

Lions Gate Hospital

Summary of Waste Assessment

September 14, 2011

Report prepared by
Christine Ronning
Coordinator, Reduction and Recycling,
Lower Mainland Health Authorities

Executive summary

An assessment of the Lions Gate Hospital general waste stream was carried out on September 14, 2011. The assessment was carried out by TRI Environmental Consulting Inc.

The purpose of the waste assessment was to:

- Determine the composition of solid waste currently being disposed of from the site
- Identify opportunities for further improving waste management systems at Lions Gate Hospital in the future.

From a 24 hour time sample, 146kg of general waste randomly was selected and hand-sorted into 24 waste categories. The recommendations from the assessment were as follows:

- Implement recycling renewal program in October 2011
- Undertake visual audits every two weeks for the first two months of the program, and monthly thereafter
- Undertake a full waste and recycling assessment in April 2012, six months after the implementation of the program.
- Educate staff through newsletters, emails, on-site recycling displays, Recycling Champion training and unit specific in-services or meetings. Focus on where new bins are located and what materials can be recycled in which streams - stress the importance of segregation
- Report progress and provide further staff education at department meetings in addition to email, poster and newsletter communication as required. Education will focus on rationale and logistics of material segregation into appropriate recycling streams.
- Continue involvement with Sodexo composting pilot at UBC with potential to expand to other sites where Sodexo provides food services
- Educate staff on the importance of medical and biomedical waste going to regular garbage or biomedical waste streams, respectively
- Educate waste vendors on types of medical waste, providing details on what is hazardous and what is not, with the aim of increasing the types and volume of material able to be accepted for recycling

Introduction

Background

A new recycling program for mixed paper, rigid and soft plastic, refundable beverage containers, batteries and glass was set up at Lions Gate Hospital in October 2011. Previously, very limited recycling was available at the site for cardboard (OCC), rigid and soft plastics (in very few departments), paper and batteries. The new program introduced in October allows for recycling of OCC, rigid and soft plastic, mixed paper, beverage containers and batteries in every department. The site now has an estimated 280 bins throughout the facility, collecting waste from each of the new recycling streams.

This report outlines the objectives of the waste and recycling assessments; the methodology used in collecting and sorting the samples; the results of the assessments; and observations and recommendations.

Objectives

The waste assessment was undertaken in order to:

- Determine the composition of solid waste being disposed from the site prior to implementation of the recycling renewal program.
- Identify opportunities for further improving waste management systems at Lions Gate Hospital in the future.

The next waste and recycling assessments will take place April 2012 (six months after the implementation of the recycling program).

Exclusions

The focus of this assessment was to determine what is being disposed from the site as general waste (garbage). The assessment excluded the following types of waste and/or recycling (that is currently disposed of separately to general waste or plastic/paper recycling):

- Biomedical waste (sharps containers, yellow and red bags)
- OCC (old corrugated cardboard)
- Batteries
- Confidential shredding
- Electronics and furniture

Caveats

This waste audit was conducted by TRI Environmental Consulting. Audit results differed substantially from those conducted by the Recycling Team at other sites. A few reasons for this:

- Materials classified as Biomedical Waste by TRI would generally have been classified as Medical Waste in previous audits – data has been adjusted to reflect this. The material in this category was not sorted by TRI, and therefore some of the materials would have likely fallen into other categories. For example, bags of waste from the OR were not sorted and were immediately classified as biomedical waste. Prior experience shows us that these bags usually contain a mix of medical waste, soft and rigid plastics, and medical plastics.
- Sample bags may not have been sorted as thoroughly as previous audits. The OR bag description above is an example of this. Data is unable to be adjusted to accurately reflect this.
- Garbage bags were included in the soft plastics category, rather than a separate category as in previous audits – data has been adjusted to reflect this

- Results are highly variable given the relatively small sample obtained for analysis relative to the amount of waste produced by the site
 - Based on previous audit results we suspect medical plastics, medical waste, hygiene and fines are over-reported, while organics and plastic recyclables are under-reported.
- Numerous staff at the site reported that they collected recycling from within their departments and took it home to recycle.

Methodology

Personnel

The waste and recycling assessments were undertaken by two sorters and one sort supervisor from TRI Environmental Consulting. Assistance with separating a valid waste sample was provided by ARAMARK's Operations Manager, housekeeping staff, Facilities Manager, Security and the Support Services Manager.

Waste categories

A total of 25 waste categories were selected by the audit team. These categories were established to allow for the identification of materials currently able to be diverted to recycling, and for additional materials that may be able to be diverted for recycling or composting in the future. A full list and description of the categories can be found in **Appendix A**.

Waste assessment

Set up

"The waste bins at Lions Gate hospitals are located directly off the loading bay docks under a covered roof. The recycling bins are located approximately 15 m further away down a ramp or a set of stairs and are not under a covered roof or loading dock area."¹

Tables and sorting bins were set up in the undercover area of the loading bay.

Sampling

A target sample size was determined in alignment with the BC Ministry of Environment, MJ Waste Solutions and Metro Vancouver. A sample size of 135kg was recommended to provide a reasonable level of accuracy in the types of waste typically disposed from the site. The actual sample size was 146kg.

"Approximately 24 hours before the waste sort took place at each hospital, the compacting waste bins on-site were replaced with approximately 30 yard non-compacting bins for the hospital staff to use as the main garbage bin. When TRI personnel arrived on-site the waste bins were full allowing TRI personnel to easily collect a representative 136 kg sample from the bin."¹

Each category was weighed to provide information on the composition of the solid waste stream.

Recycling

Recycling was not assessed as part of this audit. However the following observations were made: "Clear waste bags are used for recycling at the hospital. The recycling bins were full when the waste sort occurred. It would be necessary for staff to go into the rain to place recycling bags in the proper location."¹

¹ TRI Environmental Consulting Inc – Solid Waste Composition Study – Hospital Samples

Results

This section summarizes the waste assessment findings and provides detailed results from each of the samples.

Findings – General Waste

Table 1 presents a summary of the composition of the waste observed in the general waste stream. The data below is presented by category. Only those categories with associated waste are included in the table below.

Table 1: Lions Gate Hospital waste assessment data –September 2011

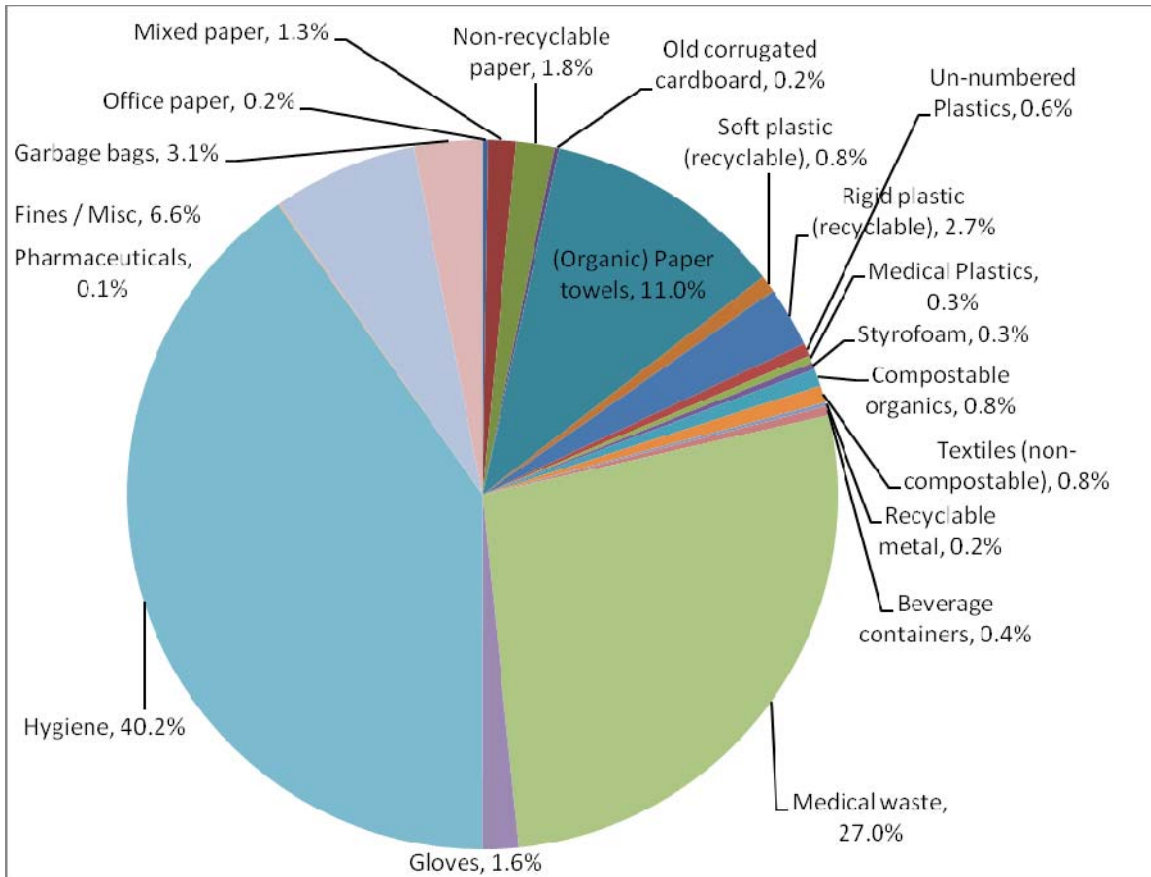
Material category	Percentage
Paper	
Office	0.2%
Mixed	1.3%
Non-recyclable	1.8%
Old corrugated cardboard	0.2%
Organic (paper towels)	11.0%
Plastics	
Soft (recyclable)**	0.8%
Rigid (recyclable)	2.7%
Rigid (un-numbered)	0.6%
Medical Plastics	0.3%
Styrofoam	0.3%
Organics	
Compostable organics	0.8%
Textiles (non-compostable)	0.8%
Metals	
Recyclable	0.2%
Beverage containers	
Beverage containers	0.4%
Electronic waste	
Electronic waste	0.2%
Medical/hygiene	
Medical waste*	27.0%
Gloves	1.6%
Hygiene	40.2%
Hazardous	
Pharmaceuticals	0.1%
Miscellaneous	
Miscellaneous/fines	6.6%
Garbage bags**	3.1%
Total	100%

*Combined the biomedical and medical waste categories from the TRI report.

**Garbage bags and soft plastic were combined categories. Assumed 80% of soft plastic was accounted for by garbage bags as based on consultants estimate

Figure 1 below illustrates the proportions of different materials in the sorted waste stream.

Figure 1: Breakdown of waste composition, Lions Gate Hospital



The data indicates that the largest proportions of the waste stream are comprised of hygiene (40%) and medical waste (27%). The hygiene category is mostly comprised of diapers in this study. It is suspected this category accounts for an unusually high proportion of material due to residential care areas of the hospital being over-represented in the waste audit sample. Medical waste includes IV bags with medication, tubing, soiled blue wrap, gowns, head and bootie covers and face masks. The majority of these items were soiled with blood or bodily fluids.

A total of approximately 7% of materials found in the waste stream will be recyclable under the recycling renewal program implemented at Lions Gate Hospital in October 2011. Rigid plastics accounted for 2%, mixed paper, soft plastic, rigid plastic, beverage containers, glass, office paper and cardboard accounted for < 1%. If a composting program was in place a further 12% of materials could be diverted from the waste stream: paper towels (11%) and organics (1%).

Each of the other material categories comprised less than 2% of the total waste stream.

Based on previous audit results we suspect medical plastics, medical waste, hygiene and fines are over-reported, while organics and plastic recyclables are under-reported.

***Note: Data has been adjusted from TRI consulting report – soft plastics has been adjusted to separate out garbage bags (80%) and biomedical waste was added to the medical waste category.**

Observations and recommendations

All recommendations in this section would be carried out by Kate Searle (Environmental Sustainability Manager, ARAMARK) and Christine Ronning (Coordinator, Reduction and Recycling, Facilities Management), with support from BISS and Energy and Environmental Sustainability (Facilities Management).

Monitoring of recycling program

The Lions Gate Hospital recycling renewal program was launched at the site in October 2011. Regular waste and recycling audits will be carried out to monitor progress and identify any problems with the program.

Recommendations:

- Undertake visual audits every two weeks for the first two months of the program, and monthly thereafter
- Undertake a full waste and recycling assessment in April 2012, six months after the implementation of the program.
- Report progress and provide further staff education at department meetings in addition to email, poster and newsletter communication as required. Education will focus on rationale and logistics of material segregation into appropriate recycling streams.

Recyclable materials

As presented in the finding section of this report, the volume of recyclable material in the waste stream is approximately 7%. Although there was already recycling in place across some departments within Lions Gate Hospital, the implementation of the recycling renewal program in October 2011 will increase the number of bins and types of materials that can be recycled, and allow every department to recycle. While the figures reported in the waste audit indicate a low proportion of recyclables in the garbage, we expect a significant increase in volume of recycling collected. This may not show in the waste audit data, given the discrepancies in the audit methodology.

Recommendations:

- Implement recycling renewal program in October 2011
- Educate staff through newsletters, emails, on-site recycling displays, Recycling Champion training and unit specific in-services or meetings. Focus on where new bins are located and what materials can be recycled in which streams - stress the importance of segregation

Compostable materials

Introducing composting programs to Lions Gate Hospital could remove over 12% of material from the general waste stream. A composting program could involve the collection of organics from any or all of the following areas:

- Food prep from the cafeteria
- Patient tray waste coming back to the food services kitchen
- Staff kitchens in clinical and administration areas
- Paper towels from major hand washing locations

These issues will need to be addressed before programs are implemented

Recommendations:

- Continue involvement with Sodexo composting pilot at UBC with potential to expand to other sites where Sodexo provides food services

Medical waste

Non-hazardous medical waste comprised the largest proportion of the waste stream at 27%; when including the categories of gloves and hygiene, this proportion increases to 67%. However, due to the audit methodology used, we expect that the hygiene proportion was significantly over-stated. Opportunities for reducing the volume of soiled medical waste are limited, and would require a full review of operational practices. Opportunities for reducing the volume of clean, unused medical waste are more readily available.

It is unclear how much medical waste observed in the waste stream was clean (or likely to have been clean when placed in the garbage). Educating both clinical staff and waste vendors on types and correct disposal of clean medical waste has the potential to reduce the total volume of waste.

Recommendations:

- Educate staff on the importance of medical and biomedical waste going to regular garbage or biomedical waste streams, respectively
- Educate waste vendors on types of medical waste, providing details on what is hazardous and what is not, with the aim of increasing the types and volume of material able to be accepted for recycling

Appendix A – Waste Categories

Material Category	Description
Paper	
Office	Copy paper (confidential and non-confidential)
Mixed	Boxboard, newspaper, magazines
Non-recyclable	Coffee cups, paper contaminated with food
Old corrugated cardboard	Shipping boxes, containerboard cartons
(Organic) Paper towels	Paper towels
Plastics	
Soft (recyclable)	Plastic film, packaging or bags
Rigid (recyclable)	All rigid plastic 1-7
Rigid (un-numbered)	Plastics without a number on them
Medical Plastics	Syringes without needles, IV bags (no medication), rinsed urine bottles
Styrofoam	Styrofoam plates and cups
Organics	
Compostable	Food and plant waste
Textiles (non-compostable)	Wood, leather, rubber
Metals	
Recyclable	All types of metal food containers e.g. tin cans
Non-recyclable	All other metal materials e.g. foil packaging
Glass	
Glass	Material that can be identified as container glass. Includes glass food jars and medicine bottles.
Beverage Containers	
Beverage containers	All refundable ready to drink beverage containers (plastic, metal, glass, tetra-paks, cartons, juice bags)
Electronic Waste	
Electronic waste	Electronic materials including TVs, CPUs and components
Medical/hygiene	
Medical waste	Clean and soiled medical supplies including tubing, IV bags, blue wrap, head and booty covers, gloves, single-use scissors
Gloves	Clean and soiled nitrile/latex gloves
Hygiene	Human hygiene products including diapers and sanitary products
Biomedical waste	Human fluid blood and blood products, items saturated or dripping with blood, body fluids contaminated with blood and body fluids removed for diagnosis during surgery, treatment or autopsy
Hazardous	
Sharps	Needles
Pharmaceuticals	Medication in pill or liquid form
Batteries	
Miscellaneous	
Miscellaneous/fines	Materials that can't be categorized anywhere else
Garbage bags	Garbage bags