

# UBC Hospital

## Summary of waste assessment

December 2011

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## Executive summary

An assessment of the general waste stream was carried out at UBC Hospital on December 14, 2011. The assessment was undertaken by Kate Searle (ARAMARK's Environmental Sustainability Manager), Christine Ronning (VCH's Coordinator, Reduction and Recycling) and Paddy Assenheimer (VCH's Leader, Transformation, Change & Innovation).

The purpose of the waste assessment was to:

- Determine the composition of solid waste currently being disposed from the site as garbage;
- Compare data with the baseline assessment undertaken in February 2011 (prior to implementation of recycling program); and
- Identify opportunities for further improving waste management systems at UBC Hospital in the future.

A 125.8kg sample was collected and hand-sorted into 27 waste categories. The main recommendations from the assessment are as follows:

- Monitor diversion rate using recycling and waste vendor invoice information.
- Educate staff 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, and non-recyclable plastics. This education could be included in any site-wide sustainability initiatives that take place in the future (which may also address cafeteria sustainability initiatives).
- Compile statistics from post implementation measures and email to staff and/or publish a story in the VCH news.
- Investigate potential to introduce composting program for organic waste from staff kitchens in clinical and administrative areas
- Investigate potential to introduce composting of paper towels in all major hand-washing locations.

## **Introduction**

### ***Background***

A new recycling program for mixed paper, rigid and soft plastic and refundable beverage containers was set up at UBC Hospital in June 2011. Approximately 220 new bins were introduced to the site in early June 2011, collecting waste from each of the four recycling streams.

This report outlines the objectives of the waste assessment; the methodology used in collecting and sorting the sample; the results of the assessment; and observations and recommendations.

### ***Objectives***

The waste assessment was 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 UBC Hospital in the future.

### ***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 (that is currently disposed of separately to general waste):

- Waste from the animal research facility (Kinsmen Tower). This is collected and disposed by staff from the research laboratories, rather than ARAMARK, and was not able to be included in the audit sample.
- Biomedical waste (sharps containers, yellow and red bags)
- OCC (old corrugated cardboard)
- Batteries
- Confidential shredding
- Electronics and furniture
- Organics

## **Methodology**

### ***Personnel***

The waste assessment was undertaken by Kate Searle (ARAMARK's Environmental Sustainability Manager), Christine Ronning (Lower Mainland Health Authorities Coordinator, Reduction and Recycling) and Paddy Assenheimer (VCH's Leader, Transformation Change & Innovation). 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, supervisor and housekeeping staff.

### ***Set up***

The waste assessment took place in the waste disposal room, adjacent to the garbage and cardboard compactors on the ground level of Detwiller Pavilion. This location allowed audit personnel to easily collect the sample and to dispose of it after the study was complete.

The assessment took place on December 14, 2011, starting at 8am and finishing at 3pm.

### ***Waste categories***

A total of 26 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**.

### ***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 125.8kg.

ARAMARK has a full-time staff member responsible for removal of garbage from the facility to the loading bay. The garbage is removed from the hospital using a tilt truck. Waste from most of the facility is collected once a day, with the exception of the OR and kitchen, where waste is collected several times a day.

General waste was collected from 8am on 13 December until 8am on 14 December and stored in the hall adjacent to the waste disposal room.

The sample was hand-sorted into 26 material categories. Each category was weighed to provide information on the overall composition of the solid waste stream.

## Results

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

Table 1 presents a summary of the composition of the waste observed in the garbage stream. Only those categories with associated waste are included in the table below.

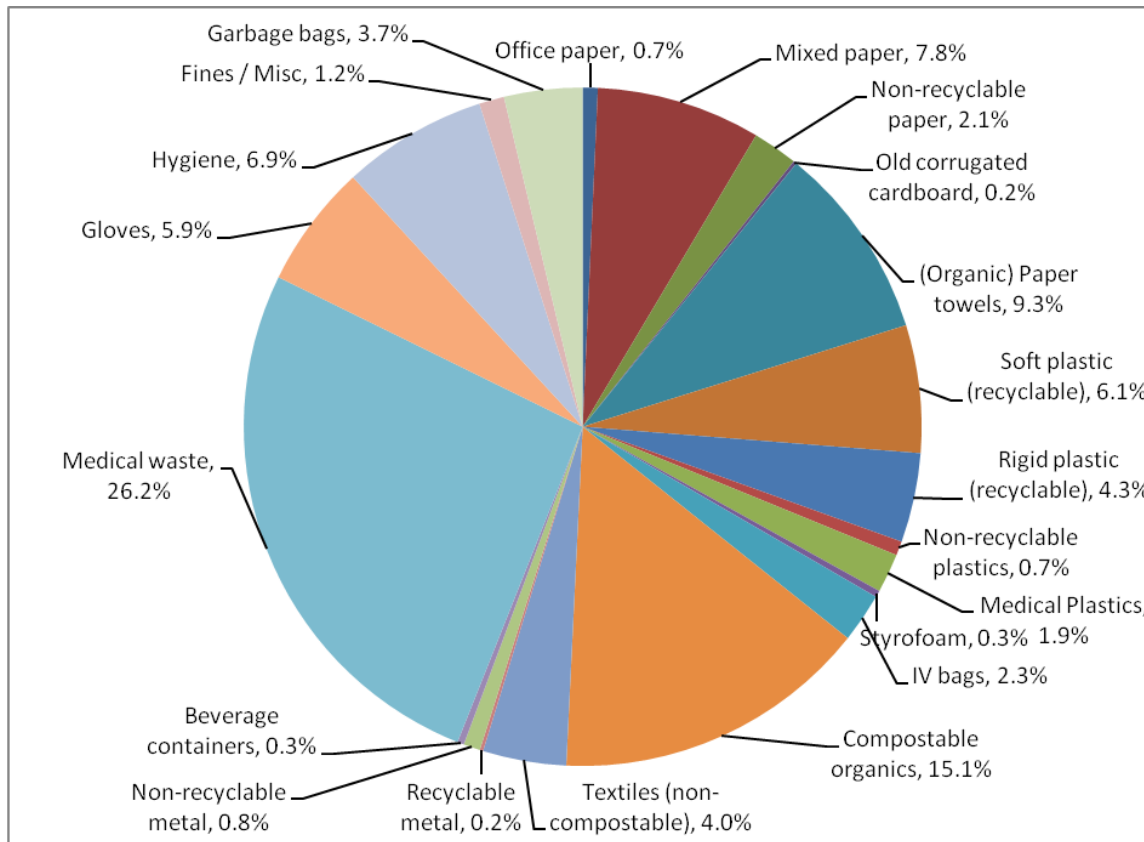
**Table 1: UBC waste assessment summary – December 2011**

Material categories	February 2011	December 2011
<b>Paper</b>		
Office paper	1.6%	0.7%
Mixed paper	9.6%	7.8%
Non-recyclable paper	6.1%	2.1%
Old corrugated cardboard	0.1%	0.2%
Paper towels (organic)	18.0%	9.3%
<b>Plastics</b>		
Soft plastic (recyclable)	3.7%	6.1%
Rigid plastic (recyclable)	7.1%	4.3%
Non-recyclable plastic	0.9%	0.7%
Medical plastics	1.2%	1.9%
Styrofoam	n/a	0.3%
IV bags	n/a	2.3%
<b>Organics</b>		
Compostable organics	23.4%	15.1%
Textiles (non-compostable)	1.0%	4.0%
<b>Metals</b>		
Recyclable metals	0.0%	0.2%
Non-recyclable metals	1.1%	0.8%
<b>Beverage containers</b>		
Beverage containers	0.8%	0.3%
<b>Medical/hygiene</b>		
Medical waste	13.8%	26.2%
Gloves	5.6%	5.9%
Hygiene	1.0%	6.9%
<b>Hazardous/miscellaneous</b>		
Fines/Miscellaneous	0.7%	1.2%
Garbage bags	3.8%	3.7%
Composite items	0.5%	n/a
<b>Total</b>	<b>100%</b>	<b>100%</b>

## Findings

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

**Figure 1: Breakdown of waste composition, UBC Hospital**



The data indicates that the largest proportion of the waste stream is comprised of medical waste (26.2%), followed by compostable organics (15.1%). A further 9.3% of the waste stream was paper towels, which are compostable. The compostable organics included fruit peels, food scraps and used coffee grounds. The paper towel stream includes all paper towels not contaminated (e.g. with food), and the paper towels mostly come from washrooms and other major hand-washing areas.

Approximately 19.6% of the total waste stream could be recycled as part of the existing recycling program. Recyclable plastics (soft and rigid plastics) comprised 10.4% of the total waste stream. Recyclable paper (mixed paper and office paper) comprised 8.5% of the waste stream.

Composting is available in the cafeteria, and in the retail and production kitchens at the site. If a composting stream was introduced, a further 24.4% of the waste stream could be diverted from the waste stream (15.1% organics, 9.3% paper towels).

Non-recyclable plastics, IV bags and Styrofoam comprised 3.3% of the waste stream and garbage bags comprised 3.7%. These materials are not able to be recycled at this time.

Medical waste (26.2%) mainly consisted of material from the operating rooms, including tubing, used IV bags, gauze, masks and blue gowns. There was a mix of clean and soiled (with blood or bodily fluids, but not biomedical waste) material in this stream. Medical plastics (1.9%) included

all syringes (without needles) and plastic measuring cylinders. Other non-recyclable items include gloves (5.9%), textiles (4.0%) and hygiene products (6.9%).

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

### ***Changes since February 2011 audit***

The February 2011 audit, which took place prior to the expanded recycling program being set up at UBC Hospital, showed that 22.5% of the waste stream was recyclable material. The December audit shows a drop to 19.6% recyclable material.

Several areas of the hospital, including the OR, Purdy Pavilion, Brain Research Centre were already recycling, and scattered recycling bins were placed throughout the rest of the hospital. Notwithstanding this, a larger decrease in the volume of recyclable material found in the waste stream was expected since the recycling renewal program was introduced to the site.

A significant proportion of waste and recycling from the site is generated in the OR, which already had a recycling program in place. Therefore, no significant decrease in volume of recyclables coming from the OR could be expected.

Food scraps (organic waste) comprised 23.4% of the total waste stream in February, and 15.1% in December. This decrease can likely be attributed to the new composting system available in the retail and production kitchens, and in the cafeteria.

## **Observations and recommendations**

### **Monitoring of recycling program**

Continue to carry out regular waste and recycling audits to monitor progress and identify any ongoing issues 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 as necessary. Education should be 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 findings section of this report, the volume of recyclable materials in the waste stream (19.6%) could be reduced further.

The volume of recyclable materials in the waste stream is evenly split between paper and plastic products. Further support, including promotion of the program and education on what can be recycled, is recommended to help reduce recyclables in garbage.

#### ***Recommendations:***

- Educate staff 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, and non-recyclable plastics. This education could be included in any site-wide sustainability initiatives that take place in the future (which may also address cafeteria sustainability initiatives).
- Compile statistics from post implementation measures and email to staff and/or publish a story in the VCH news.

### **Compostable materials**

A composting program was launched in the cafeteria and the retail and production kitchens in fall 2011. The waste audit results indicate that this has reduced the proportion of compostable material in the waste stream by approximately 8%. Approximately 23% of the waste stream is still made up of compostable material. This could be reduced by introducing composting throughout the rest of the facility for food scraps and/or paper towels.

#### ***Recommendations:***

- Investigate potential to introduce composting program for organic waste from staff kitchens in clinical and administrative areas
- Investigate potential to introduce composting of paper towels in all major hand-washing locations.

### **Medical waste**

Non-hazardous medical waste comprised the largest proportion of the waste stream at 26%; when including the categories of gloves, hygiene and medical plastic this proportion increases to approximately 40%. 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

Category	Description
<b>Paper</b>	
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
<b>Plastics</b>	
Rigid	All rigid plastic 1-7
Soft	Plastic film, packaging or bags, clean blue wrap
Non-Recyclable Plastics	Plastics without a number on them
Medical plastics	Syringes (without needles), measuring cylinders
Styrofoam	All Styrofoam products
IV bags	IV bags without tubing attached
<b>Organics</b>	
Compostable	Food and plant waste
Textiles	Wood, leather, rubber
<b>Metals</b>	
Recyclable	All types of metal food containers e.g. tin cans
Non-recyclable	All other metal materials e.g. foil packaging
<b>Glass</b>	
Glass	Material that can be identified as container glass. Includes glass food jars and medicine bottles.
<b>Beverage Containers</b>	
Beverage containers	All refundable ready to drink beverage containers (plastic, metal, glass, tetra-paks, cartons, juice bags)
<b>Electronic Waste</b>	
Electronic waste	Any electronic materials including TVs, CPUs and their components
<b>Medical/hygiene</b>	
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
<b>Other</b>	
Composite items	Packaging with waxed paper and plastic components (not separated after use)
Sharps	
Pharmaceuticals	
Batteries	
<b>Miscellaneous</b>	Other materials that cannot be classified