

G.F. Strong Rehabilitation Centre

Summary of Waste & Recycling Assessment

August 23, 2011

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Executive summary

An assessment of the G.F. Strong Rehabilitation general waste and recycling streams were carried out on August 23, 2011 and September 30, 2011 respectively. The assessments were undertaken by Kate Searle (ARAMARK's Environmental Sustainability Manager) and Christine Ronning (Lower Mainland Health Authorities Coordinator, Reduction and Recycling).

The purpose of the waste assessment was to:

- Determine the composition of solid waste & recycling currently being disposed from the site
- Identify opportunities for further improving waste management systems at G.F. Strong Rehabilitation Centre in the future.

From a 24 hour time sample, 137kg of general waste randomly was selected and hand-sorted into 24 waste categories. All recycling collected over a 1 week period was visually assessed. The main recommendations from the assessment were as follows:

- Undertake a visual audit of recycling bins on an annual basis.
- Monitor diversion rate using recycling and waste vendor invoice information.
- If visual audit and/or diversion rate data indicates a significant problem with the recycling program, conduct another waste audit.
- Report results of post implementation waste audit and provide further staff education at GF Strong staff forum – completed September 2011. Education focused on a refresher of which materials go into each recycling stream, updates on changes to accepted materials and links to recycling references/resources.
- Educate staff at the staff forum on the positive changes they have made and encourage further efforts. Re-iterate what materials can go into each recycling stream. Speak to contamination issues of coffee cups, paper towel, cardboard and reiterate the importance of proper material segregation (completed September 2011).
- Compile statistics from post implementation measures and email to staff and/or publish a story in the VCH news.
- Assess recycling in the cafeterias – possibly add more bins to divert plastic milk containers
- Continue involvement with Sodexo composting pilot at UBC with potential to expand to other sites where Sodexo provides food services.
- Continue to educate staff on the importance of medical and biomedical waste going to regular garbage or biomedical waste streams, respectively.
- Continue to 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 and refundable beverage containers was set up at G.F. Strong in February 2011. Before this program was initiated no recycling was being done by the site, although we do know some staff would take home recycling. With implementation of the program, the site has 70 bins throughout the facility, collecting waste from each of the four 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 and recycling assessments were undertaken in order to:

- Determine the composition of solid waste and recycling currently being disposed from the site
- Compare data with the baseline assessment undertaken in February 2011 (prior to implementation of recycling program)
- Identify opportunities for further improving waste management systems at G.F. Strong Rehabilitation Centre in the future.

Exclusions

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

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

Methodology

Personnel

The waste and recycling assessments were undertaken by Kate Searle (ARAMARK's Environmental Sustainability Manager) and Christine Ronning (Lower Mainland Health Authorities Coordinator, Reduction and Recycling). The team also sought expertise from MJ Waste Solutions on auditing methodology and approach. Assistance with separating a valid waste sample was provided by ARAMARK's Operations Manager and housekeeping staff.

Waste categories

A total of 24 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**. These categories were used for both the waste and recycling assessments.

Waste - Set up

The waste assessment took place in the laundry room adjacent to the housekeeping offices. This location allowed audit personnel to easily collect the sample, dispose of it after the study was complete and remain out of the way of daily site activities.

The assessment took place on 23 August 2011, starting at 8:30am and finishing at 2:00pm.

Waste - 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 determined to provide a reasonable level of accuracy in the types of waste typically disposed from the site. The actual sample size was 137 kg.

General waste was collected from 7:00am on August 22nd until 7:00am on August 23rd and stored in the housekeeping laundry room.

The total sample was hand-sorted into 24 material categories. Each category was weighed to provide information on the composition of the solid waste stream.

Recycling - Set up

The recycling assessment took place in the recycling room on the south side of the G.F. Strong Rehabilitation Centre. This location allowed audit personnel to easily sort, assess and dispose of the sample and remain out of the way of daily hospital activities.

The assessment took place on September 30, 2011, starting at 4:00pm and finishing at 4:35pm.

Recycling - Sampling

As the recycling volume at G.F Strong is much lower than the general waste stream, the entire volume collected over a one- week period was assessed.

Recycling is collected in bags throughout the site and placed in recycling totes for pick-up. These bags were grouped by stream into 65-litre totes and counted. Each stream was then visually assessed for contaminated by the two auditors.

Results

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

Findings – General Waste

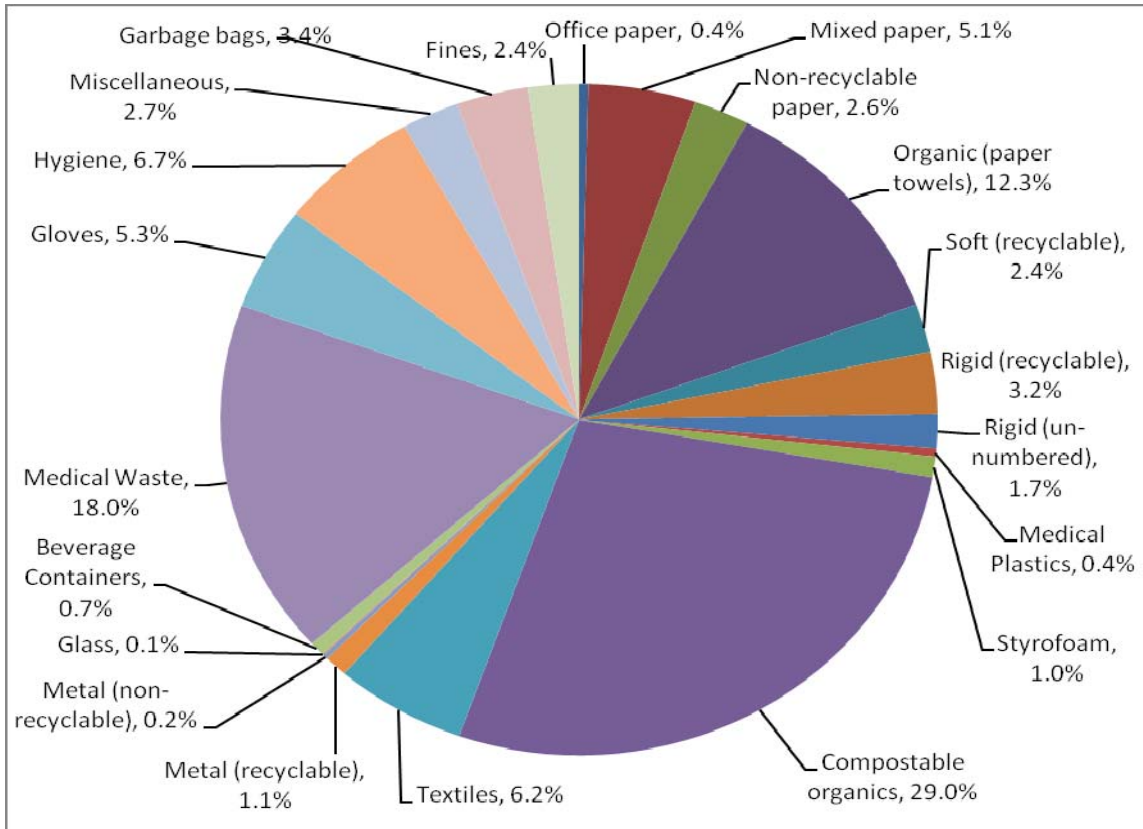
Table 1 presents a summary of the composition of the waste observed in the general waste stream. The data below is presented by category. Only those categories with associated waste are included in the table below.

Table 1: G.F. Strong waste assessment data – February 2011 and August 2011

Material category	Feb 2011	Aug 2011
Paper		
Office	6.3%	0.4%
Mixed	18.5%	5.1%
Non-recyclable	4.7%	2.6%
Cardboard	0.1%	0.0%
Organic (paper towels)	11.7%	12.3%
Plastics		
Soft (recyclable)	0.7%	2.4%
Rigid (recyclable)	1.5%	3.2%
Rigid (un-numbered)	3.5%	1.7%
Medical Plastics		0.4%
Styrofoam		1.0%
Organics		
Compostable organics	32.0%	29.0%
Textiles (non-compostable)	3.6%	6.2%
Metals		
Recyclable	1.0%	1.1%
Non-recyclable	0.7%	0.2%
Beverage containers		
Beverage containers	0.4%	0.7%
Electronic waste		
Electronic waste	0.2%	0.0%
Medical/hygiene		
Medical waste	2.7%	18.0%
Gloves	3.8%	5.3%
Hygiene	6.5%	6.7%
Miscellaneous		
Miscellaneous	0.1%	2.7%
Garbage bags	2.1%	3.4%
Fines	0.0%	-2.4%
Total	100%	100%

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

Figure 1: Breakdown of waste composition (sorted), August 2011, G.F. Strong Rehabilitation Centre



The data indicates that the largest proportions of the waste stream are comprised of compostable organics (29%) and medical waste (18%). Medical waste includes IV bags with medication, tubing, soiled blue wrap, gowns, head and booty covers and face masks. The majority of these items were soiled with blood or bodily fluids. The organics category included food scraps and used coffee grounds.

A total of approximately 15% of materials found in the waste stream could have been recycled. Rigid plastic accounted for 5%, mixed paper – 5%, soft plastics – 2% and beverage containers, office paper, cardboard, medical plastics and metal all accounted for < 1%. A large number of milk containers were noted in bags with organics indicating kitchen waste. If a composting program was in place a further 41% of materials could be diverted from the waste stream: organics (29%) and paper towels (12%).

Hygiene accounted for 7% and gloves 5%. These materials are not able to be recycled. Each of the other material categories comprised less than 2% of the total waste stream.

There was a number of rigid plastic containers were found in bags with food waste most likely coming from the kitchen.

Comparing pre and post program audit results, we found a decrease of 14% (29% to 15%) in the proportion of recyclable material in the waste stream. The largest decreases in recyclable material found in the waste stream were for mixed paper (13% decrease) and office paper (6% decrease).

Findings – Recycling

Table 2 presents a summary of the composition of the recycling observed. The data below is presented by category. Only those categories with associated materials are included in the table below. Due to the methods used to assess the recycling, some of the more detailed categories have been combined to present results in Table 2.

Mixed paper = mixed paper and office paper

Soft = soft and medical plastics such as IV bags

Rigid = Rigid (recyclable) and Rigid (un-numbered) and medical plastics such as syringes with no needles

Table 2: G.F. Strong Rehabilitation Centre recycling assessment data – September 2011

Material category	Percentage
Paper	
Mixed paper	43.5%
Non-recyclable	1.4%
Cardboard	8.0%
Paper towel	0.3%
Plastics	
Soft	8.2%
Rigid	19.3%
Styrofoam	0.6%
Beverage containers	
Beverage containers	18.4%
Medical/hygiene	
Gloves	0.3%
Total	100.0%

As recycling materials were not weighed, totter proportions were used to determine category proportions. For example the proportion of rigid plastic was calculated by taking the following steps:

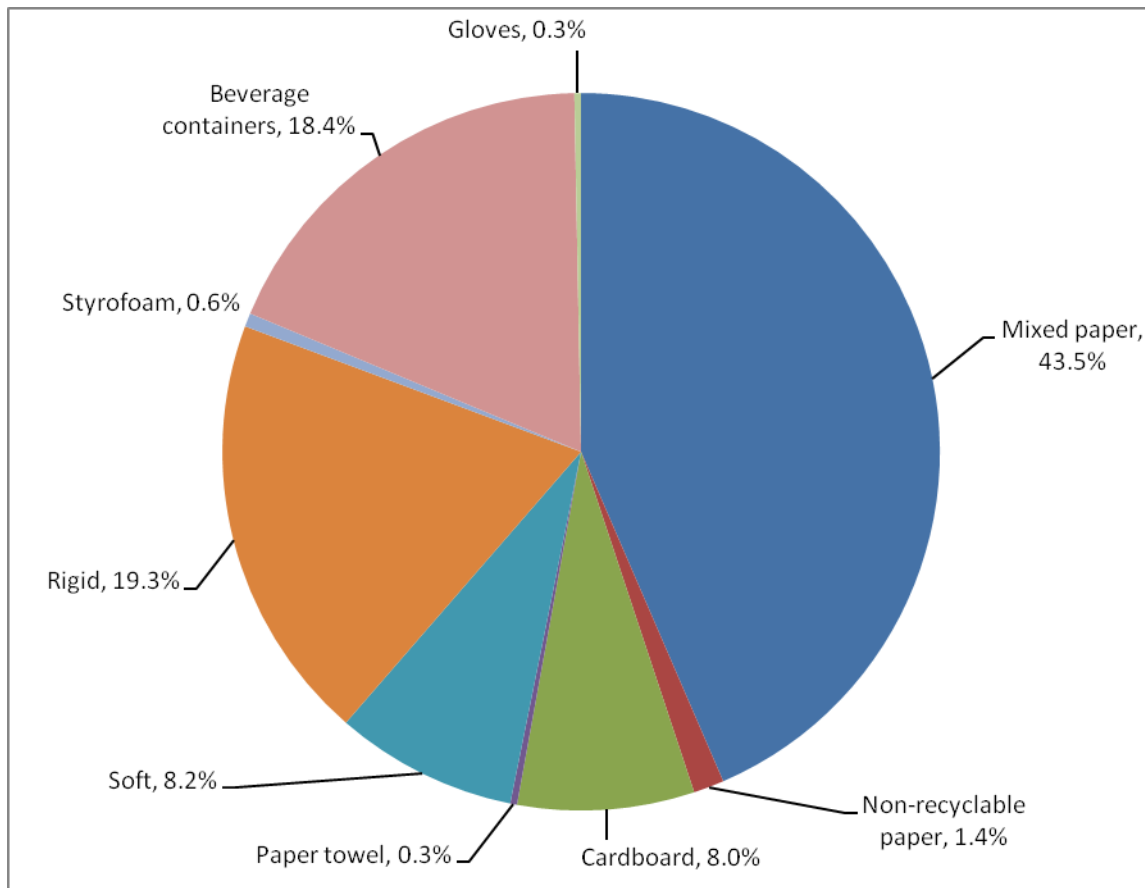
(2 rigid toters – 0.5 toters contamination) + rigid found in soft plastic & mixed paper = total volume

$$(2 - 0.5) + 0.1 / 8.2 = 19.3\%$$

Findings - Recycling

Figure 2 below illustrates the proportions of different materials in the sorted recycling stream.

Figure 2: Breakdown of recycling composition (sorted), September 2011, G.F. Strong Rehabilitation Centre



The data indicates that the largest proportions of the recycling stream are mixed paper (44%), and rigid plastic (19%). Mixed paper includes copy paper, newspapers, magazines, brochures and medical supply packaging. Rigid plastic consists of any hard plastic (with or without numbers) and includes things like food containers, saline bottles and cavi-wipe bottles.

Soft plastics comprised 8% of the material stream. Soft plastics included shrink wrap, clear and coloured packaging, plastic bags and medical supply packaging. Soft plastic can be recycled, but only if it is segregated into an individual stream. When included with rigid plastics, it often goes to garbage as it congests the sorting machinery.

Eleven percent of materials found in the recycling should be disposed of through other systems. Three percent (non-recyclable paper, styrofoam and gloves) should go to garbage. The remaining 8% (cardboard) should be recycled separately.

When looking at contamination by stream we found the lowest contamination in the beverage container stream at 7%, followed by soft plastic at 11%, mixed paper at 20% and finally rigid plastic at 25%. In the rigid plastic stream, the most common contaminant was mixed paper. In the mixed paper stream we found a large proportion of cardboard and in the soft plastics stream an equal amounts of rigid plastic, gloves and paper towel contamination was found.

Observations and recommendations

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

Monitoring of recycling program

Continue regular waste and recycling audits will be carried out to monitor progress and identify any problems with the program.

Recommendations:

- Undertake a visual audit of recycling bins on an annual basis.
- Monitor diversion rate using recycling and waste vendor invoice information.
- If visual audit and/or diversion rate data indicates a significant problem with the recycling program, conduct another waste audit.
- Report results of post implementation waste audit and provide further staff education at GF Strong staff forum – completed September 2011. Education focused on a refresher of which materials go into each recycling stream, updates on changes to accepted materials and links to recycling references/resources.

Recyclable materials

As presented in the finding section of this report, the volume of recyclable material in the waste stream (approximately 15%) could be reduced further. Mixed paper represents the majority of the recyclable material in the waste stream at 5%, followed by rigid plastic (3.2%) and soft plastic (2.4%).

Approximately 11% of materials found in the recycling stream should be disposed of through other disposal systems. The majority of this is cardboard (8%) and should be recycled separately.

Recommendations:

- Educate staff at the staff forum on the positive changes they have made and encourage further efforts. Re-iterate what materials can go into each recycling stream. Speak to contamination issues of coffee cups, paper towel, cardboard and reiterate the importance of proper material segregation (completed September 2011).
- Compile statistics from post implementation measures and email to staff and/or publish a story in the VCH news.
- Assess recycling in the cafeterias – possibly add more bins to divert plastic milk containers

Compostable materials

Introducing a composting program at G.F. Strong could remove over 40% of material from the general waste stream per month. 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

There is some hesitancy from site administration staff to introduce composting due to potential for pest issues, so mitigation strategies addressing this will need to be in place before an organics program goes ahead.

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 18%; when including the categories of gloves, hygiene and medical plastic this proportion increases to 30%. 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.

Recommendations:

- Continue to educate staff on the importance of medical and biomedical waste going to regular garbage or biomedical waste streams, respectively.
- Continue to 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	
Pharmaceuticals	
Batteries	
Miscellaneous	Other materials that cannot be classified