

Eagle Ridge Hospital

Summary of Waste Assessment

September 15, 2011

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Executive summary

An assessment of the Eagle Ridge Hospital general waste stream was carried out on September 15, 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 Eagle Ridge Hospital in the future.

From a 24 hour time sample, 132kg 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 spring 2012
- Undertake visual audits every two weeks for the first two months of the program, and monthly thereafter
- Undertake a full waste and recycling assessment fall 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.
- 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
- Investigate composting programs being undertaken at other sites and potential to introduce a program to Eagle Ridge Hospital when time allows
- 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 and glass will be set up at Eagle Ridge Hospital in spring 2012. Recycling bins are located on site in most departments; however, there is opportunity to increase the number of bins available. Materials currently being recycled include: old corrugated cardboard (OCC), mixed paper, batteries, ink cartridges/toner, electronics and light bulbs. After the recycling program is implemented, the site will have an estimated 90 bins throughout the facility, collecting waste from each of the new 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 currently being disposed from the site
- Identify opportunities for further improving waste management systems at Eagle Ridge Hospital in the future.

The next waste and recycling assessments will take place fall 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
- Organics from the production kitchen

Caveats

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

- Materials classified as Biomedical Waste by TRI would have been classified as Medical Waste in previous audits – data has been adjusted to reflect this
- Sample bags may not have been sorted as thoroughly as previous audits
- 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 paper towel, medical plastics, hygiene, fines and garbage bags are over-reported, while organics and plastic recyclables are under-reported.

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 Eagle Ridge are located directly off the loading bay docks under a covered roof. The recycling bins are located approximately 25 m further away from this area 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 132kg.

"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.

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: Eagle Ridge Hospital waste assessment data –September 2011

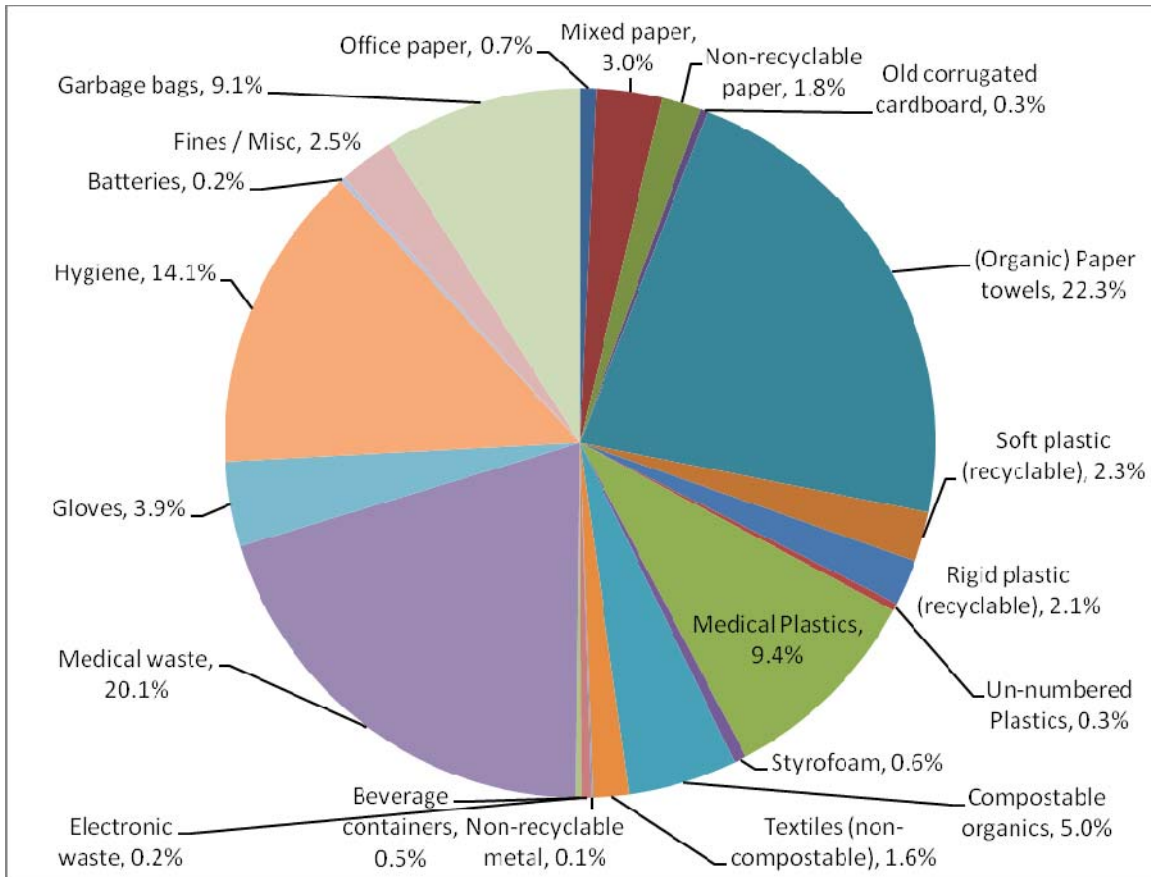
| Material category | Percentage |
|----------------------------|-------------|
| Paper | |
| Office | 0.7% |
| Mixed | 3.0% |
| Non-recyclable | 1.8% |
| Old corrugated cardboard | 0.3% |
| Organic (paper towels) | 22.3% |
| Plastics | |
| Soft (recyclable)** | 2.3% |
| Rigid (recyclable) | 2.1% |
| Rigid (un-numbered) | 0.3% |
| Medical Plastics | 9.4% |
| Styrofoam | 0.6% |
| Organics | |
| Compostable organics | 5.0% |
| Textiles (non-compostable) | 1.6% |
| Metals | |
| Non-recyclable | 0.1% |
| Beverage containers | |
| Beverage containers | 0.5% |
| Electronic waste | |
| Electronic waste | 0.2% |
| Medical/hygiene | |
| Medical waste* | 20.1% |
| Gloves | 3.9% |
| Hygiene | 14.1% |
| Hazardous | |
| Batteries | 0.2% |
| Miscellaneous | |
| Miscellaneous/fines | 2.5% |
| Garbage bags** | 9.1% |
| 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, Eagle Ridge Hospital



Based on previous audit results we suspect paper towel, medical plastics, hygiene, fines and garbage bags are over-reported, while organics and plastic recyclables are under-reported. This should be taken into account when considering the results here.

The data indicates that the largest proportions of the waste stream are comprised of paper towel (22%) and medical waste (20%). 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.

A total of approximately 14% of materials found in the waste stream will be recyclable under the recycling renewal program implemented at Eagle Ridge Hospital in spring 2012. Medical plastics accounted for 4%, mixed paper – 3%, soft plastic – 2%, rigid plastic – 2%, beverage containers, glass, office paper and cardboard accounted for < 1%. It should be noted that 60% of the medical plastics stream is accounted for by saline bags, which are not currently able to be recycled. If a composting program was in place a further 27% of materials could be diverted from the waste stream: paper towels (22%) and organics (5%).

Hygiene accounted for 14% of the waste stream and gloves 4%. These materials are not able to be recycled. Each of the other material categories comprised less than 2% of the total waste stream.

***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 Eagle Ridge Hospital recycling renewal program will be launched at the site in spring 2012. 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 fall 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 14%. Although there is recycling in place across some departments within Eagle Ridge Hospital, the implementation of the recycling renewal program in spring 2012 will increase the number of bins and types of materials that can be recycled. Given these enhancement to the current system, it is reasonable to consider that the volume of recyclable materials found in the garbage will be lower in the next waste assessment (fall 2012).

Recommendations:

- Implement recycling renewal program in spring 2012
- 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 Eagle Ridge Hospital could remove over 27% 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

Recommendations:

- Investigate composting programs being undertaken at other sites and potential to introduce a program to Eagle Ridge Hospital when time allows

Medical waste

Non-hazardous medical waste comprised the largest proportion of the waste stream at 20%; when including the categories of gloves and hygiene, this proportion increases to 38%. 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 |