CITY OF KELOWNA

# MEMORANDUM

**Date:** September 4, 2007

**File No.:** 0760-20

**To:** City Manager

**From:** Development Manager, Recreation Parks and Cultural Services

**Subject:** Final Report on the Mayor's Youth Forum on Environment Issues - The City's Role in Reducing Consumption and Land Fill waste

## RECOMMENDATION:

THAT Council receive the final report from the Mayor's Youth Forum on Environmental Issues held May 16, 2007 as attached to the report from the Development Manager dated September 4, 2007;

AND THAT Council direct staff to distribute the final report to;

- Central Okanagan Regional District Board for further distribution to the Regional Air Quality Committee, the Regional Transportation Committee, and the Regional Engineering Committee,
- School District #23 Board for further distribution to participating high schools, and
- City Departments for further distribution to the City Sustainability Committee and Transportation Committee;

AND THAT the above noted Boards, Committees and staff be requested to consider the input from youth contained in this final report when developing related policy, strategic plans and budget priorities;

AND FURTHER THAT this final report be placed in the highlighted section of the City's home web site page.

## BACKGROUND:

The Mayor's Youth Forum on Environmental Issues was held on May 16, 2007. Council received a verbal presentation on May 28, and notice that the full written report would be presented later.

The Youth Advisory Committee are recommending a wide distribution of this final report to appropriate agencies, committees and staff so that the input from youth concerning these issues can be considered and incorporated in policies, strategic plans and budget priorities.

The purpose of this Youth Forum was to solicit input from high school youth about environmental issues impacting them in Kelowna and the Central Okanagan. In particular, the focus was on consumer consumption habits and the City's role in reducing consumption and land fill waste.

Three separate research activities took place in advance of the one day forum;

- an on-line survey completed by over 560 youth,
- on-site school waste inventories completed at all seven high schools, and

- a three-day eco-footprint log completed by 48 students.

The research revealed a high awareness of consumer-related environmental impact issues including;

- garbage disposal, transit, recycling, and energy efficiency in homes.

It also revealed that respondents (and their families) have been active making one-time changes to their homes for items such as better furnace, windows, toilets, and water facets. Adopting better habits such as turning lights off more often, turning down the heat, and using alternative transportation to the car are becoming far more prevalent.

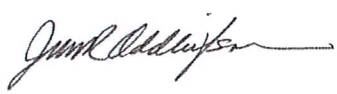
The conclusions reached from the waste audits included many suggestions for local high schools to consider, including: separating garbage, reusing paper, and using environmentally 'friendly' products. These recommendations also included more education for students.

This report lists numerous recommendations made by the youth, including several for the City to consider. These include: youth transit advisory committee, no idling policy for cars, more 'bike friendly' roadways and community education initiatives. It is recognized that some of these recommendations have either been already considered by City staff and Council, or are already underway.

More than any previous generation, youth of today are very informed and critical about consumer behaviour as it impacts the environment. They also appear willing to adopt good consumer behaviours, if made available. This report provides a very cursory list of recommendations, but perhaps more importantly, it suggests keeping youth involved in research, design, and implementation of new policies, services, or procedures relating to this topic.

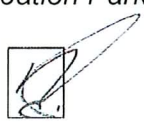
Considerations that were not applicable to this report:
Internal circulation to:
Legal/statutory authority:
Legal/statutory procedural requirements:
Existing policy:
Financial/budgetary considerations:
Personnel implications:
Technical requirements:
External agency/public comments:
Alternate recommendation:

Submitted by:



*JWR Oddleifson*
*Development Manager, Recreation Parks and Cultural Services*

Approved for Inclusion:



Cc: Youth Advisory Committee
Director of Recreation Parks and Cultural Services

Attachment

# KELOWNA YOUTH ADVISORY COMMITTEE

Report on Mayor's Youth Forum of May 16, 2007

# Spring 2007

*Prepared by -*

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KELOWNA YOUTH ADVISORY COMMITTEE

Report on Mayor's Youth Forum of May 16, 2007

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## SUMMARY

The purpose of this project was to solicit input from local high school youth (grades 10 through 12) about environmental issues impacting them in the Central Okanagan. In particular, the focus was on consumer consumption habits and the City's role in reducing consumption and land fill waste.

Three separate research activities took place in advance of the one day forum, held on May 16th. The research included an on-line survey completed by over 560 youth, on-site school waste inventories completed at all seven high schools, and a three-day eco-footprint log completed by 48 students.

The research revealed a high awareness of consumer-related environmental impact issues (garbage disposal, transit, recycling, energy efficient in homes, etc.). It also revealed that respondents (and their families) have been active making one-time changes to their homes (better furnace, windows, toilets, etc.) and adopting better habits (turning lights off more often, turning down the heat, using alternative transportation to the car, etc.).

The conclusions reached from the waste audits included many suggestions for local high schools to consider, including: separating garbage, reusing paper, using environmentally 'friendly' products, etc. These recommendations also included more education for students.

This report lists numerous recommendations made by the youth, including some for the City to consider. These include: youth transit advisory committee, no idling policy for cars, more 'bike friendly' roadways and community education initiatives. It is recognized that some of these recommendations have either been already considered by City staff and Council, or are already underway.

More than any previous generation, youth are very informed (and critical) about consumer behaviour as it impacts the environment. They also appear willing to adopt good consumer behaviours, if made available. This study provides a very cursory list of recommendations, but perhaps more importantly, it suggests keeping youth involved in research, design, and implementation of new policies, services, or procedures relating to this topic.

# METHODOLOGY

The objectives of the process are to learn what youth think can be done in the Central Okanagan to reduce daily impact on the environment.

The process design was to incorporate all primary research results with the live one-day forum. All participants are in grades 10, 11 or 12 in the Central Okanagan's seven secondary schools.

The primary data collection from Central Okanagan high school youth was from four sources:

1. **On-line survey on Consumer consumption**

   The on-line survey was used to collect large-scale input on youth consumer patterns, the respondent's school's effort to reduce non-recyclable consumption and youth's suggestions for "going green". There were 563 respondents

2. **Eco-Footprint calculation**

   This three day tracking process and analysis provides enough information on the respondent's consumption to calculate their "eco-footprint". Eco-footprint is the calculation of the number of earth's required to support current levels of consumption and waste production, using prevailing technology. 48 youth completed the Eco-footprint recording.

3. **High School waste audit**

   Garbage waste audits were completed at all seven local high schools with the help of the Regional Waste Reduction Office of the Central Okanagan Regional District.

   The waste audit was designed so that youth could have first hand exposure to what goes into their garbage and some sense of what could be recycled. Each school provided six randomly selected bags of garbage from one day of operations. The youth separated the bags of garbage into recyclable, compost-able and non recyclable content. All content was then weighed and recorded.

4. **Forum small group dialogue sessions**

   All youth at the one day forum (about 50 youth participated at the forum, representing six of the seven high schools) enthusiastically engaged in open dialogue about changes needed in the Central Okanagan to reduce or offset environmental impact of our local population.

The questions asked of the delegates were:

- What is one thing that you are committed to doing differently as a result of this forum or the increased awareness?
- What does our City need to do to better promote/encourage/enforce sustainable living for residents?
- What role can youth play in creating a world-class example of a sustainable community?
- What message do we want to tell youth about waste reduction?
- How do we get this message to youth?
- What is the first action step?

## Forum Sponsors

- City of Kelowna
- Regional District of Central Okanagan
- Regional Waste Reduction Office
- Fortis BC
- COFFY
- Little Caesars Pizza
- Venture Gear
- Quality Greens
- A & B Sound
- Brosista Clothing Co.
- Okanagan Boys & Girls Club
- Kick Start
- PRC
- YMCA

## City and other Representatives:

- Mayor Sharon Shepherd
- Wayne Horning, Trustee, School District #23
- Shelley Nicholl, Trustee, School District #23
- Michelle Kam from City Environmental Dept.

## Youth Representatives:

- Immaculata Regional High School
- Kelowna Christian School (KCS)
- Okanagan Mission Secondary School (OKM)
- Kelowna Secondary School (KSS)
- Mt. Boucherie Secondary School
- George Elliot Secondary School
- Rutland Secondary School

## School representatives:

- Angela Reid, Laurel Richey & Dale Maxwell, OKM teachers & Custodian
- April Crabb, Immaculata teacher

# FINDINGS

## 1. ON-LINE SURVEY ON CONSUMER CONSUMPTION

Of the 563 respondents to the school survey, 21% were in grade 12, 31% in grade 11 and 48% in grade 10. one third of the respondents were from Kelowna Senior Secondary school, 18 % from Immaculata Regional High School, with about 10% of responses coming from each of the five remaining schools.

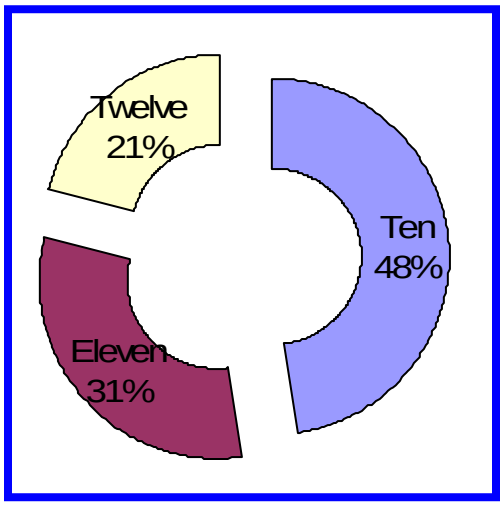


**Figure 2: Grades of respondents**

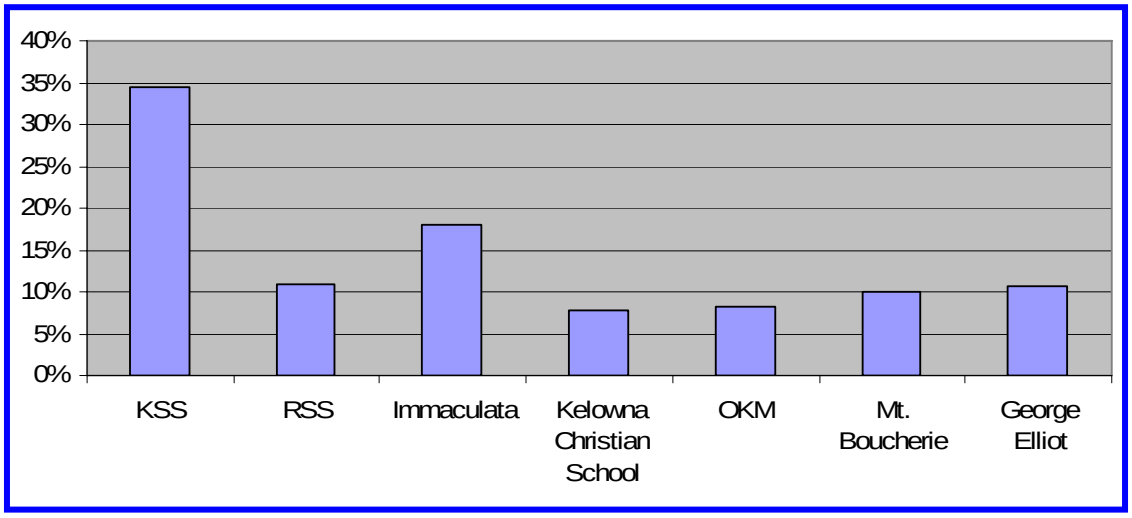


**Figure 1: Respondents' school**

**#1 Does your family recycle? Please check all that apply to you.**

As a consumer survey focussing on consumption and recycling, this survey was determining one time and habitual "green" practices.

The results show that of the eight recyclable product groups the most recycled are the refundable products (beverage containers) and least recycled are non-refundable items like: tin and aluminium, newspaper, etc.

Two obvious observations from these results are that 1) the youth respondents all know the recycling behaviours of their family and 2) there is room for improvement, between seven and 13% of all product categories were not being recycled.

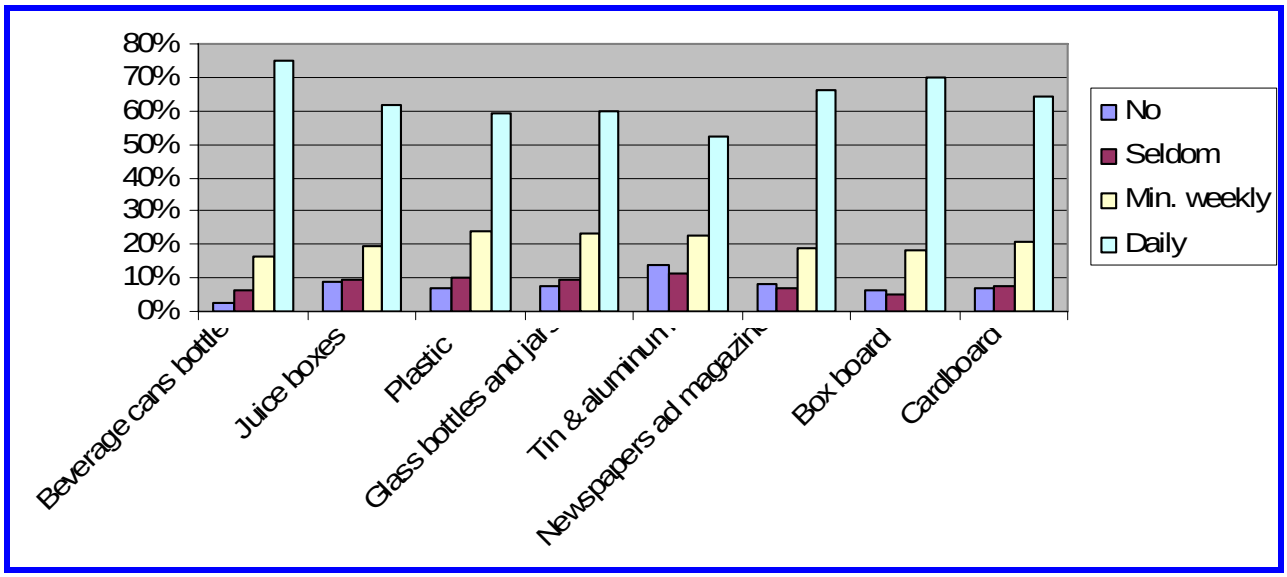


**Figure 3: Family recycling patterns**

**#2 What one-time changes has your family made to "go green"?**

Of the one time "green" changes made by families there was equal frequency for all of the suggestions provided:

- Installed a better home furnace 30%
- Installed better home windows 34%
- Installed low flush toilets or shower 35%
- Purchased a fuel efficient car 35%

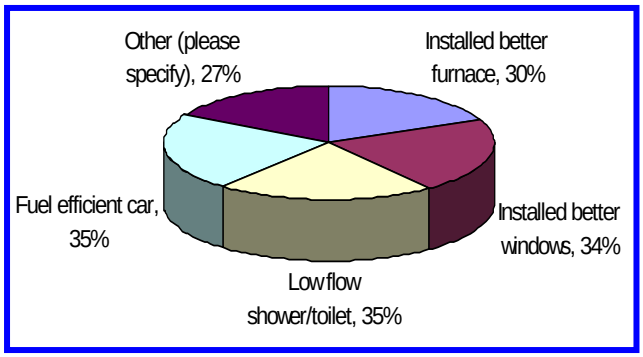


**Figure 4: One-time environmentally friendly change**

**The other one-time changes reported include:**

The following responses have been grouped by similar themes, number of similar responses is indicated with (#).

Conserve energy:

- Turn off lights and other appliances when not in use(9)
- Install newer and more efficient household appliances(5)
- Do large loads of laundry
- Use cold water to wash clothes(2)
- Insulate the house properly(3)
- Update heating to geothermal(4)

Recycle:

- Get a compost(2)
- Have and organized recycling system
- Re-use proper containers

Change transportation habits:

- Carpooling(6)
- Ride a bike(6)
- Walk more(5)
- Take the bus(2)
- Less driving(lower emissions)
- Free public transit (create awareness)
- Only own one vehicle

Change purchasing habits:

- Buy energy efficient light bulbs(29)
- Buy natural cleaning products(3)

**#3 What good habits does your family have to "go green"?**

The most popular "green" habits are:

- Turn the lights off more often 85%
- Turn down the heat 64%
- Buy food locally 60%1
- Bus, walk or bicycle instead of car 46%
- Wash dishes by hand 38%

Other good habits listed included:

- Use energy efficient light bulbs(2)
- Eats organic food
- Closes the blinds to keep the heat out in the summer
- Proper recycling
- Wash clothes in cold water
- Carpool to work or school

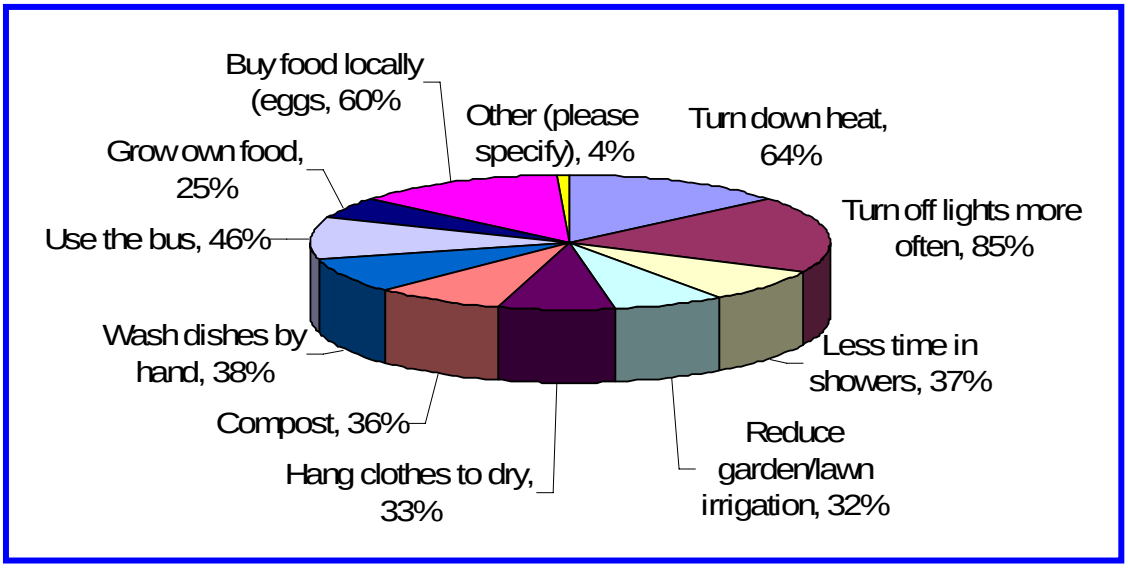


**Figure 5: Good habits of families**

[1] This question may have been misleading and respondents may have thought that "buying locally" means shopping at a local grocery store, as opposed to buying products grown/produced locally.

**#4 How much time do you spend showering?**

- 6-10 minutes/day 46%
- 11-15 minutes/day 42%
- 2-5 minutes/day 12%

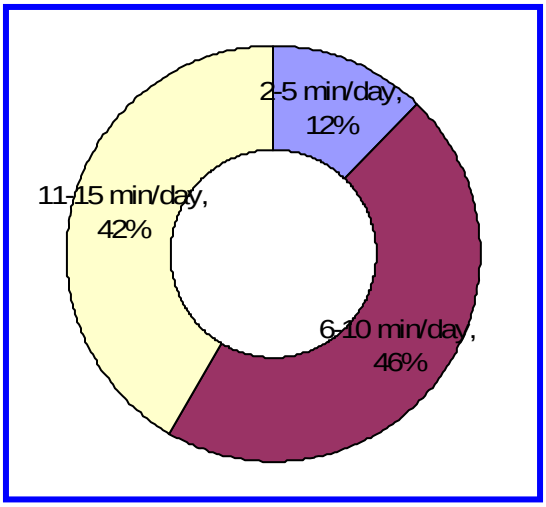


**Figure 6: Time spent showering**

**#5 How many bags of garbage does your family have on average (bags per week)**

76% of families are creating over one bag of garbage per week. 63% of respondent's families have four of fewer people in their families.

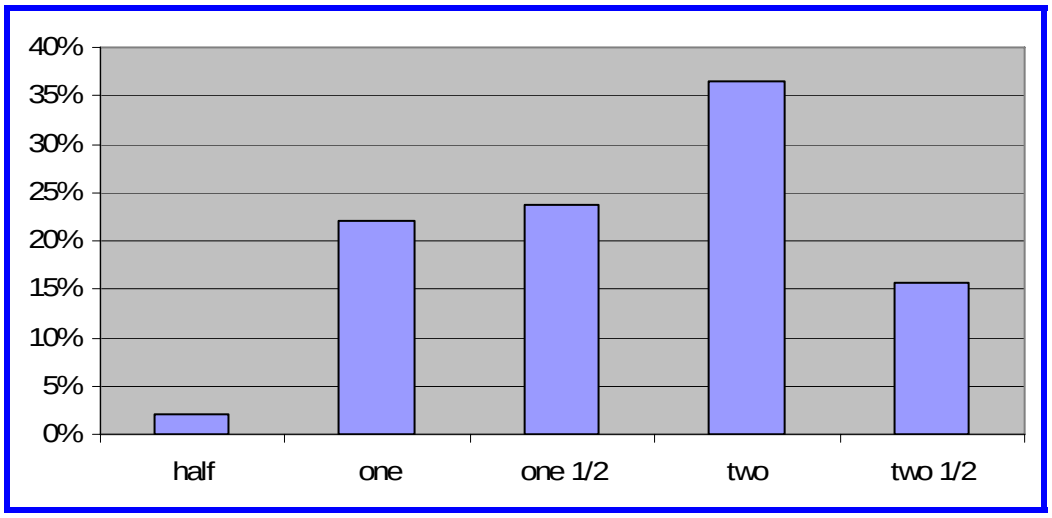


**Figure 7: Volume of garbage per family**

### #6: How many bags of recycling does your family have on average?

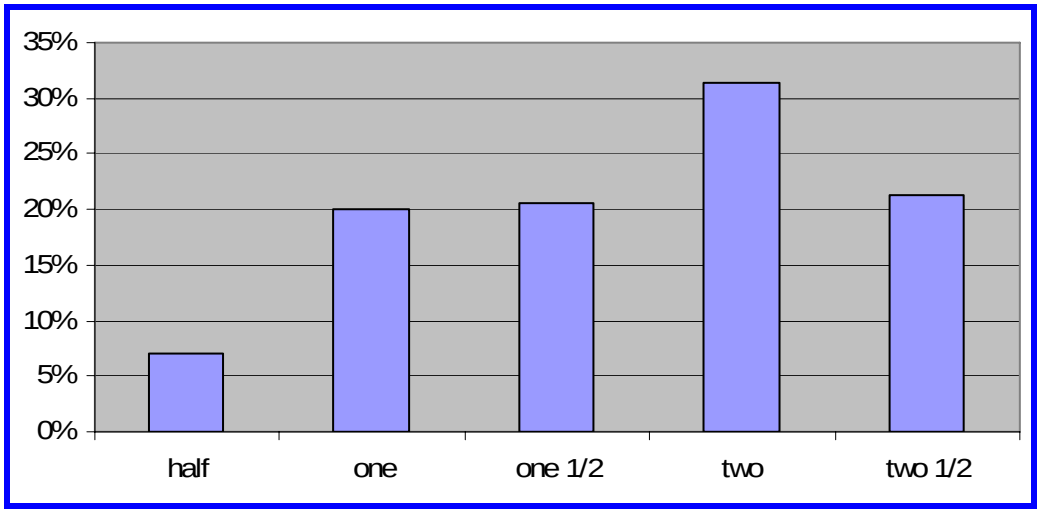


**Figure 8: Volume of recycling per family**

### #7 How many people are in your household?

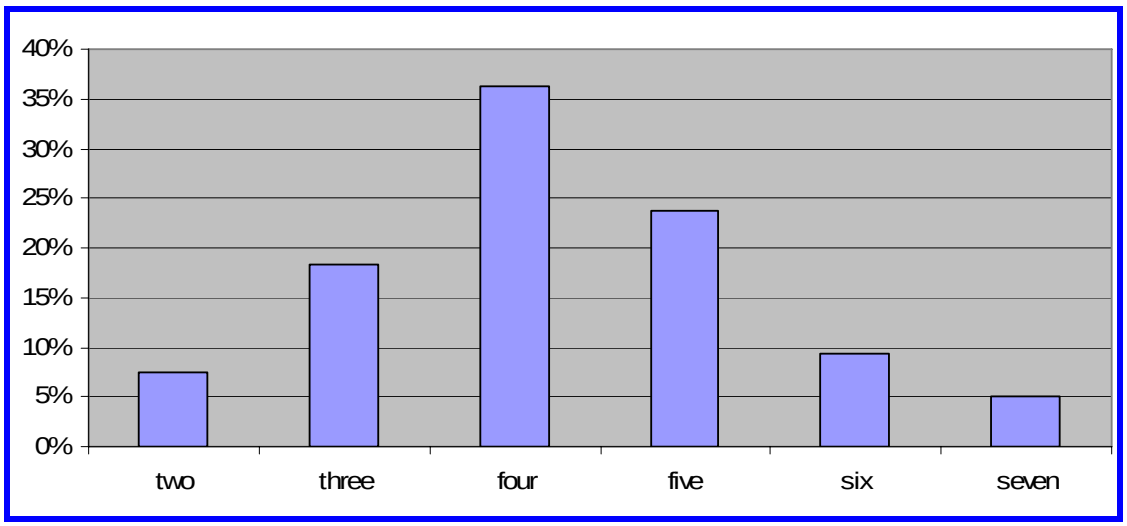


**Figure 9: Size of family**

**#8 Have you seen any of the City's "Living greener for a sustainable Okanagan" advertisements?**

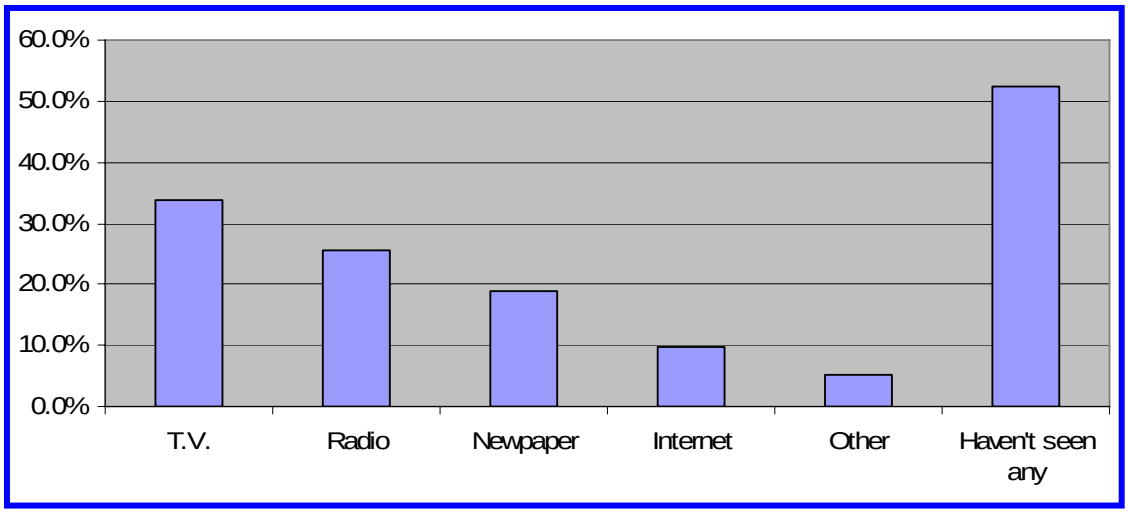


**Figure 10: Seen City's advertisements**

**#9 What is your school doing to "go green"?**

**The most popular activities schools are investing in (based on the awareness of the respondents, schools may be doing more than this) are:**

- Separated garbage (you have bins for glass, metal, garbage, etc.) 71%
- Paper being reused 64%
- Education for students on environmental issues 63%
- Waste reduction (effort to reduce amount of garbage created) 56%
- Turning lights off more often 55%
- Using environmental products (cleaning products etc) 26%

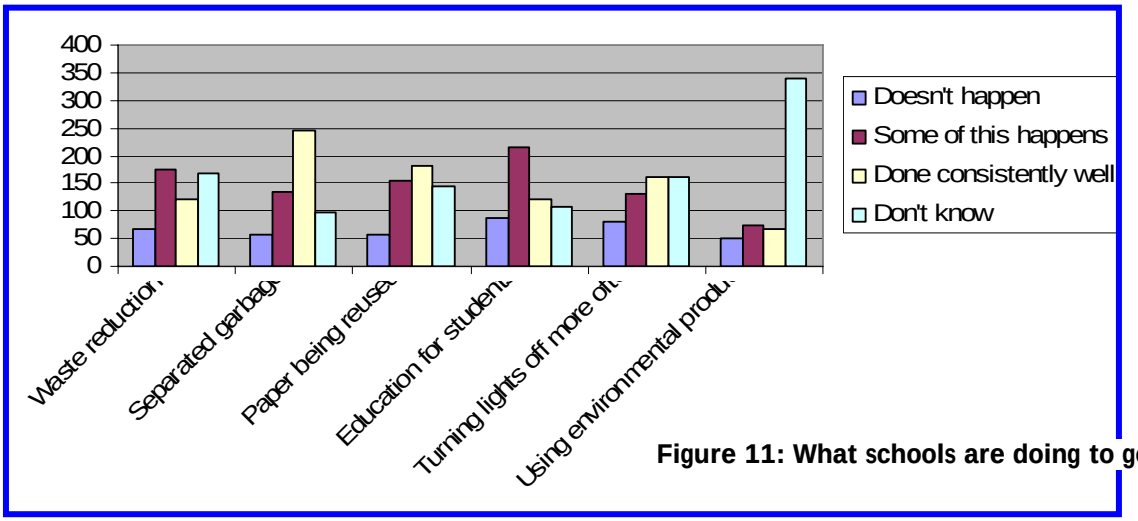


**Figure 11: What schools are doing to go "green"**

### #10 Overall, is your school doing a good job at being "green"?

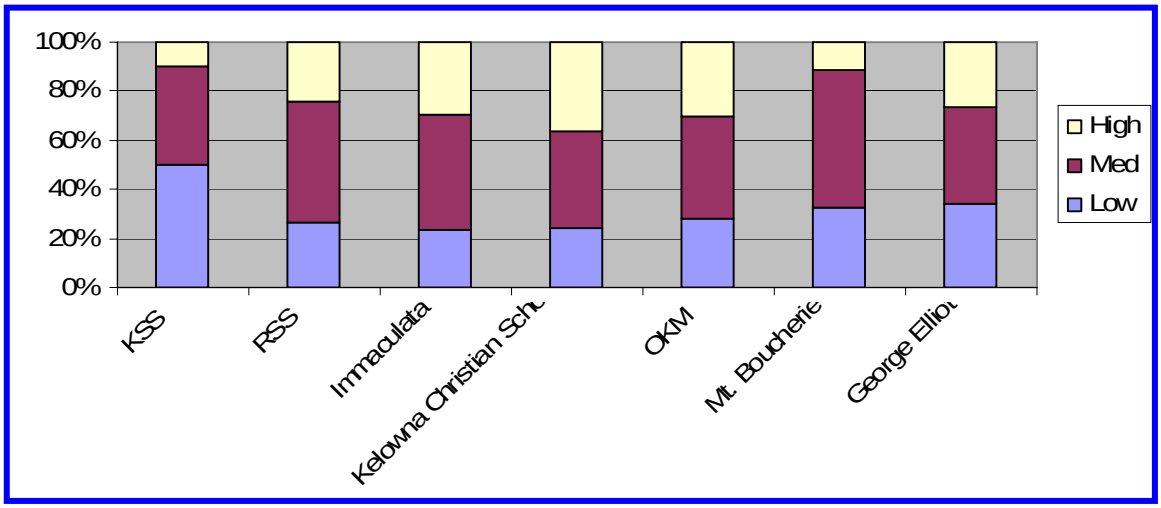


**Figure 12: Respondents' rating of their school's effort to "go green"**

### #11 What is one change you would like to see your school make?

The following responses have been grouped by similar themes, number of similar responses is indicated with (#).

| | |
|---|---|
| Provide general awareness about the environment to students: | ▪ Schools should provide more education about global warming and other environmental concerns(21)<br>▪ Have advertisements around the school about 'green'(3)<br>▪ Schools should create incentives to get students to recycle<br>▪ Have an environmental day at school once a week<br>▪ Take students on environmental field trips |
| Improve recycling: | ▪ More recycling bins at school that are clearly labelled(40)<br>▪ Re-use more paper(10)<br>▪ Get a compost (2) |
| Conserve energy: | ▪ Turn computers off when they are not being used(4)<br>▪ Do not leave water running unnecessarily(4)<br>▪ Use energy efficient lighting(2)<br>▪ Conserve heat within the school(2) |
| Clean up the school grounds: | ▪ Have more garbage bins to reduce litter(10)<br>▪ Have more trees, plants, and flowers(4) |

**#12 How much support do you feel you have to make changes towards a more sustainable lifestyle (these people encourage you to make good choices to "go green")?**

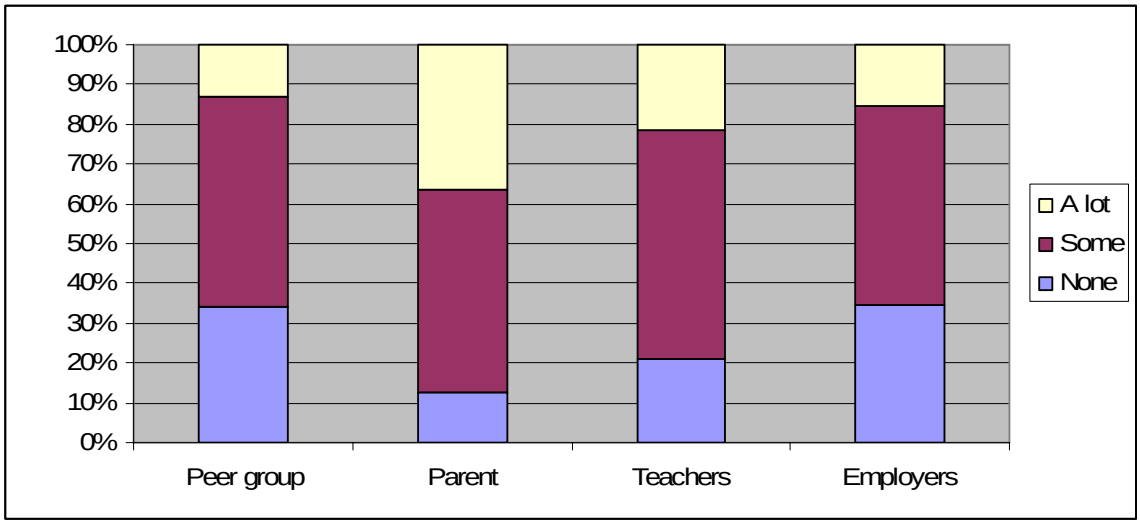


**Figure 13: Support for being more sustainable**

**#13 How would you rate the awareness of environmental issues with other students at your school (you see them making good choices: less use of car, separating garbage, less waste, etc.)**


**Figure 14: Awareness of students**

## 2. ECO-FOOTPRINT CALCULATION

This three day tracking process and analysis provides enough information on the respondent's consumption to calculate their "eco-footprint".[2]

| | |
|---|---|
| Number of studies completed | 48 |
| Low footprint score | 2.5 hectares = 1.7 earths |
| High footprint score | 8.6 hectares = 5.8 earths |
| Average footprint score | 5.09 hectares = 3.4 earths |
| Average Canadian footprint | 5.1 hectares = 3.4 earths |

## 3. HIGH SCHOOL WASTE AUDIT

Garbage waste audits were completed at all seven Central Okanagan local high schools with the assistance of the Central Okanagan Regional District Regional Waste Reduction Office.3 At each school in the study, custodians set aside randomly selected garbage from the previous day (not to include washroom waste). Each team of youth from the participating school then separated the garbage into 13 containers4 in order to measure the volume of garbage that could have been redirected to recycling services locally.

The audits revealed that despite all schools having recycling programs, about 70% of garbage currently going to the landfill from high schools could be redirected to the regional district recycling program[5]. Another 4% to 14% could be collected for organic composting. Based on volume, about one half of the garbage studied could be readily recycled. All of the schools were roughly comparable in terms of results. See the Appendices for full details of each school waste audit.

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[2] Eco-footprint is the calculation of the number of earth's required to support current levels of consumption and waste production, using prevailing technology.

[3] These results were created by Eve-Lyn Wolters, Assistant Waste Reduction Coordinator at RDCO.

[4] (plastic containers, glass, metal food cans, plastic film, returnables, paper, tissue, cardboard, yard waste, compostable food, non compostable food, disposable cups, Styrofoam, garbage, uncategorized items (like dangerous goods-batteries, paint cans etc.)

[5] This would include: plastic containers, plastic film, Styrofoam, refundable beverage containers, bathroom tissue, paper, cardboard/box board, other papers and paper cups.

Based on this study, the Regional District representatives made a number of recommendations:

- Ensure recycling bins are located in each classroom with a clear list of what materials are accepted for recycling;
- Include a separate collection bin for refundables in each classroom;
- Place recycling and refundable collection bins next to garbage containers in classrooms, hallways, and lunch areas;
- Promote 'litterless lunches' – a high volume of packaging and disposable cups were found.
- Set up a recycling station in staff and student lunch areas – separate containers for plastic film, plastic containers, refundables, tin cans;
- Invest in reusable cutlery, coffee mugs, glasses, and dishes to be used daily by staff, as well as for meetings;
- Establish a 'no Styrofoam' purchasing policy for staff meetings and events – if in need of large quantities purchase paper products;
- Consider replacing paper towel dispensers with electric hand dryers in washrooms; and
- Implement a composting program.

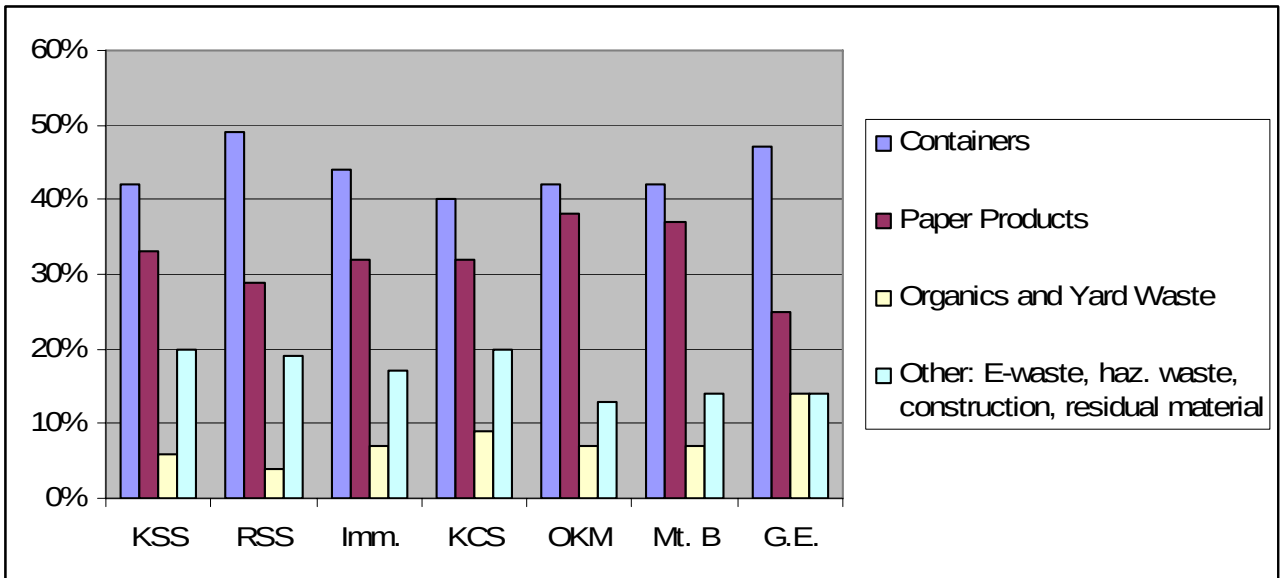


**Figure 15: Waste audit results**

## 4. FORUM SMALL GROUP DIALOGUE SESSIONS

### WHAT CAN OUR CITY DO?

Transportation:

- Make city more bike friendly (more bike lanes/bike racks) (3)
- Better bus systems (2)
- Efficient transportation routes (bridge – less idling of cars)
- More and better transit
- More pedestrian walk areas
- Free public transit day (more awareness)

Recycling System:

- More variations of recycling centres
- Compost for S.D. #23 (2)
- City wide compost/recycling bins (2)
- Recycling Programs (scare people into action)
- Compost pickup service
- More on site recycling (e.g. in apartments)
- Monitor school waste (more garbage audits)

City Vehicles:

Fuel efficient cars
Biogas
Electric Cars

Education:

- Advertise (promotions). Media awareness
- More funding towards environmental advertising
- Education for the workplace
- Educate people about storm drains
- Advertise local produce
- Educate about water resources
- Bring attention towards energy efficient lights
- Educate families about recycling through ads/funny commercials

Other suggestions:

- More control of the pollutants in our drinking water

- Emission rules/regulations
- Water regulations - "Don't be a water hog" – water consumption abuse punishment/fines
- Not sinking the bridge
- Geo-thermal energy
- Restrict agricultural land
- Pesticide regulations
- Alternative energy sources
- Effective irrigation systems
- Paint more yellow fish on drains

**WHAT ROLE CAN YOUTH PLAY?**

Promote good habits:

- Tell people what we learned at the forum
- lead by example
- be a vegetarian
- Tell elderly folks and young people in elementary schools about the environment
- Positive peer pressure
- Call people out on their recycling mistakes
- Advertising T-shirts
- Education & prizes
- Set up "green teams in school"
- Talk to your parents and remind them
- Inform your friends
- Youth & adult programs  Reach "up"
- Bring forums to schools
- Educate kids when they are young (elementary schools)
- Educate family (compost)
- Petition/letters/phone
- Protest – but do it constructively

Change consumer behaviour:

- Cloth diapers
- Buy what you need (bulk)
- Shorter showers
- Eco-friendly products
- Buy locally
- Use reusable containers for lunch
- Pack lunches and meals with litter-free packaging

Influence school's programs:

- Composts in schools
- Set up games for schools
- Environment should be part of a course (e.g. CAPP)
- Put some money in the environment for school
- More recycling bins in school
- Teachers could do more things on environment issues
- Movies
- Speakers
- More garbage cans on fields (with lids so its bird friendly)

Other suggestions:

- Pick out recycling from garbage cans
- Paint fish on storm drains
- Active in the community
- Take initiative – do something
- Start a school group
- Get informed
- Youth groups
- Show inconvenient truth
- Fun Awareness
- Make GREEN "COOL" – set an example
- Green Team

**ONE THING YOU CAN DO DIFFERENTLY?**

Change transportation habits:

- Carpooling (4)
- Take bus more – reduce emissions (e.g. bike, walk) (3)
- Biking
- Less driving (carbon offsets)
- Cycling/bus/walking

Change purchasing habits:

- Reducing waste (no plastic bags/reuse containers)
- Use containers (research what you can recycle) – Better waste management
- Buy locally
- Stop using toxin cleaning chemicals
- Cloth bags
- Eat less meat
- No aerosol cans
- Reuse clothes (second hand)
- Use reusable bags

Reduce water consumption:

- Less shower time (6)
- Water meters
- Turn on tap when brushing teeth
- Recycle water

Communicate with parents: Communicate and discuss the issues

Advertising:

- Start young – Humour … technology/media advertising
- Getting youth to advertise
- Propaganda
- Comical commercials/ads
- Embedded advertising everywhere in mass

Other suggestions:

- Turning off lights/computers (energy efficient lights) (5)
- Build youth leadership within schools first then move to communities
- Compost at school – working recycling into the curriculum
- Students create proposals to school staff and administration
- Say what you do – do what you say
- Stay committed to the cause and goals of going GREEN
- Participation in the schools and fewer garbage bags per household
- Turning down hot water tank
- Second hand shopping
- Unplug appliances because they use energy when not on.
- More recycling bin options in our homes and schools (2)

# RECOMMENDATIONS

It is clear from the results of the school surveys and delegate discussions at the forum that youth have a high awareness of environmental issues. They are also actively involved at their homes and, to a lesser extend, at their schools in positive activities, like separating garbage, recycling and car pooling. In some cases the changes reported at home were one-time changes (like replacing appliances in the home), while many were the results of better habits (showering less, car pooling, buying locally, etc.).

It is also clear that youth have a strong desire to do more. Students were able to readily report on immediate opportunities in their schools (education of issues, better systems for recycling, etc.) and with local consumer behaviour (driving habits, use of public transit, recycling and shopping habits, etc.).

In particular, the following are areas of concern and youth suggestions:

**Transportation:**

- **[City Action]** Create a youth transit advisory panel that represents grades eight to 12 from all middle and high schools. Youth represent 70-80% of all rider ship in the Central Okanagan and their desires and concerns should be heard. The group should meet at least quarterly with transit suppliers and City staff to discuss bus routes & timing of service, customer service expectations (for youth) and marketing to youth.
- **[City Action]** No idling policy[6]. Many school districts and communities are adopting no idling policies with success. This can be particularly successful if adopted by parents (school drop off/pick up, transporting children etc.) as they automatically influence the "future drivers" in their families.
- **[City Action]** More bike friendly – bike lanes, parking/locking downtown in neighborhood hubs. By removing any barriers to using a bicycle the City can influence positive transportation habits. More bike racks downtown (these could be a requirement for all commercial buildings), barriers to protect cyclists using bike lanes on major transportation arteries (like: Gordon Rd., Richter Street, Benvoulin Rd., DeHart Rd., Lakeshore Rd., future corridors to UBC-O etc.).
- **[City Action]** Free public transit day should be held at least every quarter to get people on the buses and experimenting with changing their commuting patterns to public transit.

[6] "A mere 10 seconds is the amount of time Natural Resources' Canada recommends you leave your engine idling while running errands…", (Environment Canada http://www.cleanairday.com/html/newsletter07.php)

- **[City Action]** Investigate strategies to replace vehicle traffic downtown with alternative methods. A number of major cities internationally have been using public bicycle rental programs to reduce traffic in downtown areas, reduce carbon emissions and improve transportation in city centres[7].

**Education in community:**

- **[City Action]** Create an educational resource for up-to-date information that consumers can use to make good environmental choices in their travel, purchases and habits.

  A good example of community education initiative is the City of Vancouver's One Day Vancouver (www.onedayvancouver.ca) web site portal. This initiative is a part of the City's Community Climate Change Action Plan and the City's target to reduce community-wide greenhouse gas emissions by six per cent by 2012. Consumers can learn about upcoming events, "green" changes to make in their home, at work, at school, how to save money, the benefits of protecting the environment and even success stories

**School programs and education:**

20% of youth said they get no support from teachers and 10% said they get no support from parents for making "green" choices. Clearly the most powerful advertising mediums to youth are television and Internet.

20-40% of students thought their schools were doing a poor job with environmentally friendly practices. The school district should publicize its environmental program for parents and youth to see. As a centre for education it seems like a natural opportunity for the school district to lead by example and to showcase any exemplary practices (or make improvements).

Create in-school incentives. About one half of all garbage analyzed in the waste audit section of this program was recyclable. Multiplied over one year this is an enormous amount of garbage that could be redirected from the land fill to recycling services. The waste audit program used for this program could be used as a benchmark for future waste audits and create a school district wide competition to reduce unnecessary garbage going to the land fill. A bonus for

[7] For example, Cyclocity in France provides public bicycle rental from electronically controlled bike rack-rental systems. The first half of one hour is free rental, after which the rental price increases with time. In France, the service is provided by a private advertising company plus a fee to the city in return for access to city-owned billboard rights. In Lyon the city's 3,000 rental bikes have logged about 10 million miles since the program started in May 2005. In Paris, organizers expect to have 20,600 bikes at 1,450 stations by the end of 2007 - or about one station every 250 yards across the entire city. Source: Washington Post "Paris Embraces Plan to Become City of Bikes", March 24, 2007; Page A10http://www.washingtonpost.com/wp-dyn/content/article/2007/03/23/AR2007032301753.html

the schools is that money will be recovered every year (from refundable products) for school fund raising initiatives.

**Consumer buying habits:**

- **[City Action]** More public access to recycling containers. The Kelowna Airport is one of the few public facilities that provides recycling collection alongside garbage collection.
- **[City Action]** Compost pick up service. Several Canadian municipalities are either piloting or have instituted household compost pick up services (e.g. Ladysmith, Olds, Alberta). With larger home footprints and small yard space fewer residents have home composting programs. The Town of Ladysmith estimated that about 40% of residential garbage could be composted.

# APPENDICES

# A P P E N D I C E S

## Waste Audit: Kelowna Senior Secondary

### Executive Summary

On April 24, 2007 the Regional Waste Reduction Office had the pleasure of working with students to audit Kelowna Senior Secondary's (KSS) outdoor garbage bin. This report outlines an overview of the findings from the audit and provides recommendations to improve and/or investigate options to improve services.

The audit was based on the dissection of six bags of garbage from various locations in the schools. The results revealed that nearly half (81.9gallons) of the materials sorted fit into the Container category including: plastic containers, plastic film, Styrofoam, and refundable beverage containers. Over 30 percent (63.75 gallons) of the audited bags were made up of paper related products: bathroom tissue, paper, cardboard/box board, other papers and paper cups. Organics had higher weight value, but were relatively low in volume (See Appendix A for full details). It should be noted that plastic containers and film (sandwich bags, grocery bags, plastic wrap, and garbage bags), paper and refundables represented over 50 percent of the total volume of the six bags audited.

Plastics, plastic film and paper are easily recyclable material in the Central Okanagan and uncollected returnables are a loss of revenue for the school. Note: At the end of the audit only two bags were refilled with garbage; all other materials were recycled.

The audit revealed good recycling foundations in place at KSS including: recycling collection bins in the classrooms and a refundables collection system. The objective is to implement an updated, cost-efficient program, in keeping with staff time and resources. Major recommendations include:

- Ensure recycling bins are located in each classroom with a clear list of what materials are accepted for recycling;
- Include a separate collection bin for refundables in each classroom;
- Place recycling and refundable collection bins next to garbage containers in classrooms, hallways, and lunch areas;

# A P P E N D I C E S

- Promote 'litterless lunches' – a high volume of packaging and disposable cups were found.
- Set up a recycling station in staff and student lunch areas – separate containers for plastic film, plastic containers, refundables, tin cans;
- Invest in reusable cutlery, coffee mugs, glasses, and dishes to be used daily by staff, as well as for meetings;
- Establish a 'no Styrofoam' purchasing policy for staff meetings and events – if in need of large quantities purchase paper products;
- Consider replacing paper towel dispensers with electric hand dryers in washrooms; and
- Implement a composting program.

The key to a successful recycling program is education. KSS can communicate internally by establishing a "Green Team" to be in charge of overseeing the recycling program and ensuring that everyone is aware of the recycling systems in place. Moreover, presentations, posters and friendly 'best recyclers' class competitions can help students participate and better understand recycling programs. Education and effective communication and leadership are necessary for successful implementation.

Assistance is always available by contacting the Regional Waste Reduction Office at 469-6250.

# A P P E N D I C E S

## Recommendations

KSS does have a good foundation for collecting recyclable materials; however, there's room for improvement in virtually every area. The following outlines the recommendations for improvement for each area in the school.

**Classrooms, Administration Offices and Staff Rooms:**

Despite recycling bins being located throughout the building, the audit found significant amounts of paper, cardboard, packaging, disposable cups and refundables in the garbage. Below are suggestions to help increase waste diversion:

***Recommendation***

- Be sure all recycling containers are clearly labeled – pictures are helpful.
- Place both recycling and returnable collection bins next to the garbage.
- Ensure clearly marked recycling bins are available in common areas.
- Educate students on what can be recycled and where it belongs.
- Use incentives to encourage students to recycle refundables –do something special for the school with the return it money or hold a class competition – who can recover the most refundables.
- Place small saddlebag garbage containers onto the existing waste containers (your existing waste containers will become the recycling containers). Alternatively, construct your own recycling bins for each office station, keeping in mind that they should be larger and more accessible than the garbage bins to encourage recycling.
- Circulate information to staff about acceptable materials for recycling.
- Encourage staff to bring their own mug for morning coffee.
- Purchase real dishes, mugs, and cutlery for staff lunches.
- Implement a 'no Styrofoam' policy for staff meetings and events.
- Promote 'litterless' lunch practices.

**Lunch Area/Hallways**

Significant amounts of food and beverage related packaging were found during the audit. This packaging appeared to come both from staff and students and included: plastic containers, pizza boxes, sandwich/salad plastic packaging, disposable drink cups, Styrofoam plates and cups, plastic utensils, straws, single serving food wrappers and returnables. Unfortunately, once the

recyclables have been contaminated by food and sticky drinks they become garbage.

***Recommendation***

- Ensure recycling bins are located next to garbage bins and are clearly labeled – pictures are useful.
- Set-up clearly labeled recycling stations next to vending machines and in common areas.
- Educate students about new and improved recycling stations.
- Encourage 'litterless lunches' or have 'litterless' lunch days.

**Washrooms:**

Paper towel waste made up a large portion of the paper waste found during the audit. Studies have been conducted on the cost savings, health safety, and environmental impact of using electric hand dryers. The following is a brief summary of these studies.

***Recommendation:***

- Investigate the installation of hand dryers as a more economical and sanitary method of hand drying. Based on research by several educational facilities, it is recommended that air dryers be used in washrooms.

Between paper hand towels, cloth rolled towels and electric hand dryers, research from the University of Victoria and Simon Fraser University concluded that electric hand dryers are the most sanitary, cost-effective, and environmentally friendly of the three options. The cost comparisons between the three options are startling. By the time an organization pays for the towels, pays someone to put the towels in the dispensers, pays someone to remove the towels from the restrooms, and pays to have the towels taken to the landfill, the costs can be high. A University of Victoria Waste Management study (Abbott: 1995) clearly showed air-drying as the most cost-effective method, as shown in Table 2 below.

# A P P E N D I C E S

| *Drying Method* | **Cost per Dry** |
|---|---|
| Paper towels | $0.034 per dry |
| Linen towels | $0.052 per dry |
| Air drying | $0.0012 per dry |

**Table 1: Costs for Hand Drying Options**

In 1996, the Southern Oregon State College found that for their school of 5000 students and faculty, the cost for paper towels was $260,000 per year. They calculated that the electric hand dryers would cost them only $65,000 per year including the costs of buying and installing the dryers, and the cost of electricity.

There are numerous studies that show air blown hand drying is as sanitary as cloth or paper drying.

Finally, using hand dryers is environmentally friendly. In a University of South Carolina study, it was determined that in changing to hand dryers (153 hand dryers in 80 washrooms), the University saved the equivalent of 146 trees, 21 barrels of oil, 45 cubic yards of landfill and 61,000 gallons of water in only six months (Reed: 1998).

# A P P E N D I C E S

## Implementation

Getting started can sometimes be the most challenging part of recycling. However, if the project is tackled strategically and with enthusiasm remarkable results are achievable. The following are some suggestions that other schools and organizations have used successfully to change behaviour and encourage recycling and environmental sustainability.

**Put someone in charge.**

An organized and enthusiastic team leader can oversee the steps to follow to get the program going. Setting up a "Green Team" can also be effective. A "Green Team" could consist of representatives from different grades or areas in the office. For example, KSS could create a team of administrative staff, teachers, students and the custodial staff. The person in charge or the "Green Team" can handle any questions, suggestions or concerns.

**Design a program that works for you.**

Decide which materials you want to collect in your program and determine how many containers you will need for collection. The key to success is convenience; so keep your program simple and clean. The bins should be easy to find and clearly labeled. Have custodial staff or your "Green Team" ensure that the bins are taken care of and emptied when need be.

**Organize delivery or pick-up of recyclables.**

As participation in the recycling program increases, recyclables may need to be collected more frequently and garbage less often. Kelowna Senior Secondary could encourage School District 23 to include more recyclable materials in its collection program. Alternatively, KSS could designate a staff member to insure currently non-collected materials are taken to a recycling depot, including: plastic film, plastic containers, and tin cans.

**Educate the staff and students.**

Awareness and education are the cornerstones to a successful program. Keep staff posted on the program through the suggestions given in the "Education" section.

**Start the program.**

Ensure that bins are recognizable and uniform with clear instructions on what materials belong in them. Respond quickly to any problems or questions about the program.

**Monitor the program.**

Ensure bins are emptied regularly to assure greater participation. Watch for contamination in the bins and remind staff and students of what can and cannot go in them. Determine the reason for contamination (i.e., bins moved, bins not emptied, lack of awareness). Eliminate the cause for contamination. Launch the program with a kick-off event such as an assembly and introduce your "Green Team." Be sure to tell parents about your efforts to increase recycling at the school; offer them suggestions for creating less lunch waste. Implement on-going internal communications.

**Review and expand the program.**

Monitor results of the program to determine if changes are required. Amend the program as needed (i.e., increase educational activities, add more bins). Recycling can become a habit within one week, but the habit may be fragile. Keep participation high by ensuring the bins are neat and tidy.

## Education

In order for any of the recommendations to succeed, the participants in the program must be fully aware of what options are available for disposal, why the program is being implemented and how to participate correctly. The keys to successful education programs are consistency and frequency.

# A P P E N D I C E S

**Internal Communications**

- Create a "Green Team" or assign at least one person to design and implement recycling and educational programs.
- Hold meetings with staff to communicate with them. Confirm instructions with e-mails or memos.
- Develop posters with simple graphic descriptions about "what goes where." Call on the Regional Waste Reduction Office for free assistance with design of posters, flyers, and displays.
- Place posters, memos, et cetera in staff rooms, in entryways and on bulletin boards.
- Include information about the program during morning announcements.
- Have a suggestion box available for comments, suggestions and questions. Place responses on a bulletin board weekly.
- Place notices in pay check envelopes.
- Have a contest for the greenest staff person, student, or class.

**External Communications**

- Issue a press release once the program is in place.
- Challenge other schools to be as "green" as Kelowna Senior Secondary.
- Put up posters in entryways.
- Host an open house.

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**For more information, please contact:**

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Eve-Lyn Wolters
Assistant Waste Reduction Coordinator
(250) 469-6346

# A P P E N D I C E S

## Appendix A

| | Weight (KGs) | Volume (gallons) | Percentage by KGs | Percentage by Volume |
|---|---|---|---|---|
| **Material Category** | | | | |
| Containers | 12.86 | 81.88 | 23% | 42% |
| Paper Products | 13.57 | 63.75 | 25% | 33% |
| Organics and Yard Waste | 14.16 | 11.75 | 26% | 6% |
| Other: E-waste, haz. waste, construction, residual material | 14.25 | 38.75 | 26% | 20% |
| **Totals:** | 54.84 | 196.13 | 100% | 100% |
| **Sub- Categories** | | | | |
| Plastic Containers | 2.40 | 26.25 | 4% | 13% |
| Glass Jars and Bottles | 0.00 | 0.00 | 0% | 0% |
| Steel Food Containers | 0.62 | 1.88 | 1% | 1% |
| Plastic Film | 2.45 | 27.50 | 4% | 14% |
| Refundables | 6.61 | 10.00 | 12% | 5% |
| Styrofoam | 0.36 | 8.75 | 1% | 4% |
| Disposable Cups | 0.42 | 7.50 | 1% | 4% |
| Paper | 9.15 | 36.25 | 17% | 18% |
| Tissue | 3.00 | 15.00 | 5% | 8% |
| Cardboard | 1.42 | 12.50 | 3% | 6% |
| Compostable Food Waste | 9.50 | 7.50 | 17% | 4% |
| Non-compostable Food Waste | 4.66 | 4.25 | 8% | 2% |
| Garbage | 12.18 | 32.50 | 22% | 17% |
| Uncatagorized items | 2.07 | 6.25 | 4% | 3% |
| **Totals** | 54.84 | 196.13 | 100% | 100% |

# A P P E N D I C E S

## Waste Audit: Rutland Senior Secondary

### Executive Summary

On April 25, 2007 the Regional Waste Reduction Office had the pleasure of working with students to audit Rutland Senior Secondary's (RSS) outdoor garbage bin. This report outlines an overview of the findings from the audit and provides recommendations to improve and/or investigate options to improve services.

The audit was based on the dissection of six bags of garbage from various locations in the schools. The results revealed that half (101.25gallons) of the materials sorted fit into the Container category including: plastic containers, plastic film, Styrofoam, and refundable beverage containers. Nearly 30 percent (60 gallons) of the audited bags were made up of paper related products: bathroom tissue, paper, cardboard/box board, other papers and paper cups. Organics had higher weight value, but were relatively low in volume (See Appendix A for full details). It should be noted that plastic containers and film (sandwich bags, grocery bags, plastic wrap, and garbage bags), paper, cardboard and refundables represented 40 percent of the total volume of the six bags audited.

Plastics, plastic film, cardboard and paper are easily recyclable material in the Central Okanagan and uncollected returnables are a loss of revenue for the school. Note: At the end of the audit only three bags were refilled with garbage; all other materials were recycled.

The audit revealed good recycling foundations in place at RSS including: recycling collection bins in the classrooms and a returnables collection system. The objective is to implement an updated, cost-efficient program, in keeping with staff time and resources. Major recommendations include:

- Ensure recycling bins are located in each classroom with a clear list of what materials are accepted for recycling;
- Include a separate collection bin for refundables in each classroom;
- Place recycling and refundable collection bins next to garbage containers in classrooms, hallways, and lunch areas;

# A P P E N D I C E S

- Promote 'litterless lunches' – a high volume of packaging and disposable cups were found.
- Set up a recycling station in staff and student lunch areas – separate containers for plastic film, plastic containers, refundables, tin cans;
- Invest in reusable cutlery, coffee mugs, glasses, and dishes to be used daily by staff, as well as for meetings;
- Establish a 'no Styrofoam' purchasing policy for staff meetings and events – if in need of large quantities purchase paper products;
- Consider replacing paper towel dispensers with electric hand dryers in washrooms; and
- Implement a composting program.

The key to a successful recycling program is education. RSS can communicate internally by establishing a "Green Team" to be in charge of overseeing the recycling program and ensuring that everyone is aware of the recycling systems in place. Moreover, presentations, posters and friendly 'best recyclers' class competitions can help students participate and better understand recycling programs. Education and effective communication and leadership are necessary for successful implementation.

Assistance is always available by contacting the Regional Waste Reduction Office at 469-6250.

## Recommendations

KSS does have a good foundation for collecting recyclable materials; however, there's room for improvement in virtually every area. The following outlines the recommendations for improvement for each area in the school.

**Classrooms, Administration Offices and Staff Rooms:**

Despite recycling bins being located throughout the building, the audit found significant amounts of paper, cardboard, packaging, disposable cups, Styrofoam and refundables in the garbage. Below are suggestions to help increase waste diversion:

***Recommendation***

- Be sure all recycling containers are clearly labeled – pictures are helpful.
- Place both recycling and returnable collection bins next to the garbage.
- Ensure clearly marked recycling bins are available in common areas.
- Educate students on what can be recycled and where it belongs.
- Use incentives to encourage students to recycle refundables –do something special for the school with the return it money or hold a class competition – who can recover the most refundables.
- Place small saddlebag garbage containers onto the existing waste containers (your existing waste containers will become the recycling containers). Alternatively, construct your own recycling bins for each office station, keeping in mind that they should be larger and more accessible than the garbage bins to encourage recycling.
- Circulate information to staff about acceptable materials for recycling.
- Encourage staff to bring their own mug for morning coffee.
- Purchase real dishes, mugs, and cutlery for staff lunches.
- Implement a 'no Styrofoam' policy for staff meetings and events.
- Promote 'litterless' lunch practices.

**Lunch Area/Hallways**

Significant amounts of food and beverage related packaging were found during the audit. This packaging appeared to come both from staff and students and included: plastic containers, pizza boxes, sandwich/salad plastic packaging, disposable drink cups, Styrofoam plates and cups, plastic utensils, straws, single serving food wrappers and returnables. Unfortunately, once the

recyclables have been contaminated by food and sticky drinks they become garbage.

***Recommendation***

- Ensure recycling bins are located next to garbage bins and are clearly labeled – pictures are useful.
- Set-up clearly labeled recycling stations next to vending machines and in common areas.
- Educate students about new and improved recycling stations.
- Encourage 'litterless lunches' or have 'litterless' lunch days.

**Washrooms:**

Paper towel waste made up a large portion of the paper waste found during the audit. Studies have been conducted on the cost savings, health safety, and environmental impact of using electric hand dryers. The following is a brief summary of these studies.

***Recommendation:***

- Investigate the installation of hand dryers as a more economical and sanitary method of hand drying. Based on research by several educational facilities, it is recommended that air dryers be used in washrooms.

Between paper hand towels, cloth rolled towels and electric hand dryers, research from the University of Victoria and Simon Fraser University concluded that electric hand dryers are the most sanitary, cost-effective, and environmentally friendly of the three options. The cost comparisons between the three options are startling. By the time an organization pays for the towels, pays someone to put the towels in the dispensers, pays someone to remove the towels from the restrooms, and pays to have the towels taken to the landfill, the costs can be high. A University of Victoria Waste Management study (Abbott: 1995) clearly showed air-drying as the most cost-effective method, as shown in Table 2 below.

# A P P E N D I C E S

| *Drying Method* | **Cost per Dry** |
|---|---|
| Paper towels | $0.034 per dry |
| Linen towels | $0.052 per dry |
| Air drying | $0.0012 per dry |

**Table 2: Costs for Hand Drying Options**

In 1996, the Southern Oregon State College found that for their school of 5000 students and faculty, the cost for paper towels was $260,000 per year. They calculated that the electric hand dryers would cost them only $65,000 per year including the costs of buying and installing the dryers, and the cost of electricity.

There are numerous studies that show air blown hand drying is as sanitary as cloth or paper drying.

Finally, using hand dryers is environmentally friendly. In a University of South Carolina study, it was determined that in changing to hand dryers (153 hand dryers in 80 washrooms), the University saved the equivalent of 146 trees, 21 barrels of oil, 45 cubic yards of landfill and 61,000 gallons of water in only six months (Reed: 1998).

# A P P E N D I C E S

## Implementation

Getting started can sometimes be the most challenging part of recycling. However, if the project is tackled strategically and with enthusiasm remarkable results are achievable. The following are some suggestions that other schools and organizations have used successfully to change behaviour and encourage recycling and environmental sustainability.

**Put someone in charge.**

An organized and enthusiastic team leader can oversee the steps to follow to get the program going. Setting up a "Green Team" can also be effective. A "Green Team" could consist of representatives from different grades or areas in the office. For example, RSS could create a team of administrative staff, teachers, students and the custodial staff. The person in charge or the "Green Team" can handle any questions, suggestions or concerns.

**Design a program that works for you.**

Decide which materials you want to collect in your program and determine how many containers you will need for collection. The key to success is convenience; so keep your program simple and clean. The bins should be easy to find and clearly labeled. Have custodial staff or your "Green Team" ensure that the bins are taken care of and emptied when need be.

**Organize delivery or pick-up of recyclables.**

As participation in the recycling program increases, recyclables may need to be collected more frequently and garbage less often. Rutland Senior Secondary could encourage School District 23 to include more recyclable materials in its collection program. Alternatively, RSS could designate a staff member to insure currently non-collected materials are taken to a recycling depot, including: plastic film, plastic containers, and tin cans.

**Educate the staff and students.**

Awareness and education are the cornerstones to a successful program. Keep staff posted on the program through the suggestions given in the "Education" section.

**Start the program.**

Ensure that bins are recognizable and uniform with clear instructions on what materials belong in them. Respond quickly to any problems or questions about the program.

**Monitor the program.**

Ensure bins are emptied regularly to assure greater participation. Watch for contamination in the bins and remind staff and students of what can and cannot go in them. Determine the reason for contamination (i.e., bins moved, bins not emptied, lack of awareness). Eliminate the cause for contamination. Launch the program with a kick-off event such as an assembly and introduce your "Green Team." Be sure to tell parents about your efforts to increase recycling at the school; offer them suggestions for creating less lunch waste. Implement on-going internal communications.

**Review and expand the program.**

Monitor results of the program to determine if changes are required. Amend the program as needed (i.e., increase educational activities, add more bins). Recycling can become a habit within one week, but the habit may be fragile. Keep participation high by ensuring the bins are neat and tidy.

## Education

In order for any of the recommendations to succeed, the participants in the program must be fully aware of what options are available for disposal, why the program is being implemented and how to participate correctly. The keys to successful education programs are consistency and frequency.

# A P P E N D I C E S

**Internal Communications**

- Create a "Green Team" or assign at least one person to design and implement recycling and educational programs.
- Hold meetings with staff to communicate with them. Confirm instructions with e-mails or memos.
- Develop posters with simple graphic descriptions about "what goes where." Call on the Regional Waste Reduction Office for free assistance with design of posters, flyers, and displays.
- Place posters, memos, et cetera in staff rooms, in entryways and on bulletin boards.
- Include information about the program during morning announcements.
- Have a suggestion box available for comments, suggestions and questions. Place responses on a bulletin board weekly.
- Place notices in pay check envelopes.
- Have a contest for the greenest staff person, student, or class.

**External Communications**

- Issue a press release once the program is in place.
- Challenge other schools to be as "green" as Rutland Senior Secondary.
- Put up posters in entryways.
- Host an open house.

---

**For more information, please contact:**

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Assistant Waste Reduction Coordinator
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# A P P E N D I C E S

## Appendix A

| | Weight (KGs) | Volume (gallons) | Percentage by KGs | Percentage by Volume |
|---|---|---|---|---|
| **Material Category** | | | | |
| Containers | 11.85 | 102.50 | 23% | 49% |
| Paper Products | 12.67 | 60.00 | 24% | 29% |
| Organics and Yard Waste | 11.84 | 7.50 | 23% | 4% |
| Other: E-waste, haz. waste, construction, residual material | 15.90 | 40.00 | 30% | 19% |
| **Totals:** | 52.26 | 210.00 | 100% | 100% |
| **Sub- Categories** | | | | |
| Plastic Containers | 2.76 | 22.50 | 5% | 11% |
| Glass Jars and Bottles | 0.00 | 0.00 | 0% | 0% |
| Steel Food Containers | 0.54 | 5.00 | 1% | 2% |
| Plastic Film | 3.23 | 20.00 | 6% | 10% |
| Refundable | 2.42 | 10.00 | 5% | 5% |
| Styrofoam | 0.79 | 20.00 | 2% | 10% |
| Disposable Cups | 2.11 | 25.00 | 4% | 12% |
| Paper | 2.99 | 12.50 | 6% | 6% |
| Tissue | 7.45 | 30.00 | 14% | 14% |
| Cardboard | 2.23 | 17.50 | 4% | 8% |
| Compostable Food Waste | 8.46 | 5.00 | 16% | 2% |
| Non-compostable Food Waste | 3.38 | 2.50 | 6% | 1% |
| Garbage | 15.90 | 40.00 | 30% | 19% |
| Uncatagorized items | 0.00 | 0.00 | 0% | 0% |
| **Totals** | 52.26 | 210.00 | 100% | 100% |

# A P P E N D I C E S

## Waste Audit: Immaculata

### Executive Summary

On April 24, 2007 the Regional Waste Reduction Office had the pleasure of working with students to audit Immaculata School's outdoor garbage bin. This report outlines an overview of the findings from the audit and provides recommendations to improve and/or investigate options to improve services.

The audit was based on the dissection of six bags of garbage from various locations in the schools. The results revealed that nearly half (66.75gallons) of the materials sorted fit into the Container category including: plastic containers, plastic film, Styrofoam, and refundable beverage containers. Over one quarter (48.75 gallons) of the audited bags were made up of paper related products: bathroom tissue, paper, cardboard/box board, other papers and paper cups. Organics had higher weight value, but were relatively low in volume (See Appendix A for full details). It should be noted that plastic film (sandwich bags, grocery bags, plastic wrap, and garbage bags) and refundables represented about 20 percent of the total volume of the six bags audited. Of that 20 percent, partially filled black garbage bags made up a large portion.

Plastics and plastic film are easily recyclable material in the Central Okanagan and uncollected returnables are a loss of revenue for the school. Note: At the end of the audit only three bags were refilled with garbage; all other materials were recycled.

The audit revealed good recycling foundations in place at Immaculata including: recycling collection bins in the classrooms and a returnables collection system. The objective is to implement an updated, cost-efficient program, in keeping with staff time and resources. Major recommendations include:

- Ensure recycling bins are located in each classroom with a clear list of what materials are accepted for recycling;
- Include a separate collection bin for refundables in each classroom;
- Place recycling and refundable collection bins next to garbage containers in classrooms, hallways, and lunch areas;

# A P P E N D I C E S

- Promote 'litterless lunches' – a high volume of packaging and disposable cups were found.
- Set up a recycling station in staff and student lunch areas – separate containers for plastic film, plastic containers, refundables, tin cans;
- Invest in reusable cutlery, coffee mugs, glasses, and dishes to be used daily by staff, as well as for meetings;
- Establish a 'no Styrofoam' purchasing policy for staff meetings and events – if in need of large quantities purchase paper products;
- Consider replacing paper towel dispensers with electric hand dryers in washrooms. Note: We did not find much bathroom waste at Immaculata; however, this may have been due to the small sample size sorted. Therefore, based on other school waste audits, which revealed significant amounts of paper toweling, we have included information on reducing bathroom waste in this report;
- Implement a composting program; and
- Empty classroom garbage bag contents into a larger garbage bag instead of throwing away nearly empty bags. Or, considering going to a bagless classroom garbage collections system.

The key to a successful recycling program is education. Immaculata can communicate internally by establishing a "Green Team" to be in charge of overseeing the recycling program and ensuring that everyone is aware of the recycling systems in place. Moreover, presentations, posters and friendly 'best recyclers' class competitions can help students participate and better understand recycling programs. Education and effective communication and leadership are necessary for successful implementation.

Assistance is always available by contacting the Regional Waste Reduction Office at 469-6250.

## Recommendations

Immaculata does have a good foundation for collecting recyclable materials; however, there's room for improvement in virtually every area. The following outlines the recommendations for improvement for each area in the school.

**Classrooms, Administration Offices and Staff Rooms:**

Despite recycling bins being located throughout the building, the audit found significant amounts of paper, cardboard, packaging, disposable cups and refundables in the garbage. Below are suggestions to help increase waste diversion:

***Recommendation***

- Be sure all recycling containers are clearly labeled – pictures are helpful.
- Place both recycling and returnable collection bins next to the garbage.
- Ensure clearly marked recycling bins are available in common areas.
- Educate students on what can be recycled and where it belongs.
- Use incentives to encourage students to recycle refundables –do something special for the school with the return it money or hold a class competition – who can recover the most refundables.
- Place small saddlebag garbage containers onto the existing waste containers (your existing waste containers will become the recycling containers). Alternatively, construct your own recycling bins for each office station, keeping in mind that they should be larger and more accessible than the garbage bins to encourage recycling.
- Circulate information to staff about acceptable materials for recycling.
- Encourage staff to bring their own mug for morning coffee.
- Purchase real dishes, mugs, and cutlery for staff lunches.
- Implement a 'no Styrofoam' policy for staff meetings and events.
- Promote 'litterless' lunch practices.

**Lunch Area/Hallways**

Significant amounts of food and beverage related packaging were found during the audit. This packaging appeared to come both from staff and students and included: plastic containers, pizza boxes, sandwich/salad plastic packaging, disposable drink cups, Styrofoam plates and cups, plastic utensils, straws, single serving food wrappers and returnables. Unfortunately, once the

recyclables have been contaminated by food and sticky drinks they become garbage.

***Recommendation***

- Ensure recycling bins are located next to garbage bins and are clearly labeled – pictures are useful.
- Set-up clearly labeled recycling stations next to vending machines and in common areas.
- Educate students about new and improved recycling stations.
- Encourage 'litterless lunches' or have 'litterless' lunch days.

**Washrooms:**

Very little bathroom waste was found in Immaculata's garbage; this may have been due to the small number of bags that were audited. We have included this section on washrooms because typically, paper towels make up a large portion of the paper waste uncovered during school waste audits.

Studies have been conducted on the cost savings, health safety, and environmental impact of using electric hand dryers. The following is a brief summary of these studies.

***Recommendation:***

- Investigate the installation of hand dryers as a more economical and sanitary method of hand drying. Based on research by several educational facilities, it is recommended that air dryers be used in washrooms.

  Between paper hand towels, cloth rolled towels and electric hand dryers, research from the University of Victoria and Simon Fraser University concluded that electric hand dryers are the most sanitary, cost-effective, and environmentally friendly of the three options. The cost comparisons between the three options are startling. By the time an organization pays for the towels, pays someone to put the towels in the dispensers, pays someone to remove the towels from the restrooms, and pays to have the towels taken to the landfill, the costs can be high. A University of Victoria Waste Management study (Abbott: 1995) clearly showed air-drying as the most cost-effective method, as shown in Table 2 below.

# A P P E N D I C E S

| *Drying Method* | **Cost per Dry** |
|---|---|
| Paper towels | $0.034 per dry |
| Linen towels | $0.052 per dry |
| Air drying | $0.0012 per dry |

**Table 3: Costs for Hand Drying Options**

In 1996, the Southern Oregon State College found that for their school of 5000 students and faculty, the cost for paper towels was $260,000 per year. They calculated that the electric hand dryers would cost them only $65,000 per year including the costs of buying and installing the dryers, and the cost of electricity.

There are numerous studies that show air blown hand drying is as sanitary as cloth or paper drying.

Finally, using hand dryers is environmentally friendly. In a University of South Carolina study, it was determined that in changing to hand dryers (153 hand dryers in 80 washrooms), the University saved the equivalent of 146 trees, 21 barrels of oil, 45 cubic yards of landfill and 61,000 gallons of water in only six months (Reed: 1998).

## Implementation

Getting started can sometimes be the most challenging part of recycling. However, if the project is tackled strategically and with enthusiasm remarkable results are achievable. The following are some suggestions that other schools and organizations have used successfully to change behaviour and encourage recycling and environmental sustainability.

**Put someone in charge.**

An organized and enthusiastic team leader can oversee the steps to follow to get the program going. Setting up a "Green Team" can also be effective. A "Green Team" could consist of representatives from different grades or areas in the office. For example, Immaculata could create a team of administrative staff, teachers, students and the custodial staff. The person in charge or the "Green Team" can handle any questions, suggestions or concerns.

**Design a program that works for you.**

Decide which materials you want to collect in your program and determine how many containers you will need for collection. The key to success is convenience; so keep your program simple and clean. The bins should be easy to find and clearly labeled. Have custodial staff or your "Green Team" ensure that the bins are taken care of and emptied when need be.

**Organize delivery or pick-up of recyclables.**

As participation in the recycling program increases, recyclables may need to be collected more frequently and garbage less often. Immaculata could hire a recycling collection company to take away recyclables on a regular basis (see Appendix B for recycling companies). Alternatively, Immaculata could designate a staff member to insure currently non-collected materials are taken to a recycling depot, including: plastic film, plastic containers, and tin cans.

**Educate the staff and students.**

Awareness and education are the cornerstones to a successful program. Keep staff posted on the program through the suggestions given in the "Education" section.

**Start the program.**

Ensure that bins are recognizable and uniform with clear instructions on what materials belong in them. Respond quickly to any problems or questions about the program.

**Monitor the program.**

Ensure bins are emptied regularly to assure greater participation. Watch for contamination in the bins and remind staff and students of what can and cannot go in them. Determine the reason for contamination (i.e., bins moved, bins not emptied, lack of awareness). Eliminate the cause for contamination. Launch the program with a kick-off event such as an assembly and introduce your "Green Team." Be sure to tell parents about your efforts to increase recycling at the school; offer them suggestions for creating less lunch waste. Implement on-going internal communications.

**Review and expand the program.**

Monitor results of the program to determine if changes are required. Amend the program as needed (i.e., increase educational activities, add more bins). Recycling can become a habit within one week, but the habit may be fragile. Keep participation high by ensuring the bins are neat and tidy.

## Education

In order for any of the recommendations to succeed, the participants in the program must be fully aware of what options are available for disposal, why the program is being implemented and how to participate correctly. The keys to successful education programs are consistency and frequency.

# A P P E N D I C E S

**Internal Communications**

- Create a "Green Team" or assign at least one person to design and implement recycling and educational programs.
- Hold meetings with staff to communicate with them. Confirm instructions with e-mails or memos.
- Develop posters with simple graphic descriptions about "what goes where." Call on the Regional Waste Reduction Office for free assistance with design of posters, flyers, and displays.
- Place posters, memos, et cetera in staff rooms, in entryways and on bulletin boards.
- Include information about the program during morning announcements.
- Have a suggestion box available for comments, suggestions and questions. Place responses on a bulletin board weekly.
- Place notices in pay check envelopes.
- Have a contest for the greenest staff person, student, or class.

**External Communications**

- Issue a press release once the program is in place.
- Challenge other schools to be as "green" as Immaculata.
- Put up posters in entryways.
- Host an open house.

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**For more information, please contact:**

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Eve-Lyn Wolters
Assistant Waste Reduction Coordinator
(250) 469-6346

# A P P E N D I C E S

## Appendix A

| | Weight (KGs) | Volume (gallons) | Percentage by KGs | Percentage by Volume |
|---|---|---|---|---|
| **Material Category** | | | | |
| Containers | 10.51 | 66.75 | 24% | 44% |
| Paper Products | 7.96 | 48.75 | 18% | 32% |
| Organics and Yard Waste | 15.78 | 10.00 | 36% | 7% |
| Other: E-waste, haz. waste, construction, residual material | 9.54 | 25.00 | 22% | 17% |
| **Totals:** | 43.79 | 150.50 | 100% | 100% |
| **Sub- Categories** | | | | |
| Plastic Containers | 1.91 | 15.00 | 4% | 10% |
| Glass Jars and Bottles | 0.79 | 0.50 | 2% | 0% |
| Steel Food Containers | 0.26 | 1.25 | 1% | 1% |
| Plastic Film | 2.87 | 20.00 | 7% | 13% |
| Refundables | 2.82 | 10.00 | 6% | 7% |
| Styrofoam | 0.29 | 5.00 | 1% | 3% |
| Disposable Cups | 1.57 | 15.00 | 4% | 10% |
| Paper | 3.43 | 18.75 | 8% | 12% |
| Tissue | 2.74 | 10.00 | 6% | 7% |
| Cardboard | 1.79 | 20.00 | 4% | 13% |
| Compostable Food Waste | 7.68 | 5.00 | 18% | 3% |
| Non-compostable Food Waste | 8.10 | 5.00 | 18% | 3% |
| Garbage | 9.54 | 25.00 | 22% | 17% |
| Uncatagorized items | 0.00 | 0.00 | 0% | 0% |
| **Totals** | 43.79 | 150.50 | 100% | 100% |

# A P P E N D I C E S

## Waste Audit: Kelowna Christian School

### Executive Summary

On April 24, 2007 the Regional Waste Reduction Office had the pleasure of working with students to audit Kelowna Christian School's (KCS) outdoor garbage bin. This report outlines an overview of the findings from the audit and provides recommendations to improve and/or investigate options to improve services.

The audit was based on the dissection of six bags of garbage from various locations in the schools. The results revealed that 40 percent (61.25gallons) of the materials sorted fit into the Container category including: plastic containers, plastic film, Styrofoam, and refundable beverage containers. Over 30 percent (48.75 gallons) of the audited bags were made up of paper related products: bathroom tissue, paper, cardboard/box board, other papers and paper cups. Organics had higher weight value, but were relatively low in volume (See Appendix A for full details). It should be noted that plastic film (sandwich bags, grocery bags, plastic wrap, and garbage bags) and refundables represented about 23 percent of the total volume of the six bags audited. However, KCS appeared to have fairly effective refundable collection system; only a few of these items were found.

Plastics and plastic film are easily recyclable material in the Central Okanagan and uncollected returnables are a loss of revenue for the school. Note: At the end of the audit only four bags were refilled with garbage; all other materials were recycled.

The audit revealed good recycling foundations in place at Kelowna Christian School including: recycling collection bins in the classrooms and a returnables collection system. The objective is to implement an updated, cost-efficient program, in keeping with staff time and resources. Major recommendations include:

- Ensure recycling bins are located in each classroom with a clear list of what materials are accepted for recycling;
- Include a separate collection bin for refundables in each classroom;

# A P P E N D I C E S

- Place recycling and refundable collection bins next to garbage containers in classrooms, hallways, and lunch areas;
- Promote 'litterless lunches' – a high volume of packaging was found.
- Set up a recycling station in staff and student lunch areas – separate containers for plastic film, plastic containers, refundables, tin cans;
- Invest in reusable cutlery, coffee mugs, glasses, and dishes to be used daily by staff, as well as for meetings;
- Establish a 'no Styrofoam' purchasing policy for staff meetings and events – if in need of large quantities purchase paper products;
- Consider replacing paper towel dispensers with electric hand dryers in washrooms; and
- Implement a composting program.

The key to a successful recycling program is education. KCS can communicate internally by establishing a "Green Team" to be in charge of overseeing the recycling program and ensuring that everyone is aware of the recycling systems in place. Moreover, presentations, posters and friendly 'best recyclers' class competitions can help students participate and better understand recycling programs. Education and effective communication and leadership are necessary for successful implementation.

Assistance is always available by contacting the Regional Waste Reduction Office at 469-6250.

## Recommendations

KCS does have a good foundation for collecting recyclable materials; however, there's room for improvement in virtually every area. The following outlines the recommendations for improvement for each area in the school.

**Classrooms, Administration Offices and Staff Rooms:**

Although KCS had relatively low amounts of refundables, disposable cups, and food waste were found in the six bags audited, significant amounts of paper, tissue, and packaging were found in the garbage. Below are suggestions to help increase waste diversion:

***Recommendation***

- Be sure all recycling containers are clearly labeled – pictures are helpful.
- Place both recycling and returnable collection bins next to the garbage.
- Ensure clearly marked recycling bins are available in common areas.
- Educate students on what can be recycled and where it belongs.
- Use incentives to encourage students to recycle refundables –do something special for the school with the return it money or hold a class competition – who can recover the most refundables.
- Place small saddlebag garbage containers onto the existing waste containers (your existing waste containers will become the recycling containers). Alternatively, construct your own recycling bins for each office station, keeping in mind that they should be larger and more accessible than the garbage bins to encourage recycling.
- Circulate information to staff about acceptable materials for recycling.
- Encourage staff to bring their own mug for morning coffee.
- Purchase real dishes, mugs, and cutlery for staff lunches.
- Implement a 'no Styrofoam' policy for staff meetings and events.
- Promote 'litterless' lunch practices.

**Lunch Area/Hallways**

Significant amounts of food and beverage related packaging were found during the audit. This packaging appeared to come both from staff and students and included: plastic containers, pizza boxes, sandwich/salad plastic packaging, Styrofoam plates and cups, plastic utensils, straws, single serving food

wrappers and returnables. Unfortunately, once the recyclables have been contaminated by food and sticky drinks they become garbage.

***Recommendation***

- Ensure recycling bins are located next to garbage bins and are clearly labeled – pictures are useful.
- Set-up clearly labeled recycling stations next to vending machines and in common areas.
- Educate students about new and improved recycling stations.
- Encourage 'litterless lunches' or have 'litterless' lunch days.

**Washrooms:**

Paper towel waste made up a large portion of the paper waste found during the audit. Studies have been conducted on the cost savings, health safety, and environmental impact of using electric hand dryers. The following is a brief summary of these studies.

***Recommendation:***

- Investigate the installation of hand dryers as a more economical and sanitary method of hand drying. Based on research by several educational facilities, it is recommended that air dryers be used in washrooms.

Between paper hand towels, cloth rolled towels and electric hand dryers, research from the University of Victoria and Simon Fraser University concluded that electric hand dryers are the most sanitary, cost-effective, and environmentally friendly of the three options. The cost comparisons between the three options are startling. By the time an organization pays for the towels, pays someone to put the towels in the dispensers, pays someone to remove the towels from the restrooms, and pays to have the towels taken to the landfill, the costs can be high. A University of Victoria Waste Management study (Abbott: 1995) clearly showed air-drying as the most cost-effective method, as shown in Table 2 below.

# A P P E N D I C E S

| *Drying Method* | **Cost per Dry** |
|---|---|
| Paper towels | $0.034 per dry |
| Linen towels | $0.052 per dry |
| Air drying | $0.0012 per dry |

**Table 4: Costs for Hand Drying Options**

In 1996, the Southern Oregon State College found that for their school of 5000 students and faculty, the cost for paper towels was $260,000 per year. They calculated that the electric hand dryers would cost them only $65,000 per year including the costs of buying and installing the dryers, and the cost of electricity.

There are numerous studies that show air blown hand drying is as sanitary as cloth or paper drying.

Finally, using hand dryers is environmentally friendly. In a University of South Carolina study, it was determined that in changing to hand dryers (153 hand dryers in 80 washrooms), the University saved the equivalent of 146 trees, 21 barrels of oil, 45 cubic yards of landfill and 61,000 gallons of water in only six months (Reed: 1998).

# A P P E N D I C E S

## Implementation

Getting started can sometimes be the most challenging part of recycling. However, if the project is tackled strategically and with enthusiasm remarkable results are achievable. The following are some suggestions that other schools and organizations have used successfully to change behaviour and encourage recycling and environmental sustainability.

**Put someone in charge.**

An organized and enthusiastic team leader can oversee the steps to follow to get the program going. Setting up a "Green Team" can also be effective. A "Green Team" could consist of representatives from different grades or areas in the office. For example, Kelowna Christian School could create a team of administrative staff, teachers, students and the custodial staff. The person in charge or the "Green Team" can handle any questions, suggestions or concerns.

**Design a program that works for you.**

Decide which materials you want to collect in your program and determine how many containers you will need for collection. The key to success is convenience; so keep your program simple and clean. The bins should be easy to find and clearly labeled. Have custodial staff or your "Green Team" ensure that the bins are taken care of and emptied when need be.

**Organize delivery or pick-up of recyclables.**

As participation in the recycling program increases, recyclables may need to be collected more frequently and garbage less often. KCS could hire a recycling collection company to take away recyclables on a regular basis (see Appendix B for recycling companies). Alternatively, KCS could designate a staff member to insure currently non-collected materials are taken to a recycling depot, including: plastic film, plastic containers, and tin cans.

**Educate the staff and students.**

Awareness and education are the cornerstones to a successful program. Keep staff posted on the program through the suggestions given in the "Education" section.

**Start the program.**

Ensure that bins are recognizable and uniform with clear instructions on what materials belong in them. Respond quickly to any problems or questions about the program.

**Monitor the program.**

Ensure bins are emptied regularly to assure greater participation. Watch for contamination in the bins and remind staff and students of what can and cannot go in them. Determine the reason for contamination (i.e., bins moved, bins not emptied, lack of awareness). Eliminate the cause for contamination. Launch the program with a kick-off event such as an assembly and introduce your "Green Team." Be sure to tell parents about your efforts to increase recycling at the school; offer them suggestions for creating less lunch waste. Implement on-going internal communications.

**Review and expand the program.**

Monitor results of the program to determine if changes are required. Amend the program as needed (i.e., increase educational activities, add more bins). Recycling can become a habit within one week, but the habit may be fragile. Keep participation high by ensuring the bins are neat and tidy.

## Education

In order for any of the recommendations to succeed, the participants in the program must be fully aware of what options are available for disposal, why the program is being implemented and how to participate correctly. The keys to successful education programs are consistency and frequency.

# A P P E N D I C E S

**Internal Communications**

- Create a "Green Team" or assign at least one person to design and implement recycling and educational programs.
- Hold meetings with staff to communicate with them. Confirm instructions with e-mails or memos.
- Develop posters with simple graphic descriptions about "what goes where." Call on the Regional Waste Reduction Office for free assistance with design of posters, flyers, and displays.
- Place posters, memos, et cetera in staff rooms, in entryways and on bulletin boards.
- Include information about the program during morning announcements.
- Have a suggestion box available for comments, suggestions and questions. Place responses on a bulletin board weekly.
- Place notices in pay check envelopes.
- Have a contest for the greenest staff person, student, or class.

**External Communications**

- Issue a press release once the program is in place.
- Challenge other schools to be as "green" as Kelowna Christian School.
- Put up posters in entryways.
- Host an open house.

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**For more information, please contact:**

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# A P P E N D I C E S

## Appendix A

| | Weight (KGs) | Volume (gallons) | Percentage by KGs | Percentage by Volume |
|---|---|---|---|---|
| **Material Category** | | | | |
| Containers | 6.46 | 61.25 | 15% | 40% |
| Paper Products | 9.24 | 48.75 | 22% | 32% |
| Organics and Yard Waste | 16.77 | 13.75 | 39% | 9% |
| Other: E-waste, haz. waste, construction, residual material | 10.01 | 30.00 | 24% | 20% |
| **Totals:** | 42.48 | 153.75 | 100% | 100% |
| **Sub- Categories** | | | | |
| Plastic Containers | 1.85 | 17.50 | 4% | 11% |
| Glass Jars and Bottles | 0.00 | 0.00 | 0% | 0% |
| Steel Food Containers | 0.56 | 2.50 | 1% | 2% |
| Plastic Film | 3.58 | 30.00 | 8% | 20% |
| Refundables | 0.32 | 5.00 | 1% | 3% |
| Styrofoam | 0.15 | 6.25 | 0% | 4% |
| Disposable Cups | 0.00 | 0.00 | 0% | 0% |
| Paper | 4.51 | 20.00 | 11% | 13% |
| Tissue | 3.80 | 20.00 | 9% | 13% |
| Cardboard | 0.93 | 8.75 | 2% | 6% |
| Compostable Food Waste | 12.19 | 8.75 | 29% | 6% |
| Non-compostable Food Waste | 4.58 | 5.00 | 11% | 3% |
| Garbage | 10.01 | 30.00 | 24% | 20% |
| Uncatagorized items | 0.00 | 0.00 | 0% | 0% |
| **Totals** | 42.48 | 153.75 | 100% | 100% |

# A P P E N D I C E S

## Waste Audit: Okanagan Mission Secondary

### Executive Summary

On April 26, 2007 the Regional Waste Reduction Office had the pleasure of working with students to audit Okanagan Mission Secondary's (OKM) outdoor garbage bin. This report outlines an overview of the findings from the audit and provides recommendations to improve and/or investigate options to improve services.

The audit was based on the dissection of six bags of garbage from various locations in the schools. The results revealed that over 40 percent (95gallons) of the materials sorted fit into the Container category including: plastic containers, plastic film, Styrofoam, and refundable beverage containers. Nearly 40 percent (87.5 gallons) of the audited bags were made up of paper related products: bathroom tissue, paper, cardboard/box board, other papers and paper cups. Organics had higher weight value, but were relatively low in volume (See Appendix A for full details). It should be noted that plastic containers, plastic film (sandwich bags, grocery bags, plastic wrap, and garbage bags), paper, cardboard and refundables represented over 50 percent of the total volume of the six bags audited.

Plastics, plastic film, cardboard and paper are easily recyclable material in the Central Okanagan and uncollected returnables are a loss of revenue for the school. Note: At the end of the audit only three bags were refilled with garbage; all other materials were recycled.

The audit revealed good recycling foundations in place at OKM including: recycling collection bins in the classrooms and a returnables collection system. The objective is to implement an updated, cost-efficient program, in keeping with staff time and resources. Major recommendations include:

- Ensure recycling bins are located in each classroom with a clear list of what materials are accepted for recycling;
- Include a separate collection bin for refundables in each classroom;
- Place recycling and refundable collection bins next to garbage containers in classrooms, hallways, and lunch areas;

- Promote 'litterless lunches' – a high volume of packaging and disposable cups were found.
- Set up a recycling station in staff and student lunch areas – separate containers for plastic film, plastic containers, refundables, tin cans;
- Invest in reusable cutlery, coffee mugs, glasses, and dishes to be used daily by staff, as well as for meetings;
- Establish a 'no Styrofoam' purchasing policy for staff meetings and events – if in need of large quantities purchase paper products;
- Consider replacing paper towel dispensers with electric hand dryers in washrooms; and
- Implement a composting program.

The key to a successful recycling program is education. OKM can communicate internally by establishing a "Green Team" to be in charge of overseeing the recycling program and ensuring that everyone is aware of the recycling systems in place. Moreover, presentations, posters and friendly 'best recyclers' class competitions can help students participate and better understand recycling programs. Education and effective communication and leadership are necessary for successful implementation.

Assistance is always available by contacting the Regional Waste Reduction Office at 469-6250.

## Recommendations

Okanagan Mission Secondary does have a good foundation for collecting recyclable materials; however, there's room for improvement in virtually every area. The following outlines the recommendations for improvement for each area in the school.

**Classrooms, Administration Offices and Staff Rooms:**

Despite recycling bins being located throughout the building, the audit found significant amounts of paper, cardboard, packaging, disposable cups, Styrofoam and refundables in the garbage. Below are suggestions to help increase waste diversion:

***Recommendation***

- Be sure all recycling containers are clearly labeled – pictures are helpful.
- Place both recycling and returnable collection bins next to the garbage.
- Ensure clearly marked recycling bins are available in common areas.
- Educate students on what can be recycled and where it belongs.
- Use incentives to encourage students to recycle refundables –do something special for the school with the return it money or hold a class competition – who can recover the most refundables.
- Place small saddlebag garbage containers onto the existing waste containers (your existing waste containers will become the recycling containers). Alternatively, construct your own recycling bins for each office station, keeping in mind that they should be larger and more accessible than the garbage bins to encourage recycling.
- Circulate information to staff about acceptable materials for recycling.
- Encourage staff to bring their own mug for morning coffee.
- Purchase real dishes, mugs, and cutlery for staff lunches.
- Implement a 'no Styrofoam' policy for staff meetings and events.
- Promote 'litterless' lunch practices.

**Lunch Area/Hallways**

Significant amounts of food and beverage related packaging were found during the audit. This packaging appeared to come both from staff and students and included: plastic containers, pizza boxes, sandwich/salad plastic packaging, disposable drink cups, Styrofoam plates and cups, plastic utensils, straws,

single serving food wrappers and returnables. Unfortunately, once the recyclables have been contaminated by food and sticky drinks they become garbage.

***Recommendation***

- Ensure recycling bins are located next to garbage bins and are clearly labeled – pictures are useful.
- Set-up clearly labeled recycling stations next to vending machines and in common areas.
- Educate students about new and improved recycling stations.
- Encourage 'litterless lunches' or have 'litterless' lunch days.

**Washrooms:**

Paper towel waste made up a large portion of the paper waste found during the audit. Studies have been conducted on the cost savings, health safety, and environmental impact of using electric hand dryers. The following is a brief summary of these studies.

***Recommendation:***

- Investigate the installation of hand dryers as a more economical and sanitary method of hand drying. Based on research by several educational facilities, it is recommended that air dryers be used in washrooms.

Between paper hand towels, cloth rolled towels and electric hand dryers, research from the University of Victoria and Simon Fraser University concluded that electric hand dryers are the most sanitary, cost-effective, and environmentally friendly of the three options. The cost comparisons between the three options are startling. By the time an organization pays for the towels, pays someone to put the towels in the dispensers, pays someone to remove the towels from the restrooms, and pays to have the towels taken to the landfill, the costs can be high. A University of Victoria Waste Management study (Abbott: 1995) clearly showed air-drying as the most cost-effective method, as shown in Table 2 below.

# A P P E N D I C E S

| *Drying Method* | **Cost per Dry** |
|---|---|
| Paper towels | $0.034 per dry |
| Linen towels | $0.052 per dry |
| Air drying | $0.0012 per dry |

**Table 5: Costs for Hand Drying Options**

In 1996, the Southern Oregon State College found that for their school of 5000 students and faculty, the cost for paper towels was $260,000 per year. They calculated that the electric hand dryers would cost them only $65,000 per year including the costs of buying and installing the dryers, and the cost of electricity.

There are numerous studies that show air blown hand drying is as sanitary as cloth or paper drying.

Finally, using hand dryers is environmentally friendly. In a University of South Carolina study, it was determined that in changing to hand dryers (153 hand dryers in 80 washrooms), the University saved the equivalent of 146 trees, 21 barrels of oil, 45 cubic yards of landfill and 61,000 gallons of water in only six months (Reed: 1998).

# A P P E N D I C E S

## Implementation

Getting started can sometimes be the most challenging part of recycling. However, if the project is tackled strategically and with enthusiasm remarkable results are achievable. The following are some suggestions that other schools and organizations have used successfully to change behaviour and encourage recycling and environmental sustainability.

**Put someone in charge.**

An organized and enthusiastic team leader can oversee the steps to follow to get the program going. Setting up a "Green Team" can also be effective. A "Green Team" could consist of representatives from different grades or areas in the office. For example, OKM could create a team of administrative staff, teachers, students and the custodial staff. The person in charge or the "Green Team" can handle any questions, suggestions or concerns.

**Design a program that works for you.**

Decide which materials you want to collect in your program and determine how many containers you will need for collection. The key to success is convenience; so keep your program simple and clean. The bins should be easy to find and clearly labeled. Have custodial staff or your "Green Team" ensure that the bins are taken care of and emptied when need be.

**Organize delivery or pick-up of recyclables.**

As participation in the recycling program increases, recyclables may need to be collected more frequently and garbage less often. OKM could encourage School District 23 to include more recyclable materials in its collection program. Alternatively, OKM could designate a staff member to insure currently non-collected materials are taken to a recycling depot, including: plastic film, plastic containers, and tin cans.

**Educate the staff and students.**

Awareness and education are the cornerstones to a successful program. Keep staff posted on the program through the suggestions given in the "Education" section.

**Start the program.**

Ensure that bins are recognizable and uniform with clear instructions on what materials belong in them. Respond quickly to any problems or questions about the program.

**Monitor the program.**

Ensure bins are emptied regularly to assure greater participation. Watch for contamination in the bins and remind staff and students of what can and cannot go in them. Determine the reason for contamination (i.e., bins moved, bins not emptied, lack of awareness). Eliminate the cause for contamination. Launch the program with a kick-off event such as an assembly and introduce your "Green Team." Be sure to tell parents about your efforts to increase recycling at the school; offer them suggestions for creating less lunch waste. Implement on-going internal communications.

**Review and expand the program.**

Monitor results of the program to determine if changes are required. Amend the program as needed (i.e., increase educational activities, add more bins). Recycling can become a habit within one week, but the habit may be fragile. Keep participation high by ensuring the bins are neat and tidy.

## Education

In order for any of the recommendations to succeed, the participants in the program must be fully aware of what options are available for disposal, why the program is being implemented and how to participate correctly. The keys to successful education programs are consistency and frequency.

# A P P E N D I C E S

**Internal Communications**

- Create a "Green Team" or assign at least one person to design and implement recycling and educational programs.
- Hold meetings with staff to communicate with them. Confirm instructions with e-mails or memos.
- Develop posters with simple graphic descriptions about "what goes where." Call on the Regional Waste Reduction Office for free assistance with design of posters, flyers, and displays.
- Place posters, memos, et cetera in staff rooms, in entryways and on bulletin boards.
- Include information about the program during morning announcements.
- Have a suggestion box available for comments, suggestions and questions. Place responses on a bulletin board weekly.
- Place notices in pay check envelopes.
- Have a contest for the greenest staff person, student, or class.

**External Communications**

- Issue a press release once the program is in place.
- Challenge other schools to be as "green" as Okanagan Mission Secondary.
- Put up posters in entryways.
- Host an open house.

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**For more information, please contact:**

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1450 KLO Road
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Eve-Lyn Wolters
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(250) 469-6346

# A P P E N D I C E S

## Appendix A

| | Weight (KGs) | Volume (gallons) | Percentage by KGs | Percentage by Volume |
|---|---|---|---|---|
| **Material Category** | | | | |
| Containers | 8.45 | 95.00 | 19% | 42% |
| Paper Products | 9.25 | 87.50 | 21% | 38% |
| Organics and Yard Waste | 14.77 | 15.00 | 34% | 7% |
| Other: E-waste, haz. waste, construction, residual material | 11.30 | 30.00 | 26% | 13% |
| **Totals:** | 43.77 | 227.50 | 100% | 100% |
| **Sub- Categories** | | | | |
| Plastic Containers | 1.54 | 15.00 | 4% | 7% |
| Glass Jars and Bottles | 0.00 | 0.00 | 0% | 0% |
| Steel Food Containers | 0.44 | 5.00 | 1% | 2% |
| Plastic Film | 2.82 | 30.00 | 6% | 13% |
| Refundables | 2.91 | 27.50 | 7% | 12% |
| Styrofoam | 0.13 | 7.50 | 0% | 3% |
| Disposable Cups | 0.61 | 10.00 | 1% | 4% |
| Paper | 2.93 | 30.00 | 7% | 13% |
| Tissue | 5.23 | 45.00 | 12% | 20% |
| Cardboard | 1.09 | 12.50 | 2% | 5% |
| Compostable Food Waste | 10.39 | 7.50 | 24% | 3% |
| Non-compostable Food Waste | 4.38 | 7.50 | 10% | 3% |
| Garbage | 11.30 | 30.00 | 26% | 13% |
| Uncatagorized items | 0.00 | 0.00 | 0% | 0% |
| **Totals** | 43.77 | 227.50 | 100% | 100% |

# A P P E N D I C E S

## Waste Audit: Mount Boucherie Secondary

### Executive Summary

On April 26, 2007 the Regional Waste Reduction Office had the pleasure of working with students to audit Mt. Boucherie Secondary's outdoor garbage bin. This report outlines an overview of the findings from the audit and provides recommendations to improve and/or investigate options to improve services.

The audit was based on the dissection of four bags of garbage from various locations in the schools. The results revealed that nearly half (45.25gallons) of the materials sorted fit into the Container category including: plastic containers, plastic film, Styrofoam, and refundable beverage containers. Nearly 40 percent (40 gallons) of the audited bags were made up of paper related products: bathroom tissue, paper, cardboard/box board, other papers and paper cups. Organics had higher weight value, but were relatively low in volume (See Appendix A for full details). It should be noted that plastic containers, plastic film (sandwich bags, grocery bags, plastic wrap, and garbage bags), paper, cardboard and refundables represented over 50 percent of the total volume of the four bags audited.

Plastics, plastic film, cardboard and paper are easily recyclable material in the Central Okanagan and uncollected returnables are a loss of revenue for the school. Note: At the end of the audit only one bag was refilled with garbage; all other materials were recycled.

The audit revealed good recycling foundations in place at Mt. Boucherie Secondary including: recycling collection bins in the classrooms and a returnables collection system. The objective is to implement an updated, cost-efficient program, in keeping with staff time and resources. Major recommendations include:

- Ensure recycling bins are located in each classroom with a clear list of what materials are accepted for recycling;
- Include a separate collection bin for refundables in each classroom;

- Place recycling and refundable collection bins next to garbage containers in classrooms, hallways, and lunch areas;
- Promote 'litterless lunches' – a high volume of packaging and disposable cups were found.
- Set up a recycling station in staff and student lunch areas – separate containers for plastic film, plastic containers, refundables, tin cans;
- Invest in reusable cutlery, coffee mugs, glasses, and dishes to be used daily by staff, as well as for meetings;
- Establish a 'no Styrofoam' purchasing policy for staff meetings and events – if in need of large quantities purchase paper products;
- Consider replacing paper towel dispensers with electric hand dryers in washrooms; and
- Implement a composting program.

The key to a successful recycling program is education. Mt. Boucherie Secondary can communicate internally by establishing a "Green Team" to be in charge of overseeing the recycling program and ensuring that everyone is aware of the recycling systems in place. Moreover, presentations, posters and friendly 'best recyclers' class competitions can help students participate and better understand recycling programs. Education and effective communication and leadership are necessary for successful implementation.

Assistance is always available by contacting the Regional Waste Reduction Office at 469-6250.

## Recommendations

Mt. Boucherie Secondary does have a good foundation for collecting recyclable materials; however, there's room for improvement in virtually every area. The following outlines the recommendations for improvement for each area in the school.

**Classrooms, Administration Offices and Staff Rooms:**

Despite recycling bins being located throughout the building, the audit found significant amounts of paper, cardboard, packaging, disposable cups, Styrofoam and refundables in the garbage. Below are suggestions to help increase waste diversion:

***Recommendation***

- Be sure all recycling containers are clearly labeled – pictures are helpful.
- Place both recycling and returnable collection bins next to the garbage.
- Ensure clearly marked recycling bins are available in common areas.
- Educate students on what can be recycled and where it belongs.
- Use incentives to encourage students to recycle refundables –do something special for the school with the return it money or hold a class competition – who can recover the most refundables.
- Place small saddlebag garbage containers onto the existing waste containers (your existing waste containers will become the recycling containers). Alternatively, construct your own recycling bins for each office station, keeping in mind that they should be larger and more accessible than the garbage bins to encourage recycling.
- Circulate information to staff about acceptable materials for recycling.
- Encourage staff to bring their own mug for morning coffee.
- Purchase real dishes, mugs, and cutlery for staff lunches.
- Implement a 'no Styrofoam' policy for staff meetings and events.
- Promote 'litterless' lunch practices.

**Lunch Area/Hallways**

Significant amounts of food and beverage related packaging were found during the audit. This packaging appeared to come both from staff and students and included: plastic containers, pizza boxes, sandwich/salad plastic packaging, disposable drink cups, Styrofoam plates and cups, plastic utensils, straws,

single serving food wrappers and returnables. Unfortunately, once the recyclables have been contaminated by food and sticky drinks they become garbage.

***Recommendation***

- Ensure recycling bins are located next to garbage bins and are clearly labeled – pictures are useful.
- Set-up clearly labeled recycling stations next to vending machines and in common areas.
- Educate students about new and improved recycling stations.
- Encourage 'litterless lunches' or have 'litterless' lunch days.

**Washrooms:**

Paper towel waste made up a large portion of the paper waste found during the audit. Studies have been conducted on the cost savings, health safety, and environmental impact of using electric hand dryers. The following is a brief summary of these studies.

***Recommendation:***

- Investigate the installation of hand dryers as a more economical and sanitary method of hand drying. Based on research by several educational facilities, it is recommended that air dryers be used in washrooms.

Between paper hand towels, cloth rolled towels and electric hand dryers, research from the University of Victoria and Simon Fraser University concluded that electric hand dryers are the most sanitary, cost-effective, and environmentally friendly of the three options. The cost comparisons between the three options are startling. By the time an organization pays for the towels, pays someone to put the towels in the dispensers, pays someone to remove the towels from the restrooms, and pays to have the towels taken to the landfill, the costs can be high. A University of Victoria Waste Management study (Abbott: 1995) clearly showed air-drying as the most cost-effective method, as shown in Table 2 below.

# A P P E N D I C E S

| *Drying Method* | **Cost per Dry** |
|---|---|
| Paper towels | $0.034 per dry |
| Linen towels | $0.052 per dry |
| Air drying | $0.0012 per dry |

**Table 6: Costs for Hand Drying Options**

In 1996, the Southern Oregon State College found that for their school of 5000 students and faculty, the cost for paper towels was $260,000 per year. They calculated that the electric hand dryers would cost them only $65,000 per year including the costs of buying and installing the dryers, and the cost of electricity.

There are numerous studies that show air blown hand drying is as sanitary as cloth or paper drying.

Finally, using hand dryers is environmentally friendly. In a University of South Carolina study, it was determined that in changing to hand dryers (153 hand dryers in 80 washrooms), the University saved the equivalent of 146 trees, 21 barrels of oil, 45 cubic yards of landfill and 61,000 gallons of water in only six months (Reed: 1998).

## Implementation

Getting started can sometimes be the most challenging part of recycling. However, if the project is tackled strategically and with enthusiasm remarkable results are achievable. The following are some suggestions that other schools and organizations have used successfully to change behaviour and encourage recycling and environmental sustainability.

**Put someone in charge.**

An organized and enthusiastic team leader can oversee the steps to follow to get the program going. Setting up a "Green Team" can also be effective. A "Green Team" could consist of representatives from different grades or areas in the office. For example, Mt. Boucherie could create a team of administrative staff, teachers, students and the custodial staff. The person in charge or the "Green Team" can handle any questions, suggestions or concerns.

**Design a program that works for you.**

Decide which materials you want to collect in your program and determine how many containers you will need for collection. The key to success is convenience; so keep your program simple and clean. The bins should be easy to find and clearly labeled. Have custodial staff or your "Green Team" ensure that the bins are taken care of and emptied when need be.

**Organize delivery or pick-up of recyclables.**

As participation in the recycling program increases, recyclables may need to be collected more frequently and garbage less often. Mt. Boucherie Secondary could encourage School District 23 to include more recyclable materials in its collection program. Alternatively, Mt. Boucherie could designate a staff member to insure currently non-collected materials are taken to a recycling depot, including: plastic film, plastic containers, and tin cans.

**Educate the staff and students.**

Awareness and education are the cornerstones to a successful program. Keep staff posted on the program through the suggestions given in the "Education" section.

**Start the program.**

Ensure that bins are recognizable and uniform with clear instructions on what materials belong in them. Respond quickly to any problems or questions about the program.

**Monitor the program.**

Ensure bins are emptied regularly to assure greater participation. Watch for contamination in the bins and remind staff and students of what can and cannot go in them. Determine the reason for contamination (i.e., bins moved, bins not emptied, lack of awareness). Eliminate the cause for contamination. Launch the program with a kick-off event such as an assembly and introduce your "Green Team." Be sure to tell parents about your efforts to increase recycling at the school; offer them suggestions for creating less lunch waste. Implement on-going internal communications.

**Review and expand the program.**

Monitor results of the program to determine if changes are required. Amend the program as needed (i.e., increase educational activities, add more bins). Recycling can become a habit within one week, but the habit may be fragile. Keep participation high by ensuring the bins are neat and tidy.

## Education

In order for any of the recommendations to succeed, the participants in the program must be fully aware of what options are available for disposal, why the program is being implemented and how to participate correctly. The keys to successful education programs are consistency and frequency.

# A P P E N D I C E S

**Internal Communications**

- Create a "Green Team" or assign at least one person to design and implement recycling and educational programs.
- Hold meetings with staff to communicate with them. Confirm instructions with e-mails or memos.
- Develop posters with simple graphic descriptions about "what goes where." Call on the Regional Waste Reduction Office for free assistance with design of posters, flyers, and displays.
- Place posters, memos, et cetera in staff rooms, in entryways and on bulletin boards.
- Include information about the program during morning announcements.
- Have a suggestion box available for comments, suggestions and questions. Place responses on a bulletin board weekly.
- Place notices in pay check envelopes.
- Have a contest for the greenest staff person, student, or class.

**External Communications**

- Issue a press release once the program is in place.
- Challenge other schools to be as "green" as Mt. Boucherie Secondary.
- Put up posters in entryways.
- Host an open house.

---

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# A P P E N D I C E S

## Appendix A

| | Weight (KGs) | Volume (gallons) | Percentage by KGs | Percentage by Volume |
|---|---|---|---|---|
| **Material Category** | | | | |
| Containers | 4.26 | 45.42 | 26% | 42% |
| Paper Products | 3.61 | 40.00 | 22% | 37% |
| Organics and Yard Waste | 5.59 | 7.50 | 35% | 7% |
| Other: E-waste, haz. waste, construction, residual material | 2.68 | 15.00 | 17% | 14% |
| **Totals:** | 16.14 | 107.92 | 100% | 100% |
| **Sub- Categories** | | | | |
| Plastic Containers | 0.73 | 7.50 | 5% | 7% |
| Glass Jars and Bottles | 0.00 | 0.00 | 0% | 0% |
| Steel Food Containers | 0.28 | 2.50 | 2% | 2% |
| Plastic Film | 0.98 | 10.00 | 6% | 9% |
| Refundables | 1.66 | 15.00 | 10% | 14% |
| Styrofoam | 0.09 | 3.75 | 1% | 3% |
| Disposable Cups | 0.52 | 6.67 | 3% | 6% |
| Paper | 1.50 | 18.75 | 9% | 17% |
| Tissue | 1.65 | 15.00 | 10% | 14% |
| Cardboard | 0.46 | 6.25 | 3% | 6% |
| Compostable Food Waste | 4.50 | 5.00 | 28% | 5% |
| Non-compostable Food Waste | 1.09 | 2.50 | 7% | 2% |
| Garbage | 2.68 | 15.00 | 17% | 14% |
| Uncatagorized items | 0.00 | 0.00 | 0% | 0% |
| **Totals** | 16.14 | 107.92 | 100% | 100% |

# A P P E N D I C E S

# Waste Audit: George Elliot Secondary

## Executive Summary

On April 25, 2007 the Regional Waste Reduction Office had the pleasure of working with students to audit George Elliot Secondary's outdoor garbage bin. This report outlines an overview of the findings from the audit and provides recommendations to improve and/or investigate options to improve services.

The audit was based on the dissection of six bags of garbage from various locations in the schools. The results revealed that nearly 50 percent (116.15gallons) of the materials sorted fit into the Container category including: plastic containers, plastic film, Styrofoam, and refundable beverage containers. Over one quarter (65.5 gallons) of the audited bags were made up of paper related products: bathroom tissue, paper, cardboard/box board, other papers and paper cups. Organics had higher weight value, but were relatively low in volume (See Appendix A for full details). It should be noted that plastic containers, plastic film (sandwich bags, grocery bags, plastic wrap, and garbage bags), paper, cardboard and refundables represented 50 percent of the total volume of the six bags audited.

Plastics, plastic film, cardboard and paper are easily recyclable material in the Central Okanagan and uncollected returnables are a loss of revenue for the school. Note: At the end of the audit only 1.5 bags were refilled with garbage; all other materials were recycled.

The audit revealed good recycling foundations in place at George Elliot including: recycling collection bins in the classrooms and a returnables collection system. The objective is to implement an updated, cost-efficient program, in keeping with staff time and resources. Major recommendations include:

- Ensure recycling bins are located in each classroom with a clear list of what materials are accepted for recycling;
- Include a separate collection bin for refundables in each classroom;

- Place recycling and refundable collection bins next to garbage containers in classrooms, hallways, and lunch areas;
- Promote 'litterless lunches' – a high volume of packaging and disposable cups were found.
- Set up a recycling station in staff and student lunch areas – separate containers for plastic film, plastic containers, refundables, tin cans;
- Invest in reusable cutlery, coffee mugs, glasses, and dishes to be used daily by staff, as well as for meetings;
- Establish a 'no Styrofoam' purchasing policy for staff meetings and events – if in need of large quantities purchase paper products;
- Consider replacing paper towel dispensers with electric hand dryers in washrooms; and
- Implement a composting program.

The key to a successful recycling program is education. George Elliot can communicate internally by establishing a "Green Team" to be in charge of overseeing the recycling program and ensuring that everyone is aware of the recycling systems in place. Moreover, presentations, posters and friendly 'best recyclers' class competitions can help students participate and better understand recycling programs. Education and effective communication and leadership are necessary for successful implementation.

Assistance is always available by contacting the Regional Waste Reduction Office at 469-6250.

## Recommendations

George Elliot Secondary does have a good foundation for collecting recyclable materials; however, there's room for improvement in virtually every area. The following outlines the recommendations for improvement for each area in the school.

**Classrooms, Administration Offices and Staff Rooms:**

Despite recycling bins being located throughout the building, the audit found significant amounts of paper, cardboard, packaging, disposable cups, Styrofoam and refundables in the garbage. Below are suggestions to help increase waste diversion:

***Recommendation***

- Be sure all recycling containers are clearly labeled – pictures are helpful.
- Place both recycling and returnable collection bins next to the garbage.
- Ensure clearly marked recycling bins are available in common areas.
- Educate students on what can be recycled and where it belongs.
- Use incentives to encourage students to recycle refundables –do something special for the school with the return it money or hold a class competition – who can recover the most refundables.
- Place small saddlebag garbage containers onto the existing waste containers (your existing waste containers will become the recycling containers). Alternatively, construct your own recycling bins for each office station, keeping in mind that they should be larger and more accessible than the garbage bins to encourage recycling.
- Circulate information to staff about acceptable materials for recycling.
- Encourage staff to bring their own mug for morning coffee.
- Purchase real dishes, mugs, and cutlery for staff lunches.
- Implement a 'no Styrofoam' policy for staff meetings and events.
- Promote 'litterless' lunch practices.

**Lunch Area/Hallways**

Significant amounts of food and beverage related packaging were found during the audit. This packaging appeared to come both from staff and students and included: plastic containers, pizza boxes, sandwich/salad plastic packaging, disposable drink cups, Styrofoam plates and cups, plastic utensils, straws,

single serving food wrappers and returnables. Unfortunately, once the recyclables have been contaminated by food and sticky drinks they become garbage.

***Recommendation***

- Ensure recycling bins are located next to garbage bins and are clearly labeled – pictures are useful.
- Set-up clearly labeled recycling stations next to vending machines and in common areas.
- Educate students about new and improved recycling stations.
- Encourage 'litterless lunches' or have 'litterless' lunch days.

**Washrooms:**

Paper towel waste made up a large portion of the paper waste found during the audit. Studies have been conducted on the cost savings, health safety, and environmental impact of using electric hand dryers. The following is a brief summary of these studies.

***Recommendation:***

- Investigate the installation of hand dryers as a more economical and sanitary method of hand drying. Based on research by several educational facilities, it is recommended that air dryers be used in washrooms.

Between paper hand towels, cloth rolled towels and electric hand dryers, research from the University of Victoria and Simon Fraser University concluded that electric hand dryers are the most sanitary, cost-effective, and environmentally friendly of the three options. The cost comparisons between the three options are startling. By the time an organization pays for the towels, pays someone to put the towels in the dispensers, pays someone to remove the towels from the restrooms, and pays to have the towels taken to the landfill, the costs can be high. A University of Victoria Waste Management study (Abbott: 1995) clearly showed air-drying as the most cost-effective method, as shown in Table 2 below.

# A P P E N D I C E S

| *Drying Method* | **Cost per Dry** |
|---|---|
| Paper towels | $0.034 per dry |
| Linen towels | $0.052 per dry |
| Air drying | $0.0012 per dry |

**Table 7: Costs for Hand Drying Options**

In 1996, the Southern Oregon State College found that for their school of 5000 students and faculty, the cost for paper towels was $260,000 per year. They calculated that the electric hand dryers would cost them only $65,000 per year including the costs of buying and installing the dryers, and the cost of electricity.

There are numerous studies that show air blown hand drying is as sanitary as cloth or paper drying.

Finally, using hand dryers is environmentally friendly. In a University of South Carolina study, it was determined that in changing to hand dryers (153 hand dryers in 80 washrooms), the University saved the equivalent of 146 trees, 21 barrels of oil, 45 cubic yards of landfill and 61,000 gallons of water in only six months (Reed: 1998).

# A P P E N D I C E S

## Implementation

Getting started can sometimes be the most challenging part of recycling. However, if the project is tackled strategically and with enthusiasm remarkable results are achievable. The following are some suggestions that other schools and organizations have used successfully to change behaviour and encourage recycling and environmental sustainability.

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An organized and enthusiastic team leader can oversee the steps to follow to get the program going. Setting up a "Green Team" can also be effective. A "Green Team" could consist of representatives from different grades or areas in the office. For example, George Elliot could create a team of administrative staff, teachers, students and the custodial staff. The person in charge or the "Green Team" can handle any questions, suggestions or concerns.

**Design a program that works for you.**

Decide which materials you want to collect in your program and determine how many containers you will need for collection. The key to success is convenience; so keep your program simple and clean. The bins should be easy to find and clearly labeled. Have custodial staff or your "Green Team" ensure that the bins are taken care of and emptied when need be.

**Organize delivery or pick-up of recyclables.**

As participation in the recycling program increases, recyclables may need to be collected more frequently and garbage less often. George Elliot could encourage School District 23 to include more recyclable materials in its collection program. Alternatively, George Elliot could designate a staff member to insure currently non-collected materials are taken to a recycling depot, including: plastic film, plastic containers, and tin cans.

**Educate the staff and students.**

Awareness and education are the cornerstones to a successful program. Keep staff posted on the program through the suggestions given in the "Education" section.

**Start the program.**

Ensure that bins are recognizable and uniform with clear instructions on what materials belong in them. Respond quickly to any problems or questions about the program.

**Monitor the program.**

Ensure bins are emptied regularly to assure greater participation. Watch for contamination in the bins and remind staff and students of what can and cannot go in them. Determine the reason for contamination (i.e., bins moved, bins not emptied, lack of awareness). Eliminate the cause for contamination. Launch the program with a kick-off event such as an assembly and introduce your "Green Team." Be sure to tell parents about your efforts to increase recycling at the school; offer them suggestions for creating less lunch waste. Implement on-going internal communications.

**Review and expand the program.**

Monitor results of the program to determine if changes are required. Amend the program as needed (i.e., increase educational activities, add more bins). Recycling can become a habit within one week, but the habit may be fragile. Keep participation high by ensuring the bins are neat and tidy.

## Education

In order for any of the recommendations to succeed, the participants in the program must be fully aware of what options are available for disposal, why the program is being implemented and how to participate correctly. The keys to successful education programs are consistency and frequency.

# A P P E N D I C E S

**Internal Communications**

- Create a "Green Team" or assign at least one person to design and implement recycling and educational programs.
- Hold meetings with staff to communicate with them. Confirm instructions with e-mails or memos.
- Develop posters with simple graphic descriptions about "what goes where." Call on the Regional Waste Reduction Office for free assistance with design of posters, flyers, and displays.
- Place posters, memos, et cetera in staff rooms, in entryways and on bulletin boards.
- Include information about the program during morning announcements.
- Have a suggestion box available for comments, suggestions and questions. Place responses on a bulletin board weekly.
- Place notices in pay check envelopes.
- Have a contest for the greenest staff person, student, or class.

**External Communications**

- Issue a press release once the program is in place.
- Challenge other schools to be as "green" as George Elliot Secondary.
- Put up posters in entryways.
- Host an open house.

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**For more information, please contact:**

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# A P P E N D I C E S

## Appendix A

| | Weight (KGs) | Volume (gallons) | Percentage by KGs | Percentage by Volume |
|---|---|---|---|---|
| **Material Category** | | | | |
| Containers | 14.28 | 115.73 | 19% | 47% |
| Paper Products | 10.83 | 60.50 | 15% | 25% |
| Organics and Yard Waste | 32.73 | 35.00 | 44% | 14% |
| Other: E-waste, haz. waste, construction, residual material | 15.73 | 35.00 | 21% | 14% |
| **Totals:** | 73.57 | 246.23 | 100% | 100% |
| **Sub- Categories** | | | | |
| Plastic Containers | 3.42 | 25.00 | 5% | 10% |
| Glass Jars and Bottles | 0.21 | 0.10 | 0% | 0% |
| Steel Food Containers | 1.13 | 5.00 | 2% | 2% |
| Plastic Film | 4.27 | 40.00 | 6% | 16% |
| Refundables | 4.31 | 20.63 | 6% | 8% |
| Styrofoam | 0.22 | 10.00 | 0% | 4% |
| Disposable Cups | 0.72 | 15.00 | 1% | 6% |
| Paper | 4.50 | 25.00 | 6% | 10% |
| Tissue | 5.10 | 25.00 | 7% | 10% |
| Cardboard | 1.23 | 10.50 | 2% | 4% |
| Compostable Food Waste | 27.52 | 25.00 | 37% | 10% |
| Non-compostable Food Waste | 5.21 | 10.00 | 7% | 4% |
| Garbage | 15.73 | 35.00 | 21% | 14% |
| Uncatagorized items | 0.00 | 0.00 | 0% | 0% |
| **Totals** | 73.57 | 246.23 | 100% | 100% |