

Greening the Festival of Trees

Eva Ori

ERST 308- Waste Management
Prof. John Jackson
28/01/08

Table of Contents

Introduction	3
Schedule and Festival Events/ Materials and Methods	4
Waste Audit Results	5
Overcoming Last Year's Waste Audit Challenges/Issues	11
New Challenges/Issues Regarding Waste Audit	13
Recommendations	14
Conclusion	19
References	20

Introduction

During the week of November 19th, the waste audit titled “Greening the Festival” was carried out. With two colleagues, Andrea Taylor and Anagrethel Chen, assisting me on certain days, I performed a waste audit during the 5 days of the Festival of Trees at the Peterborough Memorial Centre. We spent approximately 2 hours each day performing the waste audit, as well as observing and recording any environmentally harmful activities.

The Festival of Trees began in 1990 and has helped raise over \$4.2 million over the 17 years it has been taking place (FOT, 2007). The funds are distributed between The Peterborough Regional Health Centre Foundation, Hospice Peterborough and St. Joseph’s Care Foundation (FOT, 2007). The festival is done completely by volunteers and sponsored by community companies (FOT, 2007). Last year was the launch of the waste audit for the festival. There were 4 students and a Green-Up official working as a team to complete the task last year.

It is my goal to replicate the previous audit and modify the project to make it more accurate with less bias. Zero-waste generation is an ideal goal for the festival; however, realistically, a reduction of waste sent to the landfill is sought after. Peterborough’s landfill has been operating since 1981, accepting wastes that could be composted (i.e. kitchen scraps) or recycled (EnviroTimes, 2006). Of course current policy prohibits recyclables from being received in the landfill, however, contaminated recyclables (i.e. soggy paper plates) are fated to end up in a landfill. The Ontario Ministry of Environment has set a 60% diversion rate province wide by the end of 2008 (MOE, 2007). Peterborough has reached 46% by 2006 and it is thanks to co-operation and participation of community members and big community events such as the Festival of Trees (EnviroTimes, 2006).

The purpose of this waste audit is to calculate the amount of material that might be recycled, reused or composted that is still being sent to the landfill with other garbage. It is important to note that not *all* garbage will be audited, but just samples of the garbage in the black garbage bags that are intended for the landfill.

Schedule and Festival Events

November 16 – Meet with organizers to discuss and agree on contract

November 16-18 – Preliminary research

November 19 – Sign contract and hand in proposal

November 19 – Orientation at Peterborough Memorial Centre

November 20 – Preview Gala

November 21 – Family Night

November 22 – Heritage Breakfast

November 23 – Celebrity Lunch

November 24 – Children’s Fantasy Breakfast

December 20-25 – Report write-up

December 25 – Hand in written report

Materials and Methods

1. Acquire tarp and gloves
2. Spread tarp on the floor
3. Record the garbage that is audited
 - The location it is taken from
 - The day it is taken
4. Take one black garbage bag from two different locations
5. Empty the first garbage bag and sort content into 3 categories
 - Recycling
 - Compost
 - Garbage
6. Manually count the contents of each category and record results
7. Record specific items in each category
8. Place all items back into garbage bag or appropriate receptacle
9. Repeat steps 5 to 8 for the second garbage bag
10. Take both garbage bags behind the building to the industrial garbage bin

Tuesday November 20- Preview Gala

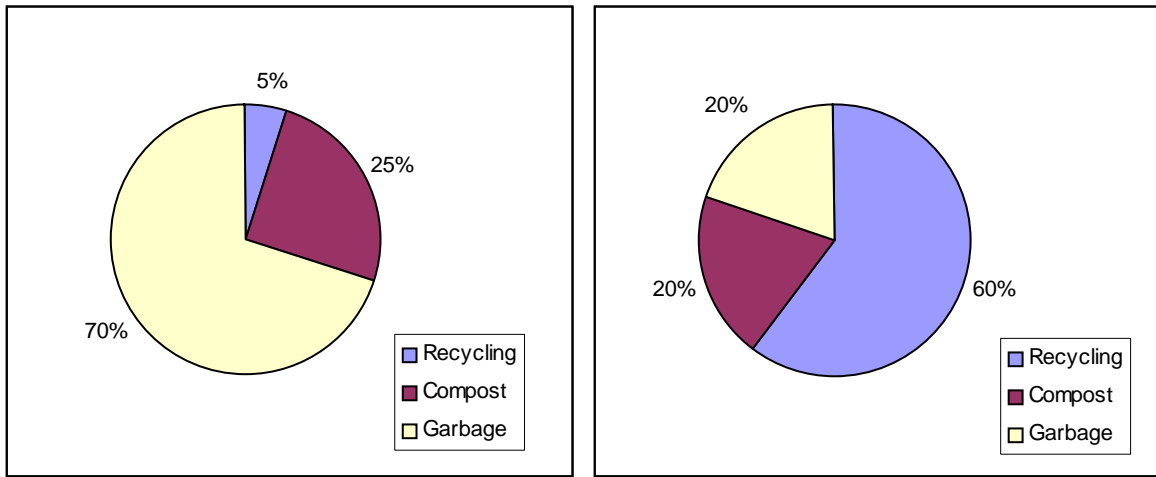


Figure 1. Illustration of the contents of two garbage bags audited on November 20: Preview Gala. Chart on left depicts results from the volunteer area and the chart on the right represents results from the exit at the floor area.

Audit 1- Volunteer Area:

- Recycling -Styrofoam plates, coffee cups, plastic salad containers/cutlery, juice boxes.
- Compost -Coffee grounds, pizza, sandwiches, yoghurt.
- Garbage -Napkins, plastic packaging.

Audit 2- Floor Area (exit):

- Recycling -Styrofoam plates, paper plates, plastic beer cups, plastic cutlery, juice boxes
- Compost -Bones, meat, limes.
- Garbage -Napkins, Tim Horton's coffee cups.

Wednesday November 21- Family Night

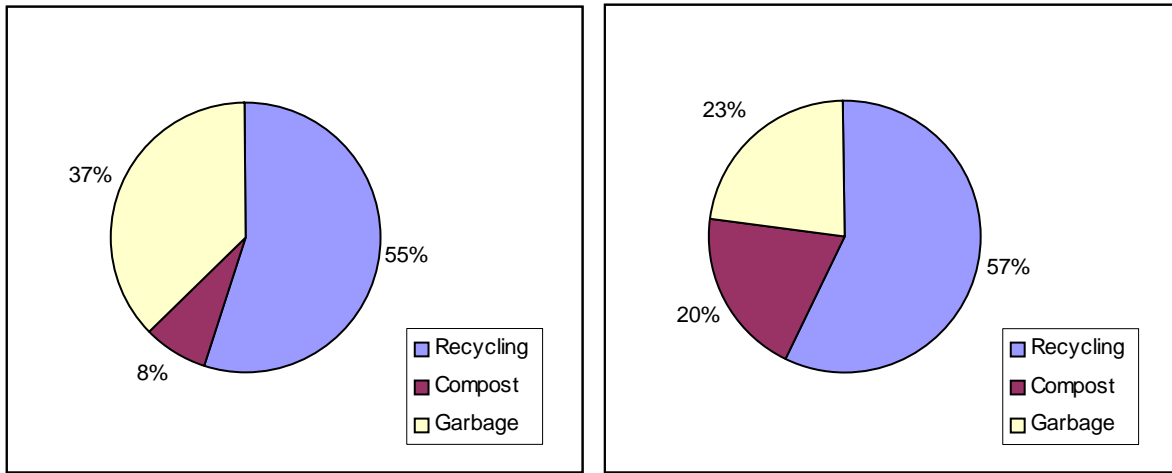


Figure 2. Illustration of the contents of two garbage bags audited on November 21: Family Night. Chart on left depicts results from the café area and the chart on the right represents results from the kids' cookie decorating area.

Audit 1- Floor Area (café):

- Recycling -Styrofoam & plastic cups, milk cartons, juice boxes, stir sticks, paper, straws
- Compost -Hot dogs/buns, baked goods, yoghurt
- Garbage -Napkins, hot dog packaging, chip bags, Starbuck's cups, other packaging

Audit 2- Kids' Area (cookie decoration):

- Recycling -Styrofoam & plastic cups, juice boxes, Styrofoam plates, paper tickets
- Compost -Wooden Popsicle sticks, apple core, ice cream, lollipops/other candies
- Garbage -Napkins, candy packaging, other packaging, plastic bags, wrapping paper

Thursday November 22- Heritage Breakfast

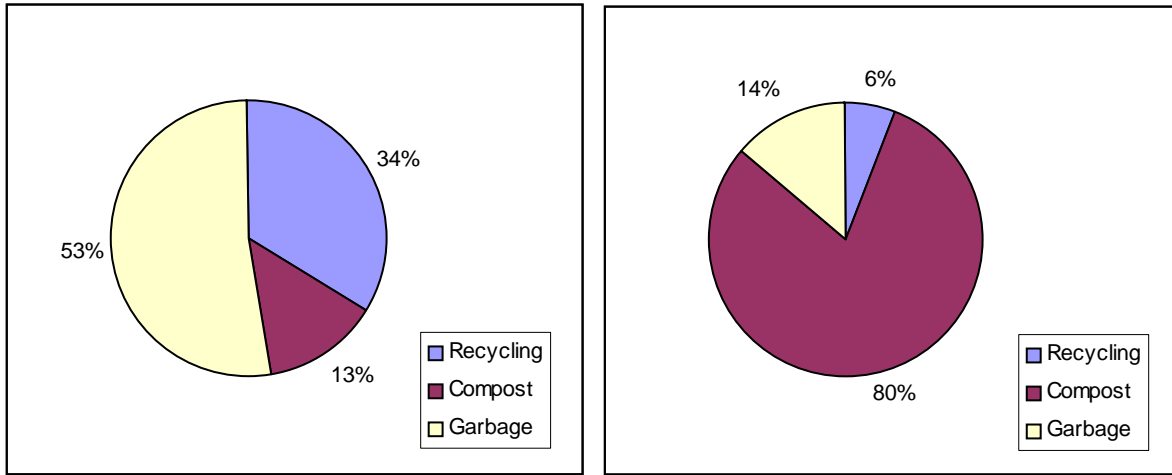


Figure 3. Illustration of the contents of two garbage bags audited on November 22:Heritage Breakfast. Chart on left depicts results from the volunteer area and the chart on the right represents results from the floor area where breakfast was served.

Audit 1- Volunteer Area

- Recycling -Styrofoam coffee cups, paper cups, plastic cutlery/lids, stir sticks, packaging
- Compost -Orange peel, wooden sticks (Shish kabob sticks)
- Garbage -Napkins, Starbucks cups, packaging

Audit 2- Floor Area (near breakfast area)

- Recycling -Styrofoam coffee cups, plastic cups/cutlery/lids, newspaper, coffee creamers
- Compost -Coffee grounds, baked goods
- Garbage -Napkins, Starbucks cups

Friday November 23- Celebrity Lunch

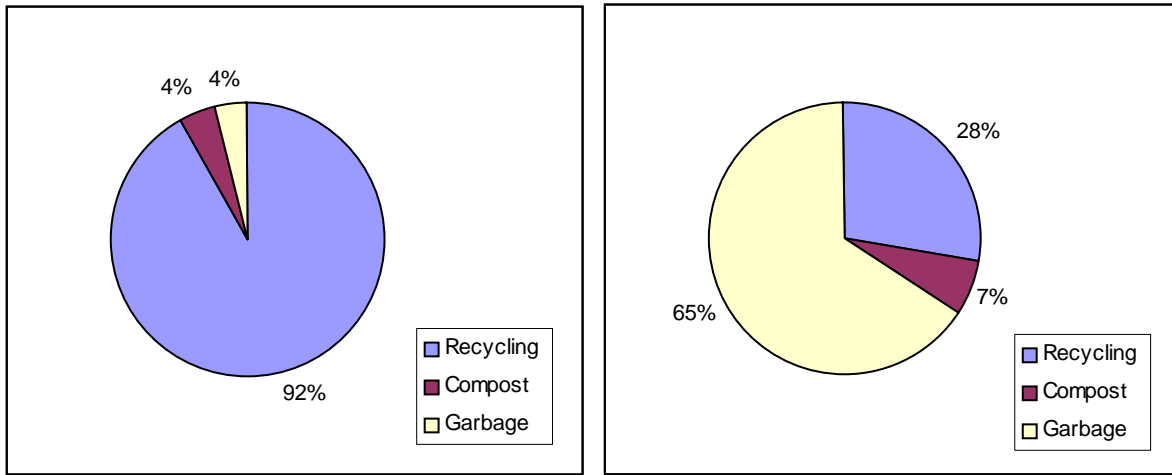


Figure 4. Illustration of the contents of two garbage bags audited on November 23:Celebrity Lunch. Chart on left depicts results from the café area and the chart on the right represents results from the kids' area.

Audit 1- Floor Area (café)

- Recycling -Styrofoam cups, plastic shot glasses/ beer cups, paper menus/table numbers
- Compost -Coffee, lollipops, noodles, limes, sugar cubes
- Garbage -Napkins, packaging, Tim Horton's coffee cups

Audit 2- Kids' Area

- Recycling -Aluminium foil, Styrofoam cups, plastic bottles/icing cups, paper plates
- Compost -Cookies, candy, wooden Popsicle sticks
- Garbage -Napkins, construction paper, rubber gloves, packaging,

Saturday November 24- Children's Fantasy Breakfast

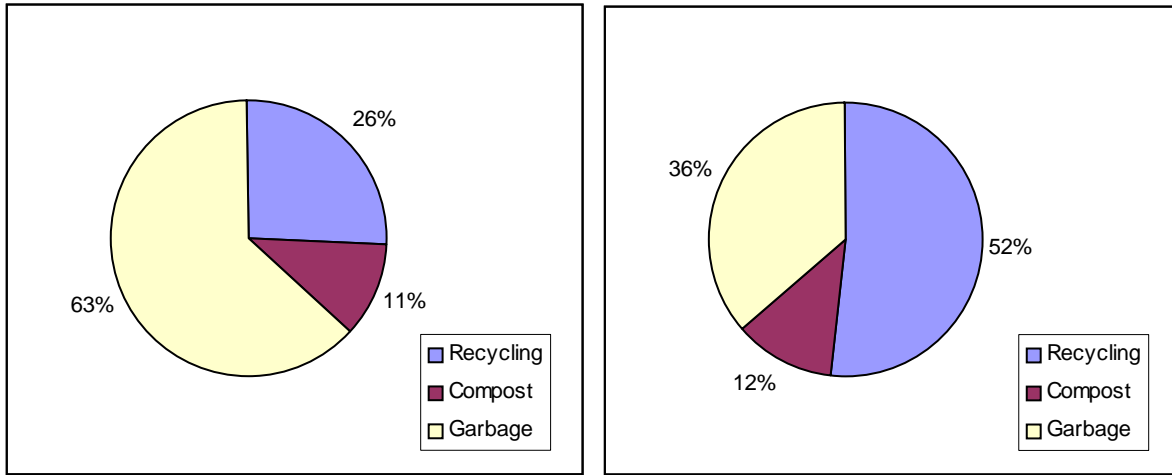


Figure 5. Illustration of the contents of two garbage bags audited on November 24: Children's Fantasy Breakfast. Chart on left depicts results from the exit at the floor area and the chart on the right represents results from the café area.

Audit 1- Floor Area (exit)

- Recycling -Styrofoam cups, juice boxes, paper candy packaging, plastic lids
- Compost -Orange peels, apple cores, candy, crackers, fast food
- Garbage -Napkins, packaging, Tim Horton's/Starbucks coffee cups

Audit 2- Floor Area (café)

- Recycling -Paper, paper bags, plastic cutlery, receipts, straws, juice boxes, sugar packets
- Compost -Orange peels, muffins, wooden Popsicle sticks, cheese, butter
- Garbage -Napkins, Tim Horton's/Starbucks coffee cups, packaging

Upon visual examination of each pie chart, I am able to conclude that there is great fluctuation between the volumes of each waste type throughout each area and each day as well. This is due to the different types of activities that were carried out, creating different types of garbage. Also, the location of each garbage bin is significant. The pooled data in Figure 6, for each location within the Memorial Centre, depicts a pattern that was seen daily.

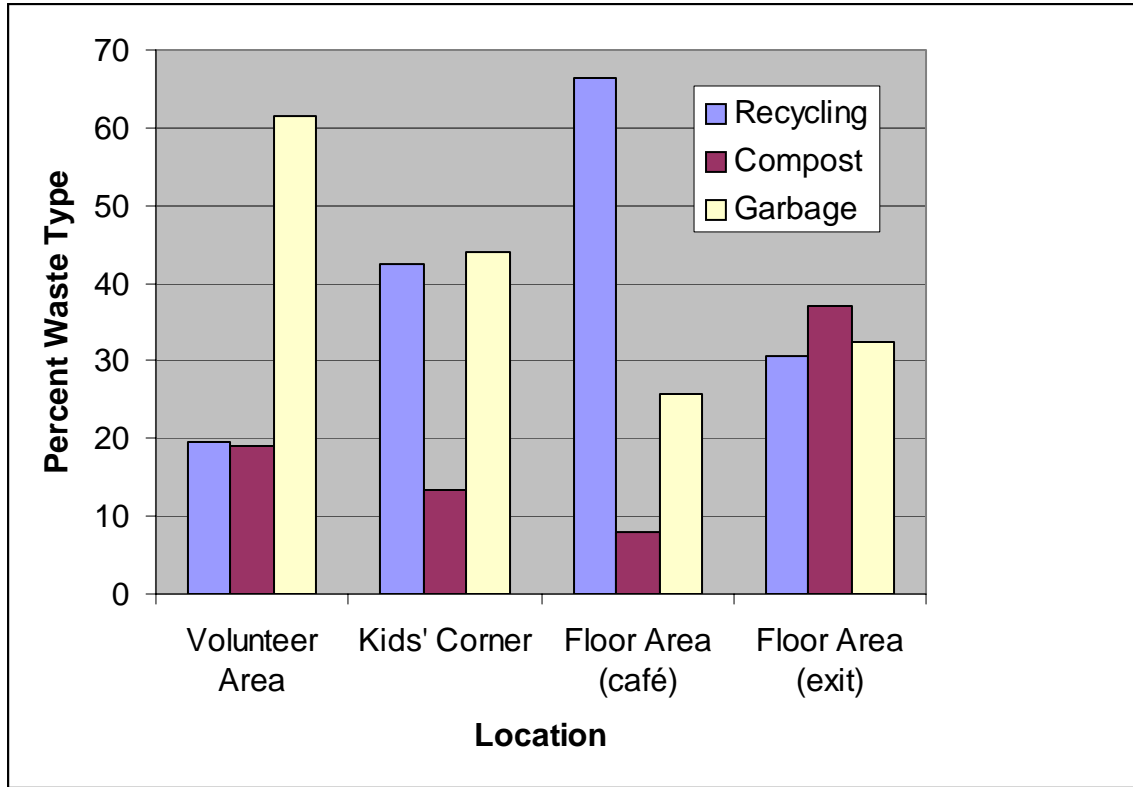


Figure 6. Cumulative percentage of waste types extracted from garbage in separate areas of the festival.

It can be seen in Figure 6 that in the volunteer area most of the items that were in the garbage bin were actually garbage. This is due to the education and care of the volunteers to help the green team with their goal of maximal waste diversion. It was expected that the kids' area would do the worst with respect to sorting their garbage, however, it was an unpleasant surprise that the café area had almost all garbage bins filled with recyclables. These recyclables were saturated in liquids and could not be salvaged. The floor area at the exit had the most compost thrown inside garbage bins. This was due to lack of other composting alternatives. The kids' area had the second highest volume of recyclables being thrown into garbage bins. However, most could be recovered and was placed into proper recycling bins.

Overcoming Last Year's Waste Audit Challenges/Issues

Challenge #1

- Last year's waste audited stated, "While performing a waste audit it is important to know the source of the garbage audited." Last year, the garbage audited was taken from the dumpster without knowing the source most of the time (Anderson et al., 2006).
- This year, the garbage that was audited was taken right from the source, not the dumpster.

Challenge #2

- Last year the audit was based on weight only; volume was not taken into consideration. This created a lot of bias in the results because recyclables weight a lot less than compost or other garbage (Anderson et al., 2006).
- This year the audit was based on volume only. Since volume is what landfills are concerned with in the first place, I believe this method is more appropriate and will give more accurate results.

Challenge #3

- Last year, the lack of communication between janitorial staff and project participants was low. Due to this issue, project participants had a hard time figuring out where the garbage was coming from that they had to audit (Anderson et al., 2006).
- This year, since the garbage was taken right from the source, I had no need to communicate with any janitorial staff.

Challenge #4

- There was a lack of professionalism and much confusion between first year students and projects participants. This lead to a congested audit room and tension between volunteers (Anderson et al., 2006).
- This year, since it was only a couple of colleagues and I, we were well informed and knew exactly what they had to do. Lack of manpower lead to other issues discussed later on.

Challenge #5

- Last year's waste audit stated, "The festival needs to have clearly labelled recycling bins. Most effective would be signs, not at floor level but above eye level" (Anderson et al., 2006).
- This year, the recycling/waste receptacles were decorated and visually pleasing, contributing to the festive appearance of the festival. Figure 7 is an illustration of the recycling/waste receptacle from this year.



Courtesy of Andrea Taylor ©

Figure 7. Illustration of the Recycling/Waste Receptacles that were distributed to various places within the festival area. This one was placed in the volunteering area and has a minor adjustment to it. The rest of the waste centres have the garbage bin located inside them not beside them.

New Challenges/Issues Regarding Waste Audit

Challenge #1- Time

Time constraints were extreme this year, compared to last year. Last year, this project began on October 17, a month before the festival (Anderson et al., 2006). This year, I was notified about the existence of this audit about a week before the festival. This placed immense stress on me to familiarize myself with the project, get myself organized and complete the preliminary research I needed in order to carry out a proper audit.

Challenge #2- Manpower

Due to the lack of people assisting me on the project, I was not able to cover activities and issues with as much detail as the students last year. Since there is three types of waste that we must work on diverting from landfills, I feel that a minimum of three people should be working on the waste audit, each observing activities that deal with their type of waste and research on how to decrease that type of waste.

Challenge #3- Communication

Although communication with janitorial staff was not needed with respect to figuring out the source of garbage, like last year, it *was* needed with regards to opening and locking the audit room. The first two days of the audit, we searched over half an hour before we found maintenance personnel who had the key to the room. The men who had the key had absolutely no idea what I was doing there and opened the door apprehensively.

Challenge #4- Odour Issues

Sorting through garbage is not the most pleasant activity, however, as long as we have gloves and an apron, it is a bearable. Some days, when there was too much compost in the garbage, the smell was repulsive to the extent that we had to leave the room for a couple minutes to get some fresh air. I recommend that dust masks be worn for future projects. They won't take 100% of the smell away, but I believe it will make it tolerable.

Recommendations

Recommendation #1

Currently, Peterborough has 3 waste management facilities:

1. The Materials Recycling Centre
2. The Household Waste Facility and The Harper Road Composting Site
3. The Peterborough County/City Landfill

(City of Peterborough, 2004)

Approximately 65% of what we throw out is organic and could be diverted from the landfill (EnviroTimes, 2007). That is over 15,000 tonnes of compost, including food and yard waste, per year that is sent to the above facilities (City of Peterborough, 2004). The “Clean Stream Waste Management System” began in 2001 where all compost types were collected for 600 homes (City of Peterborough, 2004). Waste management officials have assured citywide compost pickup for Fall 2007; however, expansion of the centralized compost system has not been completed, thus they hope “that collection will be in place for Summer 2008,” (EnviroTimes, 2007). For more information on the subject you may contact the Waste Management Division 742-7777 extension: 1657. Private composting was done for the volunteer area mostly for coffee grounds using biobags (Conchelos and Kuchinad, 2007). Unfortunately the amount of compost that is created by the festival is too much for private composting. Composting will only be a success if the City of Peterborough is involved. There is one other option that requires a bit of planning and effort by the Memorial Centre. It involves acquiring a private composter for the Memorial Centre itself. Composters of all size can be bought from the city’s waste management sector (City of Peterborough, 2004). It is not impossible, massive projects like this one would be have been a success in the past, for example, apartment composting system set up by Green Up in Peterborough (City of Peterborough, 2004). Information on how to maintain a composting system, such as this one, is available at <http://www1.city.peterborough.on.ca/WasteManagement/factsheets.htm> or by contacting the Waste Management Division 742-7777 extension: 1657.

Recommendation #2

There were only 8 walkie-talkies given to use for the festival; 2 for cash control, 1 for general admission, 1 for direct sales, 1 for Anna Skorski in Logistics, 1 for floor duty personnel, 1 in the office and 1 in the volunteer area (Conchelos and Kuchinad, 2007). It is difficult to locate team leaders in the crowds when they do not have walkie-talkies since they are very mobile throughout the day. It took me approximately half hour to locate a specific person from the Green Team because nobody knew where she was and had no way to contact her. I recommend that walkie-talkies be given to more group leaders next year to allow for quick communication in case of a problem.

Recommendation #3

Although great effort has been made to create a Recycling/Waste Centre, (seen in Figure 7) it can be seen in Figure 6 that most of the cumulative waste type that is being thrown into garbage bags is recycling. This suggests that guests are either careless or illiterate. It would be a good idea to have informed volunteers stand or sit by each waste receptacle and help the guests in making the proper decision. Sometimes it is a bit difficult, especially with certain packaging, to figure out which waste type it belongs with. Perhaps by taking one or two hours shifts, standing or sitting in one place would be bearable.

Recommendation #4

The results from the waste audit show that napkins were present in all garbage bags that were audited. Only ordinary white napkins were used in the festival (Conchelos and Kuchinad, 2007). These napkins are completely non-recyclable or compostable, thus they are sent to the landfill. To significantly reduce the amount of garbage being sent to the landfill, I suggest the use of biodegradable napkins. Biodegradable napkins resemble ordinary white napkins and are visually appealing. They must be placed in the compost. Biodegradable napkins also come in non-bleached, brown. This means that they were made from 100% biological material and recycled fibres (Taylor, 2007). They are not as visually appealing, but break down easier than the bleached ones, because every time something is recycled, the fibres become shorter and weaker (Sarasua and Pouyet, 1997).

Recommendation #5

Another type of waste that was seen in all audits is coffee cups. There were recyclable paper and Styrofoam cups, but also non-recyclable Tim Horton's and Starbucks coffee cups present in almost all waste audits. To reduce both recyclable and non-recyclables, I suggest the use of washable coffee mugs in the festival. It has come to my attention that there is a dishwashing facility on site at the Memorial Centre. In order for this plan to work, there would have to be volunteers whose job would specifically be to collect, wash and redistribute the clean mugs to all places where coffee is served. As long as there are enough volunteers, there is no reason for this idea to fail. If the volunteers are efficient, there will not be a shortage of mugs available.

Recommendation #6

I was awfully disappointed when I learned of the way the café was serving their food and drinks. They served the food on paper/biodegradable plates; they served their drinks in Styrofoam cups and sometimes in glasses (Conchelos and Kuchinad, 2007). Since there is a dishwashing facility onsite, I do not see why the café cannot serve their food on washable dishes. Once again, as long as there are volunteers for the job, it should not be a problem. The hardest part would be finding a company or organization that is willing to let the festival borrow their dishes

Recommendation #7

This year, the hospital was kind enough to let the festival borrow their dishes for the Heritage Breakfast, Celebrity Lunch and Children's Fantasy Breakfast. After each event, the dishes were transported back to the hospital where they were cleaned. In recommendation #6 I mentioned finding a company or organization that will allow the festival to borrow their dishes. I believe the first place to go ask is the hospital, since they could easily provide the amount that would be needed. The hospital is one of the beneficiaries of the profits made by the festival and it would be very callous of them to refuse.

Recommendation #8

There was an activity for the kids where they could decorate cookies and could mix their own icing in little plastic cups. In November 23's waste audit there were hundreds of these little plastic cups thrown in the garbage. They could not be thrown in the recycling because they contained mass amounts of icing in them. These plastic cups do not have to be thrown out. My colleague, Andrea, suggested that they have a 'wash station' located in the kids' area and let the kids wash their own plastic cups after they are done with it (with some help, of course, to make sure it is done properly). The kids would learn responsibility, the cups could be reused and no waste would be generated.

Recommendation #9

While browsing in the candy shop, I noticed the waxed wrapping paper that the fudge and other baked goods are weighed and wrapped in. This type of wrapping paper is non-recyclable. I suggest the use of paper bags to weight and wrap these goods in. It does not have any less visual appeal, however, it *is* recyclable and will reduce the amount of waste generated. Most of the products in that shop are heavily packaged. If all the candy and baked goods were locally baked, they would not need that much packaging. They could be served like the fudge: in bulk.

Recommendation #10

To reduce the amount of paper/Styrofoam cups circulating, and to make a bit more profit, I believe it is a good idea to sell "Festival of Trees" travel mugs and water bottles with a certificate for a free food or drink item. Last year, it was suggested to "have a lower price for customers who bring their travel mugs, and have proper advertising for this special deal on coffee" (Anderson et al., 2006). This was a very good idea, however I did not see it in effect this year. Also, it is important to encourage volunteers to bring their own mugs or water bottles from home so that they do not contribute to the waste that is being produced.

Recommendation #11

If there is more locally made food that is served at the festival, less packaging will be required. Also, since it would be made locally, it would be more beneficial to the guests' health since it will be fresher and will contain less or no preservatives than transported foods.

Recommendation #12

Try to use bulk items in the kitchen. It is cheaper to buy and it contains less packaging. Also, by using washable/reusable dishes and products in the kitchen, packaging becomes less of an issue. We have a tendency to use aluminium foil in the kitchen very generously, however, this is not a great alternative to using washable plates.

Recommendation #13

Since so many different types of food goes through the kitchen in different packaging, it is important to make sure proper recycling methods are being practiced in the kitchen as well. Hopefully by next year composting will be implemented and all kitchen scraps can be included.

Conclusion

The goal of this year's waste audit was to replicate the previous audit and modify the project to make it more accurate with less bias. This was done through measuring volume instead of the weight of the garbage. I feel it was a complete success. The purpose of this year's waste audit was to calculate the amount of material that might be recycled, reused or composted that is still being sent to the landfill with other garbage. It is important to note that not *all* garbage was audited, but just samples of the garbage in the black garbage bags that are intended for the landfill. I believe it is imperative to note that the type of waste audit I carried out did not audit recycling because recycling is not considered "waste." Waste is defined as any substance or object that is discarded and not recovered (WRAP, 2007). Therefore, it is only the black garbage bags intended for the landfill that are audited. Next year when, hopefully, there is composting added into the system, that should not be audited either since it will be returned as soil into the community. That is not considered waste either. However this fact does not mean that volunteers carrying out the waste audit should not pay attention to how to reduce the amount of recycling or compost that is being created.

For future projects I recommend at least 3 people working on the audit full time. I also suggest that more precise results can be gathered if more garbage is audited each day of the festival. As a start, I recommend auditing all 4 (or however many there will be in the future) sites of the waste/recycling centres each day. Of course, it is ideal that *all* garbage be audited for results that are accurate. However, without enough manpower, this cannot be completed.

The festival has the ability to be a leader in community waste diversion. They can verify that big events are able to function without being environmentally destructive. Also, they can prove that when a community works together for a common cause, they *can* make a difference.

References

- Anderson, Paula, Emily Brady, Jonathan Loycker, Amanda McLachlar and Rein Tammemagi. 2006. Greening the festival of trees. ERST 334: Food Systems.
- City of Peterborough. 2004. Solid waste management in 2004. Retrieved November 16 from <http://www1.city.peterborough.on.ca/WasteManagement/docs/04SUMMARY.pdf>.
- Conchelos, Mary and Ruth Kuchinad. 2007. Managers of Green Team at Festival of Trees. Peterborough, ON.
- EnviroTimes. 2007. Organics is coming... honest! Retrieved November 17, 2007 from <http://www1.city.peterborough.on.ca/WasteManagement/docs/EnviroTimesSpr07.pdf>.
- EnviroTimes. 2006. Where your garbage goes. Retrieved November 17, 2007 from <http://www1.city.peterborough.on.ca/WasteManagement/docs/06EnviroTimes.pdf>.
- Festival of Trees (FOT). 2007. Festival history. Retrieved November 16, 2007 from <http://www.ptot.org>.
- Ontario Ministry of Environment (MOE). 2007. Waste diversion act initiatives. Retrieved November 17, 2007 from <http://www.ene.gov.on.ca/envision/land/wda/index.htm>.
- Sarasua, J. and J. Pouyet. 1997. Recycling effects on microstructure and mechanical behaviour of poly-ether-ether-ketone (PEEK) short carbon-fibre composites. *Journal of Materials Science*, 32(2): 533-536.
- Taylor, Keith. 2007. Environmental Program Manager. Conservation Authority, Belleville, ON.
- Waste and Resources Action Programme (WRAP). 2007. Definition of waste. Retrieved December 23, 2007 from http://www.aggregain.org.uk/waste_management_regulations/background/definition_of.html.