per week for drop off and one morning per week for re-use program
Events	17 events from April-Sept. in various communities
Materials accepted	All, excluding motor oil and sharps/syringes
Total number of residents served by program	110,000
Total number of days open in 2004	45 days

QWS also runs a popular reuse program called "Giveaway Days" every Wednesday from 9:00 am to 2:00 pm during the operating period (April - October) at the Belleville depot. Criteria for reuse include sound container and contents in good condition (i.e., no solid paint, etc.). To date, QWS is one of the only municipal programs in the province that can accept IC&I-source hazardous waste, which it does on a fee-for-service basis.

In 2003, 112,000 kilograms of HHW were received, from 3,929 vehicles.

3.7 City of Greater Sudbury

Greater Sudbury's HHW program began as one-day collection events in 1988, progressing to several times per year, and then several times per year in various locations. In 1997 the permanent depot was constructed in the east end of the city, and the Toxic Taxi service was launched. Greater Sudbury is one of two Ontario municipalities (Toronto is the other) that operate a toxic taxi, providing residents unable to bring materials

City of Greater Sudbury Program Summary—2004	
Depots	One: Frobisher St., open 27 Saturdays from Spring to Fall.
Events	N/A
Materials accepted	All
Total number of residents served by program	155,000
Total number of days open in 2004	27 + Toxic Taxi

to depots with a pick up service. The HHW program serves 155,000 residents.

Items that are in good condition and are more than half full are set aside for reuse and are available on the Saturdays that the depot is open.

In 2003, 259,000 kilograms of HHW were received from 3,562 vehicles and via the Toxic Taxi, 1,204 households.

3.8 City of Toronto

The City of Toronto's HHW program was established July, 1988 with four permanent depots at the Scarborough and Ingram Transfer Stations and the Brock West and Keele Valley Landfills. The present program is a combination of six depots located across the city, open year round on Wednesdays and Saturdays, and 44 Environment Day collection events in different locations across the city from April to October. In addition, for residents with more than 10 litres (to a maximum of 50 litres), there is a Toxic Taxi service that will pick up materials by appointment. The city's HHW program serves 2,481,500 residents.

City of Toronto Program Summary—2004	
Depots	Six: Bermondsey, Commissioners, Disco, Ingram, Scarborough, Victoria Park; Wed. & Sat.
Events	44: various locations, April to October
Materials accepted	All, excluding empty containers
Total number of residents served by program	2,481,500
Total number of days open in 2004	667 days + Toxic Taxi

The Reuse/Use-it-up program is mainly operated at the depots, although depending on staff resources, there may be some limited reuse available at some of the events as well. Materials set aside for reuse are paints, cleaning products, wood stains, solvents and lubricants. Criteria for reuse are: containers must be sealed properly, in good condition and half full or more, items must be in their original containers; and the manufacturers labels on containers should be easily read.

In 2003, 1,711,882 kilograms of HHW were collected from 52,748 residents.

3.9 Regional Municipality of York

York Region's HHW program began as a mobile program in 1994 with five sites in five municipalities, each operating on five consecutive days. In 1998, two permanent depots were opened in Georgina and Markham. The Keele Valley Depot opened as a temporary site in January 2003 then closed in December 2003. Program participation has increased steadily from 8,166 residents bringing material to the mobile sites in 1994 to over 23,000 residents in 2003. The Region is a mix of urban (e.g., Markham, Newmarket, Richmond Hill) and rural (e.g., King Township, East Gwillimbury) communities. The total population served by the program is 739,320.

In 2003, 973,630 kilograms of HHW was collected from 23,067 residents.

Regional Municipality of York Program Summary—2004	
Depots	Three: Markham, East Gwillimbury; 2 days per week, each; Georgina 2 days per month. Fourth depot planned for Vaughan in 2005
Events	N/A
Materials accepted	All
Total number of residents served by program	739,320
Total number of days open in 2004	228

3.10 Other Program Information

The following table provides additional information on the nine programs in the study. Note that all but two operate Reuse/Use it Up programs, which have become very popular aspects of the larger HHW programs. In many cases, reuse program regulars make special visits to the depots to browse for items.

Five of the programs accept empty paint cans in the blue box, and four accept empty aerosols. If residents bring these items to depots or events, these items are accepted, but they are advised of the blue box program for “next time.”

Daily quantity limits vary significantly from site to site and can relate to the specific site storage limits imposed by the Ministry of the Environment through the site’s Certificate of Approval. Daily quantity limits are also a means to discourage IC&I generators from bringing in commercial waste.

Promotion and educational materials focus on keeping the public informed on the range of items that need to be separated from the regular waste stream and brought to HHW events or depots. Newsletters, flyers and web site information serve both to remind residents on the need to treat these waste materials differently as well as provide site and event schedules. One day collection events are typically well advertised in local papers and radio.

Refer to Appendix 6 for additional operating details.

Table 3.1—Programs Summary

Program	Reuse/Use it up Program	Empty Aerosol and Paint Can Collection in Blue Box	Program Daily Limits	HHW Program Promotion and Education
Greater Sudbury	Yes, at depot	Paint cans , yes; plans for empty aerosols in 2006	No, but drums not accepted	Radio, print ads, website, info at landfill, school presentations
Essex-Windsor Solid Waste Authority	Yes, at Windsor depot	No	500 litres per site	Two newsletters
Halton, Region	Yes, at depot	No	20 litres per visit	Newspaper ads, pamphlets, annual waste management calendar
Toronto	Yes, at depots and some events	Yes	No	Collection calendars, flyers, and website
Ottawa Valley Waste Recovery Centre	No	Yes	No	Quarterly newsletter, flyers, radio spots, newspaper ads
Niagara, Region	Yes at Road 12 depot and events	No	No	Annual waste collection schedule, website, newsletter, newspaper ads
Peel, Region	Yes	Yes	80 L/person/day	Ads, yearly waste collection mail outs, flyers and the Waste-line.
Quinte Waste Solutions	Yes at Belleville Depot	Yes, and if brought to events or depot, residents are asked to put them in Bluebox next time.	100 L/vehicle; 10 lead/acid batteries, 10 Propane tanks	Calendar, HHW brochure, yearly newsletter, newspaper ads for events; radio and PSAs for larger events
York, Region	No	Planning for 2005	No	Flyers, Region's and local municipalities' websites, and via telephone

4.0 Project Summary and Methodology

The HHW Baseline Study (2004) was carried out through the summer and fall of 2004 at nine Ontario HHW programs. Programs and sampling dates for the inbound materials portion of the study are summarised in Tables 4.1 and 4.2. Twenty seven of the total 44 sampling days were scheduled for summer, with the remaining 17 completed in the fall.

Table 4.1 Summer Sampling Dates and Locations

Municipality	Site	Site Type	Date
Sudbury	Sudbury	Depot	July 10
EWSWA	Windsor	Depot	July 12
			July 19
			July 26
			August 4
			August 11
			August 18
Halton	Milton	Depot	July 15
			July 20
			July 22
Toronto	Disco Rd.	Depot	July 21
			July 28
OVWRC	Bonnechere Valley	Event	July 24
	Whitewater Region, Twp.	Event	August 28
	Woito Stn Rd	Depot	One week in August
Niagara	Road 12, Grimsby	Depot	July 27
Peel	Battleford CRC Mississauga	Depot	July 8
	Bolton CRC	Depot	July 21
	Battleford CRC	Depot	July 22
	Bolton CRC	Depot	August 10
	Bolton CRC	Depot	August 13
	Bolton CRC	Depot	August 18
	Battleford CRC	Depot	August 19
	Battleford CRC	Depot	August 25
QWS	Bancroft	Event	August 21
	Marmora	Event	August 28
York	East Gwillimbury	Depot	August 17
Total number of summer sampling days			27

Table 4.2 Fall Sampling Dates and Locations

Municipality	Site	Site Type	Date
Sudbury	Sudbury	Depot	September 25
Halton	Milton	Depot	October 5
			October 13
Toronto	Disco Rd.	Depot	September 22
			September 29
OVWRC	OVWRC Woito Stn. Rd	Event	September 18
	OVWRC Woito Stn. Rd	Event	October 23
	OVWRC Woito Stn. Rd	Depot	One week in November
Niagara	Road 12, Grimsby	Depot	October 26
Peel	Battleford CRC Mississauga	Depot	September 30
	Battleford CRC	Depot	October 14
	Bolton CRC	Depot	October 15
	Battleford CRC	Depot	October 21
	Bolton CRC	Depot	October 22
	Bolton CRC	Depot	October 30
	Bolton CRC	Depot	October 30
QWS	Belleville	Depot	October 16
York	East Gwillimbury	Depot	October 19
Total number of fall sampling days			17

4.1 Sampling Procedure

4.1.1 Inbound Materials

The previous two HHW composition studies have demonstrated that it is usually not possible to record all of the materials brought to a HHW site or event on a reasonably busy day. The total number of vehicles that can be “sampled” in a day varies from 25-35. One individual may bring a single car battery for example, which takes a moment to inspect and record. The next car may have a trunk full of small items, which can take up to an hour to record. Thus, in most cases, it was decided to sub-sample—i.e., record the materials from vehicles arriving every ten or 15 minutes (or every third or fourth car, in some cases, where it was known that there could be long periods with no cars). Recording staff at each of the study sites were provided with detailed sampling procedures, and all participated in training sessions organised by the AMRC.

4.1.2 Sampling Procedure—Outbound Materials

This portion of the study focused on already

packed drums, lab packs and other shipping containers. Staff/sampling personnel at the sites recorded the product type, name, container size and fullness, and brand owner for all of the items in the containers. The results of this portion of the study are summarised in Section 7.

4.2 Material Categories

The HHW material categories have been expanded from the 2000 study to reflect additional materials that are now widely collected by HHW programs, and to remain consistent with the materials categories used in the annual province wide tonnage data call administered by Waste Diversion Ontario (WDO). These categories reflect Ministry of Environment Regulation 347/558 Waste Classification numbers. The biggest change for the 2004 material categories is the subdivision of the paint category so that latex based paints and coatings can be reported separately from alkyd or solvent based paints and coatings.

Table 4.3 Comparison of HHW Categories: 1995, 2000 and 2004 Studies

2004 Study	2000 Study	1995 Study
Acid	Acid	Acid
Aerosol	Aerosol	Antifreeze
Antifreeze	Antifreeze	Base
Base	Base	Batteries
Vehicle Batteries	Vehicle Batteries	Flammables
Dry Cell Batteries	Dry Cell Batteries	Gas Cylinders
Flammable/Misc. Organic	Flammable	Oil
Inorganic Oxidizers	Inorganic Oxidizers	Oxidizers
Oil	Oil	Other
Oil Filters	Oil Filters	Paint
Organic Oxidizers	Organic Oxidizers	Pesticides
Paint & Coatings: Latex	Paint	Pharmaceuticals
Paint & Coatings: Alkyd/Solvent	Pesticides	Unknown
Pesticides	Pharmaceuticals	
Pharmaceuticals	Propane Cylinders	
Propane Cylinders	Propane Tanks	
Propane Tanks	Syringes	
Syringes	Other	
Fluorescent Tubes		
Compact Fluorescents		
Other		


Refer to Table 5.2 for the list of items in the two paint categories

Table 4.3 provides a comparison of the HHW categories for the previous two and current studies.

4.3 Sampling Forms

Data on each of the items sampled were recorded on the following form:

Figure 4.1 Sampling form

1. Number of Items		3. Product Type						
Acid	Oil Filter	4. Product Name						
Aerosol	Organic Oxidizer	5. Brand Owner						
Antifreeze	Paint	6. Manufacturer						
Base	Pesticide	7. Container Type		Can / Glass / Plastic				
Vehicle Battery	Pharmaceutical	(circle one)		Other –describe				
Dry Cell Battery	Propane Cylinder	8. Container Condition		Good	Fair	Poor	Leaky	
Flammable	Propane Tank	9. Residual Quantity		Full	3/4	1/2	1/4	Empty
Inorganic Oxidizer	Syringe	10. Weight (grams)						
Oil		11. Container size						
Fluorescent Tube	Length	12. Reuse?		Yes			No	
Compact Fluorescent		13. Quick Translator?		Yes	No	Symbol		Text
Other (describe)		If "no." is this because symbol on label is obscured?				Yes		No
		If "no." is this because item is not in original container				Yes		No
		For corrosives  is this because item is one litre or less?				Yes		No
		For poisons, does label include word "Caution?"				Yes		No

4.3.1 New Information: Manufacturer, Weight, and The Quick Translator—What is HHW

In addition to the two new material categories, three new pieces of information were added to the sampling forms. Product manufacturer (where different from brand owner), and item weight were added at the suggestion of individuals who had participated in the 2001 study. The former was added to provide additional information (when apparent on the label), while item weight was added to offset the somewhat subjective evaluation of a container's fullness. It was felt that total weight (including container/packaging) might provide a truer picture of the relative proportions of items in the HHW stream.

4.3.2 The Quick Translator-what is HHW?

4.3.2.1 Background

Released in 2003, the Canadian Standards Association (CSA) Standard Z752-03 is the result of a four year effort on the part of industry, municipal and NGO representatives to identify criteria that can be used to identify specific household waste materials as hazardous, requiring special handling and disposal, separate from the regular residential waste stream.

The criteria are derived from flammable, corrosive, water miscibility and toxicity limits and provide a scientific basis to identify the hazardous characteristics of materials.

The standard, while exhaustive, does not provide a rapid or "user friendly" ability to identify potentially hazardous materials—either for use by HHW site technicians, or the general public. For this reason, the HHW Quick Translator (QT) was developed and reviewed by a subcommittee of individuals who had participated in the original CSA process. The HHW QT is in close alignment with the CSA standard and uses the hazard symbols that appear on product labelling to identify most items. There is a small subgroup of items that do not carry such labelling (e.g., motor oils, fluorescent tubes, solvent based paints, etc.) that have characteristics that would be caught by the CSA standard. These items are listed on the Translator under "Other." Refer to figure 4.2 on the following page.

The "beta version" of the HHW QT has been incorporated into the sampling process to determine opportunities for improvement (as required) and to answer a number of questions, including:

- 1) Of all of the items received and recorded through this study, which items—by waste class, product type and brand owner—have characteristics that would result in their being identified as hazardous by the QT and therefore by the CSA standard?

- 2) How well does this approach work to assist site staff in identification of items that would be hazardous based on the CSA criteria, given the often poor condition of labels, or the fact that some materials are not in their original containers?
- 3) For the items received and recorded that are not identified by the symbols or the list of items on the QT, what are they, and why are they not identified? Is it because they are not hazardous? Produced before the symbols were required? Unidentifiable? In quantities below those caught by the CSA standard?
- 4) Would the HHW QT be useful in helping residents/members of the public to identify which items to segregate for disposal at HHW sites?
- 5) What, if any, changes could be made to the HHW QT to improve its efficacy?

Refer to the discussion in Section 6 for responses to these questions.

4.3.2.2 HHW QT Questions

Accordingly, the following questions were added to the sampling form:

Quick translator?	Yes	No	Symbol	Text
If "no." is this because symbol on label is obscured?			Yes	No
If "no." is this because item is not in original container			Yes	No
For corrosives, is this because item is one litre or less?			Yes	No
For poisons, does label include word "Caution?"			Yes	No

Explanation for this portion of the form was as follows:




- Check product label for the symbols on the Translator. If found, circle "yes" and "Symbol."
- Check to see if the product is listed on the Translator. If it is, circle "yes" and "Text."
- If there is no symbol on the label and the product isn't listed on the Translator, circle "no."
- If you have circled "no", indicate if this is because you can't make out the symbol on the label, or because the material is not in its original container.
- For corrosives, indicate if item is one litre or less. For poisons, indicate if label includes word "Caution."

Figure 4.2 HHW Quick Translator Beta Version

Definition of Household Hazardous Waste

Quick Translator – What’s HHW?

This “quick translator” offers a method of identifying residuals of consumer products using information readily available to, and understandable by consumers. The materials identified by this “quick translator” should be closely aligned with CSA Standard Z752-03 Definition of Household Hazardous Waste. It will identify some materials that are not described by the CSA standard. It will not identify some materials described by the standard because there is no readily available information that the consumer can use. It may not identify some materials that are being collected because they are not hazardous.

<p>FLAMMABLE Packages displaying symbols</p>	
<p>CORROSIVE Packages displaying symbol Does not include products designed to go down the drain <u>that are packaged as 1 litre or less</u> – e.g. drain uncloggers, toilet bowl cleaners.</p>	
<p>POISON Packages displaying the symbols and words Does not include products with the word “CAUTION”</p>	
<p>EXPLOSIVES</p>	<p>Fireworks, ammunition, nail gun charges, flares, model rockets</p>
<p>MEDICAL SHARPS</p>	<p>Used needles, lancets</p>
<p>OTHER</p>	<p>Mercury switches & thermometers, NiCd batteries, used motor oil & lubricants, turpentine, solvent-based paints (alkyd), fluorescent tubes, paint thinner, methylene chloride paint stripper, electronic equipment</p>

4.4 Data Entry

All data were entered into a database designed in MS Access (2003), with output to MS Excel.

4.5 Statistical Significance

Given the scope of the HHW Baseline Study, it was decided that the proposed number of sampling days (49) needed to be reviewed to evaluate whether the information obtained would be a representative sample of the materials received by HHW programs in Ontario.

Care had already been taken to ensure that there were as many HHW programs and types of programs included in the study as possible. As well, programs were selected to be representative of the different geographical areas of Ontario.

Data from the 2001 study were analysed by the Ashton Lab of the Math and Stats Department at the University of Guelph to determine the anticipated level of confidence for the higher volume waste classes (e.g., oil, paints and flammables) and respective brand owners for a range of potential number of sampling days. For these waste classes, the proposed number of sampling days was calculated to be 2X standard deviation with a 95% confidence level of 5, 4 and 2% for flammables, oils and paints respectively.

It was suggested that an analysis of the final results from the 2004 Baseline Study be undertaken to confirm the projected confidence levels.

5.0 Inbound Materials— Composition Study Results

5.1 Final Results

The results on the following pages provide detailed information on the materials sampled at the nine programs from July through November.

A total of 12,611 items have been entered into the database. Table 5.1 summarizes the sites, activities and sampling intervals. The queries and reports generated have been modified somewhat from the 2000 study to reflect updates to product categories/waste classes, and to incorporate information on the HHW Quick Translator.

Table 5.1 Site Sampling Summary

Municipality	Site	Site Type	Date	Weather	Sampling Interval	Number of Vehicles Sampled	Total Number of Vehicles	Number of Items Sampled	Av. # items per vehicles sampled
Sudbury	Sudbury	Depot	July 10	Sunny, hot	15 min	25	376	414	16.6
		Depot	Sept. 25	Sun+cloud, mild	15 min	27	120	581	21.5
EWSWA	Windsor	Depot	July 12	Fair	15 min	24	70	100	4.2
			July 19	Overcast, rain	15 min	24	80	106	4.4
			July 26	Sunny, warm	15 min	28	104	100	3.6
			August 4	Overcast, rain	15 min	23	67	74	3.2
			August 11	Cloudy, cool	15 min	22	75	132	6.0
			August 18	Sunny, cool	15 min	21	56	86	4.1
Halton	Milton	Depot	July 15	Overcast, drizzle	all	75	96	574	7.7
			July 20	Cloudy, rain	15 min	30	104	265	8.8
			July 22	Cloudy, cool	15 min	30	82	257	8.6
			Oct. 5	Sunny, cold	10 min	34	105	464	13.65
			Oct. 13	Sunny, mild	15 min.	25	110	411	16.4
Toronto	Disco Rd.	Depot	July 21	Sunny, Hot	15 min	30	57	404	13.5
			July 28	Sun+Cloud	15 min	19	85	461	24.3
			Sept. 22	Sunny, warm	15 min	12	47	351	29.3
			Sept. 29	Sunny, warm	15 min	23	80	409	17.8
OVWRC	Bonnechere Valley	Event	July 24	Sunny, warm	15 min	30	129	283	9.4
	Whitewater Region, Twp.	Event	August 28	Sunny with cloudy periods	10 min	26	102	147	5.7
	Woitto Stn Rd	Depot	One week in Sept.	N/A	All drop offs	28	28	275	9.8
	Woitto Stn Rd	Event	Sept. 18	Sunny, cool	15 min	29	169	292	10.1
	Woitto Stn Rd	Event	Oct. 23	Sunny, cool	15 min.	18	242	221	12.3
	Woitto Stn Rd	Depot	One week in Nov.	Variable	All	22	22		

Continued on next page

Table 5.1, (continued) Site Sampling Summary

Municipality	Site	Site Type	Date	Weather	Sampling Interval	Number of Vehicles Sampled	Total Number of Vehicles	Number of Items Sampled	Av. # items per vehicles sampled
Niagara	Road 12, Grimsby	Depot	July 27	Overcast, drizzle	15	28	37	380	13.6
	Road 12, Grimsby	Depot	Oct. 26	Fog, then sun+cloud	all	28	35	403	14.4
Peel	Battleford	Depot	July 8	Sunny, warm	all	95	95	474	5.0
	Bolton CRC	Depot	July 21	Sunny, Hot	10	16	38	76	4.8
	Battleford CRC Mississauga	Depot	July 22	Mostly sunny, Hot	15	30	95	120	4.0
	Bolton CRC	Depot	August 10	Sun+Cloud showers	All vehicles	35	44	104	3.0
	Bolton CRC	Depot	August 13	Overcast, cool, showers	All vehicles	21	21	117	5.6
	Bolton CRC	Depot	August 18	Sun+Cloud	All vehicles	18	18	369	20.5
	Battleford CRC	Depot	August 19	Sun+Cloud	15 min	90	141	132	1.5
	Battleford CRC	Depot	August 25	Sunny, warm	15 min	25	77	371	14.8
	Battleford CRC	Depot	Sept. 30	Sunny, warm	Every 3rd vehicle	15	60	234	15.6
	Battleford CRC	Depot	Oct. 14	Overcast, cool	Every 3rd vehicle	25	77	282	11.3
	Bolton CRC	Depot	Oct. 15	Overcast, cool	All (to 3 pm)	11	19	144	13.1
	Battleford CRC	Depot	Oct. 21	Overcast, cool	Every 3rd vehicle	14	44	251	17.9
Bolton CRC	Depot	Oct. 22	Overcast, cool, drizzle	All vehicles	19	21	358	18.8	
Bolton CRC	Depot	Oct. 30	Drizzle, then afternoon sun	Approx. every 2nd car	32	50	540	16.9	
QWS	Bancroft	Event	August 21	Sunny, warm	Every 4th car	10	54	292	29.2
	Marmora	Event	August 28	Sun+Cloud Hot	As available	14	146	252	18
	Belleville	Depot	October 16	Frigid, windy	20 min	22	366	354	18.1
York	East Gwillimbury	Depot	August 17	Sunny, warm	15 min	32	120	413	12.9
	East Gwillimbury	Depot	Oct. 19	Frigid, windy	Every 3rd car	21	94	348	16.6
Total / Average						1,204	3,896	12,611	10.5

The data presented in Section 5 are subdivided as follow:

- 1) Composition by product category/waste class for liquids, solids and combined (section 5.2), and
- 2) Composition by product type (liquids, solids and combined) (section 5.3);

The composition and quantity for each product category/waste class is in Appendix 2. Residual container volumes and container information are detailed in Appendix 3. Reuse activities by product type are profiled in Appendix 4, and brand owner information is detailed in Appendix 5.

Table 5.2 Paints and Coatings: Latex and Solvent Based Items

5.1.1 New Product Categories

As noted previously, the former paint category has been modified to a paint and coatings category, and subdivided to provide information on the relative quantities of solvent or alkyd based materials, versus latex or water based materials.

This change reflects a review of product types by the Product Care Association to indicate the products that should be included in the Paint and Coatings category. Note, however, that this still allows for comparison with the results from the previous HHW composition studies as non paint solvent based coatings were previously in the flammables category and the two can simply be added together.

This new subdivision will also help to highlight how or if water and latex based paints and coatings are increasing at HHW collection programs, relative to solvent or alkyd based paints and coatings. The use of the HHW Quick Translator has

Paints and Coatings: Alkyd/Solvent-based	Paints and Coatings: Latex/Water-based
Alkyd paint	Artist craft paint
Artist craft paint	Concrete water sealer
Concrete water sealer	Enamel
Driveway Sealer	High heat paint
Enamel	Lacquer
High heat paint	Latex paint
Lacquer	Liquid plastic
Linseed oil	Primer sealer
Liquid plastic	Rust or metal paint
Other	Specialty paint
Primer sealer	Spray paint
Rust or metal paint	Stain
Specialty paint	Wood finish
Spray paint	Wood preservative
Stain	
Unknown	
Varnish	
Water repellent	
Wood finish	
Wood preservative	
Wallpaper prep.	

A note on terminology
 The following sections use the term “product category/waste class” to refer to the broad categories by which household hazardous wastes are typically packed for shipping—e.g., flammables, acids, bases, pesticides, etc. The term “product type” is used as a general description of an item within a specific product category or waste class. There are dozens of product types, ranging from paint thinners to transmission fluid to pool chemicals, etc.

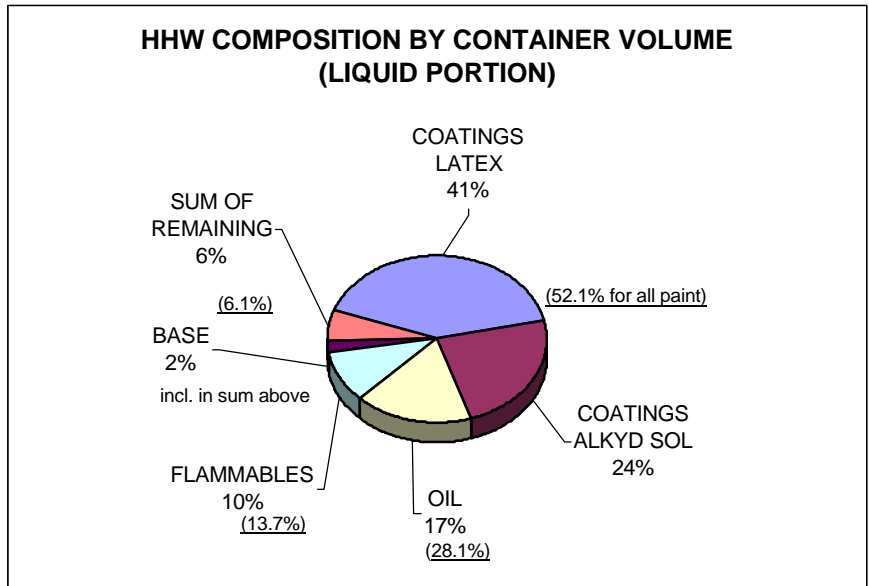
greatly assisted this process. Table 5.2 details the product types in the two categories.

5.2 Composition by Product Category/MOE Waste Class

Container volume refers to the actual size of the container, based on label information.

Paints and coatings represent the highest proportion of container volume at 65%, followed by oil (17%), flammables (10%), sum of remaining (6%) and bases (2%). Composition of sum of remaining items is detailed in Table 5.2.1. Bracketed red figures are 2001 study results.

Figure 5.2.a Composition by container volume for the liquid fraction of materials sampled

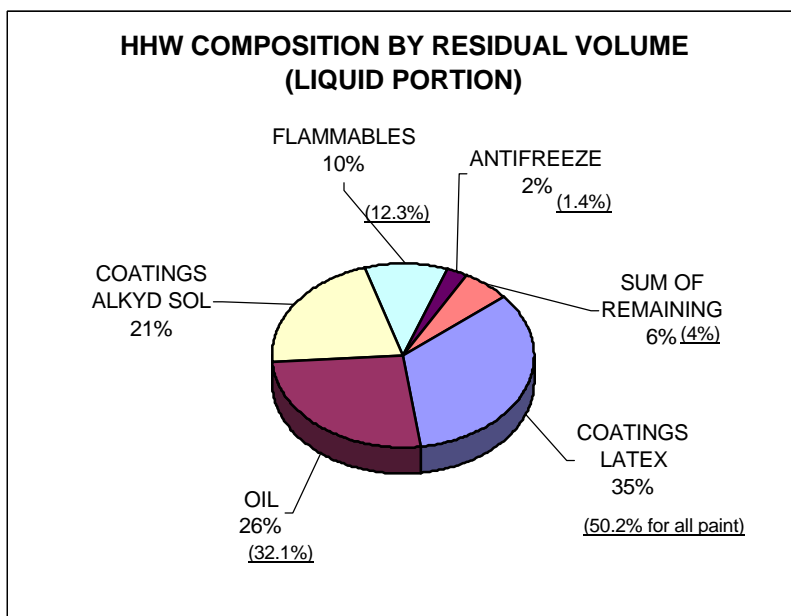


Bracketed underlined figures are 2001 study results

Table 5.2.1 Sum of remaining items—container volume

Category/Waste Class	Number of Items	Total container volume (L)
Pesticides	356	331.3
Antifreeze	129	476.8
Acids	97	162.6
Oxidizers	108	335.7
Unknown	113	160.5

Figure 5.2.b Composition by residual volume for the liquid portion of materials sampled



Residual volume refers to the actual quantity of material estimated to be in each container, ranked as: full, 3/4, 1/2, and 1/4.

Coatings comprise the highest proportion by residual volume at 56% followed by oil (26%), flammables (10%), sum of remaining (6%) and antifreeze (2%).

Table 5.2.2 Sum of remaining items—residual volume

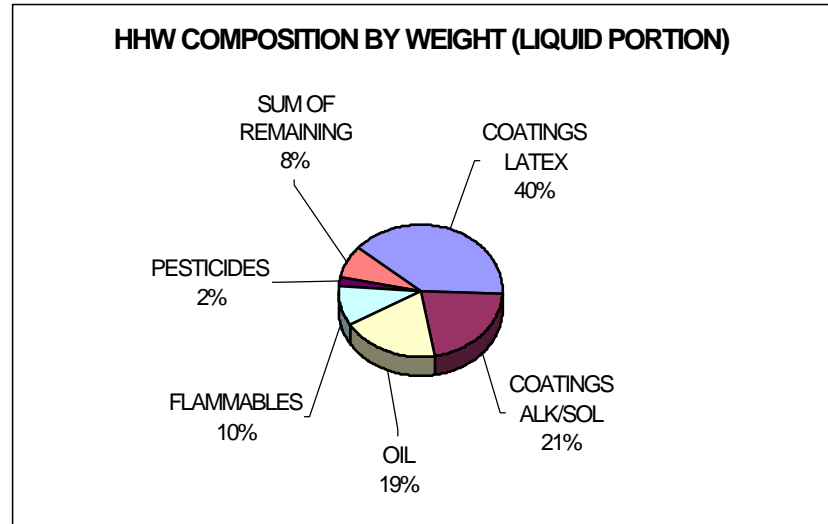
Category/Waste Class	Number of Items	Total residual volume (L)
Pesticides	356	203.1
Bases	179	248.2
Acids	97	139.8
Oxidizers	108	181.8
Unknown	113	96.3

Bracketed underlined figures are 2001 study results

Figure 5.2.c Composition by total weight for the liquid portion of materials sampled

Composition by weight uses the recorded weights to document the relative proportions of waste categories. This information is new (weights were not recorded in previous studies) and reflects new insight into HHW composition. Although the relative proportion of materials by weight does not differ substantially from residual volume, the differences do reflect the variations due to container weight (e.g., glass vs. plastic), and eliminate the subjective measure of container fullness.

Figure 5.2.c Composition by weight for the liquid portion of materials sampled



By weight, paint and coatings comprise 61% of the total, followed by oil (19%), flammables (10%) and pesticides (2%).

Table 5.2.3 Sum of Remaining Items—Weight

Category/Waste Class	Number of Items	Total weight (Kg)
Bases	179	267.3
Acids	97	148
Unknown	113	133.7
Pesticides	356	319.4
Oxidizers	108	191.1

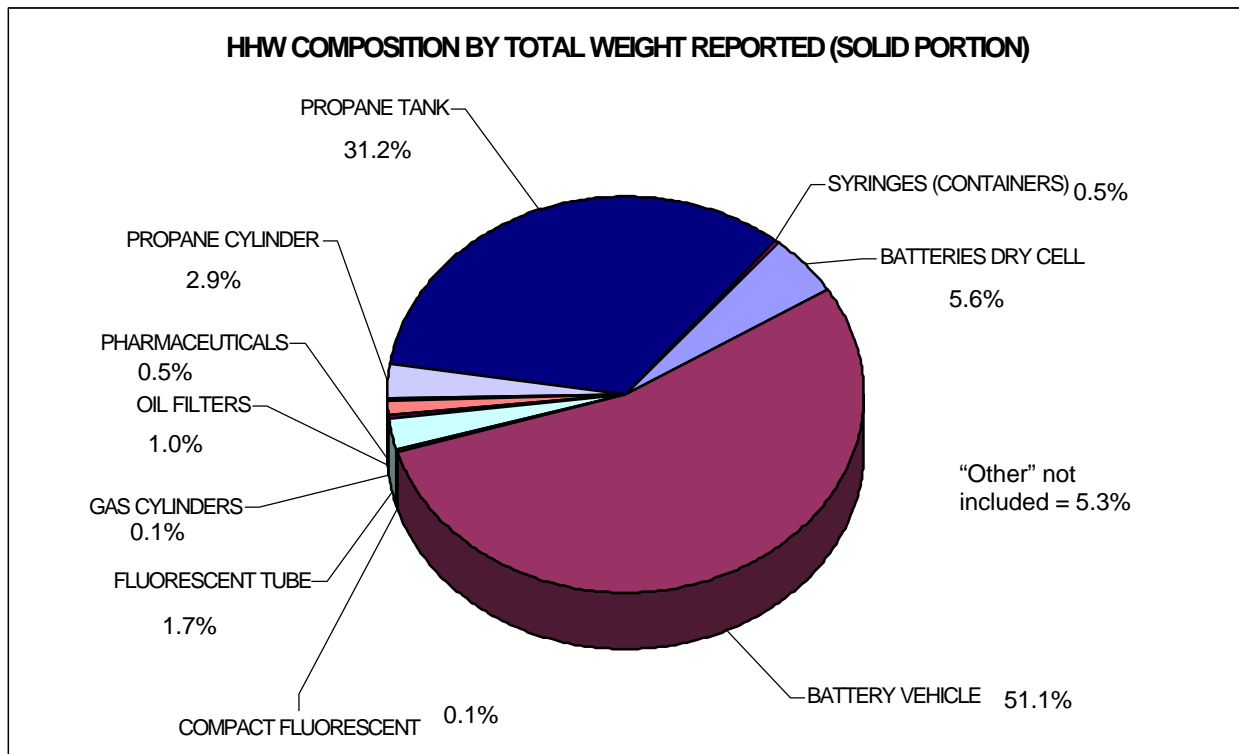
Table 5.2.4 Overall HHW Composition—Liquid Portion

Category	No. of Items	Percent of Items caught by HHW QT	Total Container Volume (L)	Percent of Total Container Volume	Total Residual Volume (L)	Percent of Total Residual Volume	Total Weight (KG)	Percent of Weight
Acid	97	37.1	162.6	0.7	139.8	1.0	148.0	0.9
Antifreeze	129	54.3	476.8	1.9	352.4	2.4	282.6	1.8
Base	179	36.3	486.3	2.0	248.2	1.7	260.1	1.6
Coatings Alk/Sol	2,722	100	5,845.9	23.8	3,129.4	21.3	3,730.6	23.6
Coatings Latex	3,439	0	10,036.2	40.8	4,979.9	33.9	5,970.1	37.8
Flammables	1,735	50.7	2,483.6	10.1	1,523.9	10.4	1,561.3	9.9
Oil	1,079	100	4,285.2	17.4	3,815.6	26.0	3,317.7	21.0
Oxidizers	108	9.3	335.7	1.4	181.8	1.2	185.9	1.2
Pesticides	356	31.2	331.3	1.3	203.2	1.4	216.3	1.4
Unknown	113	0	160.5	0.7	96.3	0.7	133.7	0.8
Totals	9,957	4,973 items	24,604.2		14,670.7		15,806.3	

Table 5.2.4 summarises the total number of items in the liquid portion of the materials sampled (9,957) and provides the total container volume (24,604 litres), residual volume (14,671 litres) and weight (15,806 kilograms).

The percentage of liquid items caught by the HHW Quick Translator is 50%. If latex coatings are removed, this percentage increases to 76%.

Figure 5.2.d Composition by weight for the solid portion of materials sampled



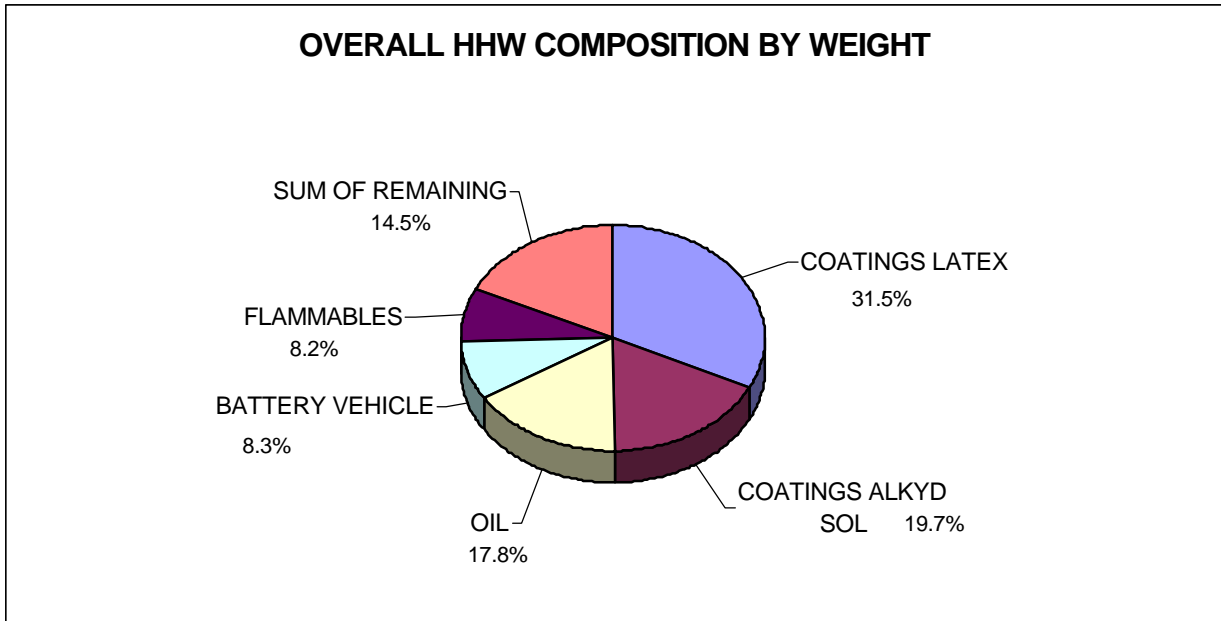
Vehicle batteries are the highest proportion by weight (51%) of the materials sampled, followed by propane tanks and cylinders (34%), dry cell batteries (5.6%) and fluorescent tubes/compact fluorescents (1.8%). The remaining items, syringes, gas cylinders and pharmaceuticals, comprise 2.1%. "Other" items not reflected in figure 5.2.d comprise 5.3%.

Table 5.2.5 provides details on the number of items in each category, where dry cell batteries comprise the highest proportion. Of the sampled items 35.8% in the solid portion are caught by the HHW Quick Translator.

Table 5.2.5 Overall HHW Composition—Solid Portion

Category	No. of items	Percent of items caught by HHW QT	Total weight reported (KG)	Average weight reported (KG)	Total weight calculated (KG)
Batteries (dry cell)	1,806	6.0	173.2	N/A	175.1
Batteries (vehicle)	133	100	1,495.4	11.33	1,608.7
Compact fluorescents	10	100	1.8	0.18	1.8
Fluorescent tubes	136	100	50.3	0.37	54.4
Gas cylinders	7	100	4.2	0.60	4.2
Oil filters	69	100	26.2	0.38	31.6
Other	92	6.5	168.2	1.83	170.0
Pharmaceuticals	107	1.9	14.4	0.13	14.4
Propane cylinders	163	100	84.0	0.52	90.2
Propane tanks	116	100	903.8	7.93	983.1
Syringes (containers of)	15	100	15.1	1.01	15.1
Total	2,654	765 items	2,936.7		3,148.6

Figure 5.2.e Overall HHW Composition by Product Category/Waste Class by Weight



Given that all materials were weighed in this study, it is now possible to analyse the liquid and solid portions together and show the relative proportions of all materials by weight. It must be stressed however, that the liquids include container weights, while many of the solids (e.g., batteries, propane tanks and cylinders) have no packaging.

By weight, paints and coatings comprise 51.2% of the total, followed by oil (17.8%), sum of remaining (14.5%), vehicle batteries (8.3%) and flammables (8.2%).

Table 5.2.6 Overall HHW Composition by Product Category/Waste Class

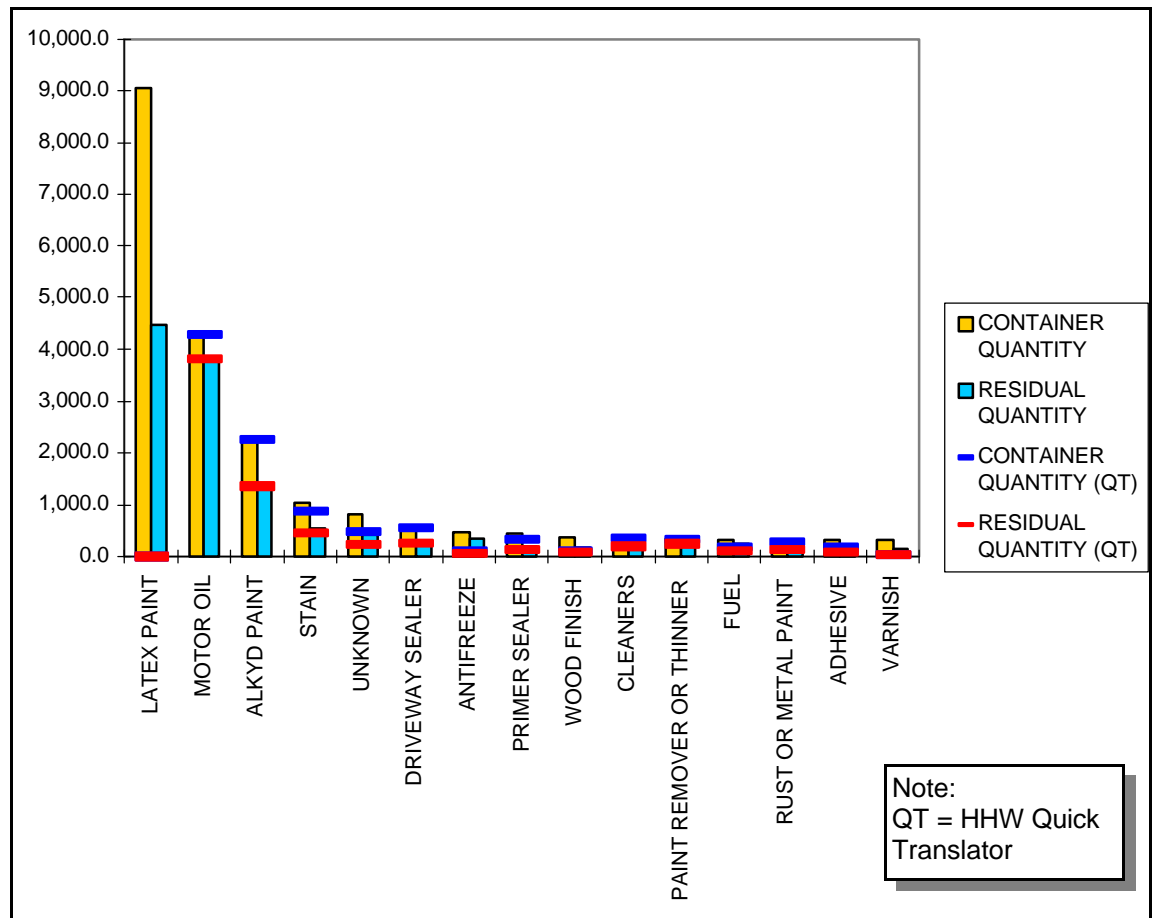
Category	No. of items	Total weight reported (KG)	Avg. weight reported (KG)	No. of items with recorded weight	Calculated total weight (KG)	No. of items caught by HHW QT	Percent of items caught by HHW QT
Coatings: Latex	3,440	5,971.1	1.7	3,345	6,136.3	0	0.0
Coatings: Alkyd/Solvent	2,721	3,729.6	1.4	2,635	3,847.8	2,721	100.0
Oil	1,079	3,317.7	3.2	1,030	3,472.0	1,079	100.0
Vehicle batteries	133	1,495.4	11.3	123	1,608.7	133	100.0
Flamm/Misc. Org	1,735	1,561.3	0.9	1,690	1,602.0	880	50.7
Sum of remaining	3,503	2,667.9	N/A	3,346	2,819.3	924	26.4
Totals	12,611	18,743.0		12,169	19,486.0	5,737	

5.3 HHW Composition by Product Type

Product types found in the highest proportion are summarised in Figures 5.3.a (liquids), 5.3.b (solids),

5.3.c (combined), and Tables 5.3.1, 5.3.2 and 5.3.3.

Figure 5.3.a Highest Proportion of Product Types (top 8)—Liquid Portion



The product types found in the highest proportion by volume include latex paint, motor oil, alkyd paint, stains, “unknowns” stains and driveway sealer. The top three are the same top three as those in both the 2001 and the 1995 studies.

Table 5.3.1 details the relative number of items and the number of items caught by the HHW Quick Translator.

Table 5.3.1 Highest proportion of product types (top 15)—Liquid portion

PRODUCT TYPE	NO. OF ITEMS	ALL ITEMS (IN L)		CAUGHT BY HHW QT (IN L)		PERCENT CAUGHT BY HHW QT	
		CONTAINER QUANTITY	RESIDUAL QUANTITY	CONTAINER QUANTITY (HHW QT)	RESIDUAL QUANTITY (QT)	CONTAINER QUANTITY (QT)	RESIDUAL QUANTITY (QT)
LATEX PAINT	2,847	9,041.9	4,472.2	0.0	0.0	0.0	0.0
MOTOR OIL	1,079	4,285.2	3,815.6	4,285.2	3,815.6	100.0	100.0
ALKYD PAINT	938	2,267.3	1,354.8	2,267.3	1,354.8	100.0	100.0
STAIN	405	1,040.3	540.4	860.7	455.0	82.7	84.2
UNKNOWN	336	813.1	430.0	483.0	233.3	59.4	54.3
DRIVEWAY SEALER	41	557.8	262.3	557.8	262.3	100.0	100.0
ANTIFREEZE	129	476.8	352.4	119.3	48.9	25.0	13.9
PRIMER SEALER	175	441.9	194.9	324.2	139.3	73.4	71.5
WOOD FINISH	202	375.4	172.7	122.3	77.5	32.6	44.9
CLEANERS	354	358.8	235.9	351.9	192.8	98.1	81.7
PAINT REMOVER OR THINNER	168	353.3	193.2	323.5	241.1	91.5	124.8
FUEL	123	323.5	240.9	178.5	101.0	55.2	41.9
RUST/ METAL PAINT	346	314.8	177.5	279.9	136.1	88.9	76.7
ADHESIVE	156	308.7	187.6	164.0	80.1	53.1	42.7
VARNISH	206	305.1	148.1	28.0	21.0	9.2	14.2

Figure 5.3.b Highest proportion of product types for the solid portion by weight

Not surprisingly, vehicle batteries and propane tanks comprise the highest proportion of solid materials by weight even though they were well below many other items in number.

Table 5.3.2 details the relative number of items and the number of items caught by the HHW Quick Translator.

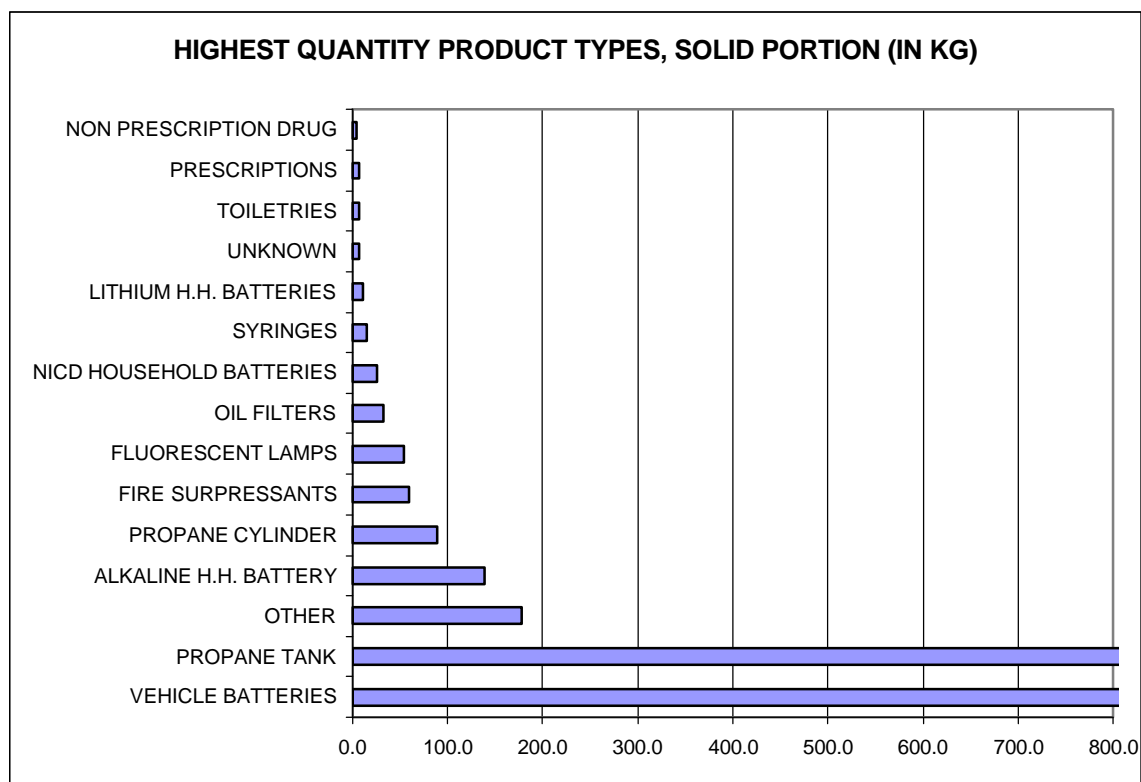
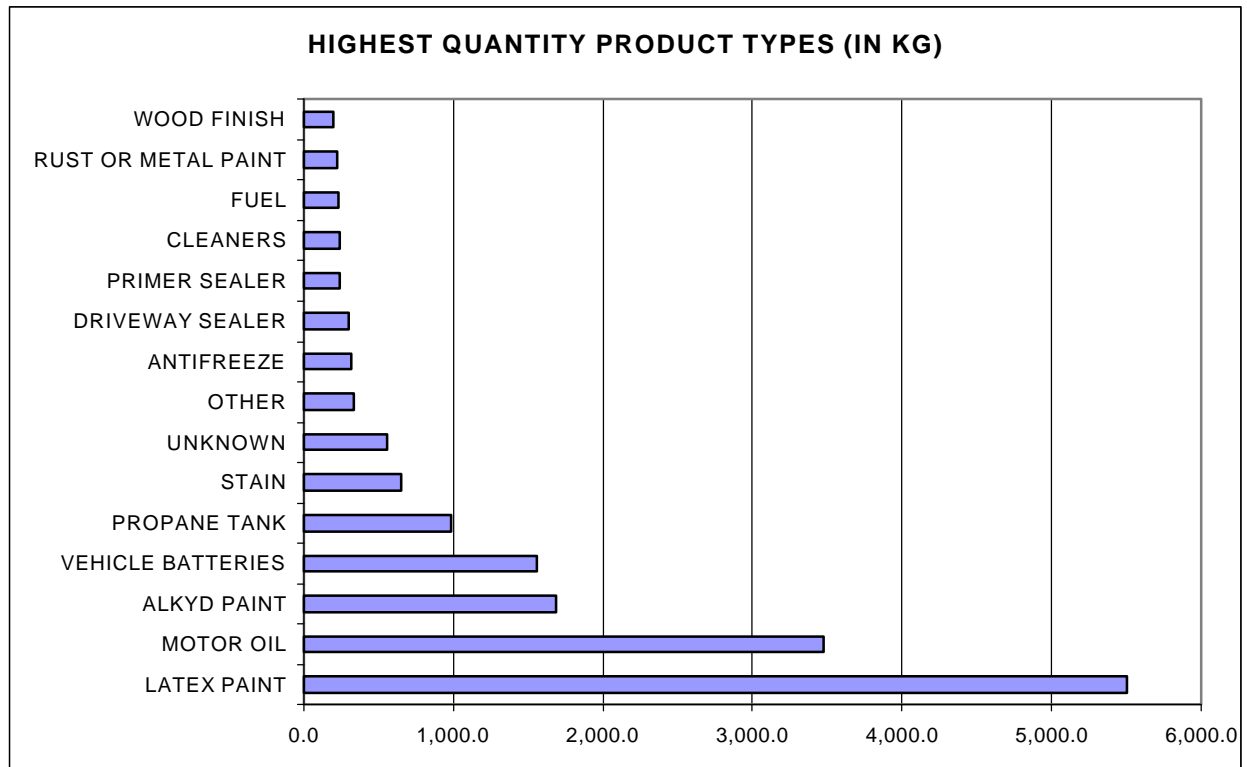


Table 5.3.2 Highest proportion of product types for the solid portion by weight

PRODUCT TYPE	NO. OF ITEMS	TOTAL WEIGHT REPORTED (KG)	AVG. WEIGHT REPORTED (KG)	NO. OF ITEMS WITH NO WEIGHT REPORTED	CALCULATED TOTAL WEIGHT (KG)	PERCENT OF ITEMS CAUGHT BY HHW QT
VEHICLE BATTERIES	109	1434.7	13.2	100	1553.2	100
PROPANE TANK	116	903.8	7.9	106	983.1	100
OTHER	98	174.1	1.8	96	177.6	37.8
ALKALINE HOUSEHOLD BATTERIES	1592	135.5	0.1	1,554	138.7	0
PROPANE CYLINDER	162	82.5	0.5	150	88.7	100
FIRE SURPRESSANTS	8	59.0	7.4	8	59.0	0
FLUORESCENT LAMPS	145	50.1	0.3	134	53.9	100
OIL FILTERS	69	26.2	0.4	55	31.6	100
NICD HOUSEHOLD BATTERIES	108	18.6	0.2	71	25.0	100
SYRINGES	15	15.1	1.0	15	15.1	100
LITHIUM HOUSEHOLD BATTERIES	56	10.9	0.2	56	10.9	0
UNKNOWN	14	7.4	0.5	14	7.4	7.1
TOILETRIES	42	7.2	0.2	42	7.2	2.4
PRESCRIPTIONS	52	6.5	0.1	52	6.5	0
NON PRESCRIPTION DRUG	31	3.8	0.1	31	3.8	3.2

Figure 5.3.c Highest proportion of product types (top 15) by weight—overall



When the solid and liquid portions are combined and analysed by weight, the product types found in the highest proportion are latex paint, motor oil and vehicle batteries.

Table 5.3.3 illustrates the dramatic difference between these products with respect to number of items.

Table 5.3.3 Highest proportion of product types by weight—overall

PRODUCT TYPE	NO. OF ITEMS	TOTAL WEIGHT REPORTED (KG)	AVG. WEIGHT REPORTED (KG)	NO. OF ITEMS WITH RECORDED WEIGHT	CALCULATED TOTAL WEIGHT (KG)	PERCENT OF ITEMS CAUGHT BY QT
LATEX PAINT	2847	5359.8	1.9	2,770	5,505.1	0.0
MOTOR OIL	1079	3317.7	3.2	1,030	3,472.0	100.0
ALKYD PAINT	938	1640.2	1.8	910	1,689.3	100.0
VEHICLE BATTERIES	109	1434.7	13.2	100	1,553.2	100.0
PROPANE TANK	116	903.8	7.9	106	983.1	100.0
STAIN	405	614.5	1.5	381	650.9	80.7
UNKNOWN	350	548.5	1.6	347	553.2	46.3
OTHER	181	329.2	1.8	176	338.3	38.1
ANTIFREEZE	129	282.6	2.2	112	319.9	54.3
DRIVEWAY SEALER	41	298.7	7.3	41	298.7	100.0
PRIMER SEALER	175	243.2	1.4	174	244.6	32.0
CLEANERS	354	239.3	0.7	349	242.6	33.9
FUEL	123	230.5	1.9	123	230.5	99.2
RUST/ METAL PAINT	346	212.8	0.6	333	220.8	62.1
WOOD FINISH	202	190.7	0.9	200	192.6	87.6

6.0 The HHW Quick Translator

6.1 HHW Quick Translator

One of the stated concerns of many involved in household hazardous waste issues has been that municipal HHW programs receive, process and ship a number of items of various waste types/classes that may not in fact meet hazardous criteria. Some items or products, by their very nature, are often designed to be used so that they go down drains or storm sewers. Other items may be received because of public confusion over what should be taken to HHW sites. The potential result is that some items may unnecessarily be going through the costly handling necessitated by HHW programs.

As discussed in Section 4.3.2, the CSA Standard Z752-03 was developed to identify criteria that can be used to identify specific household waste materials as hazardous. The HHW Quick Translator (HHW QT) was developed as a tool to evaluate the materials received at HHW programs to assist in determining what is captured by the CSA Standard's criteria.

The HHW QT is in close alignment with the CSA standard and uses the hazard symbols that appear on product labelling to identify most items. One of the goals of the study was to evaluate opportunities to modify the HHW QT to improve its clarity.

From the municipal perspective, the major question raised in using the CSA Standard to define or determine what is hazardous has been "how do the criteria translate to the items received—what proportion of the materials currently brought to HHW sites is caught by the CSA Standard or HHW Quick Translator?"

This baseline study has resulted in a database of some 13,000 items received by HHW programs across the province over a five month period, with the ability to rank these items based on the criteria developed for the CSA Standard, as interpreted by the HHW Quick Translator. It can be assumed that those items caught by the HHW QT are caught because they have ingredients or characteristics that warrant special collection and handling.

Equally important, the items not caught by the HHW QT can be assessed to determine what they are, and why they weren't caught. The list of items not identified by the HHW QT as hazardous is detailed in Appendix 1 and can be reviewed to determine the following:

- Are some items not caught because they are not hazardous—e.g., cooking oil, some toiletries, some cleaners, some pharmaceuticals, etc.?
- Are there some items that are not caught because they are too old to carry the hazard symbols now required on specific products? If yes, what are these items, and what is the proportion of these items to the total received?
- How many items are not caught by the HHW QT because they are corrosive and one litre or less, and are therefore considered low risk by the CSA Standard?
- How many items are not caught because they carry the poison symbol and the word "caution" and are therefore considered low risk by the CSA Standard?
- What proportion of items are not identified using the HHW QT because the label is illegible or because they are not in their original containers?

The larger question surrounding the use of the HHW QT, is whether it could be an effective tool to guide HHW site personnel in differentiating items that, for example, may be designated in a stewardship program. Would it be a useful tool for guiding the public in deciding what they should bring to a HHW site?

These questions will be dealt with in section 6.6, but it first is necessary to provide overall information on the HHW QT study results.

Section 6.2 provides an overview of the HHW QT trial results, section 6.3 discusses the waste classes and product types caught by the HHW QT. Section 6.4 provides an overview of items not caught by the HHW QT. Section 6.5 discusses the difference between what is received and what is classified as hazardous based on the Translator. Section 6.6 discusses the general efficacy of the HHW QT.

Overview of HHW QT results

If latex paint and alkaline household batteries are removed from the total (both are not caught by the HHW QT and both are generally easily identifiable by site personnel and members of the public), then the proportion of items received during the study and not caught by the HHW Quick Translator is 13.8% (1,735 items of 12,611). Translated to container volume for liquids, and weight for solid items, this becomes 528 litres and 187 kilograms, respectively. Conversely (and removing latex paint and alkaline hhd. Batteries), the proportion of items caught by the HHW QT is 86.2%

6.2 Overview of HHW QT Results

All data on the HHW QT were entered as recorded for each item. Thus, a vehicle battery or a propane cylinder, for example, was recorded as a “yes” and “symbol” if the product labels were intact and legible, and “no” and “label missing/obscured” or “not in original container” if not. The data summaries on the following pages reflect total or “absolute” yeses. In other words, all vehicle batteries, propane cylinders and other identifiable items that should be yeses (e.g., turpentine in a mason jar) have been entered as such.

However, the “no’s” have not been lost and are reflected in the totals reported in Table 6.1, *Proportion of Items Caught by HHW QT*. The difference between the “caught by recorder” and “should be caught” is 885 items or 7% of the total. Conversely, 690 or items or 5.5% of the total were recorded as “yeses” but converted on data entry to “no’s” based on product type or other information provided on the recording form. These figures could be interpreted as “recorder error” and will be discussed further in Section 6.6.

During the summer sampling, a subgroup of paints and coatings that were not specifically labelled as “alkyd” or solvent-based was not caught




Table 6.1 Proportion of Items Caught by HHW QT

HHW Quick Translator	Caught by recorder		Should be caught		Difference by percent
	No. of items	Percent	No. of items	Percent	
Yes	4,854	36.5	5,739	45.5	7.0
No	7,562	60.0	6,872	54.5	-5.5
Unknown	195	1.5	--	--	--
Total	12,611		12,611		

by the Translator (no hazard symbol, and not interpreted as being among the list of items in the “other” column of the QT). These products indicate on the label that they contain petroleum distillates and/or require mineral spirits for clean up. Following discussion with project team members, it was advised that these should be “yes” and “text,” and this is reflected in the Fall sampling results. Figure 6.1 below indicates the changes made to capture this subgroup.

Of the 12,611 items analysed in this study, 5,739 or 45.5% were captured by the HHW Quick Translator. The majority of the remaining items, as expected, were not identified as hazardous by the HHW QT. These items comprised largely latex paint and alkaline household batteries.

Figure 6.1 HHW Quick Translator, revised text

FLAMMABLE Packages displaying symbols	
CORROSIVE Packages displaying symbol Does not include products designed to go down the drain <i>that are packaged as 1 litre or less</i> – e.g. drain uncloggers, toilet bowl cleaners.	
POISON Packages displaying the symbols and words Does not include products with the word “CAUTION”	
EXPLOSIVES	Fireworks, ammunition, nail gun charges, flares, model rockets
MEDICAL SHARPS	Used needles, lancets
OTHER	Mercury switches & thermometers, NiCd batteries, used motor oil & lubricants, turpentine, solvent-based paints and coatings (alkyd, contain petroleum distillates or mineral spirits, or require solvent/mineral spirits for thinning or clean-up), fluorescent tubes, paint thinner, methylene chloride paint stripper, electronic equipment, fuels (e.g., gasoline, kerosene)

6.3 Overview of items caught by the HHW Quick Translator

The charts and tables in this section detail the various waste classes and product types caught by the HHW QT. The data are presented to provide the opportunity to compare the composition of items caught with the overall composition of HHW as reported in Section 5.

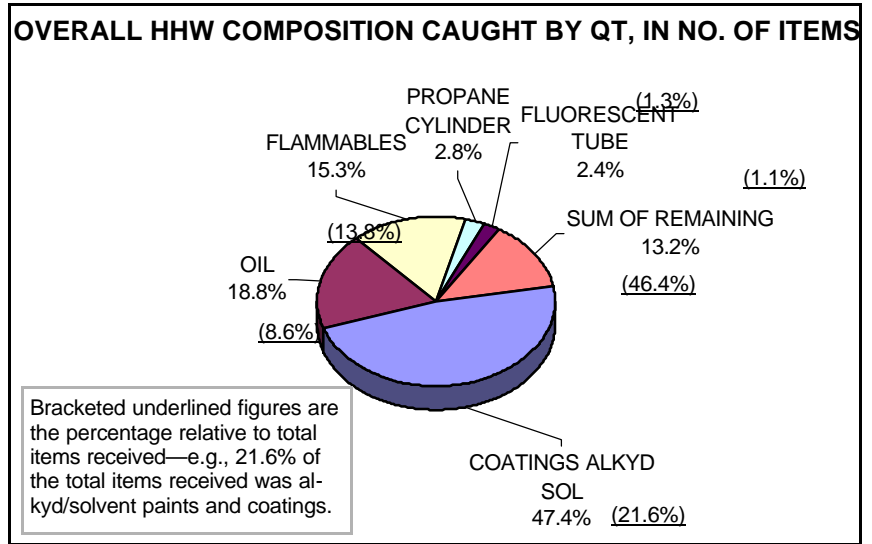
While it may seem that reporting volumes, weights and number of items, is a bit of “data overload,” the information is important to reflect the operational details of HHW collection. For example, “number of items” reflects the labour involved in receiving, evaluating, and packing or bulking the material as received. Weight and volume provide a cumulative amount, but no indication of the handling involved.

Of the 5,739 items caught by the HHW QT, alkyd and solvent based paints and coatings comprise nearly 50% of the total, with oil and flammables/miscellaneous organics a further 34%. The remaining items comprise fluorescent lamps, pesticides, acids, bases and oxidizers.

Looking at the top 15 product types (5,080 items)

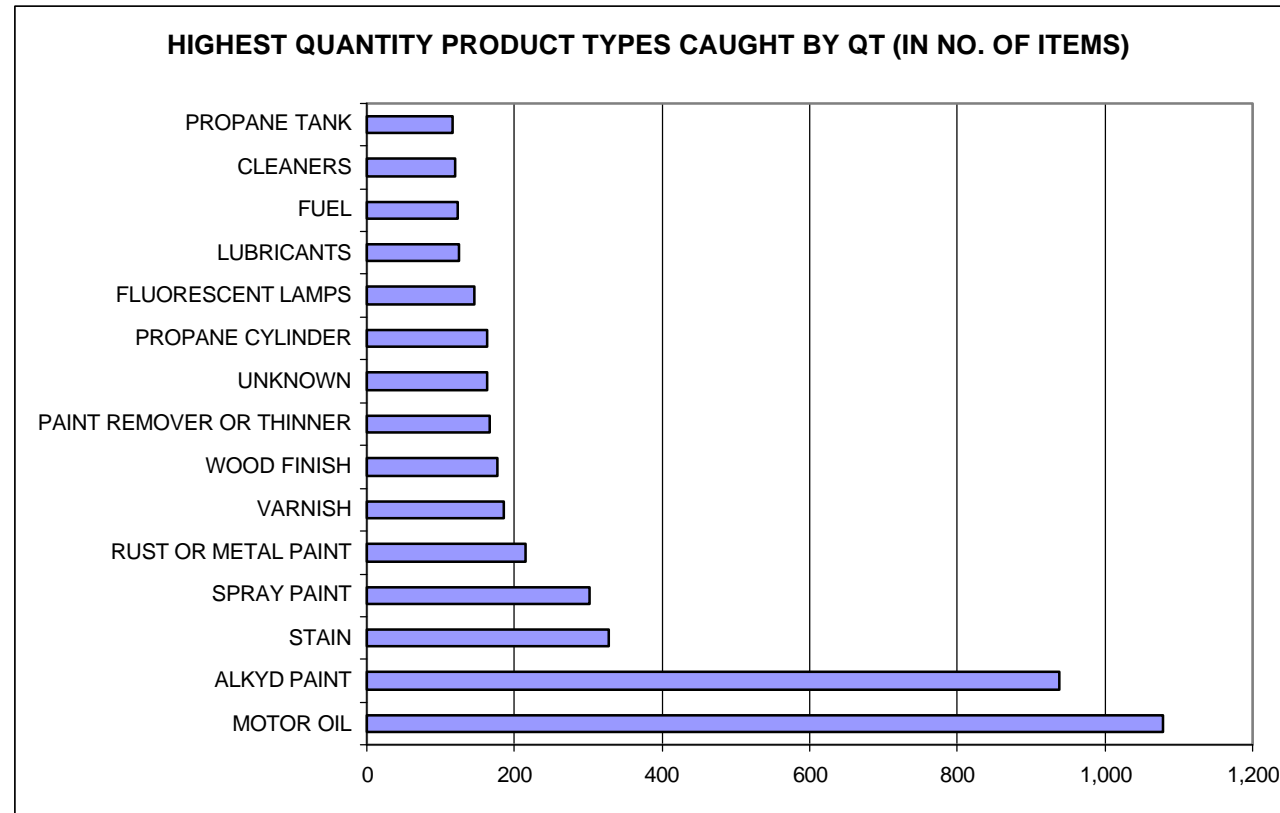
Figure 6.3 Top 15 product types caught by HHW QT

Figure 6.2 Overall HHW composition caught by HHW QT by number of items



caught by the QT by number of items, oil, alkyd paint and stains comprise 50% (Figure 6.3).

The HHW QT uses both symbols and specific listed items to identify items with hazardous properties. Note that the top two product types captured by the HHW QT are both in the “other” category of the HHW QT and would rarely carry a hazard symbol on the label.



With respect to the brand owners whose products were most frequently identified by the HHW QT, the top 15, as shown in Figure 6.4, comprise 56% of the total items caught by the QT.

The highest number of items (818 or 14% of the

total items caught by the QT) had no identifiable brand owner and is comprised largely of oil, fuels, solvents and propane tanks/cylinders, either not in their original containers, or without (legible) labels.

Figure 6.4 Top 15 Brand owners by number of items caught by HHW QT

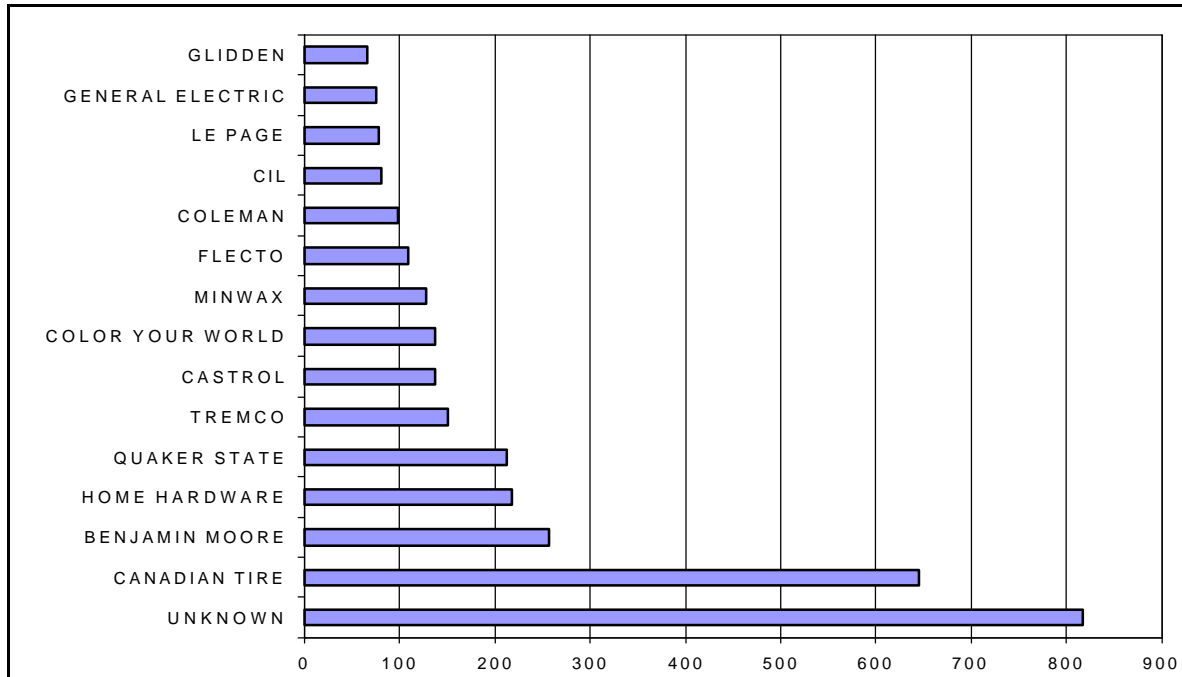
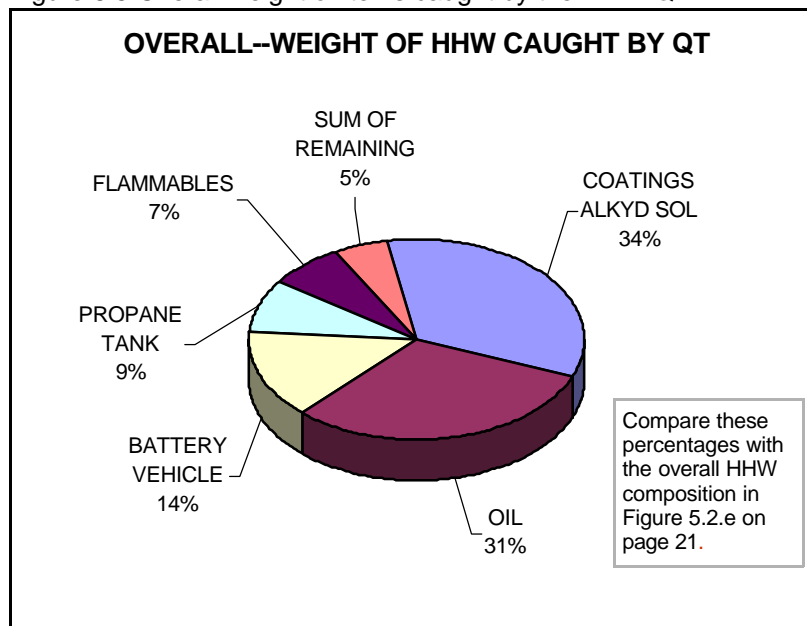


Figure 6.5 provides insight on the relative proportion by weight of the material caught by the HHW QT. Solvent/alkyd based paints and coatings, oil

and vehicle batteries comprise just under 75% of the total weight of QT items, whereas they are 46% by weight of the total items received.

Figure 6.5 Overall weight of items caught by the HHW QT



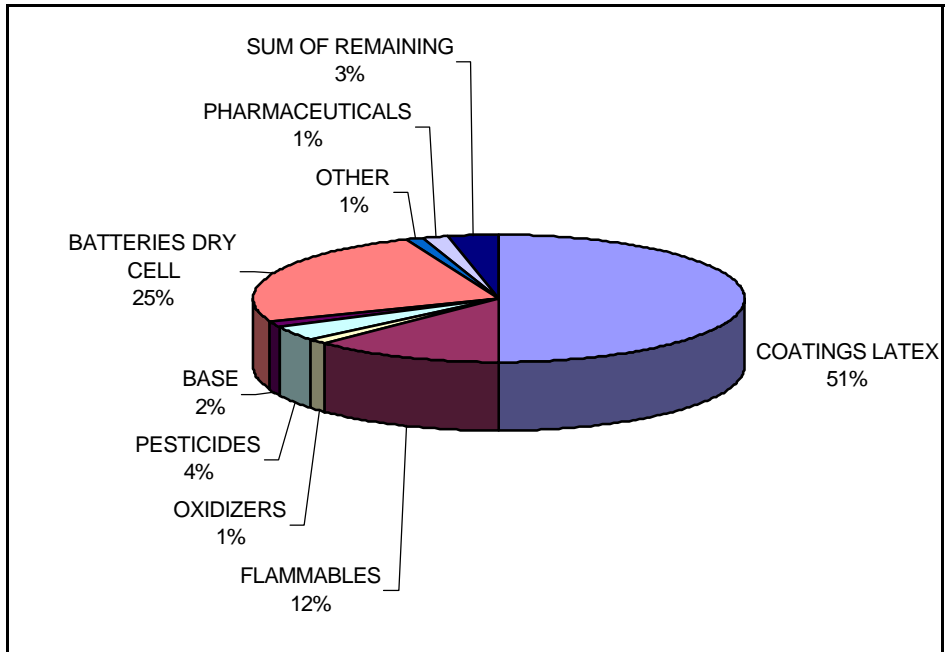
- For liquids, the container and residual volumes of materials caught by the QT, respectively, are: 12,070 litres (49% of total container volume), and 8,110 litres (55% of total residual volume).
- For solids, the weight of items caught by the QT is 2,964 kg. (94% of total weight of solid portion).

6.4 Overview of items not caught by the HHW Quick Translator

Of the close to 13,000 items recorded for this study, 45.5% were caught by the HHW Quick Translator. Of the 54.5% of items not caught, the majority (76%) is latex paint/coatings and household batteries (non NiCd). The remaining 1,731 items (13.8% of the total) are various flammables or miscellaneous organics, pesticides, bases, oxidizers and pharmaceuticals. A detailed list of all the items not caught is in Appendix 1.

Note that latex paints was the only waste class in which no items were caught by the HHW QT.

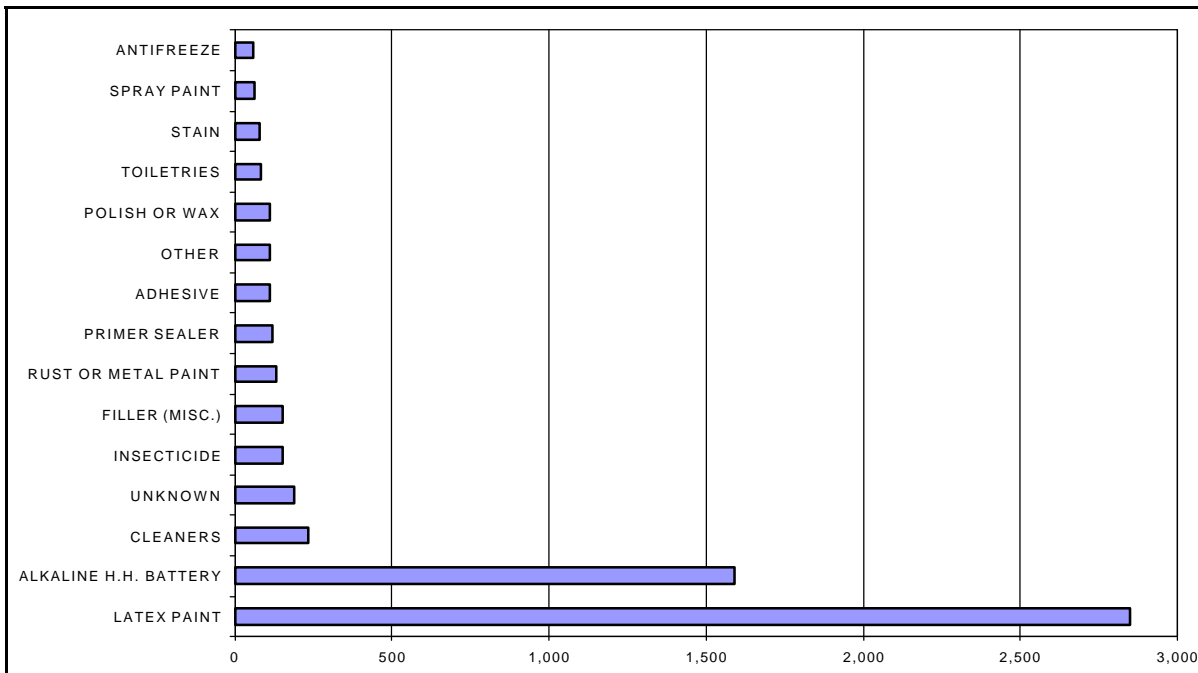
Figure 6.6 Overall HHW composition of items not caught by HHW QT



The top 15 product types not caught by the HHW QT (6,030 of the total number of items) are detailed in Table 6.7. Not surprisingly, latex paint and

household batteries comprise the majority at 4,439 items, or 74% of the top 15.

Figure 6.7 Number of items not caught by HHW QT by product type



6.5 The difference between what is brought to sites, vs. what is classified as hazardous based on the HHW QT

The promotional and educational (P&E) materials used by most HHW programs have typically listed a range of product types and waste classes that should be segregated from regular household garbage and brought to hazardous waste sites or events. This list-based approach works well for some easily identifiable products or waste classes (e.g., motor oil, batteries, propane tanks and cylinders, and paints and coatings). Some programs also advise residents to segregate items that carry hazard symbols.

The lists can also include any liquid and/or hazardous items that municipalities are not allowed to dispose in solid waste landfills and do not want in the sanitary sewer system (e.g., some cleaners, some pesticides, pool and photo chemicals, cooking oil, to name a few).

This broadly-based approach has meant that programs receive a range of materials that would not be classified as hazardous based on the CSA criteria or the HHW QT. This broadly-based approach also reflects an assumption that there is

Table 6.2 HHW QT data by Waste Class

Waste Class	No. of items	No. of items caught by QT	% of items caught by QT
COATINGS LATEX	3440	0	0
COATINGS ALKYD SOL	2721	2721	100
OIL	1079	1079	100
BATTERY VEHICLE	133	133	100
FLAMMABLES/MISC.ORG	1735	880	50.7
PROPANE TANK	116	116	100
ANTIFREEZE	129	70	54.3
BASE	179	65	36.3
PESTICIDES	356	111	31.2
OXIDIZERS	108	10	9.3
BATTERIES DRY CELL	1806	108	6.0
OTHER	92	6	6.5
ACID	97	36	37.1
UNKNOWN	113	0	0
PROPANE CYLINDER	163	163	100
FLUORESCENT TUBE	136	136	100
OIL FILTERS	69	69	100
SYRINGES	15	15	100
PHARMACEUTICALS	107	2	1.9
GAS CYLINDERS	7	7	100
COMPACT FLUORESCENT	10	10	100
TOTAL	12,611	5,739	

not an effective means of educating the public on how to differentiate between some of the product types that should be handled through a HHW program. The resulting approach has often been that it is better to collect more than required rather than risk missing some truly hazardous items.

Tables 6.2 and 6.3 illustrate the difference by waste class and product type respectively between what was received at the study sites and what was classified as hazardous based on the HHW QT.

Table 6.3 HHW QT data by product types (top 15)

Product Description	No. of items	No. of items caught by QT	% of items caught by QT
LATEX PAINT	2847	0	0.0
MOTOR OIL	1079	1,079	100.0
ALKYD PAINT	938	938	100.0
VEHICLE BATTERIES	109	109	100.0
PROPANE TANK	116	116	100.0
STAIN	405	327	80.7
UNKNOWN	350	162	46.3
OTHER	181	69	38.1
ANTIFREEZE	129	70	54.3
DRIVEWAY SEALER	41	41	100.0
PRIMER SEALER	175	56	32.0
CLEANERS	354	120	33.9
FUEL	123	122	99.2
RUST OR METAL PAINT	346	215	62.1
WOOD FINISH	202	177	87.6
TOTAL	7395	3601	48.7

The highlighted cells in Table 6.2 illustrate the waste classes that have a mixture of caught/not caught items. (refer to Appendix 1 for the itemized list of products not caught). This list needs to be reviewed and analysed by industry representatives to determine if the product formulation is hazardous, and to the extent possible, provide information on why some items have not been caught. For example, there are some fuels and adhesives in the flammables/miscellaneous organics waste class that likely should be diverted from regular disposal.

At the same time, there are a number of relatively innocuous cleaning products and toiletries that may not warrant special collection.

Household hazardous waste programs routinely receive items that are 30, 40 and even 50 years old. This was observed a number of

times during the study when people would deliver a lifetime's worth of stockpiled treasures, cleaned up in preparation for e.g., moving to smaller residences. Many of these items were marketed before hazard symbols were required on labels and are reflected particularly in the pesticides and flammables classes.

Looking at the top 15 product types received in Table 6.3, (59% of the total number of items received), nine of them are a combination of caught/not caught (highlighted cells). Four of these are coatings, reflecting the differences in product formulation (solvent vs. latex based). One third of the cleaning products were caught by the HHW QT, similarly one third of the pesticides. Just over one half of the antifreeze was caught. These "combination" product types comprise 31% of the top 15 items and 18% of the total items received. There is no question that they are brought to HHW sites because of promotion and education materials that list "cleaners," "pesticides," "antifreeze," etc.

6.6 Efficacy of the HHW Quick Translator

If latex paint and alkaline household batteries are removed from the total (both are not caught by the HHW QT and both are generally easily identifiable by site personnel and members of the public), then the proportion of items received during the study and not caught by the HHW Quick Translator is 13.8% (1,735 items). Translated to container volume for liquids, and weight for solid items, this becomes 528 litres and 187 kilograms, respectively.

One of the initial concerns with using the HHW Quick Translator was that all HHW programs receive items that either don't have legible labels or that are not in their original containers. This is particularly true for paints and coatings and for motor oil. The question was then whether these items could be identified for the purposes of using the HHW QT.

Of the 607 items that didn't have legible symbols on the label or were not in their original containers, it was possible to determine by product type or characteristics that 90% were either caught or not caught by the HHW QT. It should be pointed out that it was with the help of site staff or on data entry that this determination was made.

6.6.1 Use of HHW QT by site personnel

HHW site operators must differentiate items received based on MOE waste classes and disposal contractors' criteria. A review of Table 6.2

indicates that a number of waste classes (alkyd paint, oil, oil filters, propane tanks and cylinders, fluorescent lamps, syringes and gas cylinders) are universally captured by the HHW QT, and are readily classified.

The issues arise with the waste classes that may be packed differently depending on the contractor (e.g., some requiring solvent based paints to be packed separately from other solvent based coatings), and with those waste classes that have a combination of items, some of which may be caught by the QT, and others that aren't.

This latter issue is particularly true for waste classes that are bulked—antifreeze and flammables/miscellaneous organics, in particular. Would it be feasible to determine whether an item is caught by the QT and bulk it separately from one that is not? Given that antifreeze is generally bulked into 500 litre (or more) tanks, it is unlikely that a site would be able or willing to bulk into two separate tanks, based on whether the antifreeze is methylene glycol (caught by HHW QT, hazard symbol) or propylene glycol, (not caught by HHW QT, no hazard symbol).

For those sites that bulk flammables into 205 litre drums (five in the present study), the requirements for separate containers may not pose the same space requirements as for antifreeze tanks, but the additional staff time to run two bulking operations may be excessive.

The remaining waste classes that have a combination of "caught/not caught" items are pesticides, oxidizers, acids, bases and pharmaceuticals. Some of these posed confusion during the study as to what was caught and what was not caught. In particular, the differentiation between corrosives of one litre or less and designed in their use to go down the drain sparked debate and was considered somewhat subjective. This applied to 49 items.

The "caution" qualifier accompanying the poison symbol led to some initial confusion on the part of recording staff, and which could be reflected in broader use. This applied to 42 items.

It is unlikely that the "recorder error" discussed in Section 6.2 (7% converted to "yes," 5.5% converted to "no" on data entry) is an accurate reflection of how effectively the HHW QT might be used in a real operation. It more likely reflects a brief learning curve that site personnel might experience.

6.6.2 Use of HHW QT by the public

As noted earlier, some programs already recommend the use of hazard symbols on product packaging to guide residents on what to bring to HHW programs. Examples of product types tend to supplement this educational material.

If residents were to use the HHW QT, much of it would be an extension of what they now do, since many people appear to segregate items based on the presence of hazard symbols (including the explosive symbol). There would likely be some confusion surrounding the qualifiers for poisons and corrosives. There could also be uncertainty with illegible labels and items no longer in their original containers. While it is not possible to substantiate this, it is likely most people would tend to err on the side of caution and continue to bring “questionable” items to HHW sites.

The larger question becomes: is there a big enough difference between what is received at HHW sites and what is captured by the HHW QT to merit significant effort to change public behaviour?

6.6.3 Discussion and Recommendations

It is recognised that programs now receive and will continue to receive a range of household special waste items (HSW—includes, e.g., latex paint, pharmaceuticals, alkaline household batteries), a subset of which is household hazardous waste (HHW—as identified by the CSA Standard). It is also acknowledged that it is in no one’s interest to collect items through these programs if they don’t require segregation or special handling.

Under an industry funded stewardship program, industry will need to know precisely “what is in and what is out” in order to collect fees from brand owners or manufacturers whose products or residuals require special handling.

Since the CSA standard needs to be rendered “usable” for consumers and site staff, what did the study indicate on how the HHW Quick Translator performed?

The following chart summarises some of the study observations and provides recommendations.

Observations

- It was found that the HHW QT had to be modified to explicitly include solvent based paints and coatings, and fuels.
- It was found that, with latex paint and alkaline household removed from the total, the HHW QT captured 86.2% of all of the items received.
- It was found that the HHW QT did not catch a small group of older hazardous products that did not have hazard symbols on the labels.
- It was found that the HHW QT itself did not catch some 600 items without legible labels or that were not in their original containers, but that 90% of these were identifiable by product type or by site staff.
- It was found that some waste classes have a combination of items, some of which are caught by the HHW QT, some of which are not.

Recommendations

- Latex paint and coatings would need to be added as a “listed” non-hazardous item or special waste. This material is easily identified by the public and site staff;
- Vehicle batteries with intact labels are caught by the HHW QT. However, since it was found that many no longer have labels, it may be necessary to provide the public with supplemental information;
- The same is true for propane tanks and cylinders without labels;
- Unlabelled material (often motor oil and solvents) is largely captured by the “other” category of listed items on the HHW Quick Translator. This material is usually identifiable by the resident or site staff;
- Old material that predates hazard labelling—it is likely that residents will continue to bring these items into programs and therefore site staff would need to determine how to classify. These items would comprise the “historical waste” that will continue to make up a small portion of programs;
- For non hazardous antifreeze (propylene glycol), programs may opt to continue to receive this material or educate residents on alternative means of disposal.

For those items not requiring special management, a determination needs to be made on whether their proportion relative to the total amount of material received warrants special consumer education vs. continuing to handle these items as an unfunded portion of HSW.

It appears likely that the information conveyed by the HHW QT can be supplemented in various promotional and educational media to assist consumers/residents in understanding what they should be doing with specific materials once they no longer have a use for them.

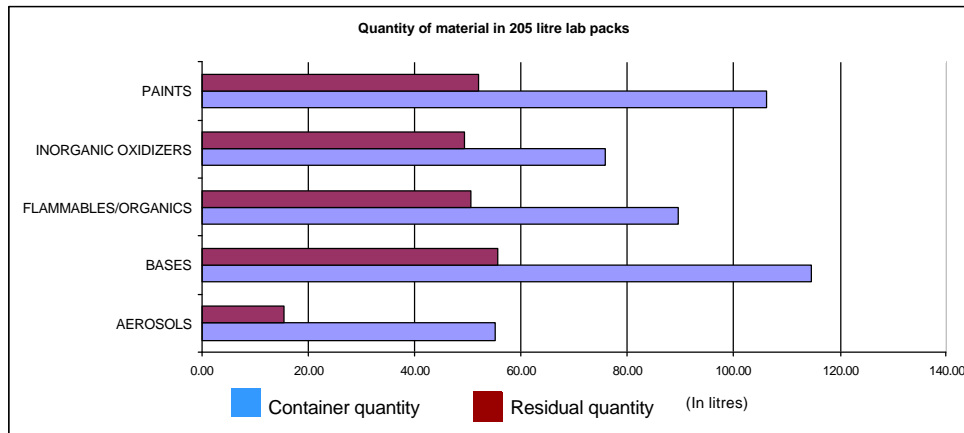
7.0 Outbound Materials— Categorisation Study Results

During the composition study, and as time permitted, already packed shipping containers (lab packs) were examined to record the product type, name, container size and fullness, and brand

owner for all of the items in the containers.

A total of 14 lab packs were evaluated at sites in Peel, Halton, Niagara and Essex-Windsor. These included oxidizers (1), paint (3), bases (1), dry cell batteries (2), flammables/miscellaneous organics (6), and aerosols (1). Figure 7.1 summarises total container and residual quantities in each of the lab packs (excluding dry cell batteries which were reported as a single lab pack weight).

Figure 7.1 Residual and container volumes



Detailed information on the individual product types in the different lab packs is provided in Tables 7.1– 7.5

Table 7.1 Product types in flammables/miscellaneous organics lab pack (6 drums sampled)

Product description	No. of items	Total container quantity (L or Kg)	Total residual quantity (L or Kg)	Amount remaining in container
DRIVEWAY SEALER	4	64.00	40.50	63.28%
STAIN	21	57.20	31.06	54.30%
UNKNOWN	14	53.33	46.39	87.00%
ALKYD PAINT	17	43.38	27.59	63.61%
RESIN OR SEALER	6	42.85	12.48	29.13%
TAR OR ROOFING PATCH	4	37.78	11.95	31.62%
FUEL	2	29.00	12.50	43.10%
SPECIALITY PAINTS	6	27.54	14.33	52.02%
FILLER (MISC.)	16	21.33	11.98	56.15%
PRIMER SEALER	6	20.16	18.14	90.00%
PAINT REMOVER OR THINNER	8	19.23	9.31	48.41%
WOOD FINISH	14	19.14	11.81	61.69%
WATER REPELLANT	5	17.25	10.68	61.95%
MOTOR OIL	7	13.00	10.50	80.77%
ADHESIVE	6	11.20	5.00	44.64%
VARNISH	7	8.76	2.60	29.69%
RUST OR METAL PAINT	9	7.91	3.04	38.39%
POLISH OR WAX	6	6.81	4.05	59.50%
OTHER	4	5.24	4.50	85.94%
CONTACT CEMENT	3	5.08	1.27	25.00%
WINDSHIELD WASHER FLUID	1	5.00	1.25	25.00%
LATEX PAINT	2	4.85	3.42	70.64%
LIQUID PLASTIC	5	4.69	2.14	45.52%
SOLVENT (MISC.)	1	4.00	2.00	50.00%
WOOD PRESERVATIVE	1	4.00	2.00	50.00%
LUBRICANTS	6	1.73	1.23	71.19%
ANTIFREEZE	1	1.00	1.00	100.00%
LINSEED OIL	1	1.00	0.50	50.00%
TRANSMISSION FLUID	1	0.95	0.47	50.00%
GLUE	1	0.47	0.35	75.00%
TOTALS	185	537.86	304.05	N/A
TOTALS/AVG PER DRUM	30.83	89.64	50.67	56.53%

Table 7.2 Product types in paint lab pack (latex or oil) (3 drums sampled)

Product description	No. of items	Total container quantity (L or Kg)	Total residual quantity (L or Kg)	Amount remaining in container
LATEX PAINT	94	310.97	151.15	48.60%
PRIMER SEALER	2	7.57	4.73	62.48%
TOTALS	96	318.54	155.88	
TOTALS/AVG PER DRUM	32	106.18	51.96	48.93%

Table 7.3 Product types in base lab pack (1 drum sampled)

Product description	No. of items	Total container quantity (L or Kg)	Total residual quantity (L or Kg)	Amount remaining in container
CLEANERS	30	25.74	12.69	49.30%
OTHER	7	21.30	5.93	27.82%
FILLER (MISC.)	8	21.27	12.90	60.63%
DE-ICER	4	21.00	12.25	58.33%
BLEACH	4	10.00	3.00	30.00%
PAINT REMOVER/THINNER	1	3.79	2.84	75.00%
DESCALER	6	3.41	1.71	50.04%
METAL CLEANER/POLISH	10	2.82	1.51	53.52%
DRAIN OPENER	2	1.41	0.60	42.74%
INSECTICIDE	1	1.00	0.25	25.00%
WAX STRIPPER	1	1.00	0.50	50.00%
AMMONIA	1	0.97	0.97	100.00%
POOL CHEMICAL	1	0.65	0.33	50.00%
UNKNOWN	2	0.20	0.10	50.00%
TOTALS/AVG PER DRUM	78	114.56	55.56	48.50%

Table 7.4 Product types in oxidizer lab pack (1 drum sampled)

Product description	No. of items	Total container quantity (L or Kg)	Total residual quantity (L or Kg)	Amount remaining in container
FERTILIZER	11	42.44	26.09	61.48%
POOL CHEMICAL	5	16.50	10.50	63.64%
MIXED PEST AND FERT	5	13.00	9.75	75.00%
OTHER	3	2.00	2.00	100.00%
UNKNOWN	1	2.00	1.00	50.00%
TOTALS/AVG PER DRUM	25	75.94	49.34	64.98%

Table 7.5 Product types in aerosol lab pack (1 drum sampled)

Product description	No. of items	Container quantity (L or Kg)	Residual quantity (L or Kg)	Amount remaining in container
SPRAY PAINT	34	11.09	4.69	42.26%
RUST OR METAL PAINT	29	9.59	2.43	25.31%
ALKYD PAINT	4	1.36	1.02	75.00%
LUBRICANTS	13	3.52	0.89	25.40%
POLISH OR WAX	3	1.14	0.69	60.73%
ADHESIVE	2	0.82	0.57	68.98%
SPECIALITY PAINTS	14	4.15	0.52	12.51%
INSECTICIDE	5	1.63	0.49	30.00%
OTHER	5	1.99	0.45	22.82%
RESIN OR SEALER	3	0.75	0.45	60.21%
SHOE CARE PRODUCTS	7	1.35	0.45	33.25%
ARTIST CRAFT PAINT	12	1.92	0.44	22.87%
VARNISH	2	0.68	0.43	63.83%
CLEANERS	7	2.99	0.42	14.15%
LATEX PAINT	2	0.54	0.37	68.52%
FUEL	4	0.89	0.28	31.97%
CARBURETOR CLEANER	2	0.64	0.24	37.89%
LIQUID PLASTIC	3	0.98	0.24	24.46%
HIGH HEAT PAINT	1	0.25	0.13	50.00%
PROPANE CYLINDER	11	4.46	0.12	2.61%
ISOCYANATES	1	0.33	0.08	25.00%
PRIMER SEALER	8	2.51	0.00	0.00%
SOLVENT (MISC.)	1	0.39	0.00	0.00%
TOILETRIES	5	1.11	0.00	0.00%
TOTALS/AVG PER DRUM	178	55.06	15.40	27.97%

Appendix 1 Detailed list of items not caught by the HHW QT

This is a separate file that accompanies the pdf version of this report. If you did not receive the excel file with this report, contact the AMRC at amrc@golden.net

Appendix 2 Composition by Individual Product Category/MOE Waste Class

Bar graphs in Figures A.2.a to A.2.k provide relative quantities of the most commonly found product types for each material category/waste class.

Tables A.2.1 to A.2.11 indicate total quantities of all products in each class, also indicating those caught by the HHW Quick Translator.

Figure A.2.a Highest quantity product types in acid category

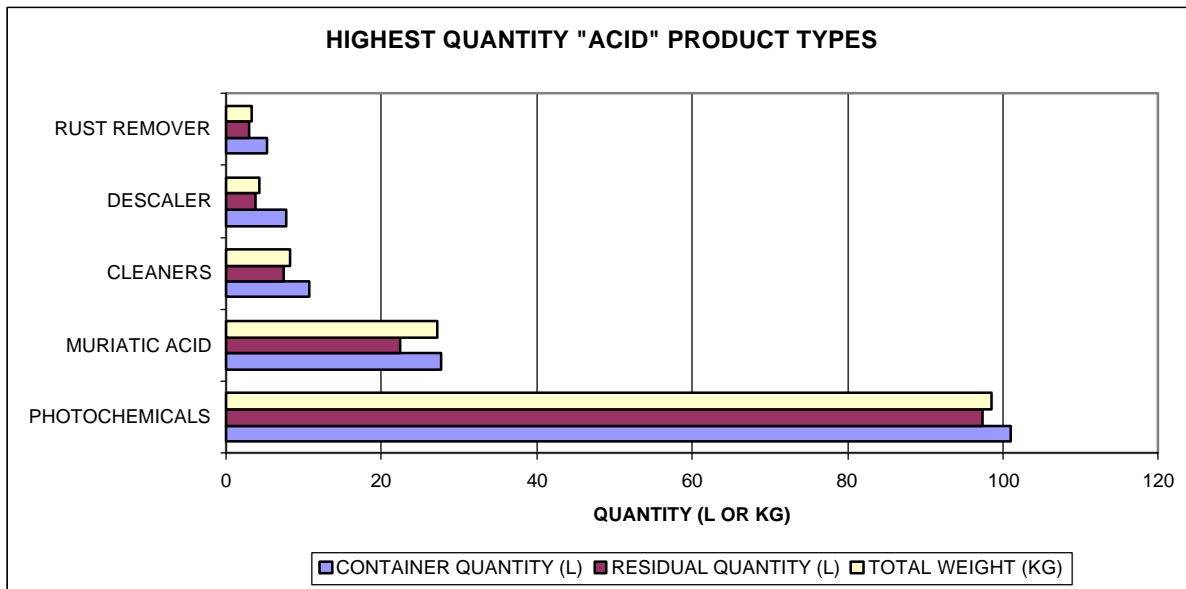


Table A.2.1 Product types in acid category

PRODUCT TYPE	NO. OF ITEMS	CONTAINER QUANTITY (L)	RESIDUAL QUANTITY (L)	TOTAL WEIGHT (KG)	CAUGHT BY QT	
					NO. OF ITEMS	PERCENT OF ITEMS
PHOTOCHEMICALS	13	101.1	97.3	98.54	2	15.4
MURIATIC ACID	13	27.6	22.5	27.13	9	69.2
CLEANERS	14	10.7	7.4	8.13	5	35.7
DESCALER	14	7.8	3.7	4.24	0	0.0
RUST REMOVER	11	5.2	2.9	3.23	9	81.8
METAL CLEANER	14	3.3	2.4	3.26	7	50.0
POOL CHEMICAL	2	2.4	0.6	0.48	0	0.0
OTHER	6	1.5	0.6	0.97	3	50.0
UNKNOWN	1	1	0.3	0.31	0	0.0
NON PRESCRIPTION DRUG	2	0.8	0.5	0.69	0	0.0
POLISH OR WAX	1	0.4	0	0.14	0	0.0
FILLER (MISC.)	2	0.4	0.3	0.38	0	0.0
DISINFECTANT	1	0.3	0.1	0.16	0	0.0
FERTILIZER	1	0.02	0.01	0.05	0	0.0
SHOE CARE PRODUCTS	1	0.02	0.01	0.05	0	0.0
TOTAL/AVERAGE	96	162	139	148	35	36.5

Figure A.2.b Highest quantity product types in base category

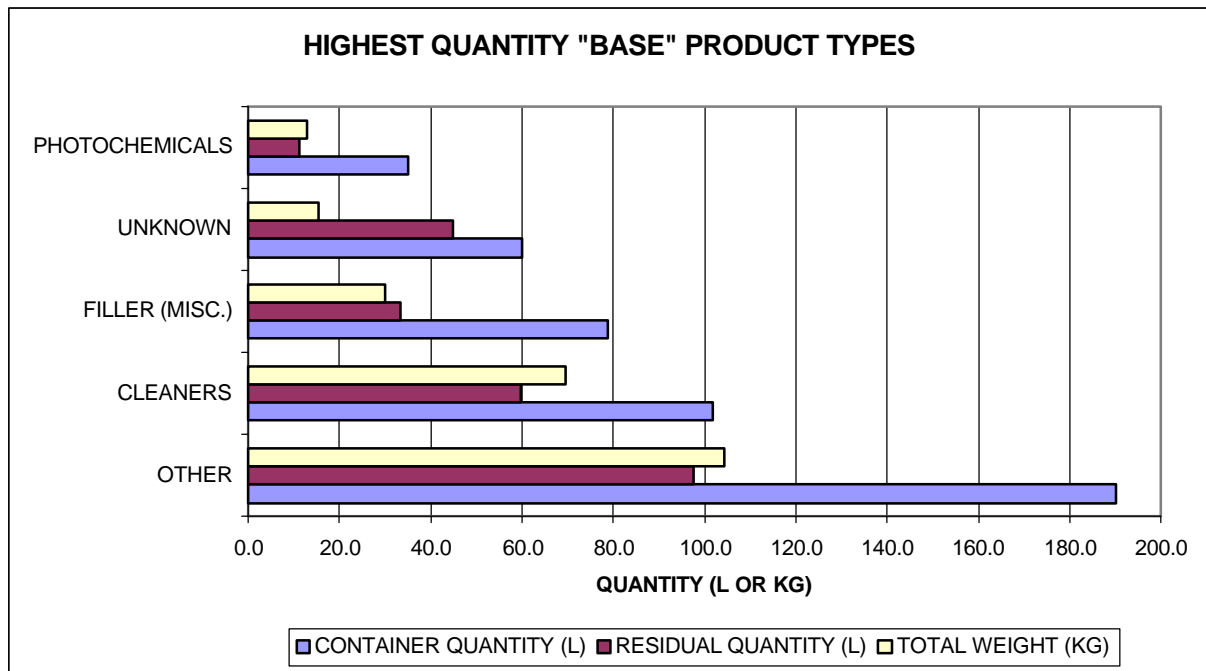


Table A.2.2 Product types in base category

PRODUCT TYPE	NO. OF ITEMS	CONTAINER QUANTITY (L)	RESIDUAL QUANTITY (L)	TOTAL WEIGHT (KG)	CAUGHT BY QT	
					NO. OF ITEMS	PERCENT OF ITEMS
OTHER	11	190.0	97.6	104.3	6.0	54.5
CLEANERS	99	101.8	59.7	69.5	38.0	38.4
FILLER (MISC.)	22	78.8	33.5	29.9	6.0	27.3
UNKNOWN	2	60.0	45.0	15.4	0.0	0.0
PHOTOCHEMICALS	9	35.1	11.2	12.9	0.0	0.0
DRAIN OPENER	13	9.4	6.1	6.5	1.0	7.7
AMMONIA	7	8.8	4.6	5.0	3.0	42.9
POOL CHEMICAL	2	7.6	5.2	4.5	6.0	300.0
WAX STRIPPER	9	7.2	3.9	4.6	2.0	22.2
RESIN OR SEALER	1	5.0	5.0	7.5	0.0	0.0
METAL CEMENT	2	2.5	1.0	0.9	0.0	0.0
ADHESIVE	2	2.0	1.5	1.4	0.0	0.0
TOTAL/AVERAGE	179	508	274	262	62	34.6

Figure A.2.c Highest quantity product types in household battery category

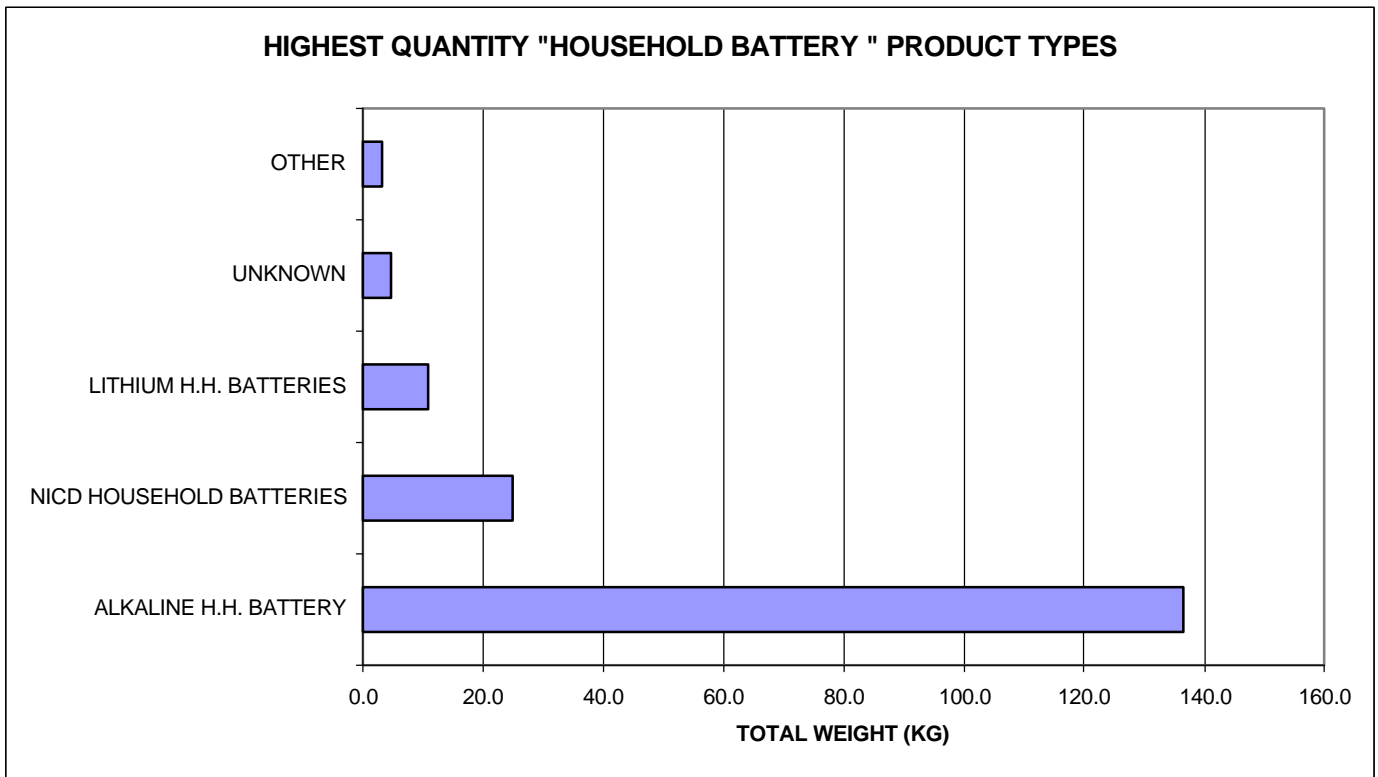


Table A.2.3 Product types in household battery category

PRODUCT TYPE	NO. OF ITEMS	TOTAL WEIGHT (KG)	CAUGHT BY QT	
			NO. OF ITEMS	PERCENT OF ITEMS
ALKALINE H.H. BATTERY	1,592	136.4	0	0.0%
NICD HOUSEHOLD BATTERIES	108	25.1	108	100.0%
LITHIUM H.H. BATTERIES	56	10.9	0	0.0%
UNKNOWN	9	4.7	0	0.0%
OTHER	9	3.3	0	0.0%
BUTTON BATTERY	32	0.2	0	0.0%
TOTAL	1,806	181	108	

Figure A.2.d Highest quantity product types in flammables/miscellaneous organics category

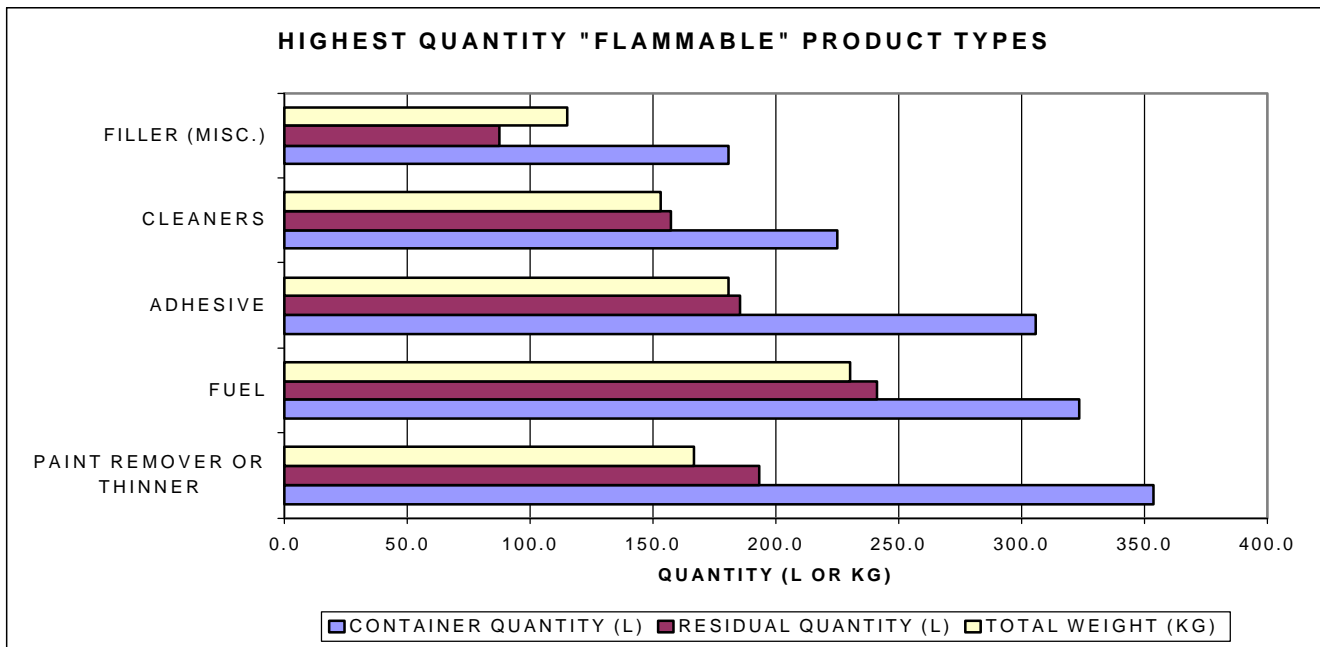


Table A.2.4 Product types in flammables category

PRODUCT TYPE	NO. OF ITEMS	CONTAINER QUANTITY (L)	RESIDUAL QUANTITY (L)	TOTAL WEIGHT (KG)	CAUGHT BY QT	
					NO. OF ITEMS	PERCENT OF ITEMS
PAINT REMOVER OR THINNER	168	353.3	193.2	166.5	168	100.0
FUEL	123	323.5	240.9	230.5	122	99.2
ADHESIVE	153	305.7	185.3	180.7	42	27.5
CLEANERS	207	224.7	157.3	153.1	70	33.8
FILLER (MISC.)	150	180.6	87.4	114.9	19	12.7
TRANSMISSION FLUID	54	131.1	100.9	98.1	54	100.0
TAR OR ROOFING PATCH	46	118.3	65.0	69.9	4	8.7
SOLVENT (MISC.)	37	117.2	75.2	75.2	15	40.5
UNKNOWN	60	110.7	67.2	69.0	5	8.3
POLISH OR WAX	137	102.7	60.8	88.6	28	20.4
LUBRICANTS	125	90.3	52.0	54.1	125	100.0
WINDSHIELD WASHER FLUID	24	84.9	37.7	0.0	19	79.2
OTHER	45	63.7	43.2	34.2	13	28.9
GLUE	23	53.1	20.5	13.6	3	13.0
RESIN OR SEALER	57	51.2	39.5	45.7	41	71.9
MINERAL SPIRITS	3	25.0	15.3	17.1	21	700.0
STUCCO	8	22.9	16.2	42.9	29	362.5
BRAKE FLUID	41	21.1	15.6	14.6	15	36.6
CONTACT CEMENT	31	20.5	7.1	13.5	5	16.1
POWER STEERING FLUID	29	17.1	10.1	20.4	19	65.5
TOILETRIES	57	16.2	7.6	10.7	20	35.1
UNDERCOATING	7	12.4	7.8	7.5	2	28.6
SHOE CARE PRODUCTS	62	9.6	5.9	9.1	4	6.5
GASLINE ANTIFREEZE	35	7.9	4.2	6.1	8	22.9
DISINFECTANT	6	6.8	3.8	4.2	0	0.0
DE-ICER	16	4.6	3.1	3.5	0	0.0
AIR FRESHENER	16	3.6	1.4	2.5	1	6.3
CARBURETOR CLEANER	9	3.3	1.7	2.5	0	0.0
INKS	4	3.0	3.0	2.6	0	0.0
NON PRESCRIPTION DRUG	1	0.5	0.4	0.6	0	0.0
PHOTOCHEMICALS	1	0.5	0.2	0.5	0	0.0
INSECTICIDE	1	0.4	0.4	0.3	0	0.0
TOTAL	1,736	2,486.6	1,530.2	1,552.8	852	

Figure A.2.e Highest quantity product types in coatings: alkyd solvent category

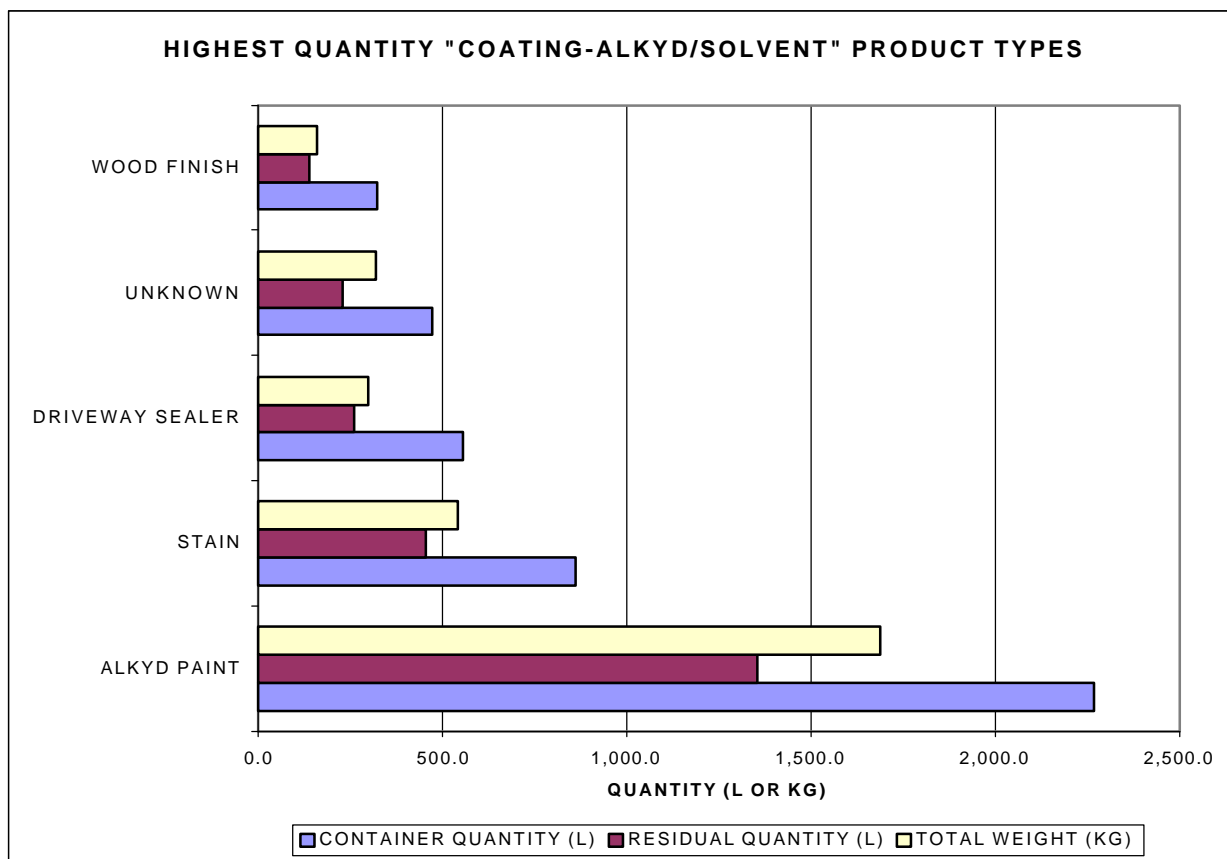


Table A.2.5 Product types in coatings: alkyd-solvent category

PRODUCT TYPE	NO. OF ITEMS	CONTAINER QUANTITY (L)	RESIDUAL QUANTITY (L)	TOTAL WEIGHT (KG)	CAUGHT BY QT	
					NO. OF ITEMS	PERCENT OF ITEMS
ALKYD PAINT	938	2,267.3	1,354.8	1,689.3	938	100.0
STAIN	327	860.7	455.0	543.1	327	100.0
DRIVEWAY SEALER	41	557.8	262.3	298.7	41	100.0
UNKNOWN	156	474.7	228.9	319.4	156	100.0
WOOD FINISH	177	324.2	139.3	160.2	177	100.0
VARNISH	185	279.9	136.1	161.4	185	100.0
WATER REPELLANT	48	191.2	77.5	83.9	48	100.0
RUST OR METAL PAINT	215	178.5	101.0	124.8	215	100.0
PRIMER SEALER	56	119.3	48.9	65.2	56	100.0
CONCRETE WATER SEALER	13	111.4	52.0	53.4	13	100.0
LIQUID PLASTIC	66	97.1	60.3	69.6	66	100.0
SPRAY PAINT	301	92.7	49.6	78.0	301	100.0
WOOD PRESERVATIVE	27	90.8	55.5	56.3	27	100.0
SPECIALITY PAINTS	62	88.7	50.0	58.3	62	100.0
WALL PAPER PREP	31	28.6	18.2	21.0	31	100.0
ENAMEL	18	28.0	17.2	22.2	18	100.0
LAQUER	10	22.9	6.4	8.2	10	100.0
LINSEED OIL	10	9.5	7.7	6.9	10	100.0
OTHER	5	8.3	6.2	11.6	5	100.0
HIGH HEAT PAINT	8	3.5	1.2	2.2	8	100.0
ARTIST CRAFT PAINT	8	1.0	0.4	0.9	8	100.0
TOILETRIES	19	0.3	0.2	1.2	19	100.0
TOTAL	2,550	5,645.6	3,021.4	3,703.3	2,550	

Figure A.2.f Highest quantity product types in coatings: latex category

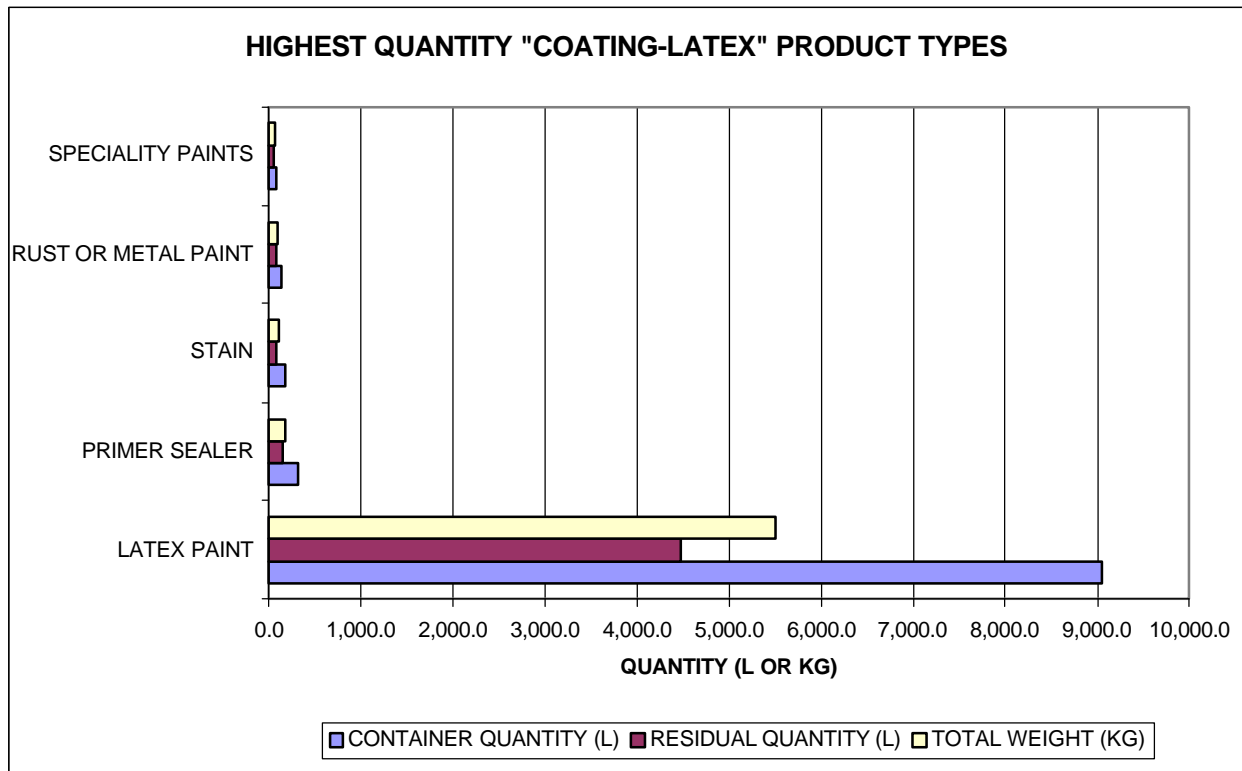


Table A.2.6 Product types in coatings: latex category

PRODUCT TYPE	NO. OF ITEMS	CONTAINER QUANTITY (L)	RESIDUAL QUANTITY (L)	TOTAL WEIGHT (KG)	CAUGHT BY QT	
					NO. OF ITEMS	PERCENT OF ITEMS
LATEX PAINT	2,847	9,041.9	4,472.2	5,505.1	0	0.0
PRIMER SEALER	119	322.6	145.2	179.2	0	0.0
STAIN	78	179.9	85.7	106.7	0	0.0
RUST OR METAL PAINT	131	136.1	76.6	95.7	0	0.0
SPECIALITY PAINTS	58	81.7	48.4	64.1	0	0.0
ENAMEL	28	77.6	45.8	51.6	0	0.0
WOOD FINISH	25	51.3	33.4	0.0	0	0.0
LIQUID PLASTIC	27	33.9	26.1	32.9	0	0.0
VARNISH	21	25.0	11.9	0.0	0	0.0
OTHER	6	21.3	0.0	2.3	0	0.0
SPRAY PAINT	60	19.0	10.9	16.8	0	0.0
LAQUER	4	13.3	9.4	8.7	0	0.0
UNKNOWN	3	12.0	4.0	5.9	0	0.0
ARTIST CRAFT PAINT	30	6.6	3.4	8.2	0	0.0
WOOD PRESERVATIVE	1	4.0	1.0	0.0	0	0.0
HIGH HEAT PAINT	4	2.1	1.0	1.4	0	0.0
WATER REPELLANT	1	1.3	0.9	0.0	0	0.0
TOTAL	3,443	10,029.7	4,975.7	6,078.6	0	0

Figure A.2.g Highest quantity product types in oxidizer category

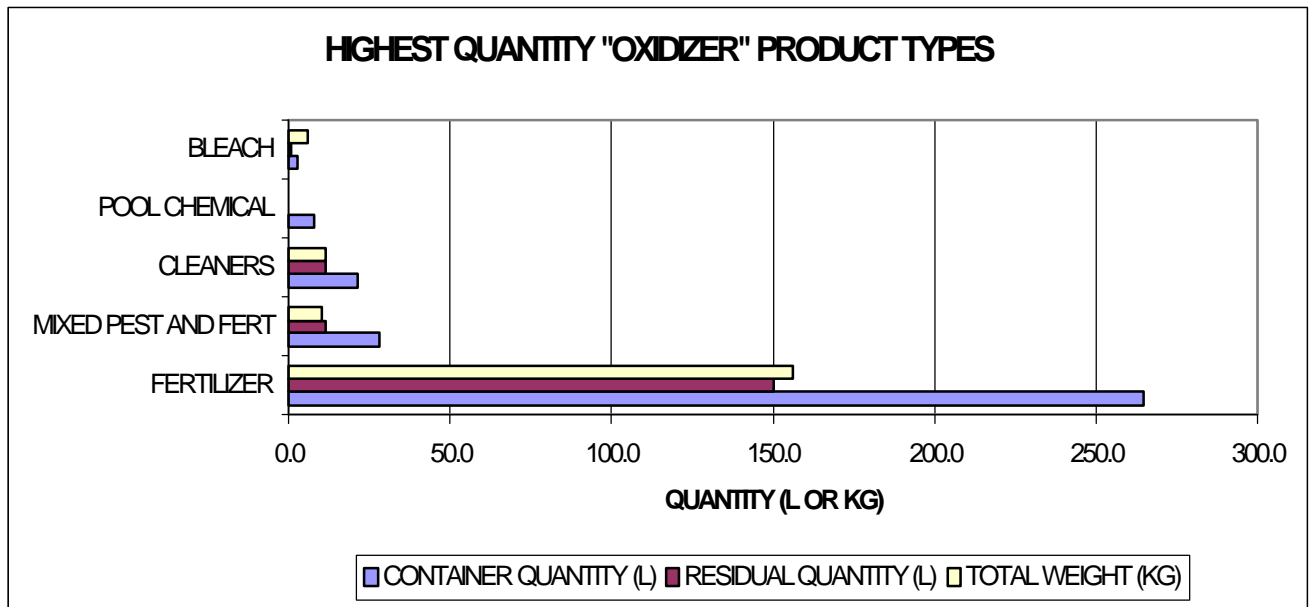


Table A.2.7 Product types in oxidizer category

PRODUCT TYPE	NO. OF ITEMS	CONTAINER QUANTITY (L)	RESIDUAL QUANTITY (L)	TOTAL WEIGHT (KG)	CAUGHT BY QT	
					NO. OF ITEMS	PERCENT OF ITEMS
FERTILIZER	49	264.4	150.1	156.2	2	4.1
MIXED PESTICIDE AND FERTILIZER	8	28.1	11.7	10.4	0	0.0
CLEANERS	34	21.5	11.5	11.8	7	20.6
POOL CHEMICAL	1	8.0	0.0	0.0	1	100.0
BLEACH	3	3.0	0.8	5.9	0	0.0
HARDENER	7	2.6	2.5	2.2	0	0.0
ADHESIVE	1	1.0	0.8	0.9	0	0.0
HERBICIDE	1	1.0	0.8	0.7	0	0.0
FILLER (MISC.)	3	0.9	0.7	1.0	0	0.0
TOTAL/AVERAGE	107	330	179	189	10	9.3

Figure A.2.h Highest quantity product types in pesticide category

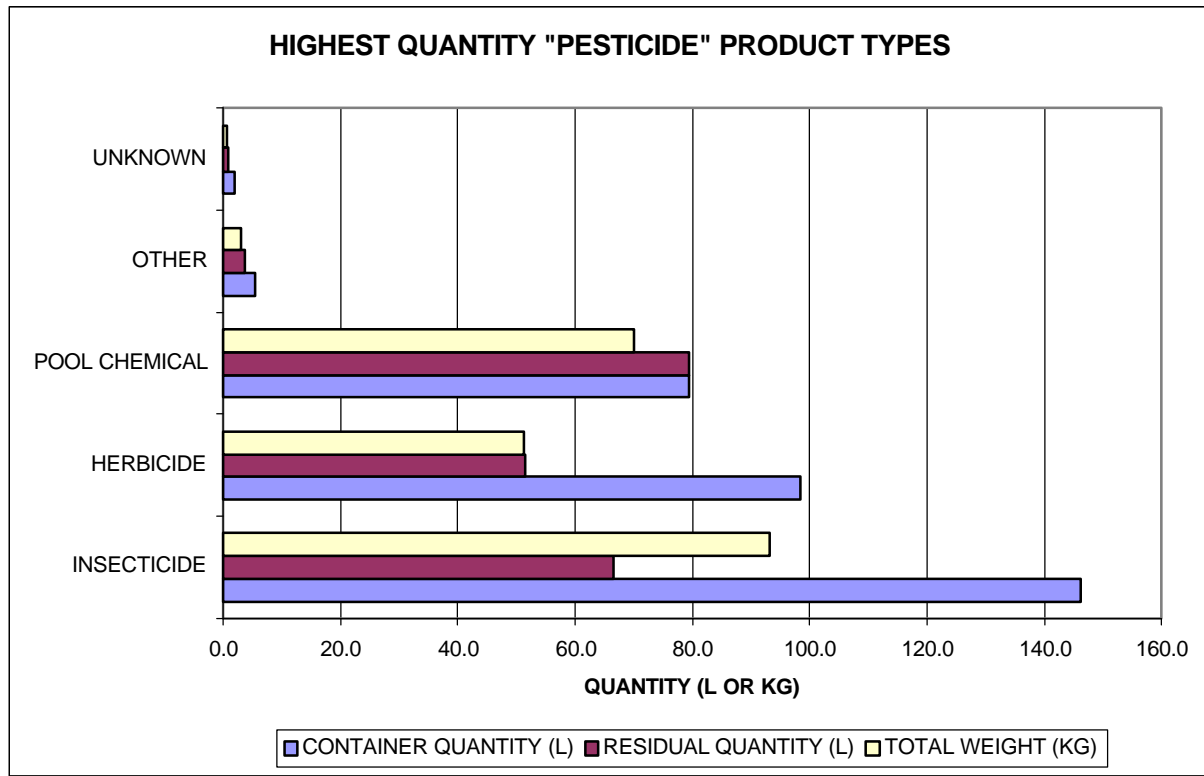


Table A.2.8 Product types in pesticide category

PRODUCT TYPE	NO. OF ITEMS	CONTAINER QUANTITY (L)	RESIDUAL QUANTITY (L)	TOTAL WEIGHT (KG)	CAUGHT BY QT	
					NO. OF ITEMS	PERCENT OF ITEMS
INSECTICIDE	257	146.2	66.6	93.2	105	40.9
HERBICIDE	54	98.4	51.5	51.2	5	9.3
POOL CHEMICAL	35	79.5	79.5	70.0	0	0.0
OTHER	9	5.4	3.6	3.0	1	11.1
UNKNOWN	1	2.0	1.0	0.7	0	0.0
TOTAL/AVERAGE	356	331.5	202.1	218.1	111	31.2

Figure A.2.i Highest quantity product types in “other” category

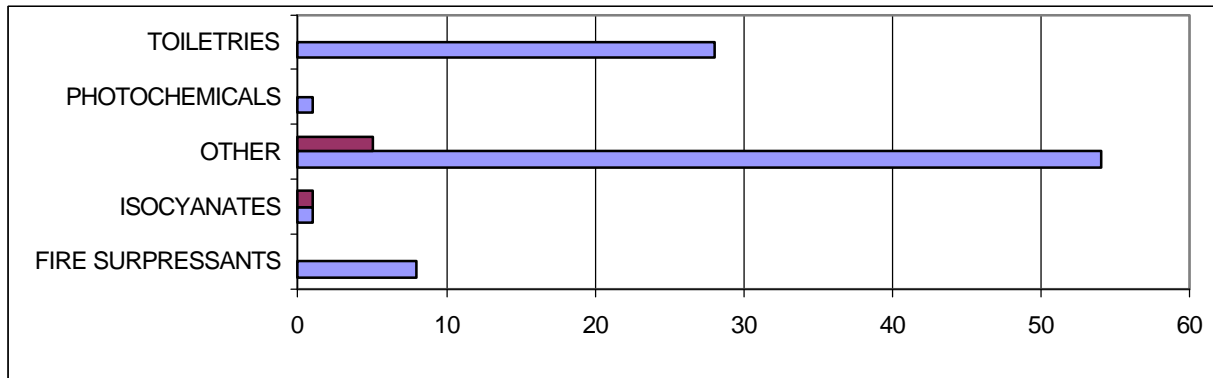


Table A.2.9 Product types in “other” category

PRODUCT TYPE	NO. OF ITEMS	NO. OF ITEMS CAUGHT BY QT
FIRE SURPRESSANTS	8	0
ISOCYANATES	1	1
OTHER	54	5
PHOTOCHEMICALS	1	0
TOILETRIES	28	0
	92	6

EXAMPLES OF WHAT'S IN "OTHER-OTHER"

- ANTI SPLATTER NOZEL SHIELD FOR MIG WELDING GUN
- ASBESTOS
- BAKING POWDER
- BONE MEAL
- BRITA ON TAP FAUCET FILTER SYSTEM
- COOKING OIL
- CROWN ROYAL (IN BAG)
- DRINKING WATER TABLETS
- INCANDESCENT LIGHT BULB
- MARKING CHALK
- MATCHES
- REMNANTS OF HOME CHEM SET
- SMALL CHRISTMAS LIGHTS-9 SETS
- SMOKE DETECTOR
- SOLDERLESS CABLE TIE WRAPS
- STUMP REMOVER
- THERMOSTAT (HG SWITCH)
- TONER CARTRIDGE

Figure A.2.j Highest quantity product types in aerosol category

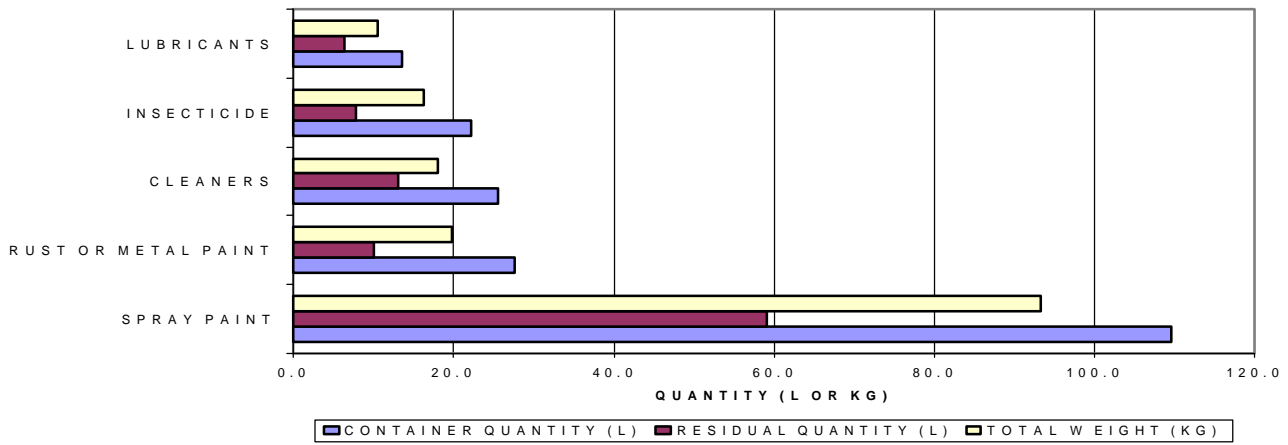
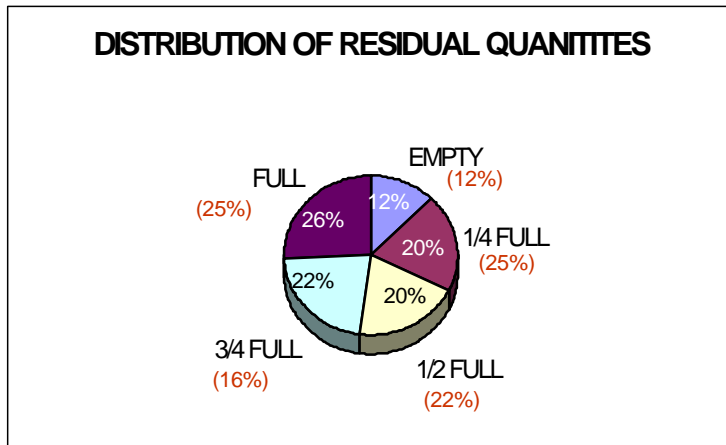


Table A.2.10 Product types in aerosol category

PRODUCT TYPE	NO. OF ITEMS	CONTAINER QUANTITY (L)	RESIDUAL QUANTITY (L)	TOTAL WEIGHT (KG)	CAUGHT BY QT	
					NO. OF ITEMS	PERCENT OF ITEMS
SPRAY PAINT	354	109.6	59.1	93.2	294	83.1
RUST OR METAL PAINT	79	27.6	10.0	19.7	70	88.6
CLEANERS	58	25.4	13.0	18.0	31	53.4
INSECTICIDE	62	22.1	7.8	16.3	33	53.2
LUBRICANTS	45	13.5	6.3	10.4	45	100.0
OTHER	23	8.2	2.7	4.7	10	43.5
VARNISH	22	6.9	2.5	0.0	22	100.0
TOILETRIES	22	5.9	1.2	0.0	12	54.5
RESIN OR SEALER	14	5.8	4.4	6.0	9	64.3
SPECIALITY PAINTS	21	5.7	1.0	3.3	13	61.9
SHOE CARE PRODUCTS	20	4.2	2.6	3.8	4	20.0
PRIMER SEALER	10	3.4	2.1	3.3	12	120.0
AIR FRESHENER	13	3.0	1.1	2.0	6	46.2
FUEL	13	2.8	1.4	2.3	8	61.5
HIGH HEAT PAINT	8	2.8	0.8	1.6	6	75.0
ALKYD PAINT	8	2.7	1.0	2.3	0	0.0
POLISH OR WAX	8	2.4	1.1	1.6	6	75.0
FIRE SURPRESSANTS	1	1.9	1.9	1.4	5	500.0
WATER REPELLANT	6	1.9	1.1	0.0	4	66.7
LAQUER	6	1.8	0.8	1.4	3	50.0
CARBURETOR CLEANER	5	1.7	0.5	1.0	3	60.0
ADHESIVE	5	1.5	0.4	0.7	3	60.0
UNDERCOATING	3	1.4	0.8	0.0	2	66.7
ENAMEL	4	1.4	0.4	0.9	3	75.0
DISINFECTANT	3	1.1	0.2	0.4	5	166.7
TAR OR ROOFING PATCH	2	1.1	0.0	0.3	5	250.0
LIQUID PLASTIC	3	1.0	0.9	1.2	0	0.0
ARTIST CRAFT PAINT	6	1.0	0.4	0.8	1	16.7
UNKNOWN	3	1.0	0.0	0.0	1	33.3
SOLVENT (MISC.)	2	0.9	0.6	0.6	1	50.0
DE-ICER	3	0.6	0.2	0.4	1	33.3
PAINT REMOVER /THINNER	1	0.4	0.4	0.5	1	100.0
WOOD FINISH	1	0.3	0.3	0.0	1	100.0
ISOCYANATES	1	0.3	0.3	0.3	1	100.0
DRAIN OPENER	1	0.2	0.0	0.1	0	0.0
CONTACT CEMENT	1	0.2	0.0	0.3	0	0.0
WINDSHIELD WASHER FLUID	1	0.2	0.1	0.0	0	0.0
NON PRESCRIPTION DRUG	1	0.2	0.0	0.1	0	0.0
TOTAL	839	271.9	127.4	198.7	621	

Appendix 3 Residual container volume

Figure A.3.a Residual container volume



Bracketed red figures are 2001 study results

Residual container volume was estimated for each packaged item and allows for calculation of an “average” container fullness of 59%. The fullest containers by category are oil and anti-freeze (do-it-yourselfers generally fill an empty container when changing oil or antifreeze), followed by pesticides and acids.

Residual	Number of items
EMPTY	1,271
1/4 FULL	2,045
1/2 FULL	2,030
3/4 FULL	2,269
FULL	2,632
	10,247

Container type by Product Category/Waste Class

Metal containers were found to be the predominant packaging type, followed by plastic. Note the

similarity between these and the 2001 and 1995 study results.

Table A.3.1 Container type

CATEGORY	AEROSOL	CAN	GLASS	OTHER	PLASTIC
ACID	2	19	7	2	66
ANTIFREEZE	0	3	0	0	109
BASE	19	20	6	23	103
COATINGS ALKYD	445	2,070	37	13	86
COATINGS LATEX	74	3,155	28	29	76
FLAMMABLES	211	607	68	64	698
OIL	0	33	6	1	975
OTHER	10	1	8	4	40
OXIDIZERS	1	6	0	15	74
PESTICIDES	62	34	30	43	179
PHARMACEUTICALS	1	1	16	21	38
UNKNOWN	1	35	36	0	27
TOTAL NO. OF ITEMS	826	5,984	242	215	2,471
PERCENT OF TOTAL NO. OF ITEMS	8.5	61.4	2.5	2.2	25.4
(2001 STUDY)	7.1	61.9	2.6	2.2	26.1
(1995 STUDY)	10.8	54.1	3.0	15.6	17.5

Appendix 4 Reuse Activities

Paints and coatings (latex, alkyd, stains, spray paints and primer sealers) are the most commonly reused category by number of items.

Table A.4.1 Reuse activities by product type

Product type	No. of reused items	Avg. container quantity (L)	Avg. residual quantity (L)	Residual as % of container quantity	Total weight (reported) re-used (KG)	Percent reused by weight	No. of reused items caught by QT	Percent of number of reused items caught by QT
ADHESIVE	14	1.3	1.2	89.1	16.1	8.9	3	21.4
ALKYD PAINT	142	2.3	1.8	77.1	312.8	19.1	142	100.0
ANTIFREEZE	5	3.9	2.5	64.8	10.6	3.8	2	40.0
ARTIST CRAFT PAINT	2	0.1	0.1	62.2	0.3	3.5	1	50.0
BRAKE FLUID	4	0.4	0.3	65.4	1.2	8.5	4	100.0
CLEANERS	36	0.8	0.6	74.8	21.3	8.9	14	38.9
CONCRETE WATER SEALER	7	3.9	3.6	92.6	24.1	45.0	7	100.0
ENAMEL	6	1.9	1.4	74.3	10.4	16.1	3	50.0
FERTILIZER	3	1.4	1.1	76.3	3.1	2.0	3	100.0
FILLER (MISC.)	23	0.9	0.8	86.4	42.6	29.8	0	0.0
FIRE SURPRESSANTS	4	0.0	0.0	N/A	31.9	54.1	0	0.0
FUEL	6	1.5	0.7	49.2	3.6	1.6	6	100.0
GASLINE ANTIFREEZE	4	0.1	0.1	100.0	1.2	22.9	3	75.0
HERBICIDE	3	1.9	1.7	93.3	5.5	10.5	0	0.0
LAQUER	2	2.1	1.1	54.2	2.7	15.7	1	50.0
LATEX PAINT	539	3.1	2.3	74.7	1,467.4	27.4	0	0.0
LINSEED OIL	2	1.3	1.1	85.1	1.4	20.9	2	100.0
LIQUID PLASTIC	24	1.2	0.9	76.8	23.8	23.7	21	87.5
LUBRICANTS	7	0.3	0.2	72.5	1.6	3.1	7	100.0
METAL CLEANER	1	0.3	0.2	75.0	0.2	5.2	0	0.0
MOTOR OIL	2	2.2	2.2	100.0	4.0	0.1	2	100.0
OTHER	6	1.0	0.5	55.7	2.5	0.8	3	50.0
PAINT REMOVER OR THINNER	10	3.0	1.7	57.1	12.5	7.7	10	100.0
POLISH OR WAX	16	0.8	0.7	89.7	12.1	13.8	2	12.5
POOL CHEMICAL	35	2.3	2.3	100.0	70.0	91.9	0	0.0
PRIMER SEALER	40	2.2	1.4	65.5	70.0	28.8	14	35.0
RESIN OR SEALER	6	2.0	1.9	97.6	14.8	27.8	1	16.7
RUST/METAL PAINT	68	1.2	0.8	61.6	57.8	27.1	47	69.1
SHOE CARE	6	0.1	0.1	59.5	0.7	7.4	2	33.3
SPECIALITY PAINTS	4	2.8	2.6	91.2	12.4	10.1	1	25.0
SPRAY PAINT	66	0.3	0.3	88.4	23.5	25.2	57	86.4
STAIN	94	2.4	1.8	75.9	194.6	31.7	74	78.7
VARNISH	35	1.5	1.1	71.9	40.1	23.1	31	88.6
WALL PAPER PREP	3	1.2	1.0	82.8	3.3	15.6	3	100.0
WATER REPELLANT	6	3.4	2.7	79.0	16.5	19.4	6	100.0
WAX STRIPPER	2	1.0	0.8	75.0	1.8	42.4	2	100.0
WINDSHIELD FLUID	4	4.0	1.5	37.5	6.3	15.7	1	25.0
WOOD FINISH	42	1.5	1.0	71.0	47.6	24.9	39	92.9
TOTAL	1308				2,617.6		525	
AVERAGE		1.9	1.3	74.8		15.6		

Appendix 5 Brand Owner Information

Bar graphs in Figures A.5.a to A.5.j provide relative quantities of the most commonly found brand owners for each material category/waste class.

Tables A.5.1 to A.5.13 provide details on number of items, volume of material and HHW Quick Translator information.

Figure A.5.a Highest volume acids by brand owner

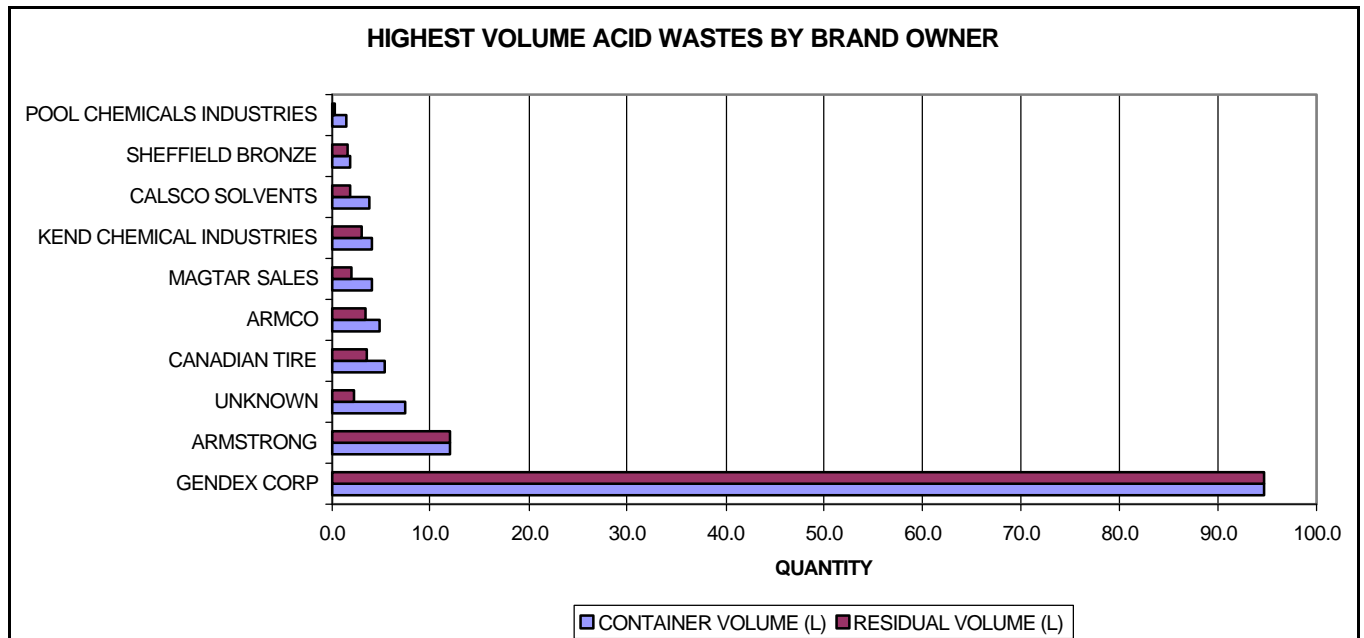


Table A.5.1 Highest volume acids by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER VOLUME (L)	RESIDUAL VOLUME (L)	RESIDUAL AS A PERCENT OF CONTAINER VOLUME	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
GENDEX CORP	10	94.6	94.6	100.0	58.3	0	0.0
ARMSTRONG	3	12.0	12.0	100.0	7.4	1	33.3
UNKNOWN	7	7.4	2.3	30.9	4.6	0	0.0
CANADIAN TIRE	9	5.4	3.6	66.8	3.3	2	22.2
ARMCO	2	4.9	3.5	70.4	3.0	1	50.0
MAGTAR SALES	5	4.1	2.0	50.0	2.5	2	40.0
KEND CHEMICAL INDUSTRIES	1	4.0	3.0	75.0	2.5	1	100.0
CALSCO SOLVENTS	1	3.8	1.9	50.0	2.3	1	100.0
SHEFFIELD BRONZE	2	1.8	1.6	87.5	1.1	0	0.0
POOL CHEMICALS INDUSTRIES	1	1.5	0.4	25.0	0.9	0	0.0
TOTALS	41	139.5	124.9		86.0	8	

Figure A.5.b Highest volume antifreeze by brand owner

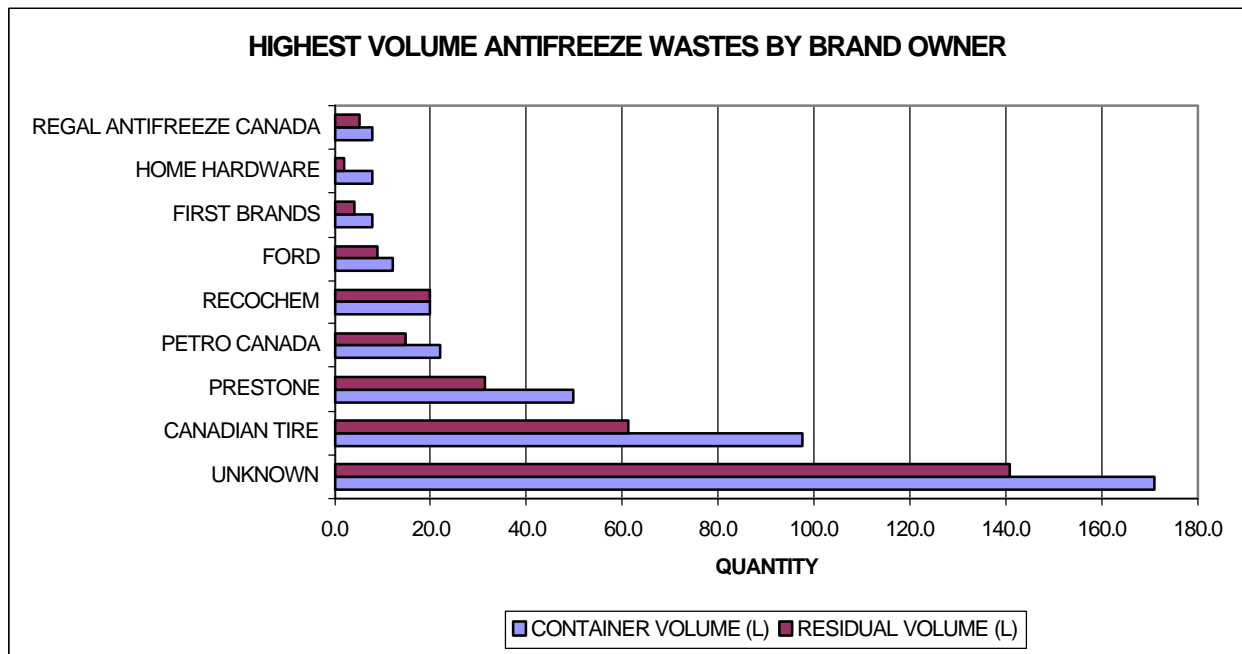


Table A.5.2 Highest volume antifreeze by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER VOLUME (L)	RESIDUAL VOLUME (L)	RESIDUAL AS A PERCENT OF CONTAINER VOLUME	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
UNKNOWN	40	170.8	140.8	82.4	35.7	5	12.5
CANADIAN TIRE	26	97.5	61.2	62.8	20.4	24	92.3
PRESTONE	14	49.8	31.2	62.6	10.4	8	57.1
PETRO CANADA	7	22.0	14.8	67.0	4.6	4	57.1
RECOCHEM	5	20.0	20.0	100.0	4.2	2	40.0
FORD	3	12.0	9.0	75.0	2.5	3	100.0
FIRST BRANDS	2	8.0	4.0	50.0	1.7	2	100.0
HOME HARDWARE	3	8.0	2.0	25.0	1.7	2	66.7
REGAL ANTI-FREEZE CANADA	2	8.0	5.0	62.5	1.7	1	50.0
ALL OTHER BRANDS CONTRIBUTED 1.0% OR LESS OF TOTAL PRODUCT CATEGORY							
TOTALS	102	396.1	287.9		82.9	51	

Figure A.5.c Highest volume bases by brand owner

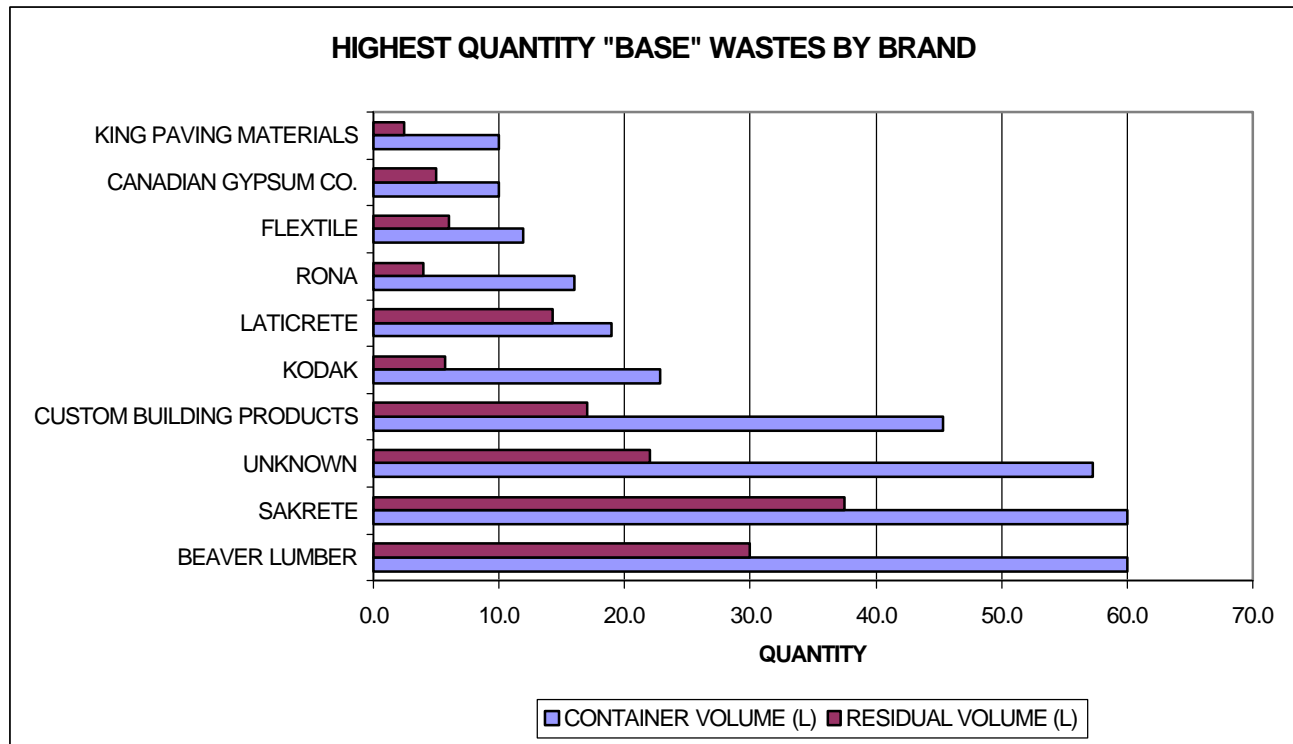


Table A.5.3 Highest volume bases by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER VOLUME (L)	RESIDUAL VOLUME (L)	RESIDUAL AS A PERCENT OF CONTAINER VOLUME	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
BEAVER LUMBER	2	60.0	30.0	50.0	12.5	2	100.0
SAKRETE	2	60.0	37.5	62.5	12.5	1	50.0
UNKNOWN	15	57.3	22.1	38.5	11.9	1	6.7
CUSTOM BUILDING PRODUCTS	2	45.4	17.0	37.5	9.4	0	0.0
KODAK	2	22.8	5.7	25.0	4.7	0	0.0
LATICRETE	1	19.0	14.3	75.0	4.0	3	300.0
RONA	1	16.0	4.0	25.0	3.3	0	0.0
FLEXTILE	4	12.0	6.0	50.0	2.5	1	25.0
CANADIAN GYPSUM CO.	2	10.0	5.0	50.0	2.1	5	250.0
KING PAVING MATERIALS	1	10.0	2.5	25.0	2.1	3	300.0
TOTALS	32	312.5	144.0		65.1	16	

Figure A.5.d Highest volume flammables/miscellaneous organics by brand owner

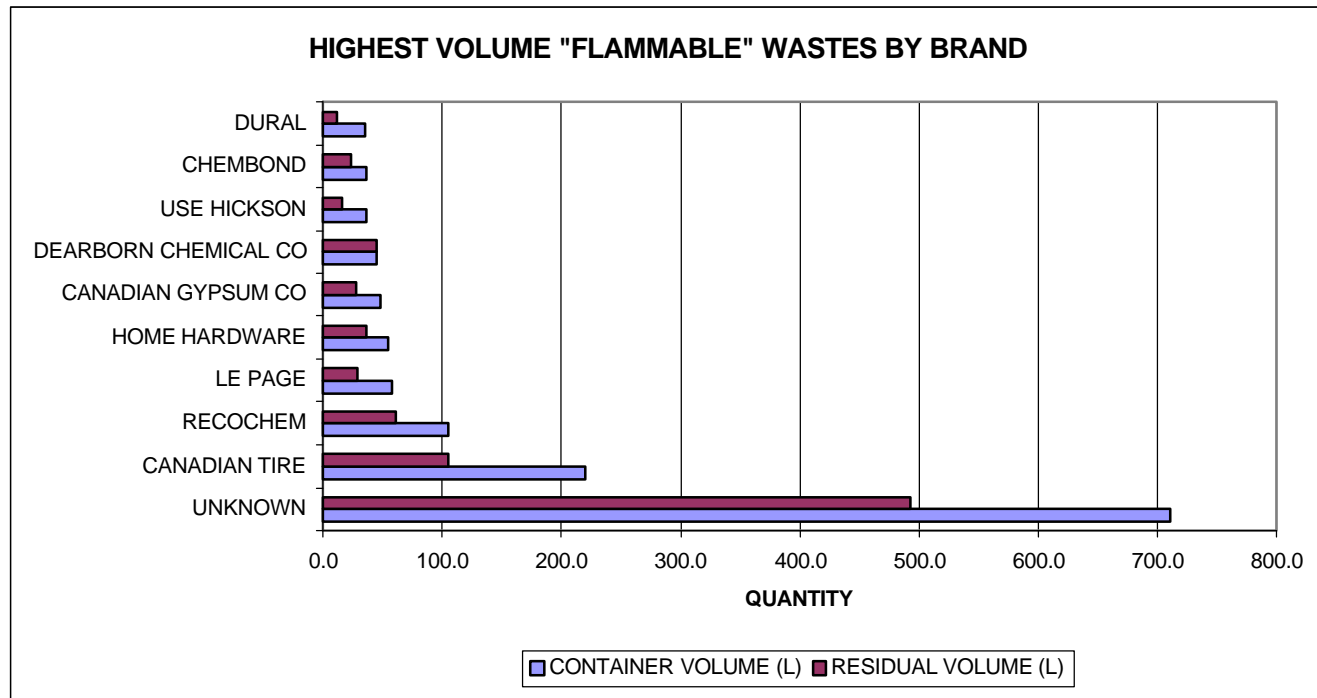


Table A.5.4 Highest volume flammables/miscellaneous organics by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER VOLUME (L)	RESIDUAL VOLUME (L)	RESIDUAL AS A PERCENT OF CONTAINER VOLUME	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
UNKNOWN	206	710.8	492.9	69.3	28.2	80	38.8
CANADIAN TIRE	192	220.2	105.5	47.9	8.7	146	76.0
RECOCHEM	62	105.4	61.8	58.6	4.2	54	87.1
LE PAGE	86	57.9	28.8	49.8	2.3	47	54.7
HOME HARDWARE	54	55.2	36.8	66.7	2.2	38	70.4
CANADIAN GYPSUM CO	8	49.0	27.8	56.6	1.9	0	0.0
DEARBORN CHEMICAL CO	2	45.5	45.5	100.0	1.8	0	0.0
USE HICKSON	14	37.2	16.1	43.2	1.5	1	7.1
CHEMBOND	13	36.4	24.5	67.3	1.4	2	15.4
DURAL	9	35.5	11.8	33.3	1.4	2	22.2
TOTALS	646	1,353.1	851.4		53.7	370	

Figure A.5.e Highest volume coatings: alkyd/solvent wastes by brand owner

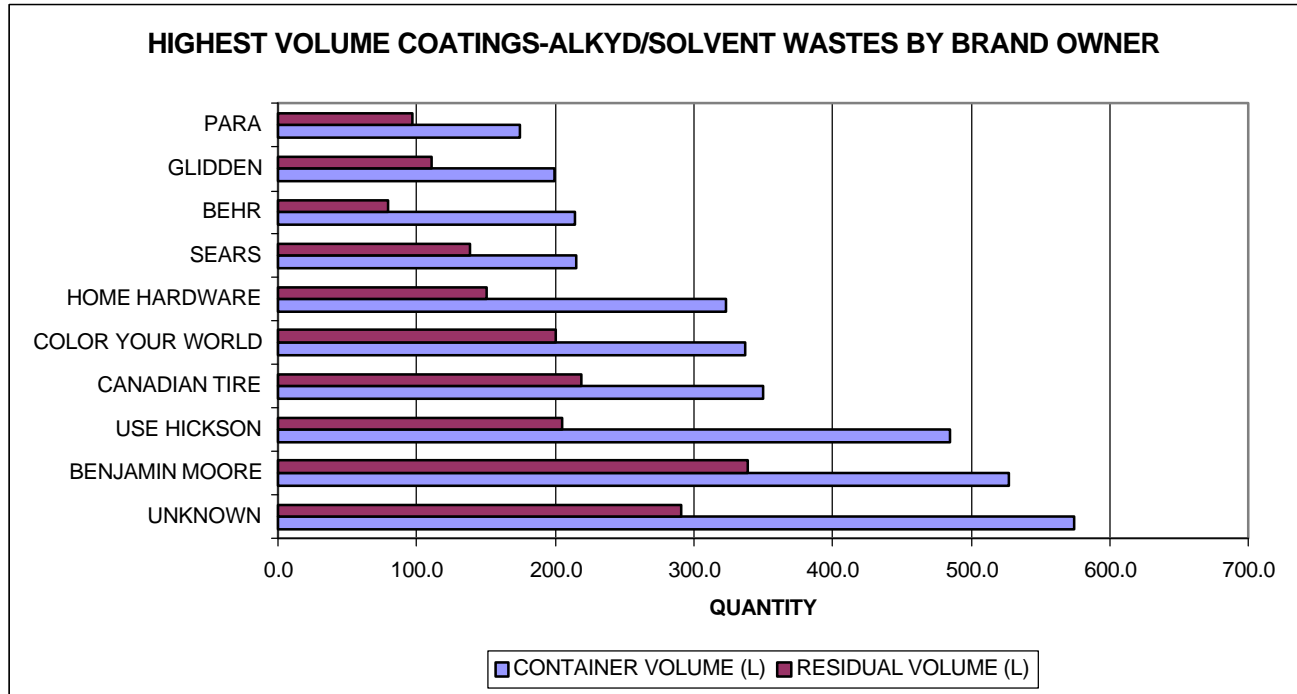


Table A.5.5 Highest volume coatings: alkyd/solvent wastes by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER VOLUME (L)	RESIDUAL VOLUME (L)	RESIDUAL AS A PERCENT OF CONTAINER VOLUME	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
UNKNOWN	202	574.4	290.7	50.6	9.8	202	100.0
BENJAMIN MOORE	256	526.7	338.8	64.3	9.0	256	100.0
USE HICKSON	43	484.3	205.1	42.3	8.3	43	100.0
CANADIAN TIRE	276	350.2	218.9	62.5	6.0	276	100.0
COLOR YOUR WORLD	137	336.6	200.1	59.5	5.8	137	100.0
HOME HARDWARE	165	322.9	150.5	46.6	5.5	165	100.0
SEARS	60	214.7	137.9	64.2	3.7	60	100.0
BEHR	54	213.8	79.0	36.9	3.7	54	100.0
GLIDDEN	66	199.4	110.5	55.4	3.4	66	100.0
PARA	56	174.0	96.9	55.7	3.0	56	100.0
TOTALS	1315	3,397.1	1,828.4		58.2	1315	

Figure A.5.f Highest volume coatings: latex by brand owner

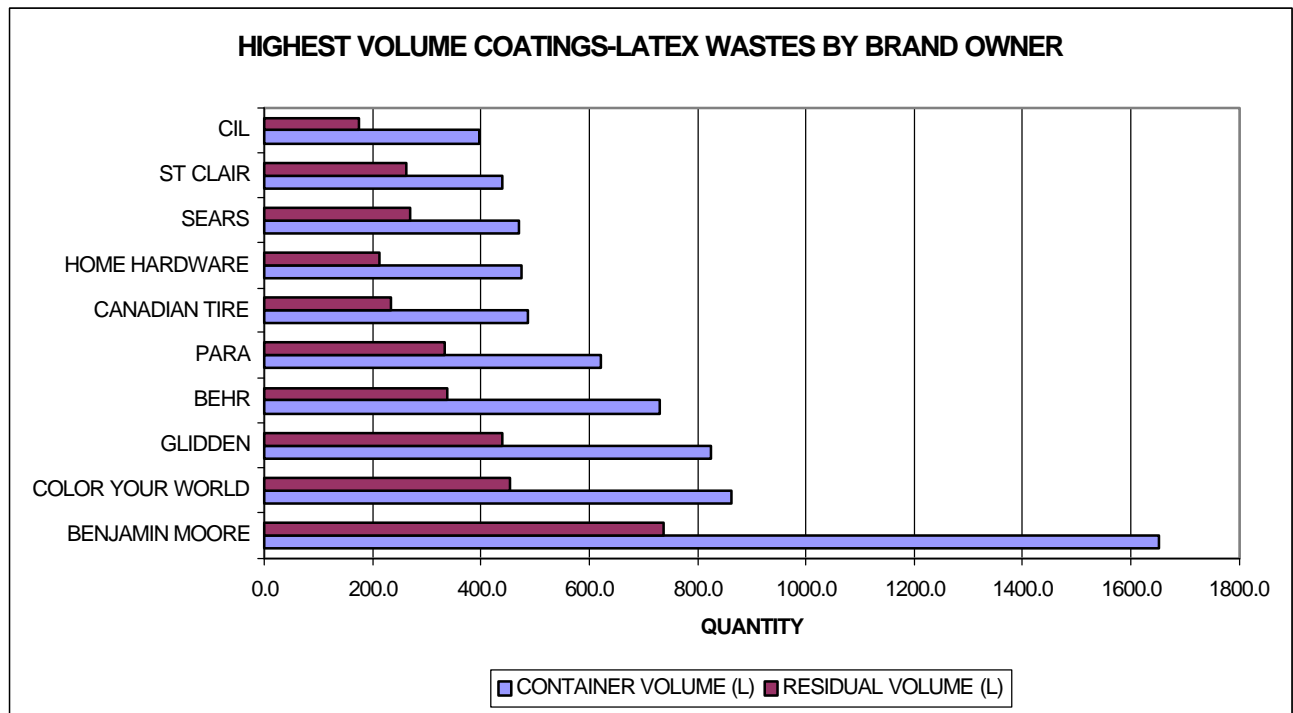


Table A.5.6 Highest volume coatings: latex by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER VOLUME (L)	RESIDUAL VOLUME (L)	RESIDUAL AS A PERCENT OF CONTAINER VOLUME	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
BENJAMIN MOORE	627	1650.7	736.6	44.6	16.5	0	0.0
COLOR YOUR WORLD	282	862.4	453.9	52.6	8.6	0	0.0
GLIDDEN	176	824.4	438.4	53.2	8.2	0	0.0
BEHR	231	731.0	337.2	46.1	7.3	0	0.0
PARA	201	621.9	332.1	53.4	6.2	0	0.0
CANADIAN TIRE	205	486.8	234.6	48.2	4.9	0	0.0
HOME HARDWARE	164	475.2	211.6	44.5	4.7	0	0.0
SEARS	128	469.1	268.7	57.3	4.7	0	0.0
ST CLAIR	150	439.2	261.7	59.6	4.4	0	0.0
CIL	143	396.3	173.9	43.9	3.9	0	0.0
TOTALS	2307	6,956.9	3,448.7		69.3	0	

Figure A.5.g Highest volume oxidizers by brand owner



Table A.5.7 Highest volume oxidizers by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER QUANTITY (L OR KG)	RESIDUAL QUANTITY (L OR KG)	RESIDUAL AS A PERCENT OF CONTAINER QUANTITY	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
CIL	9	113.4	59.0	52.0	34.0	2	22.2
UNKNOWN	6	39.8	33.4	83.9	11.9	0	0.0
SO GREEN	4	26.0	14.0	53.8	7.8	0	0.0
SWIFT CANADA	1	18.1	4.5	25.0	5.4	0	0.0
TURF SCIENCE LABORATORIES	1	18.0	4.5	25.0	5.4	0	0.0
CANADIAN TIRE	8	16.0	14.2	88.8	4.8	2	25.0
GREEN CROSS	4	16.0	7.2	45.1	4.8	0	0.0
WHITE ROSE	2	12.0	7.0	58.3	3.6	0	0.0
HTH	1	8.0	0.0	0.0	2.4	1	100.0
PLANT PROD	6	7.5	4.5	60.0	2.3	0	0.0
TOTALS	42	274.8	148.3		82.5	5	

Figure A.5.h Highest volume oil by brand owner

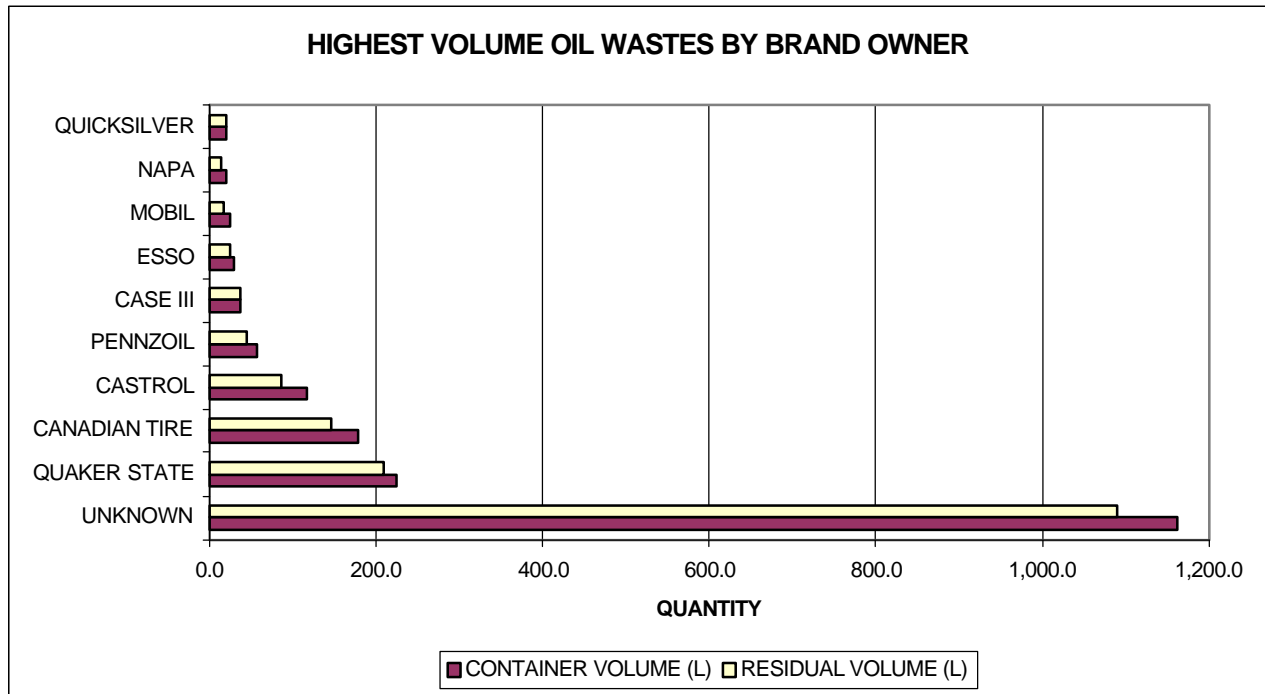


Table A.5.8 Highest volume oil by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER VOLUME (L)	RESIDUAL VOLUME (L)	RESIDUAL AS A PERCENT OF CONTAINER VOLUME	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
UNKNOWN	224	1,162.3	1,089.3	93.7	27.1	ALL ITEMS CAUGHT	
QUAKER STATE	60	225.2	209.0	92.8	5.2		
CANADIAN TIRE	65	179.1	146.5	81.8	4.2		
CASTROL	45	118.0	86.7	73.5	2.7		
PENNZOIL	19	56.7	45.4	80.0	1.3		
CASE III	4	37.9	37.9	100.0	0.9		
ESSO	17	30.0	25.0	83.3	0.7		
MOBIL	7	25.0	17.0	68.0	0.6		
NAPA	1	20.0	15.0	75.0	0.5		
QUICKSILVER	2	20.0	20.0	100.0	0.5		
TOTALS	444	1,874.2	1,691.8		43.6		

Figure A.5.i Highest number of vehicle batteries by brand owner

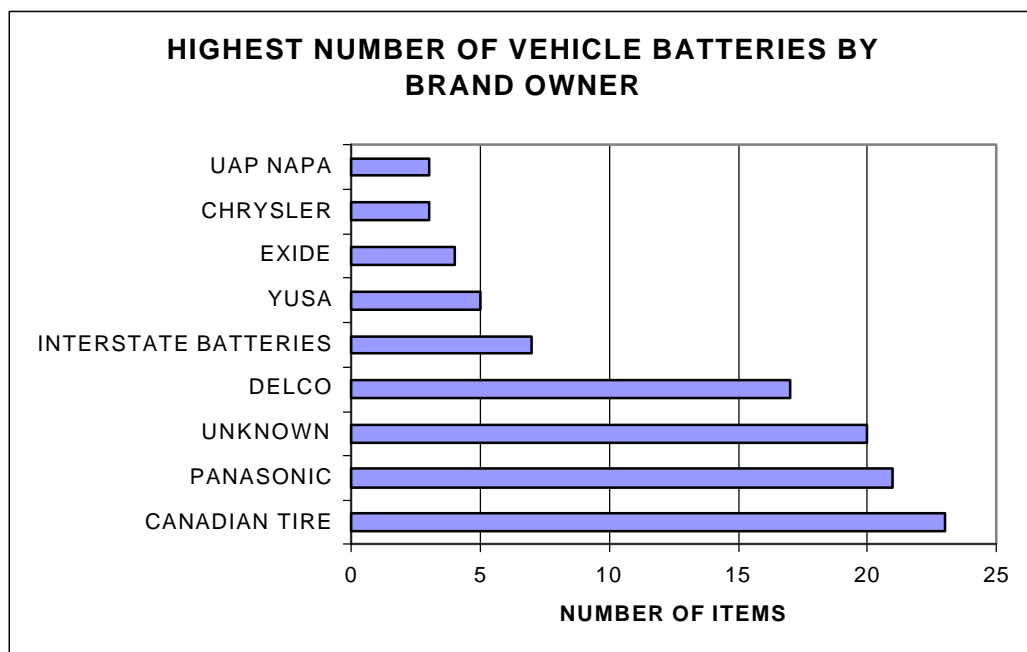


Table A.5.9 Highest number of vehicle batteries by brand owner

BRAND OWNER	NO. OF ITEMS	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
			NO. OF ITEM	PERCENT OF NO. OF ITEMS
CANADIAN TIRE	23	17.3	23	100.0
PANASONIC	21	15.8	21	100.0
UNKNOWN	20	15.0	20	100.0
DELCO	17	12.8	17	100.0
INTERSTATE BATTERIES	7	5.3	7	100.0
YUSA	5	3.8	5	100.0
EXIDE	4	3.0	4	100.0
CHRYSLER	3	2.3	3	100.0
UAP NAPA	3	2.3	3	100.0
ALL REMAINING BRAND OWNERS CONTRIBUTED 1 OR 2 BATTERIES				
TOTALS	103	77.4	103	

Figure A.5.j Highest volume of pesticides by brand owner

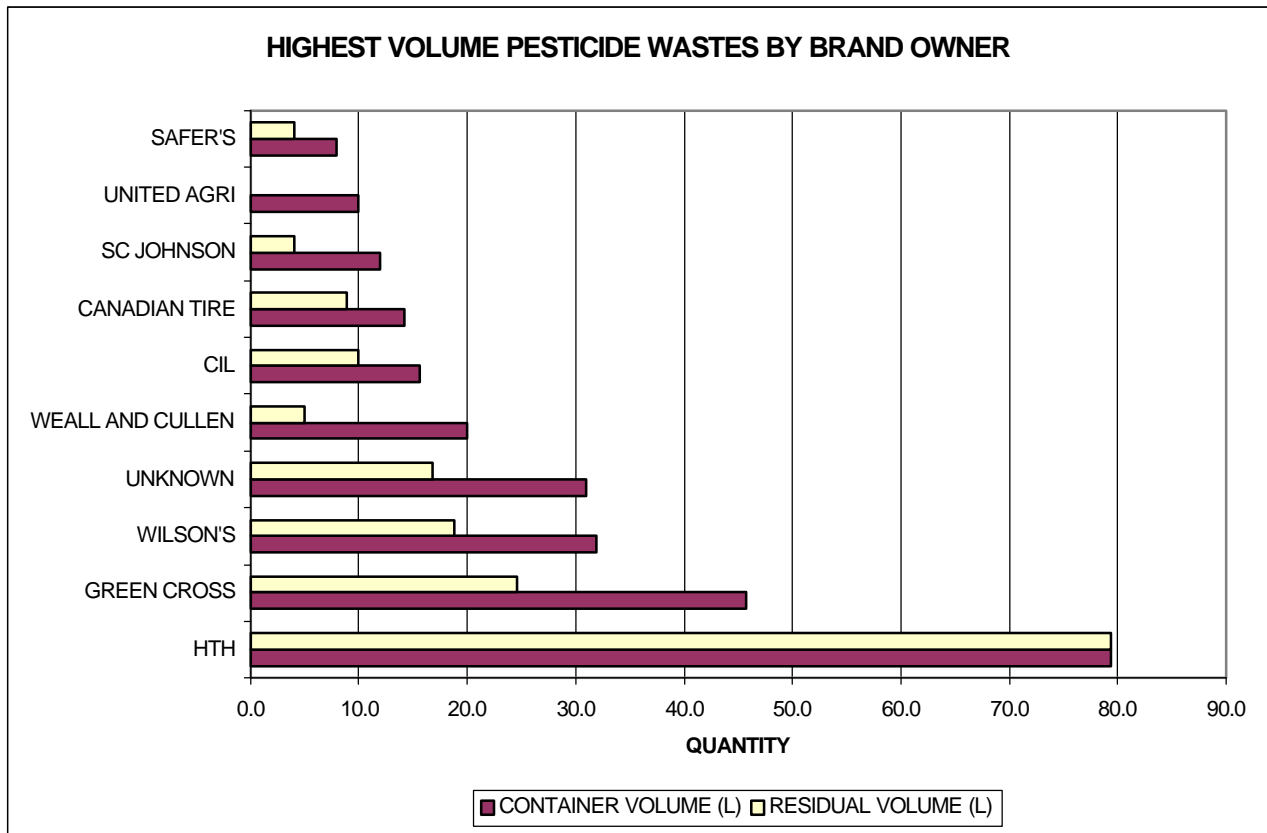


Table A.5.10 Highest volume of pesticides by brand owner

BRAND OWNER	NO. OF ITEMS	CONTAINER VOLUME (L)	RESIDUAL VOLUME (L)	RESIDUAL AS A PERCENT OF CONTAINER VOLUME	PERCENT OF TOTAL CATEGORY WASTE	QUICK TRANSLATOR	
						NO. OF ITEM	PERCENT OF NO. OF ITEMS
HTH	35	79.5	79.5	100.0	24.1	0	0.0
GREEN CROSS	59	45.8	24.6	53.7	13.9	20	33.9
WILSON'S	49	31.9	18.8	59.0	9.7	23	46.9
UNKNOWN	18	30.9	16.8	54.4	9.4	1	5.6
WEALL & CULLEN	1	20.0	5.0	25.0	6.1	0	0.0
CIL	24	15.6	10.0	63.9	4.7	6	25.0
CANADIAN TIRE	4	14.2	8.8	62.1	4.3	1	25.0
SC JOHNSON	37	11.9	4.1	34.3	3.6	16	43.2
UNITED AGRI	1	10.0	0.0	0.0	3.0	1	100.0
SAFER'S	10	7.9	4.0	50.8	2.4	1	10.0
TOTALS	238	267.6	171.5		81.1	69	

Table A.5.11 Highest number of fluorescent lights by brand owner

CATEGORY	TOP 5 BRAND OWNERS	NO. OF ITEMS	PERCENT OF TOTAL WASTE CATEGORY	QUICK TRANSLATOR	
				NO. OF ITEM	PERCENT OF NO. OF ITEMS
COMPACT FLUORESCENTS	GENERAL ELECTRIC	9	90.0	ALL ITEMS CAUGHT	
	SYLVANNIA	1	10.0		
	TOTALS	10	100.0		
FLUORESCENT TUBES	GENERAL ELECTRIC	57	41.9		
	PHILLIPS	25	18.4		
	SYLVANNIA	27	19.9		
	UNKNOWN	26	19.1		
	ADVANCE	1	0.7		
	TOTALS	136.0	100.0		

Table A.5.12 Highest number of oil filters by brand owner

ALL BRAND OWNERS	NO. OF ITEMS	PERCENT OF TOTAL WASTE CATEGORY	QUICK TRANSLATOR	
			NO. OF ITEM	PERCENT OF NO. OF ITEMS
FRAM	8	11.6	ALL ITEMS CAUGHT	
TOYOTA	5	7.2		
UNKNOWN	5	7.2		
GENERAL MOTORS	4	5.8		
CANADIAN TIRE	2	2.9		
PENNZOIL	2	2.9		
ALL REMAINING BRAND OWNERS CONTRIBUTED 1 OIL FILTER				
TOTALS	26	37.7		

Table A.5.13 Highest number of gas cylinders/tanks by brand owner

CATEGORY	TOP 5 BRAND OWNERS	NO. OF ITEMS	PERCENT OF TOTAL WASTE CATEGORY	QUICK TRANSLATOR	
				NO. OF ITEM	PERCENT OF NO. OF ITEMS
GAS CYLINDERS	BERNZ O MATIC	7	100.0	ALL ITEMS CAUGHT	
PROPANE CYLINDERS	COLEMAN	95	58.6		
	CANADIAN TIRE	17	10.5		
	WAL-MART	17	10.5		
	BERNZ O MATIC	11	6.8		
	HOME HARDWARE	7	4.3		
	TOTALS	147	90.7		
PROPANE TANKS	UNKNOWN	64	55.2		
	WOLFEDALE ENGINEERING	27	23.3		
	MANCHESTER TANKS	4	3.4		
	SUPERIOR PROPANE	4	3.4		
	ALL REMAINING BRAND OWNERS CONTRIBUTED 1 OR 2 TANKS				
TOTALS	99	85.3			

Appendix 6 Details of Municipal Site Operation

Program	Receiving	Processing	Operations	Reuse
Greater Sudbury, City	Attendant confirms source and unloads material onto roller conveyor; No daily quantity limit but drum-sized containers not accepted. All containers are returned, as requested, for bulked materials.	Oil and glycol are bulked.	Contractor's staff (Hotz) provides site supervisor and general labourers for all site activities. Hotz also has disposal contract.	Items must be in containers that are more than half full and in good condition.
Essex-Windsor Solid Waste Authority	Site attendant records source municipality, items, and does unloading; No daily quantity limit; All containers are returned, as requested, for bulked materials.	Paint, oil, flammables and glycol are bulked; Aerosol can crusher is used on aerosols containing flammables which are then bulked.	Contractor's staff (Drain-All) provides site supervisor and general labourers for all site activities; Drain-all also has disposal contract; Separate contracts for vehicle batteries and propane tanks/cylinders.	For paint: container is shaken—if liquid, half full or more, then lids are removed and contents checked, if OK then set out for reuse. For other items, e.g., cleaners, pool chemicals, etc. containers are checked, if OK then set out for reuse.
Halton, Region	People are asked which municipality they are from and source of material to confirm that it is residential (not ICI); Unloading done by resident with assistance from site attendant; Limit is 20 litres per visit per day; Containers are returned, as requested, for bulked materials.	Oil and glycol are bulked, excluding oil in one litre or less, which are packed in 205 L drums with flammables; Remainder of materials are packed in 205 L drums	Contractor's staff (Hotz) do all site operations; Hotz also has disposal contract;	Items set aside for reuse in separate shed include paints and stains in good condition. Reuse is closed over the winter as shed is unheated.
Toronto, City	People are asked source of waste to confirm that it is residential; Unloading done by resident; No specified quantity limit;	Oil, glycol and flammables are bulked; Remainder of items are packed in 205 litre drums; paint is packed in gaylords	Municipal staff do all site operations; Hotz has disposal contract	Items set aside for reuse must be in properly sealed, original containers in good condition, half full or more, and the labels must be legible.
Ottawa Valley Waste Recovery Centre (OVWRC)	License numbers, source municipality and type of waste are recorded by OVWRC staff; There are no quantity limits but items must not be in anything larger than 20 L pails; Fuel/oil/glycol containers returned if brought to depot (not events);	At depot: Oil, glycol, paints (except marine paints) and stains are bulked into 205 L drums, flammables (fuel, var-sol, mineral spirits) are bulked into 205 L drums; Oil filters are crushed; Aerosol can crusher is used on aerosols containing paint., which is then bulked At events: all items are packed in drums and shipped directly to contractor's facility.	At events, OVWRC and contractor's staff share site activities; at depot, OVWRC only. Disposal and event contractor is Buckham	No reuse program
Niagara, Region	Information (e.g., license #, source municipality) is recorded at scale house as residents arrive, not specifically for HHW depot; No quantity limits; Depot is set up for unsupervised drop off as site attendant is sometimes at other locations at landfill: residents place materials in totes which move via roller conveyor system into depot. Containers are returned, as requested, for bulked materials.	Oil and glycol are bulked (tanks); remainder of items packed into 205 L drums.	Regional staff do all receiving, bulking, packing. Contractor (Hotz) loads truck.	Limited reuse of items, mostly as requested.

Appendix 6 Details of Municipal Site Operation (continued)

Program	Receiving	Processing	Operations	Reuse
Peel, Region	People are asked source of material to confirm that it is residential (not ICI); Resident does unloading Limit is 80 L/person/day; All containers are returned, as requested, for bulked materials.	Oil, glycol, fuel are bulked (tanks) Some flammables e.g., thinners, solvents are bulked into 205 L drums; Remainder of materials packed in 205 L drums; 20 L pails are packed into gaylords for shipping.	Municipal staff do all receiving, bulking packing, except: Contractor (Hotz) vermiculite packs glass items prior to loading on truck	For reuse item must be in original container, container must be in good condition and more than half full; no oxidizers or pesticides
Quinte Waste Solutions (QWS)	People are asked source municipality, how many households, how they heard about the program and whether this is a repeat or first time visit. At depot, site attendants unload; Quantity limits: 80 L of any one liquid per vehicle, 100 L of total liquid per vehicle, 6 vehicle batteries and 6 propane tanks.	At depot: Flammables (all 263a) and glycol are bulked. Aerosol cans are punctured and contents bulked as either flammables or misc. organics; reusable paints are bulked into 20 L pails for set out; solids and sludge paints are packed in 205 L drums; Remainder of materials packed in 205 L drums; Event items are packed in drums and transported to depot for bulking.	QWS staff do all receiving, bulking, packing. Contractors (Buckham for lab packs and Clean Harbors for bulked drums) mostly do loading on truck.	Extensive reuse program that bulks reusable paints into 20 L pails, sets out stains, etc. The only items not set out for reuse are pesticides and pharmaceuticals.
York, Region	People fill out form at receiving area, giving name, license, address and general items being brought in. Residents and staff unload items into totes which move via roller conveyor system into depot. There are no daily quantity limits. Containers are returned, as requested for bulked items	Oil and glycol are bulked (tanks) Remainder of materials packed in 205 L drums;	Contractor's staff (Hotz) do all site operations; Hotz also has disposal contract;	No reuse program