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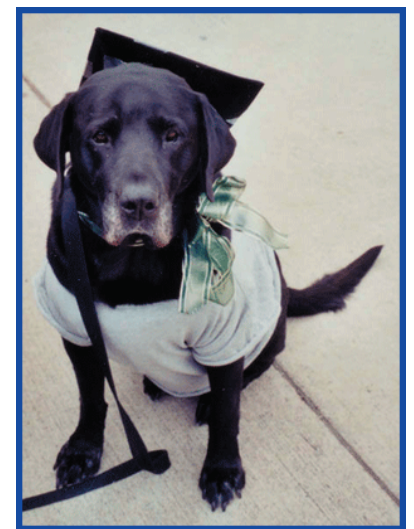
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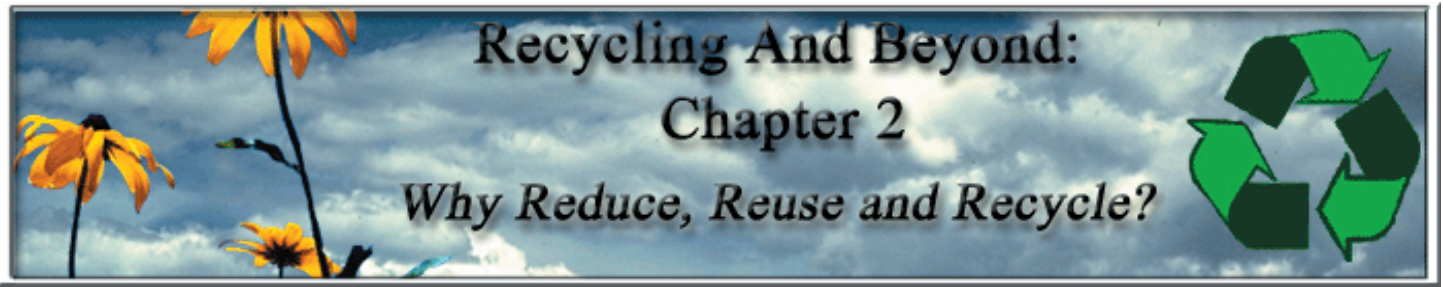


With increasing pressure on our precious resources, college campuses have come to play an important role in environmental stewardship. This guide provides an overview of strategies for implementation and program development of a college campus recycling program. This guide provides tools, resources and successes to inspire collegiate recyclers everywhere.

There are many aspects and challenges of implementing and developing a campus recycling program. The important thing to remember is to start small, do pilot projects and work to build bridges. Creating a program that has longevity is an evolving process which takes a lot of dedication and small steps. Campus recycling programs are taking colleges in positive directions by: creating hands-on experiences for students, developing sustainable practices and resource conservation, working towards smart economics and an opportunity for colleges to get some good PR.

This guide is a compilation of experiences from college campus recyclers around the globe. Ultimately, the best resources we have are each other. Networking is one of the greatest assets....don't worry, there is plenty of room for more sharing. Enjoy this guide and thanks for recycling!

Recycling And Beyond: Chapter 2 *Why Reduce, Reuse and Recycle?*



Almost everything creates waste. According to the US Environmental Protection Agency: “In 1999, U.S. residents, businesses, and institutions produced more than 230 million tons of MSW, which is approximately 4.6 pounds of waste per person per day, up from 2.7 pounds per person per day in 1960.” (from the EPA...)

Traditionally, most garbage is buried in landfills. But landfills are filling up and closing down all over the country. In 1986, there were 7,683 municipal solid waste landfills. A survey done in 1995, showed only 3,581.

Incineration is a poor alternative. According to The Recycler’s Handbook (Earthworks Group 1990): “Even with pollution controls, incinerators are the largest new source of air pollution in most communities. The metals, acid gases, carbon monoxide and dioxins. Additionally, incinerators produce millions of tons of toxic ash, which still have to go to landfills.”

In *The Solid Waste Dilemma, An Agenda for Action* published by the EPA/530-SW-89-019 in 1989, integrated waste management was referred to as “the complementary use of a variety of waste management practices to safely and effectively handle the municipal solid waste stream with the least adverse impact on human health and the environment.”



When deciding how to handle solid waste, consider the alternatives in this order: source reduction (includes reuse), recycling, incineration then land filling. This hierarchy has remained unchanged and is still regarded as the best way to handle solid waste.

Source reduction, the highest goal in the solid waste management hierarchy, should be the centerpiece of every business or government procurement program. Source reduction is first in the solid waste hierarchy. Although recycling questions and changes how products are manufactured, it is not designed to question why they are produced. Source reduction asks those questions: Do we need this? If so, can it be produced with fewer resources, take up less space or make a lighter environmental impact? A “source reduction product” can be defined as “a product that results in a net reduction in the generation of waste compared to the previous or alternate version and includes durable, reusable and remanufactured products; products with no or reduced toxic constituents; and products marketed with no or reduced packaging”.

Sometimes source reduction comes from the product itself, e.g. lighter product packaging. Other times, it has more to do with how the product is used. Sometimes buying for source reduction means that several different parts of an organization must agree on policies that result in fewer or different products being purchased. It's time to think before buying and reduce the amount of overall waste produced in the first place. This is called Precycling. It is a choice to make when shopping.

Reusing starts at the point of purchase. Choose products that can be maintained and repaired to ensure a longer life.

Recycling, as the word indicates, is a cyclical process. After purchasing a product and using it to its' full potential, a choice becomes evident: Throw it away or recycle it. If there is an available market choose recycling. According to the University of Oregon Factoids Section:

*Every year enough energy is saved by recycling steel to supply L.A. with nearly a decade's worth of electricity.

*Making one ton of recycled paper uses only about 60% of the energy needed to make a ton of virgin paper.

*Every aluminum can that is recycled saves, 95 percent of the energy that it would have taken to manufacture a new one from bauxite. In other words, when a can is tossed in the trash as much energy is thrown away as if the can was half full of gasoline. Recycling one aluminum can to run a TV for three hours.

*Recycling glass lowers the melting point for the new glass, saving up to 32% of the energy needed for production.

*Recycling reduces dependence on landfills and incinerators.

*Every year Americans throw away nearly 10 million tons of newspaper. If these papers were all recycled, over 150 million trees would be left standing, less than half as much energy would be used, and air pollution from the manufacturing process would be cut by more than 70 percent.

*America imports most of its' oil. Saving energy by recycling means we depend less on foreign supplies and reduce environmental problems such as global warming, acid rain and oil spills directly linked to our energy use.

Recycling reduces the amount of pollution created during the manufacturing process. The end result is cleaner air, land, and water. The earth's resources are finite. Reduce, reuse or recycle to conserve valuable resources.

In order for recycling to be successful, there must be a demand for use of recycled materials. Colleges have a unique opportunity to demand products: made with reduced and recyclable packaging, made with recycled content and made to last, while being repairable for the long haul.

Chapter 2 - Why Reduce, Reuse and Recycle?

Colleges and Universities are educating future leaders. Day-to-day operations serve as an example to students and the greater community. Using resources efficiently and effectively, collecting materials for recycling and purchasing non-toxic recycled content products will enhance the reputation of the school, while reducing costs and contributing to a better world.

Environmental Advantages of Recycling

For every one (1) ton of paper recycled:

- * 17 pulpwood trees are conserved
- * 500 pounds of air pollutants are not emitted
- * 12,000 gallons of processed water are conserved
- * water pollution is reduced by 40%
- * energy equivalent to 96 gallons of gasoline is conserved
- * solid waste pollution is reduced
- * 5 cubic yards of landfill space is conserved and the amount of money to process the landfill space is conserved

Source: Garden Services Inc., Salem, Oregon

“Decomposition Rate for Trash”, Oregon Department of Environmental Quality 1988

Paper -- 2.5 months

Orange Peel --- 6 months

Milk Carton -- 5 years

Cigarette Butt -- 10-12 years

Plastic bag -- 10-20 years

Disposable diaper -- 75 years

Tin can -- 100 years

Beer can -- 200-500 years

Styrofoam -- never (immortal)

Resources

University of Oregon Campus Recycling Program Factoids
<http://www.uoregon.edu/~recycle/Factoids.htm>



This section provides information to establish an effective recycling program on a college campus.

I. Writing a Proposal

Most college campus recycling programs have developed out of student and/or faculty interest rather than coming from the administration itself. But institutionalizing a campus recycling

1. Research Past Problems:

Research and planning must go into a proposal for it to be convincing. Before drafting a proposal, check into past attempts at setting up a recycling program and learn from previous mistakes. Also, investigate any applicable city or campus ordinances that supports recycling and can be used to help establish a program.

2. Identify College, Local and State Laws, Executive Orders and Policies on Waste Prevention and Recycling:

This is a critical component. If these exist, identify and utilize them in the process of creating a waste prevention and recycling program. Colleges, as a visible community entity, strive to be in compliance with all laws and policies and leaders in the greater local community. Additionally, identify advocates in these areas to assist in supporting the establishment of a program. Build alliances and bridges. Identify advocates on campus and in the local community. Networking also is a valuable asset.

3. Examine the University Waste Stream:

Determine the composition of the campus waste. What wastes are recyclable, and in what quantities? Glass, aluminum, cardboard, office paper, and newspaper are usually the most abundant. Food products and campus ground trimmings are also possibilities for composting. Be sure to examine offices, classrooms, cafeterias, lounges and dormitories for the study. See Chapter 4 Solid Waste Audits of this handbook for waste analysis details.

4. Economic Argument:

This is the most important section of a proposal. Recycling as a campus policy makes sense both economically and environmentally. Demonstrate to the administration that your school may save money on disposal, and will generate income from the sale of recyclables. This is called demonstrating cost-avoidance and also revenue potential. This is a critical component in creating a sustainable campus

recycling program.

a. Check Out Markets for Recyclable Materials:

Are there recycling markets available in the area and for what materials? It is a big mistake to collect materials that do not have a ready market. Instead of recyclables, the end result is waste. Identify local waste management companies that handle recyclables and other recycling processors in your area. Initially focus on high grade office paper, especially computer paper, since it brings in the biggest revenue and is usually plentiful on college campuses. Paper brokers may also accept other materials or have information on where to take them. What prices do these brokers pay for materials? Obtain a list of prices from local brokers. What are the brokers' collection methods? It may be necessary to deliver the recyclables to brokers, or materials may be able to be picked up at a central location on campus.



b. Look at the Current Cost and Methods of Waste Disposal:

Determine how the waste is handled on campus. Many campuses handle their own waste, while others contract out waste disposal. Examine how to incorporate a recycling program into existing campus waste management operations. Review the County Solid Waste Management Plan and determine how the college fits into that plan and also what impact your college has on the local waste stream.

Be a critical thinker and detective: How much does the school spend on disposal? Is the charge by weight, volume, or is it a fixed rate? If the charge is by weight or volume then the economic incentive for recycling is greater. Where does the waste go? Landfill? Incineration? Include information on the environmental consequences of such disposal practices in the report. What are the projected future landfill costs?

Recycling is an effective way to avoid the exorbitant landfill costs as space becomes more scarce. Explicitly outline the potential savings for the campus. Explain that the cost of waste disposal will decrease as volume decreases, and that money can be generated from the sale of recyclable materials. This money can be used to operate the recycling program, to publicize it, or for incentive programs.

5. Decide What Type of Collection Process Will Work Best:

Depending on recycling programs in the community surrounding a campus, a recycling program may be incorporated into one that is already established. Otherwise, it will be necessary to shop around for brokers to sell to, and/or businesses to collect and transfer materials to a broker. The size of the institution is also a factor, as discussed in section III.

Some Possible Collection Methods:

****IMPORTANT: ALWAYS SITE RECYCLING NEXT TO A GARBAGE BIN!!!**

This is the key to a consistent waste management strategy. Without this, recyclables end up in the trash and trash ends up in the recycling. As recycling is becoming more prevalent, including trash in the collection system is often overlooked which creates problems for participants and the program.

a. A Drop Off Center:

This is the easiest to set up. Arrange for a central site where people can deposit their recyclables. The recycling coordinator will have to arrange transportation of the materials to the broker. The problem with this arrangement is that participation may be low, unless the center is in a convenient location.

Beware, often public drop-off sites become dumping grounds. Always site recycling collection with trash. One way to reduce illegal dumping and contamination is to have a camera mounted (even a non-working one), and have security make rounds to monitor this area. These strategies help ensure success of a drop-off center.

Another idea is to have a station that is staffed. Hours would be limited but things will be better managed for everyone: participants can receive on-site education and the program will have an easier time servicing well prepared monitored material.

b. Building Pickups:

For greater participation, a weekly pickup at each building or group of building is preferable. Containers for each recyclable material should be provided to allow people to separate recyclables accordingly. The pickup process can be made easier by assigning one person, in each building, the responsibility of placing the containers outside the night before the centralized pickup. Building pickups make it easy to track materials while presenting opportunities for campus recycling competitions.

c. In-House Pickup:

Depending on the collection system a local broker runs, it may be possible to have containers collected directly from each building. Find out if the campus will get the proceeds from recyclables if a broker picks materials up directly from sites (as opposed to a campus centralized location). Examine the possibility of involving the custodial staff in the collection, as when trash is converted to recycling, the amount of materials handled still remains the same.

d. Outside Contractor:

There are companies that will completely run a program, including supplying containers, pickup, material processing and maintenance. Sometimes the campus can share in the recycled materials revenue while saving money on labor and disposal costs.

6. Ask For an Initial Capital Investment to Buy Necessary Materials:

Some schools have proposed adding a recycling charge to the student activities fee to help fund the

program. Cooperatively funded programs are the most successful. Creating a funding structure that incorporates a financial commitment from the administration and students gives the campus community ownership of the process and also provides extra insurance that at any time, the program won't be eliminated.

Once the program is running it will be attractive to demonstrate that the program saves money for the University. Depending upon the program resources, there may be an opportunity for the program to be self sustaining. Self sustaining college recycling programs are ones that have incorporated a college effort into a recycling processing operation. If resources are not available to create this model, at the least, it is easy to demonstrate direct cost savings and revenue which administrators can recognize as being valuable. At a minimum, college recycling programs require:

- * Containers for separating and storing materials
- * A vehicle for transport (either borrowed from college facilities or purchased solely for recycling use)
- * A warehouse to process and stage materials (very large campuses)
- * An established recycling office that manages recycling staff and administrative functions
- * Labor of course!

7. Purchase Recycled Products:

It is important to buy products made from recycled materials in order to strengthen the market for recyclables. Although recycled paper is currently more expensive than virgin paper, the price will decrease as the demand increases. Point out that the campus will be participating in an environmentally sound practice by encouraging resource and energy conservation, while supporting a market for materials collected on campus.

Purchasing plays an important role in campus waste generation and provides an opportunity to reduce waste and overall campus costs. Contracting for products and vendor services also provide an opportunity to create extended producer responsibility such that the responsibility for waste reduction and recycling is put on a contractor. Take a look at the campus waste stream costs, on larger campuses, these are in the millions, no small change. Waste reduction and recycling saves colleges notable amounts of money. Encourage vendor responsibility by incorporating waste reduction, recycled content and end use take back recycling at the point of contracting. A relevant example is in carpeting. Many manufacturers are creating carpet contracts with colleges that provide recycling of old carpets, recycled content new carpets and end use recycling of worn out carpets. This practice alone is saving colleges money, while reducing the impact on the landfill.

8. Hire a Recycling Coordinator:

Determine a program organizational structure, delineate roles and responsibilities, establish funding mechanism and develop paid positions. For a program to be successful, it is important to employ people who will be responsible for proper maintenance of the program. Most important is to establish an institutionalized program with on-going paid staff with supplemental opportunities for volunteers in less critical roles.

Students are a valuable asset to a campus recycling effort and many programs employ students to perform recycling and other administrative duties. Additionally, there are many opportunities for students to get involved through internships and class projects. Utilize students as resources as much as possible. This is also an opportunity to provide an academic hands-on experience for students to compliment the college experience.

Hire a full-time paid recycling coordinator to keep the program running smoothly. Programs operating on volunteers or short-time student coordinators only have a low success rate and also provide little security for program longevity and development.

Programs operating utilizing custodians are tricky as often the recycling coordinator works secondarily through a custodial supervisor and remember, the custodians have other priorities besides recycling. Programs with specialized recycling staff are more coherent and focused. Programs utilizing students as recyclers (who do collection, processing and other assorted tasks including program education), have reduced costs and the benefit of providing valuable student jobs with an experiential component. The key to this is a full-time coordinator(s).

II. Implementing a Program

1. Create a Program Name and Logo:

Create a logo that the campus community can identify with the recycling effort. This is a critical tool in implementing a successful program. The logo is something that can be placed on recycling collection containers, painted on collection vehicles, for use on t-shirts, stationary, posters etc....

2. Create A Phone Contact/Department Contact List:

Make sure to have some mechanism to be contacted and a way to contact departments on updates on recycling procedures. It is important that people can contact the program and likewise setting up a department contact list is helpful in terms of getting information out to campus. Some campuses have designated Recycling/Environmental Contacts in each department.

3. Set Up a Pilot Program to Ensure Program Longevity:

Start small with a representative sample of buildings and limited amount of materials. This is critical. The idea is to build a foundation and grow from there. It may be easiest to concentrate on one or two materials at first to get the university community accustomed to the idea of recycling. Consider circulating a questionnaire to find out where the most support exists.

It is important to publicize the recycling program early to make sure people are aware that recycling has arrived on campus. Make it a point to use recycled paper for publicity, information, and other printed materials, and make it known that you are doing so. Model the message.

Use the pilot program to work out problems and streamline the collection and transportation process. Be creative in troubleshooting challenges such as: limited storage space, lack of janitorial cooperation in leaving the recycling bins alone, people throwing trash in the recycling containers, etc. Make sure to label bins clearly and consistently so that everyone recognized them.

4. Set-Up Recycling Guidelines at Each Recycling Site:

Create and post an easy to read recycling guidelines poster which includes contact info. for questions. Also, this will help identify the sites and give the campus participants an opportunity to help by preparing recyclables properly.

5. Collection Practices:

If possible, utilize a source separated collection system, from the start. This increases the marketability of the materials and reduces labor costs by encouraging individual responsibility and participation. Other programs have found that it is difficult to get participants to separate paper by type after being accustomed to throwing it all into one container.

A good method of collection is to pick up full containers and leave empty ones in exchange. This saves time by eliminating the need to dump and re-bundle the recyclables. In creating a collection program, strive for efficiency. Picking up recyclables, in areas that generate small amounts, may require in-frequent pick-ups.

Not all sites have the same bin type and collection requirements. Additionally, consider back-haul possibilities in all aspects of waste generation. When you drop off items, organize to pick-up other items. This saves resources including money and labor. Creative advertising and incentives, such as prizes or coupons for the building that recycles the most can greatly increase participation.

6. Track Campus Waste Stream/Demonstrate Cost Benefits:

Track the campus waste stream and cost benefits (cost savings from garbage costs and revenue generated from recyclables, volunteer hours savings from labor costs, other savings from reuse programs etc...). This is the most valuable piece of information you can create. It provides valuable information for the program as well as the institution. This mechanism is the key to justifying a recycling program's existence. See Chapter 26 Tracking Materials/Cost Benefits of this guide for more information.

III. Special Considerations

1. Size of Campus:

For all campuses, another approach may be to hire a recycling consultant to suggest the best system for campus. Depending on the specific situation, it may prove easier to hire an outside contractor to handle the whole process. If not anything else, this could be just what is needed to convince the ad-

ministration to institute a campus recycling program. Here are some specific considerations for small and large schools.

a. Small Campuses (under 3,000 students):

A small school generally has an advantage in starting a recycling program because of its smaller volume of collectable materials and a more consolidated campus. Coordinating a collection program with the surrounding community may also be easier. A separate recycling department or office may not be necessary for a small school, as long as there are one or two people to coordinate the program. But establishing an actual department does add stability and continuity. One possible set back for a small school is that some of the brokers will only make large pickups. This is rarely a problem if the waste is transported to the site by facilities staff, or some other groups can be enlisted to assist in the process.

b. Large Campuses (10,000 students or more):

The large quantity of recyclable materials generated by large schools will be of great interest to recycling brokers. The larger volume will also create more jobs for students, which may make it preferable to establish an administrative department for recycling with a full-time coordinator. A full-time position is necessary to coordinate the multiple routes and pickup days, identifying markets for the collected materials and other waste reduction opportunities. A full-time recycling coordinator will have plenty to do besides operations (including tracking materials, networking, attending committee meetings, educational campaigns and other administrative duties.

Education/promotion, program administration, materials tracking and employee management are part of the multitude of tasks involved in running a successful recycling program. Additionally, larger schools often have more than one full-time recycling coordinator. As programs evolve, the need for other coordinators becomes self-evident. Professional contractors can be hired to either aid or run a program.

2. Encourage Reduction Practices:

Incorporate waste reduction practices into all aspects of a campus recycling effort. Since 1990, average waste generated per person has nearly doubled from 4 pounds to 7 pounds. Be sure to consider that as waste increases, more resources will be needed to maintain increasing recycling recovery rates. Incorporating waste reduction practices into recycling efforts presents an opportunity for a large pay-off in reducing the waste before it is produced.

College campuses provide endless opportunities for waste reduction from encouraging double sided copying practices to reducing packaging and vendor waste from contracts. Purchasing and contracting play an important role in campus waste reduction as campus institutional waste is mostly generated from the outside. When looking at the campus waste stream, remember the 3R's...and ask "Can this be Reduced? Reused? Recycled?" It is amazing how much waste can be reduced by reviewing the fundamentals.

Recycling and Beyond:

As campus recycling programs begin to grow, colleges are finding that establishing campus recycling

practices goes beyond the garbage can. In reality, waste generation and consumption are inherent to every aspect of daily life. Recycling opens the door to resource conservation in all areas of campus life from facilities to academics and involve much more then creating another place to put garbage.

This guide touches on the many aspects that campus recycling programs come to play an important role in. Remember to think beyond the can and be ready for the endless possibilities to create a zero waste recycling effort.

Make recycling a success campus! Establishing a recycling program on campus will provide students and faculty with an opportunity to turn concern for the environment into positive action. Those who have previously been unaware of the need to recycle will receive a practical education on the importance of conserving natural resources, energy and valuable open space. A recycling program can provide an avenue for everyone to make a difference.

Resources

EPA Financing Guide for Recycling Businesses: Investment Forums, Meetings and Networks
<http://www.epa.gov/epaoswer/non-hw/recycle/finguide/>

RECYCLING CONTAINER AND EQUIPMENT SUPPLIERS
<http://solidwaste.dpwt.com/sorrt/busrec9c.htm>

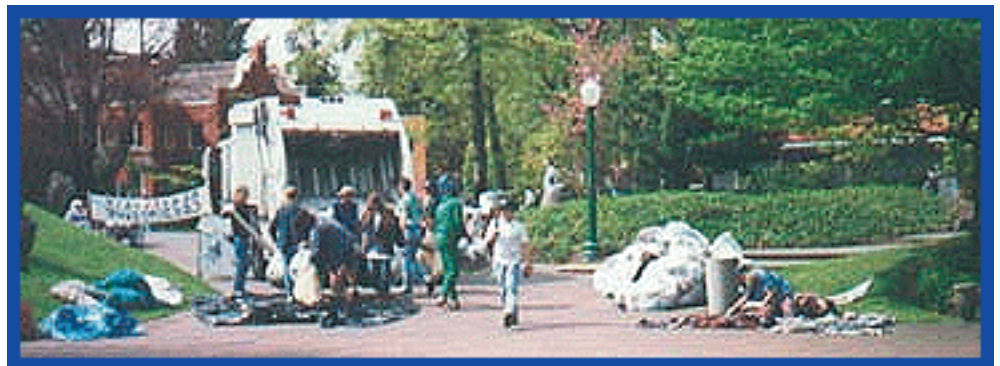


Each year, Americans throw away over 150 million tons of trash. Per capita waste generation in the United States is twice that of any other country and the amount of garbage produced is rising. The Environmental Protection Agency estimates that within five years, one-third of all landfills in the nation will reach capacity. The proliferation of waste can be attributed to the growing use of packaging, convenience items, and disposable products. Campuses generate large quantities of waste, much of which can be recycled, reused, or composted.

Waste Audits are a Valuable Tool

Waste audits are one of the most valuable tools for college recyclers to help identify what is being generated. This is an important starting point for identifying what materials to think about recycling before searching for markets. Waste audits are useful for: demonstrating the need for creating a recycling program; doing cost benefit analysis of trash vs. recycling; creating awareness; gaining PR for recycling efforts and also for use as a public education tool.

There are many types of waste audits: a general dig in the garbage to get a true picture of the waste stream (this can be select streams such as identifying food waste in food service areas or to see how many paper towels are thrown away that could be composted); sample waste audits to get an idea of the waste composition; in a smaller fashion for educational purposes.



How To Conduct A Campus Solid Waste Stream Analysis

Conducting a waste stream analysis will provide a good snapshot of waste composition on a campus. The waste stream analysis is also important for designing an integrated waste management plan that promotes reduction, reuse, and recycling. The timing of the study is important. Try to do the waste analysis during a time that reflects the average level of campus activity (mid-semester or quarter, and mid-week). Remember that the time of year will also effect the results of your research. For example, more yard waste will be generated in spring and fall than in winter.

Materials: Gather the following materials and resources before beginning a waste analysis:

sorting tables, a large scale for weighing the waste, bins for all the sorting categories, gloves, a calculator, and volunteers.

Select Campus Areas: Select 3 to 6 areas on campus that represent distinct waste generation locations, such as Residence Halls, Food Services, Administration, Student Union, and Academic Buildings (separate physical sciences and liberal arts, if possible).

Do a Trial Waste Audit: Prior to the actual audit, conduct a preliminary audit, using a small sample of garbage (five bags, for example). This will help determine the appropriate waste categories and will improve the methodology.

Collecting Garbage: Randomly collect at least five bags or more of garbage from dumpsters at each one of your campus regions prior to the daily waste pick-up. Label the bags according to the collection point.

Calculate Weight and Volume: Once all of the garbage has been transferred to the sorting site, calculate the total weight and volume collected from each region before beginning to sort. Remember to weigh the sorting containers. Carefully sort each bag of garbage into categories. Once the sorting for one region is completed, weigh your containers of material (subtracting the actual weight of the container itself) and note the figures. The volume (V) can be measured using the height (H) and radius (R) of the waste in the container ($V=2pRH$).

Waste Categories: Sort waste into the following categories below. Categories can be expanded to reflect a more detailed analysis of recyclable waste. For example, the technology exists to recycle steel-plated tin cans, phone books, and lower grades of paper, however, there may not be existing markets for these materials in the area. The following list will give a basic guideline for the different categories: White paper, Plastics, Colored paper, Glass, Computer paper, Metals, Low Grade paper, Drink Boxes, Newspaper, Corrugated cardboard, Magazines & Books, Food Waste.

Using the Information: If the total amount of waste that a particular area generates is unknown, represent figures as a percentage. For example, newspaper represents about 15 percent of the waste generated from the food service area on campus. If the total weight of all food service wastes is known, multiply that percentage by the total weight to estimate the total amount of each waste category. It is important to use both weight and volume figures because weight figures can be misleading. For example, spilled liquids can make paper, particularly newspapers, weigh significantly more than normal.

Only a small amount of the total campus waste stream can be analyzed in a single day, use the figures conservatively. This will provide important information about the general types and quantities of waste the campus generates. Also, get the campus newspaper to cover the event, it's a great photo opportunity!

Example Collection Tally Sheet

Building: _____

Total Weight: _____

Type of Facility: _____

Total Volume: _____

Waste Category	Weighth	Volume	% Total Weight	%Total Volume
White Paper				
Colored paper				
Computer Paper				
Low Grade Paper				
Newspaper				
Magazine & Books				
Plastics				
Glass				
Metals				
Drink Boxes				
Corrugated Card-board				
Foodwaste				
Trash				
Total Materials				

This can also be done in other groupings such as: paper, kitchen recyclables, bottles and cans. Waste audits in public areas are great for educational purposes. An example of this is to take a sample of 3 bags of garbage from 5 buildings on campus and perform a sort in a public area. This sampling could be used for public awareness and media attention. Get the results published.

Variations

Food Waste Audits

These are done to assess food and napkin waste generated in dining halls. This works best with food service areas in residence halls. Generally, enlist a team to monitor the audit that should be done during a meal. Create informational table tents that students can read while they eat. This information should include an announcement of the event and hopefully some statistics and tips on reducing post consumer food and napkin waste (Take what you need, you can always go back for more!).

Have barrels and volunteers, stationed in front of all of the entrances/exits for the dish room. Label the bins: food waste, napkin waste, trash. Help people sort into these containers before placing dishes in the dishwasher. At the end of the meal, weigh all of these bags and formulate a report for the cafeteria. Consider per meal/per day etc....when this is added up, it will provide good information to support a food and napkin waste reduction campaign including educational activities and potentially composting. This info. can also be used to do a cost benefit analysis for handling material as waste versus recycling.

Mini-Waste Audit as a Presentation Tool

Another idea is to take an office type garbage can and fill it with things found in an office. For the presentation, have 4 boxes labeled: reduce, reuse, recycle, trash. Pull each item out of the can and get the audience to interact on which category these would fit. For example: a paper cup. The audience would ideally say cup waste can be reduced if reusable mugs are used instead of a disposable. This exercise is good to get people used to thinking of the 3 R's as they go about their day.

Analysis

Things to think about:

How much solid waste is generated on campus? What is the composition of campus waste? Who is in charge of solid waste disposal contracts? Do different entities on campus (e.g. fraternities, sororities, residence halls, medical center) have separate contracts with waste haulers or is the entire campus covered under one contract? What are the total costs of disposal per year, the cost per ton, and the disposal fee structure? How much have those costs increased in recent years? Where does campus garbage go? How much is land filled, incinerated, recycled, and composted? Does the campus have a recycling program? If so, what is the current percentage of materials removed from the waste stream? Does the recycling program generate any revenue? Is the program run by students or the university administration? Does the city operate a recycling program? Is it voluntary or mandatory? What percentage of the total waste stream is yard waste? This figure can vary between 10% and 40% or more. Are landscape clippings mixed with or separated from other campus wastes? Does the campus use landscape clippings as compost or mulch? What programs exist on campus to promote source reduction and reuse in order to reduce the quantity of waste generated? How does the campus compare to other institutions?

To Gain Perspective, Get Information:

To get an idea of what is in the campus waste stream, conduct a campus waste stream analysis that is

described in the beginning of this chapter. Contact facilities maintenance department for information about garbage volumes, costs, collection processes, and disposal contracts. Specific contract arrangements may be the responsibility of the purchasing office. Talk with representatives from the waste hauling company. They also will have information about waste costs, quantities, and collection procedures. Custodial staff are also a valuable source of information. Contact facilities to find out who is responsible for landscape maintenance in order to obtain information on yard waste and composting. Food Service managers can provide information regarding the use of plastic, polystyrene, paper and other disposable service ware in campus cafeterias. Contact the community's Public Works department, local recycling centers, environmental groups, and the state solid waste management board for information about local and state solid waste disposal issues. Contact the campus and local community newspaper(s) for the volume of newsprint distributed on campus.

Source Reduction and Reuse:

A successful waste management policy supports a resource-conserving hierarchy: source reduction, reuse, composting, and recycling first, waste-to-energy incineration, and land filling last. Encourage food services to sell reusable mugs, allowing a discount on coffee and cold beverages. Use permanent ware in food services or reusable plastic ware when possible. Offices can reuse corrugated cardboard, file folders, interdepartmental envelopes, and other office supplies. Establish photocopying guidelines that encourage the use of half-sheets and double-sided copies.

Recycling:

A campus-wide recycling program, supported and managed by the administration and students, should include an extensive system of source separation for a variety of materials (white and colored bond paper, computer paper, glass, aluminum, recyclable plastics, corrugated cardboard). The program must target students, staff, faculty, and visitors and should not rely solely on voluntary labor.

Composting and Mulching:

Yard wastes and some kitchen wastes can be composted and used as mulch on campus or sold to landscaping businesses off-campus.

Resources


A Guide to Waste Audits and Reduction Work Plans for Industrial, Commercial and Institutional Sectors

<http://www.ene.gov.on.ca/envision/gp/2480e.pdf>

OCCSB EAC Waste Audits

<http://www.occdsb.on.ca/~envact/htm/wasteaudits.htm>

Recycling And Beyond: Chapter 5 *Involving Students, Faculty and Staff*



A college campus is an optimal place for a waste management effort. Besides being a generator of a multitude of materials, it is a microcosm of office, industrial and commercial entities. An educational institution also has the benefit of being an enclosed community that has internal communication networks and a variety of resources not available in these other sectors. These resources are the campus community itself.

Creating alliances and giving people the opportunity to make a difference in a school and work place setting is invaluable. Besides getting people involved and creating communication networks, it is important to integrate recycling and waste reduction practices into every aspect of campus daily life. Communication, offering academic experiences and maintaining a high level of customer service are some of the important aspects of campus community involvement. Gathering information from the campus population is also an important tool in assessing the needs of the program. It is important to integrate this message when people begin their experiences.



Including recycling program information in all new student and employee orientation and issuing recycling collection containers and refillable mugs to new students and employees are important strategies in building and sustaining a college recycling effort. There are many opportunities to involve the campus community in numerous aspects of a college waste reduction and recycling effort while integrating it into the mission of the university.

Students

Students provide an inexpensive labor force, especially when hiring work study funded student employees. Students also are in school to learn and a job in a college recycling program provides them with real-life experience in environmental coordination and program management. They are also enthusiastic about doing something that makes a difference. Student employees are an excellent resource on a college campus. Students also seek out volunteer and internship opportunities that will gain them academic credit. Campus recycling is a wealth of opportunities for engaging students in amazing projects. Some ways students can get involved include: working on PR campaigns, spearheading grassroots efforts to draw attention to an issue, assisting with event recycling efforts, performing research and analysis, doing surveys, building educational displays. The possibilities are endless.

With the expansive curriculum at colleges, there is an opportunity to integrate “environmentally” focused projects into course study. Many professors offer a large portion of a final grade based upon a term project or research paper. These requirements usually encourage on-campus projects. Identify possible projects and find a professor who can propose it to a class or student. There’s endless possibilities of productive projects to benefit college recycling programs. These can be anything from creating a business plan to advertising campaigns. The beauty of a college campus is that there are many opportunities to access quality input from talented faculty members who are also in a position to motivate students. The Faculty also make up an influential part of the campus community who can serve as allies for development and support of a campus recycling effort. Building alliances with Faculty can create an advocacy for many aspects of a campus recycling program including encouraging recycling and waste reduction practices within Faculty offices and departments. They are large waste generators and an important group to get on board. The Faculty are also influential in implementing recycling and waste prevention strategies in the classroom. Doing classroom presentations is also another mechanism for educating the campus community. Faculty are usually amenable to class presentations or quick announcements in classes. Let Faculty know the many opportunities that a college recycling program can offer to enhance the educational experience.

Staff

Every college has a large population of staff that is involved in every aspect of waste generation. These folks interface with the campus community in various capacities from one on one interactions to having communication accessibility with the entire campus. The Staff often is the group that are directly involved with department management from purchasing to disposal. Building bridges with campus staff is critical in the effectiveness of a college recycling effort. Setting up a communications network with staff is one of the most valuable tools for getting the word out to the campus community. With entire campuses on computer networks, it is easy to establish a listserv to post pertinent information about campus recycling efforts. These are the people on the front lines who can get the word out to students, faculty and administration. Establishing department recycling contacts to be on the listserv is another important mechanism to involve the campus. A college campus is an expansive community where people in various roles can make a difference. It is important to tap into these valuable resources of people who will assist in making a college recycling program successful.

....And remember, these are the folks who are part of a world outside of campus. They take that knowledge and help build and continue these efforts in their homes, among their families and in the greater community....not only are they an invaluable resource but a college recycling program also becomes their resource for building a better world. Don’t forget to let them know....THANKS FOR RECYCLING!



Marketing recyclables requires knowledge of the material itself. Knowing the markets will provide invaluable information about what types of materials are recyclable in the area and will indicate what is needed to know about collecting, processing, and transporting that material.

Marketing recyclables to reduce costs of garbage and supplement a recycling effort, is an important key to managing a recycling/waste reduction program. To determine what materials to recycle it is important to do a waste stream audit to determine what waste materials and amounts are generated on campus. See Chapter 4 Solid Waste Audits

*It is a big mistake to collect materials that do not have a ready market. Instead of recyclables, the end result is waste. Identify local waste management companies that handle recyclables and other recycling processors in the area. Obtain a list of prices from local vendors. Find out what the vendors' collection methods are? Determine the campus ability to collect, process and deliver materials to local vendors or if a contractor needs to be hired to do it.

*Determine economic feasibility and benefits of recycling different items, some materials might make money, others might be a break even and there are some markets that will cost money to recycle. Do a cost benefit analysis on collection costs vs. benefits from sale or diversion of materials from the landfill to determine if the benefits are worth the effort. BE AWARE that recycling markets are not consistent across the country and the markets fluctuate.

*Determine areas where large amounts of materials are generated. Work with users on easy ways to capture the materials. Next, determine how to collect and store materials before transport to the market.

*Determine processing needs (ex. sorting, grinding, crushing) for the market once materials are collected and incorporate this into program operations.

*Ability to maximize revenue from recyclables can be dependent on the resources at hand. Many colleges have been fortunate to have large warehouses to accommodate balers and storage of recycled materials for bulk sale as well as storage of low market recyclables to wait out the market. Identify program priorities and resources. Collecting and processing is a number one priority, but becoming a recycling processor to maximize marketability might not always be feasible. The better job the team does in preparing non-contaminated clean recyclables for market, the more recycling markets will work to accommodate maximum revenue.

*Set-up collection systems with educational information to maximize participant responsibility and minimize recycling processing needs.

*Markets go through ebbs and flows. Be creative in the lean years and try and work to put money aside to carry over. Set-up collection programs that will be stable. Once a recycling collection system is established, it is very difficult to take it away, change it or scale it back. Try and create systems that are in synch with local residential recycling programs so that the program can benefit from local educational programs.

*If markets are not available for materials generated in large quantities, find ways to encourage waste reduction prior to generation of waste. Institute waste reduction strategies for these materials. Design “preycling” education and contract procedures that encourage waste reduction.

*Do waste reduction education campaigns for materials that do not have available markets, but can be reduced. For example: If the campus chooses to utilize paper towels instead of electric dryers or a linen service, create a paper towel reduction campaign. Print up decals that say “Use Wisely, Paper=Trees” and place these on all campus paper towel dispensers. This type of education can potentially reduce paper towel use on campus. It will plant a seed for people to think before using.

*Consider markets in waste/recycling contracts. Research what other campuses are doing with RFP’s to maximize recycling revenue and efficient collections while reducing garbage costs. Insert contract language that requires suppliers to provide products and services in reduced packaging, to have take-back and accountability programs (where the vendor takes back packaging and end-use product for recycling, include requirement for accountability on recycling including amounts recycled). As a last resort, if materials are left for the University waste stream, ensure through the contract, that materials are reduced and recyclable packaging is utilized.

*Do the necessary research and network with other recycling programs in the area to stay on top of the many markets and possibilities for marketing campus recyclables. A good place to find local



recycling market information is from the local City or County sanitation service. Check out the landfill or if available the local recycling center. Find out what is recyclable in the area. This is a good method for finding accurate information which could lead to assistance in setting up a campus program.

*Form partnerships with other local waste generators, to collect and recycle, materials that can be recycled in larger quantities than an individual campus can generate or store. Often markets are available for materials generated in large quantities. These markets don’t necessarily exist for smaller quantities.

In finding markets, be aware of the specifications for preparing materials and quantities that are marketable.

*For rural communities, contact the nearest metropolitan area to find out more information. If the campus is located in a town, work with town officials to obtain grants and services to provide recycling drop-off centers for on campus and off. Large rural campuses may have to be prepared to store large quantities of materials to be able to market them. For campuses in large urban areas, look in the phone book for recycling market information. Large urban areas have a better chance of being on the route for recycling collection for some odd or hard to recycle items.

Resources

EPA State Data web site

<http://www.epa.gov/epaoswer/non-hw/muncpl/states.htm>

Recyclers World

<http://www.recycle.net/>

SC Dept of Commerce has a Recycling Market Development Advisory Council

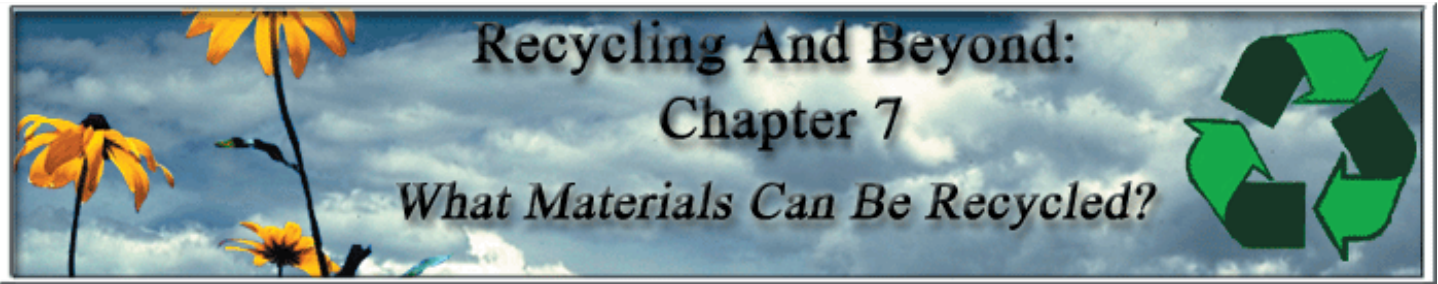
<http://www.callsouthcarolina.com/callsc.cfm?page=recycling&documents=home>

South Carolina DHEC Center for Waste Minimization

<http://www.scdhec.net/eqc/admin/html/wmrindex.html>

Waste Management Commodities Exchange

<http://commodities.wm.com/wmx/exchange.nsf>



Items most often recycled on collegiate campuses are: high-grade office paper, blended office paper or office mix, corrugated cardboard, magazines, newspaper, books, confidential paper, computer green bar, chip board, plastic, glass and steel cans, aerosol cans, milk/juice cartons and aluminum. See Chapter 3 How to Start a Recycling Program. Also go to Chapter 16 Special Materials, Chemicals and Hazardous Waste to find out what other materials are recyclable.

Aluminum Cans and Tabs

Aluminum is the second most abundant metallic element in the Earth's crust after silicon, yet it is a comparatively new industrial metal that has been produced in commercial quantities for just over 100 years. It weighs about one-third as much as steel or copper; is malleable, ductile, and easily machined and cast; and has excellent corrosion resistance and durability. measured either in quantity or value, aluminum's use exceeds that of any other metal except iron, and it is important in virtually all segments of the world economy. Aluminum scrap is ground and shredded into small chips before being melted and cast into ingots. The ingots are sent to manufacturing plants where they are molded or rolled into sheets that can be shaped into various products.

Aluminum is recycled on most college campuses because of its high resale value. Aluminum sales have raised funds for many recycling programs. Unfortunately, plastic bottles are replacing valuable aluminum cans in vending machines.

Go to aluminum cans and tabs related links...

Aseptic (Drink Box) Packaging, Milk/Juice Cartons

Aseptic (drink boxes) packaging is gaining markets across the country. Check with the local markets for plastic and paper to see if this material is collected in the area.

Aseptic (drink box) packages are made with three materials. Paper comprises 70 percent of the package, polyethylene 24 percent and aluminum 6 percent. These cartons are recycled using a paper recycling process called hydropulping. Hydropulping separates the paper from the plastic and aluminum so that the high-quality paper fiber is recovered for recycling into other paper products. In some cases, the plastic/foil residual can also be recycled into high-end plastic lumber products.

When these materials are recycled, a single 1 liter milk carton can be turned into five sheets of high quality office paper.

Go to aseptic packaging, milk/juice cartons related links...

Glass

A mechanical processing system breaks the recycled glass into small pieces called cullet. Magnets, screens and vacuum systems remove metals, labels, bits of plastic, and caps. The cullet is blended with silica sand, soda ash and limestone. The mixture is melted and blow-molded into new glass containers. It's important to know what kind of glass the industry needs. Check with the local market to find out how to sort/prepare glass to be recycled. Glass is commonly collected with plastic and steel cans. If glass has to be separated from other materials to recycle, remember cullet should meet four criteria:

- * separated by color
- * be contaminant free
- * meet market specifications
- * be container glass only

Recycled glass reduces energy consumption, raw materials use, and wear and tear on machinery, ensuring a steady supply of recycled glass, or cullet, has become crucial to the industry's success.

Other uses for recycled glass containers include fiberglass and construction uses such as pipe-bedding and trench backfill in place of virgin rock aggregate. Also recycled glass sand in place of conventional filter sand in pool filters. There is even a paint called Eco-glass paint that uses 30% recycled glass. It is a glass-filled system that is formulated to seal, condition, repair and coat concrete.

Go to glass related links...

Papers

Paper is one of the easiest materials to collect and market when starting a recycling program. See Chapter 6 Marketing Recyclables. Paper can be recycled in many different ways. Determining markets is very important when starting to consider what types of paper to recycle and how to recycle it. For example, one university may be

able to recycle a blend of paper that includes high-grade white paper, colored paper, greenbar paper, newspaper, envelopes, sticky notes, fax paper, card stock, and magazines. A different university on the other side of the same State, may only be able to recycle paper when it is separated into distinct categories like white paper only, books only, newspapers only, magazines only, etc. Make sure that



the program is aware of the market specifications for delivered materials. Determine that the material market is stable. It is important to stay as consistent as possible on what is collected, in order to educate the campus.

Go to paper related links...

Plastic

The most commonly recycled plastics types on campuses are #1 PET (polyethylene tri-chloride, which is used for pop bottles and is blow molded) and #2 HDPE (high density polyethylene which is the plastic used to make milk jugs). Plastics need to be sorted by type because many plastic resins are used that are incompatible in the recycling process. Plastic may be shredded, baled, or chipped before it is shipped to the reprocessing plant. Resins are melted and remolded into new products.

Less than 1% of all plastics get recycled. PET and HDPE, are the only plastics that have a widespread market and account for most of the plastics that get recycled. There are over 1000 different resin types, which cause an obstacle in identifying plastics for recycling. The Plastics Industry is doing little to establish and stabilize markets for viable plastics recycling. Unfortunately, even when there is a market for plastics, plastics get recycled into end use products that cannot be recycled again, and plastics are not able to be recycled back into original form. This is called “down cycling”. This applies for all plastics recycling which includes block Styrofoam, meat trays and Styrofoam cups. Check with area market/broker to find out the specifics on how to process material to be acceptable to recycling markets.

Consider working with the campus purchasing department to purchase products that minimize plastic waste. Paper, metal, aluminum, cardboard, glass are stable in terms of consistency in recyclability. There is a perception that plastics are indeed being recycled and therefore a good environmental choice. An increasing amount of consumer goods are made from and being packaged in plastic. Unfortunately, the plastics markets have never been stable. Hopefully this will turn around as our world increases its consumption of plastics.

Go to plastic related links...

Plastic, Glass, and Steel Cans

The combination of recyclable commodities is called commingled recycling. A common commingled collection for college campuses is called PGS or plastic, glass and steel cans recycling. Each commodity will be described separately below. Again, check with the local market before starting to recycle these items because there are major differences in how brokers want these materials collected.

Steel Cans, Aerosol Cans

Steel is the most recycled commodity in the world on an industrial scale as well as in the home. In fact, steel scrap is a necessary component in the steel making process. Tin cans are really tin-coated steel cans. Types of steel cans include paint, food, aerosol and coffee cans. Removing lids from cans and flattening them makes reprocessing easier. The tin coating on steel cans is removed with a caustic de-tinning solution by electrolysis. The remaining steel is rinsed and baled and sold to a steel mill. The tin is a valuable ingredient for many products. Always check with the market to find out how to prepare the material for market.

Go to steel cans, aerosol cans related links...

Other/Specials Materials

There are many more commodities that can be recycled. The ones listed above are just a few of the most commonly recycling ones on college campuses. Please visit Chapter 16 Specials Materials, Chemicals and Hazardous to find more recyclable commodities.

Resources

Aluminum Cans and Tabs

The Aluminum Association, Inc.
<http://www.aluminum.org/>

Steel Recycling Institute
<http://www.recycle-steel.org/index2.html>

The Consumer Recycling Guide
<http://www.obviously.com/recycle/guides/common.html>

Recycling Today: The American Consumers Viewpoint
http://www.forester.net/mw_electronic/mw0304recycling.pdf

Don't Can It
<http://www.bluefish.org/recycle.htm>

Aseptic Packaging Council

Chapter 7 - What Materials Can Be Recycled?

<http://www.aseptic.org>

Glass

The Glass Packaging Institute

<http://www.gpi.org/>

EPA Commodities Page-Glass

<http://www.epa.gov/epaoswer/non-hw/recycle/jtr/comm/glass.htm>

GRT (Glass Recycling Technologies) 904-98-8767

For Pyrex

www.trivetro.com

Paper

How is paper recycled? See Earth Answers:

http://www.tappi.org/paperu/all_about_paper/earth_answers/Recycle1.htm

Paper University:

<http://www.tappi.org/paperu/>

Institute of Paper Science and Technology:

<http://www.ipst.edu/>

Paper Calculator

<http://www.ofee.gov/recycled/descript.htm>

Plastic

Carolina Recycling Association Bottle Bill Factsheet

[http://www.cra-recycle.org/Documents/The Bottle Bill Battle.doc](http://www.cra-recycle.org/Documents/The%20Bottle%20Bill%20Battle.doc)

NAPCOR, The National Association for PET Container Resources

<http://napcor.com>

The Association of Postconsumer Plastic Recyclers

Chapter 7 - What Materials Can Be Recycled?

<http://www.plasticsrecycling.org/>

The Society of the Plastics Industry, Inc.

<http://www.plasticsindustry.org/>

American Plastics Council

<http://www.americanplasticscouncil.org/>

Plastics News

<http://www.plasticsnews.com/subscriber/headlines.phtml>

EPA Commodities Page-Plastic

<http://www.epa.gov/epaoswer/non-hw/recycle/jtr/comm/plastic.htm>

Steel Cans, Aerosol Cans

Steel Recycling Institute

<http://www.recycle-steel.org/index2.html>

Below is a short list of College and University web sites that list materials recycled.

Brown

http://www.brown.edu/Departments/Brown_Is_Green/waste/index.html

Colorado University

<http://www.colorado.edu/curecycling/>

Emory

<http://www.fm.emory.edu/recycling/newrecycling.html>

George Mason University

<http://www.gmu.edu/gmu/recycling/accept.htm>

Iowa State University

http://www.fpm.iastate.edu/recycling/recycling_at_isu.asp

JMU Recycling

<http://www.jmu.edu/recycling/>

Kalamazoo College

<http://www.kzoo.edu/recycle/items.htm>

Chapter 7 - What Materials Can Be Recycled?

Medical University of South Carolina

<http://www.musc.edu/recycle/what.htm>

Middlebury College

<http://www.middlebury.edu/NR/rdonlyres/372DF7FC-B1B4-4383-AEAC-C967FA99584A/20609/recyclecard.pdf>

University of Massachusetts Amherst

http://www.umass.edu/recycle/red_blue_green.html

http://www.umass.edu/recycle/beyond_bottles.html

University of North Carolina at Charlotte

<http://facilities.uncc.edu/Recycling/Materials/Default.htm>

University of Oregon

<http://darkwing.uoregon.edu/~recycle/Material.htm>

University of Vermont

http://www.uvm.edu/~uvmppd/Services/Recycling_and_Solid_Waste/?Page=What_to_Recycle/What.html

University of Virginia



“Buy Recycled Products so We Can Recycle the Products We Buy”

For a long time, recycled materials have been used in production of new materials and yet, this was not a recognized effort. Things like paper bags, newspapers and cardboard, always have contained some recycled content, though they were never labeled as such. This recycled material came from things like collecting newspapers for fundraisers. That seemingly insignificant effort kept recycled content included in items in minimal proportions. These fundraisers generated a small amount of material that kept the price of recyclables at a level that helped community groups. At that point, recycling markets weren't really an issue. It is amazing that people collected recyclables before markets were developed. With this in mind, it is incredible that recycling survived.

Yet, as more people jumped on the recycling bandwagon, markets have become taxed as the traditional uses for recycled materials are saturated. Truly, things would be a lot easier if markets were developed along with recycling collection. In order for this to happen:

- *Industry must work towards developing products containing recycled content that meet the same or better product specifications and develop technology to utilize recycled materials.
- *Consumers must demand and accept recycled content in packaging and their products.

With the increased pressure and growth in recycling collection, recycling will only work if there is a market for the products that come from the recyclables that are collected and reprocessed. This is directed by consumer demand of recycled products.

These efforts also must be supported through legislation. Recycling legislation is becoming more common in states while the federal government is also taking steps to legislate this. These laws typically establish community “opportunity to recycle” rules. The recycled product purchasing portion typically relates to government purchases, which includes state institutions of higher education. It usually includes an acceptable price variance for choosing recycled content over virgin materials. These laws are guided by the recycling symbol.

The symbol that represents recycling, features three arrows chasing each other. This “loop” illustrates how recycling is dependent on people not only recycling what they use, but also purchasing recycled products. The arrow is coming to mean: market development, purchasing and recycled materials collection. The message is also being broadcast to the public by the Environmental Defense Fund with the slogan: “If you're not buying recycled products, you're not recycling.”

Colleges and Universities purchase millions of dollars of products and services annually. Additionally, they generate millions of pounds in garbage. In establishing a campus recycling effort, it is important to support markets for recyclables through purchasing, while reducing waste through vendor contracts. Additionally, another bonus is that this message is being extended to create a safe environment through consideration of purchasing non-toxic products.

Purchasing on college campuses is a place where waste reduction can play a vital role in reducing costs for managing a recycling program, while additionally stimulating a demand for recycled content packaging and products. Reducing costs in other areas besides disposal fees, will also create an opportunity to demonstrate smart economics of incorporating waste reduction and recycling into college practices.



Here's some things that can be done to stimulate buy recycled and environmentally preferable purchasing on a college campus:

- *Research the state law and university policies. If there is a recycling law, it probably contains something about price preference on recycled content materials especially paper. Check with the state on purchasing laws as well to see if there is anything on purchasing recycled content/environmentally preferable purchasing.

- *If the campus is not at a state school, it is good to be familiar with these laws and also check with other colleges in the area to see what they do to implement these practices. The more information, especially related to economic benefits, the easier it will be to convince the college to take steps to support these practices. Remember waste prevention or reduce, is the most vital part of a college recycling effort.

- *Build alliances with the college purchasing managers and print shop managers.

- *Work to create a campus environmental policy that addresses the issue of buying recycled and non-toxic products.

Environmentally Responsible Purchasing Policy (sample):

The University recognizes that one of the primary methods of exercising its commitment to environmental responsibility is through its purchasing choices. The University will strive to obtain maximum value for its expenditures and will work towards obtaining the "best value" balancing short and long term costs, maintenance, life cycle, and environmental costs in purchasing goods and services.

A. The University acknowledges that environmentally responsible purchasing choices will help create and sustain markets for environmentally responsible and recycled content products.

B. The University commits to the goal of making environmentally and fiscally responsible purchasing choices that consider life cycle costs, long term implications, and relative environmental harm of products.

C. Purchasing policies will encourage obtaining products that minimize waste products, have high recycled content, use environmental production methods, demonstrate maximum durability or biodegradability, reparability, energy efficiency, non toxicity, and recyclability.

College Recycled Paper Policy (sample):

It is the policy of the University of ----- to purchase and use recycled paper products, in its operations in accordance with Executive Order No. -----, dated -----. This policy requires the purchase and use of paper products made from recycled materials when such products are of a quality to satisfy applicable specifications, are available in the desired quantity within a reasonable period of time, and are priced competitively in accordance with preferential rules of the State of ----- Model Public Contract Rules Manual.

Any University of ----- request for bids or quotes for purchase of paper products, including authorized printing from outside vendors, shall include a solicitation of bids or quotes for recycled paper and papers that have not been bleached with chlorine or other hazardous materials. No specification shall require the use of paper products made exclusively of virgin materials, nor specifically exclude the use of recycled paper or tree-free products, as provided in ----- State statutes.

University Printing Services shall have the authority to specify the minimum recycled content standard in bid solicitations to accomplish the purpose of this policy. The default for all office equipment that uses paper, such as copiers, printers, and fax machines, shall be set to reflect these specifications, and be in compliance with the State of ----- policy guidelines. Every effort will be made to eliminate excessive or unnecessary paper use. Strategies to do so include using:

- *electronic mail or other paperless communication
- *double-sided copying [EO_90_09]
- *half-sheets of paper for all brief, printed on-campus communications
- *short distribution and targeted mailing lists to reduce volume

In accordance with the guidelines stated above in this policy, the official stationery program as shown in 'Graphic Style of the University of ----- shall be determined by the Office of University Pub-

lications and University Printing Services, with approval by the Environmental Issues Committee. The use of heavily dyed paper or paper which requires special handling for recycling will be subject to additional charges.

Reviewed and approval recommended by: President's Staff

Issued by Vice President for Administration

*Work with campus purchasing managers to consider purchasing recycled content and environmentally preferable products through education, contracting, tracking, work with vendors.

*Start with paper as there are many quality 100% post consumer recycled papers on the market. Post Consumer content is preferred as this is the material that comes from collected recyclables. Pre Consumer content connotes industrial scrap generated before it goes to the consumer, which is good but doesn't support your recycling efforts.

*A student project could include researching recycled content products that are available.

*Work with the purchasing manager to invite vendors to showcase environmentally preferable and recycled content products. Holding an annual showcase with a guest speaker and discussion is an excellent way to encourage vendors and educate college purchasers.

Here are some things that Purchasing Managers can do:

*Add a clause regarding waste generation, in ALL contracts for vendors products and services...request that packaging be minimal and what's left is recyclable, give preference to vendors who take back recyclable packaging waste and also choose products that can last and have replaceable parts. Remember: waste management is an expensive operating cost for all institutions. These items are brought in from outside the college. Reducing the cost of waste management is a true savings.

(**Unfortunately, costs of garbage are accepted without question. Administrators see recycling as an extra cost instead of a reduced cost. Additionally, waste generation is not factored into profit oriented items sold on campus. For example: when a student union negotiates a contract for a particular item, the student union receives the profit and the college recycling program ends up picking up the tab for the waste generated. Some colleges are implementing vendor waste taxes on for profit items on campuses to create vendor responsibility.

*Choose nontoxic products, for a safer work place.

*Consider life cost accounting in all purchases.

*Ask questions such as: Is this product made for longevity? Can separate parts be replaced or when something breaks, does it need to be discarded? How much waste is generated in the acqui-

sition of the products or services? Can the product or service, be provided with minimum or no waste generated in the process? Is the packaging recyclable through the college recycling program? Will the vendor take the packaging back for recycling? Is the item recyclable and repairable once it has completed it's use?



*Spend a little more money at the onset in order to choose quality, longevity and recyclability, which saves us all in the long run, this indeed ties directly in with attaining “best value”.

*Choose products that reduce impact on the University and global resources: many choices are available for energy and water conservation. Items such as: energy saver copy machines, computers, printers, lights, washing machines etc...are available sometimes less expensive than items without energy/resource conservation features. As the amount of new products and technology become part of our daily lives, the impact on our energy and water costs

are astronomical. Consider purchasing items that reduce the impact on our precious resources and make conservation the rule and not the exception.

*Buy products made from recycled materials so we can continue to recycle the products we buy! There are numerous products on the market now that not only meet the performance standards of virgin products, but are cost competitive. Some items and services are beginning to incorporate waste into the contract.

*Let vendors know of your purchasing policy and interest in these items and practices. More companies are incorporating life cost accounting into their products. This includes: producer responsibility for their waste, building products that last, incorporating recycling materials into products and purchasing products that promote resource conservation.

*Research purchasing co-operatives and partnerships.

*Work to create a recycled/environmentally friendly product tracking mechanism on all purchasing forms.

Purchasing practices have a huge impact on the waste stream. Working with Purchasing Managers to recognize this economic impact is critical in taking college recycling full circle. Recycling is still just one step away from the garbage can. College recycling programs need to consider waste reduction, reuse and waste generation in order to maintain effective recycling efforts.

Resources

American Petroleum Institute

<http://www.recycleoil.org/>

Architectural Resource Database

ADPSR@aol.com

Bulk Office Paper Buying Club at

<http://rfu.org/buyingclub.htm>

California Integrated Waste Management Board (links to purchasing resources): <http://www.ciwmb.ca.gov/Recyclestore/>

<http://www.ciwmb.ca.gov/BuyRecycled/>

<http://www.ciwmb.ca.gov/RCP/>

The Carbohydrate Economy

<http://www.carbohydrateeconomy.org>

City of Seattle “green purchasing program”

<http://www.ci.seattle.wa.us/environment/purchasing.htm>

EPA Comprehensive Procurement Guidelines

<http://www.epa.gov/cpg>

Conservatree

<http://www.conservatree.com/paper/Choose/PaperSelection.shtml>

Co-op America

<http://www.coopamerica.org/gp/Dabout.htm>

EARTHBOUND SYSTEMS INC.

<http://www.earthbound95.com>

Earth Day Eco-Store

http://www.earthday.com/about_store.htm

Earth Republic.com

<http://www.earthrepublic.com/default.asp?CategoryID=0>

Ecomall

<http://www.ecomall.com/>

Environmental Building News

Chapter 8 - Buy Recycled

<http://www.ebuild.com>

Environmentally Preferable Purchasing (EPP) Database

<http://yosemite.epa.gov/oppt/eppstand2.nsf/Pages/Homepage.html?Open>

Environmentally Preferable Products Listserve

Rebecca Bartlett at NERC 802-254-3636 or rbartlet@sover.net

Environmentally Preferable Purchasing

<http://www.epa.gov/opptintr/epp/>

EPA, Environmental Accounting Project

<http://www.epa.gov/oppt/acctg/>

General Services Administration Recycled Products

<http://www.gsa.gov>

Government Sales Associates

<http://www.governmentales.com/>

GreenBiz

<http://www.greenbiz.com/toolbox/printer.cfm?LinkAdvID=4204>

GreenDisk

<http://www.greendisk.com/>

Green Earth Office Supplies

<http://www.webcom.com/geos/geos2.html>

GreenOrder

<http://www.greenorder.com/pages/1/index.htm>

Green Seal

<http://www.greenseal.org>

GreenSpec

<http://www.greenspec.com>

Interface Inc.

<http://www.interfaceinc.com>

Living Tree Paper Company

<http://www.livingtreepaper.com/>

Minnesota Office of Environmental Assistance

Chapter 8 - Buy Recycled

<http://www.moea.state.mn.us>

The National Association of Educational Buyers

<http://www.naeb.org/>

National Association of State Purchasing Officials

http://fcn.state.fl.us/bpsr/drc_notice.html

The Natural Step

<http://www.naturalstep.org/>

Office of the Federal Environmental Executive

<http://www.ofee.gov/>

Oikos

<http://www.oikos.com>

Panel King (office furniture and environments)

<http://www.businessfurnitureshop.com>

Plastics Sourcebook

<http://sourcebook.plasticsresource.com/complist.asp>

Pollution Prevention and Environmental Assistance (DPPEA)

<http://www.p2pays.org/>

Pacific Northwest Pollution Prevention Resource Center (PPRC)

<http://www.pprc.org/pprc/pubs/topics/envpurch.html>

Reach for Unbleached (RFU)

<http://www.rfu.org/>

Recycled Paper Coalition

<http://www.papercoalition.org/aboutus.html>

The Recycling Data Network

<http://www.recyclingdata.com>

The Recycled Products Purchasing Cooperative (RPPC)

<http://www.recycledproducts.org/>

The Recycle Store

<http://recyclestore.com>

ReThink Paper

Chapter 8 - Buy Recycled

<http://www.rethinkpaper.org/>

Rice Integrated Waste Management Services

<http://www.ruf.rice.edu/~recycle/guides/buyrec.html>

WasteCap of Lincoln

<http://www.wastecaplnk.org/>

USDA biobased products

<http://www.usda-biobasedproducts.net/public/>

US EPA Environmental Purchasing Program

<http://www.epa.gov/opptintr/epp>

US EPA Wastewise Buy Recycled Guide

<http://www.epa.gov/wastewise/wrr/buyman.htm>

WasteCap of Lincoln

<http://www.wastecaplnk.org>



1) Why compost?

Organic materials make up a large part of a university waste stream. Composting provides an alternative to incineration or land filling organics, which can be dense and have a high per ton disposal cost. Compost improves soils water retention, aeration, and adds lost nutrients. Composting can save the grounds department money on buying mulch, fertilizer, and pesticides. The system may be worked into the curriculum of some courses such as sustainability, biology, soil science, ecology, etc.

2) What is compost?

Composting is nature's way of recycling. Composting is controlled biological reduction of organic wastes to humus. The end product, compost, is used as a soil amendment that provides plant nutrients, supports beneficial soil life, reduces soil diseases, increases water retention in sandy soil and adds drainage to clay soils, and promotes weed and erosion control.

3) What can be composted?

Compostable materials include organics such as grass, leaves, tree limbs, shrub waste, non-hazardous animal lab waste, hand towels, paper plates, napkins, wax and paper cups, wax and non-wax cardboard, pre and post-consumer food waste such as coffee grounds, tea bags, egg shells, fruit and vegetable waste, breads, dairy products, and jello.

Non-compostable materials include oils, weeds, diseased plants, meat, bones, dairy products, cat, dog, or human waste, hazardous materials, plastic, glass, metal, treated wood, and very large items like large tree limbs or stumps.

4) Can a contractor/farm do it?

Maybe. Farms may accept yardwaste for composting. Hog farms have been know to accept food waste as feedstock. Call the City or County; some areas have composting programs set up especially for yardwaste. Local food banks may accept donations of food for the hungry. In any of these cases the most important thing is make sure the organic material is separated correctly and meets the specifications of the accepting entity.

5) How does compost work?

Control the following parameters of a compost pile: carbon and nitrogen inputs, size and surface area exposed of inputs, moisture, air, volume and temperature. The compost pile is full of microbes such as bacteria, actinomycetes, protozoa, and fungi. Microbes need food, air and water for survival. The optimum carbon: nitrogen ration is 30:1 by weight. Examples of materials with high carbon ratios are leaves, straw, bark, paper, wood chips and sawdust. Examples of materials with high nitrogen ratios are food waste, grass clippings and manures. The later could create odor and vector (rodent) issues.

Shred the material before placing it in a compost pile. This will speed up the process by increasing the amount of surface area the microbes have to work on.

The material should be moist but not soaked. Too much water will eliminate space needed for air. Squeeze the material and make sure it is like a damp sponge. The optimum moisture level is approximately 40-60%. Water should be mixed into the pile. Composting is an aerobic process. If the pile isn't turned, it will become an anaerobic (without oxygen) pile. Anaerobic conditions will cause odors and create chemicals toxic to plants. Piles should be between 27 and 125 cubic feet. If the pile is too small it will not hold heat and if it is too large it will not get enough oxygen. Optimum temperatures are between 90-140 F (32-60 C). Most microbes die when temperatures rise above 160 F. Pathogens are usually destroyed around 131F (55 C).



6) What method of composting should be used?

What and how to compost depends on many factors including regulations, space, funding, town and gown issues, and available labor. Composting can take up anywhere from several acres to one parking space. Methods used most often are grasscycling, piles, long rows (windrows), in-vessel, and vermicomposting.

When grass is cut and left on the lawn, it is called grasscycling. The cut material simply decomposes on site adding beneficial organic matter to the soil reducing the need for fertilizer and reducing water evaporation. This will not create a thatch problem. Thatch is a mixture of roots, dead leaves and rhizomes that decompose slowly. Grass is a rapid decomposer.

Keep the mower blades sharp, mow more often cutting less than 1" of the leaf surface, mow dry grass, and do not over-fertilize.

Piles can be any size in a container or not. It will take a longer time for a smaller pile to decompose. Try not to make the pile taller than the person working on it unless heavy equipment is used. The pile will shrink and spread out. To contain the pile, build or buy a compost bin. There is no one way to make a compost bin. A circle of chicken wire will work, an elaborate wood bin or a plastic or wood bin from a garden store. Piles are usually for small scale composting although they can get as big as cars. Depending on what is put into the pile and how it's managed, a pile can take up to six months or a year to obtain finished compost.

Aerated Piles are made the same way regular piles are made except these piles have a system to let more air in. The system can be as simple as a pallet under the bin or as elaborate as PVC tubing with forced air inserted into the pile. More air generally helps your system work faster.

Windrows can handle tons of organic matter. This pile is usually long, narrow, and at least 4-ft high. When done on a large scale this method requires heavy machinery such as a front-end loader and/or windrow turner. Windrows can be covered or not. This method is often used for large institutions or for cities and counties.

Tumblers are units that are containers that rotate or turn. Some work done manually, others utilize a motor. These units work by allowing the contents to heat up rapidly and retain moisture. Air is limited but present. This method is for small scale but fast composting. This type of composter is available for purchase at a garden store and home improvement centers.

In-vessel composters can compost anywhere from a few hundred pounds to over 60 tons a day. Organic waste including meats, oils, fish, and dairy products are placed in the container and mixed, shredded, and fluffed by the composter. Some composters are fully automated with sensors to monitor temperature, oxygen and moisture. Biofilters are used to reduce or eliminate odors. This is another good method for institutions with large amounts of organics.

Vermicomposting uses red wiggler (*eisenia foetida*) worms to do the work of composting. Vermicomposting requires air, water and food the same way aerobic composting does but in this case you are not using the microbes, which produce heat to do the bulk of the composting work. The worms eat the organics and leave behind castings. These systems are also available in a variety of sizes. This can even be done using a 10-gallon container that might handle a small departments food waste. Another option is a continuous flow system that could handle all of a large institutions food waste.

7) How can compostable material be collected and transported?

Once determining a method of composting, the next step is to think about how to get compostable materials collected from the source and transported to the composting operation. For yard waste determine what is currently happening with the material and amount generated.



Find out how the campus grounds crew collects and transports yardwaste. If grass is currently bagged, will that work with the composting system? Is the bag plastic, paper or biodegradable? The grounds crew might have a routine for the entire year that can be reviewed to determine how much and what kind of material is generated. For example: typically lots of tree or bush cuttings are generated during one time of year and more grass and flower waste another time. Is there enough carbon material to mix with the nitrogen material? Some composting operations

have to find alternative sources of carbon and nitrogen. Collection systems will depend on volume. Regular trucks (including trash and dump trucks) may be utilized to collect and haul material.

If there is an opportunity to compost food waste and animal lab waste, find out how the waste is currently handled and determine how much waste is generated. Determine whether the system will handle just pre-consumer food waste or both pre and post-consumer food waste. Determine what type of animal lab waste that is acceptable. Make sure to only collect non-hazardous animal lab waste. Research any regulations concerning the disposal of this type of waste.

Education is a critical component to the success of this process. Perform in depth training sessions with the managers of these operations. It is important to educate the employees involved, do regular updates and reviews to keep employees focused on this process. Select sturdy bins that have lids and wheels and place the bins to collect the most amount of material. With a small amount of material, the collection system can be kept low tech. A 30 or 40 gallon bin with a lid and wheels would probably do the trick for collection. Depending on the situation, a can liner may need to be used in the bin.

Keep in mind safety issues concerning lifting because food (lots of liquid) and animal waste can be heavy. Make a place available to clean out the bins between uses. Color code bins and label them clearly. For bin transport in a vehicle, make sure the lid is tight and the bin is strapped in. For large-scale operations use larger bins like 60 or 90-gallon containers with lids and wheels. Assess the need to use heavy machinery and hydraulic systems. Examples include: using a rear, top or side loader sealed trash truck to set up an all organics collection route, using a dump truck for yardwaste, using a hydraulic lift on your truck to empty 90-gallon carts, and having a tank full of water on the truck for cleaning out empty carts on site. Regardless of how waste is collected, be reliable in pick-ups. Food and animal lab waste cannot sit around and wait to be collected. Set a schedule and stick to it.

8) Should education be a part of the program?

Absolutely! To institute a composting program in a dining hall from hundred's of students, education is the key to success. Signs are a must (adding photos can help as well). During the first few weeks of school have a volunteer stand by the collection bins to explain the new program. When composting for an event, designate volunteers to monitor the sites and educate the public on what goes into the collection bins. For campus kitchens, educate staff and managers. Provide periodic refresher presentations because of changes in the student body and staff. Brochures and posted guidelines are a helpful reminder. Include materials in new employee and new student training, orientations. If possible, take the staff (including anyone who's involved in the process) out to the composting site to explain the process, savings and resulting applications.

If hand towel waste is integrated into the composting collection, don't forget to train the housekeeping staff. Don't forget to include faculty and administrators in the education efforts. Articles in the school paper, broadcast e-mail, posters, bulletin boards, etc. are all good ways to get the message out. Provide the campus with updates on the progress of the program. It's good PR while also reminding the campus about the collection process. Post signage in a prominent garden that refers to the use of compost made right on campus from materials found on campus. This is a great way to educate

everyone on a closed loop system.

9) What to do with the compost?

Finished compost should be fine, dark, sweet smelling, have a pH that is 7.0-9.0, and is no longer heating up. Depending on what is composted and the method for doing it, it might be necessary to screen the compost to take out larger unfinished pieces. Determine how fine to make the end product. Compost can be used as mulch around shrubs, trees, flowers and on paths, as soil amendment to break up clay type soils or bind sandy soils, as a lawn top-dressing or use it in houseplants. Many people use compost in gardens instead of chemical fertilizers to provide nutrients to their plants. It is also commonly thought that using compost can reduce or eliminate the need for chemical pesticides. Placing finished compost in a cloth bag and letting that sit in a bucket of water for 3-5 days, makes compost tea, a nutrient rich liquid.

10) What special issues should you consider?

Funding is usually the first concern for any project. How much to budget will depend on the degree of technology to be used. Site concerns are important mostly in urban areas. In these areas, be sure and educate the neighbors. Controlling odors is very important. Composting will not create unpleasant smells if it is managed correctly. Find out the regulations to perform this operation in the chosen site. The regulations may allow composting but they may call for only certain methods of composting. Compost can also be tested to assess the variety of nutrients in the finished product. This will help determine correct applications (and also help trouble-shoot any problems that arise).

Resources

Composting for Kids

<http://aggie-horticulture.tamu.edu/sustainable/slidesets/kidscompost/cover.html>

Cornell Composting Page

http://compost.css.cornell.edu/Composting_homepage.html

Earth 911

<http://www.earth911.org/master.asp?s=lib&a=organics/organics.asp>

EPA Composting

<http://www.epa.gov/msw/compost.htm>

Humboldt State University Composting

<http://www.humboldt.edu/~recycle/>

Ithaca Composting

Chapter 9 - Composting

<http://www.ithaca.edu/rempe/composting.htm>

Master Composter

<http://www.mastercomposter.com/>

MUSC Vermicomposting

<http://www.musc.edu/recycle/vermicompost.htm>

Rice Environmental Progress Report Go to Compost Section

<http://www.ruf.rice.edu/~envintrn/report99/ruepr99.html>

UNC Chapel Hill Animal Bedding Recycling

http://www.fac.unc.edu/WasteReduction/Recyclables/animal_bedding.asp

UNC Charlotte

<http://facilities.uncc.edu/Recycling/Compost/Default.htm>

University of Oregon Composting

<http://darkwing.uoregon.edu/~recycle/Composting.htm>

US Composting Council

<http://compostingcouncil.org/index.cfm>

UVM Composting

<http://www.uvm.edu>



Waste reduction is the key to a successful college recycling effort. There are many ways that this can be accomplished and in some areas, actual savings can be demonstrated. It is important to look at ways to reduce campus waste as a mechanism to save money, extend the life of resources and reduce the costs and impact of overall waste management.

Reuse Exchanges

When possible, creating reuse exchanges can be a successful venture. Some colleges have reusable office supply exchanges and surplus furniture exchanges. Other colleges, with available space, have turned trash into gold while keeping valuable items out of the landfill. These schools have created reuse stores or have auctions. These are sometimes operated through a college recycling program but often involve property management.



These reuse stores can generate a healthy income for the college, while the exchanges can save colleges money.

Reusable Office Supply Exchanges

Reusable office supply exchanges can be set-up on a small scale in department offices. This can be a small area such as a closet or set of shelves where people can leave items they don't need anymore and take what they need.

This can also be done as a campus wide exchange through finding a suitable closet or room that can accommodate a large amount of material. These exchanges work well unattended and are available to faculty, staff, administration, student groups and graduate students. In state funded institutions, the materials are considered state property and are not available to the general student population.

Find a place to have a reusable office supply exchange on campus. Let folks know about it. Gather materials from departments or have departments drop off materials in the room. Get the room organized and materials shelved as to make easy pickings. Then when you have a good amount of materials, have an open house. This can be done in conjunction with Earth day, America Recycles Day, Recycling Awareness week or whatever event you plan. This is also a great opportunity for media attention.

The reusable office supply exchange can be operated with minimal labor. Set up the room or area

so that people can check out a key or staff it once or twice a week. Some schools set this up so that it is the department responsibility to get the materials to the room. With a key check out, this can be done anytime during the week. Let the campus moving crew know about this as when they are doing move-outs, the department can gather up office supplies to put in the room and it is paid for as part of the move. Believe it or not, this works well and people do still drop items off even if your department does not offer a pick-up service.

Have this operated by student help. It is best to have an area for items coming into the room. Have a student worker shelf the items. Additionally, keep a notebook with an inventory check-out sheet where people can record the items they take. The student can look in the office supplies catalog for the college and record the prices for purchasing new items, which in effective is the savings from reuse. Keep this documented and include in your recycling program tracking as a savings to the college. Just from file folders, staplers, notebooks, etc...this can amount to over \$10,000 in savings annually.

All colleges have policies on property management. If the room needs “reducing”, check with the property management department to see where to take extra materials. Some schools can donate items and others have to go through state surplus. Overstock items may be donated to students on campus.

Some colleges also take an extra step and post available materials from the exchange, on-line. It is difficult to keep the list current and it still works without doing this.

Office supplies are expensive and there is plenty to go around. Setting up a reusable office supply exchange is a good strategy for waste reduction on a college campus, which will save departments money and reduce usable materials entering the waste stream.

Reusable Furniture Exchanges

Office furnishings are big ticket items that are continually being purged from a college setting. Offices get remodeled and moved or even eliminated. All of these places have valuable office furnishings that can be utilized by others on campus.



On a smaller scale, some colleges create an area (typically a warehouse setting) where usable furniture, in good condition, is collected. Broken or non-usable items can be recycled or may have to be landfilled. Remember these items can be costly to dispose. Schools without the capacity for creating an exchange find themselves shipping items to a state property management facility, typically far enough away that there is a cost involved. Gleaning usable items on campus is a smart practice to reduce waste management costs.

Once again, this area can be operated at a minimal cost. Have the area staffed 3 times/week with at least one time during a lunch hour, another time in the AM and the third time in the PM. This will provide a good variety of times to meet everyone's needs. The staff person can make sure that only usable items are available, things are organized, things are delivered and reusable items can be recorded. Additionally, the staff person can find replacement costs from doing research on local costs of middle of the road types of items as to provide a reasonable cost savings figure. Also, it is possible to estimate the weight of each item and demonstrate weight and dump savings along with other tracking.

Tags can be available to put on claimed items which indicate: item, department, contact, method of pick-up. It is best to work this out such that only the official facilities moving crew can pick-up and deliver the items to the departments. There are liabilities and concerns with having individuals picking up items.

This program can save a college thousands of dollars and especially benefits poorer departments. Items in a reusable surplus furniture exchange can be: chairs, desks, bookcases, dividers, bulletin boards, conference tables. There are a lot of great finds for furnishing offices from a college furniture reuse exchange.

Some schools are lucky to have large amounts of space, most favorably warehouse space, available to property management. Setting up a public re-use store or auction is a full-time job but can make the college a healthy income, while reducing the impact on the waste stream. Some schools are also selling items on e-bay, which has proven to be lucrative as well.

Other Campus Waste Reduction Opportunities

There are endless ways that colleges can reduce waste. This also can save resources, money and land-fill space. Here's a list of just some of the possibilities:

- *use vendor contracts to encourage waste reduction on items and services provided to the college (see Buy Recycled section)

- *establish reusable materials exchanges

- *create department contacts to network information and also for on-line exchanges

- *hold an annual yard sale for college on-campus residents, donate the leftovers or save them to sell back to students in the fall (see Dump and Run, link below)

- *give all new students and staff refillable mugs, recycling collection containers and a recycling program brochure, at orientation

- *encourage all campus food service areas to provide a cheap refill price for beverages and eliminate disposable cups in the residence hall cafeterias, if a student wants to take a beverage out of

the cafeteria, they need to bring their mug (by eliminating disposable cups in a residence hall cafeteria at a school with 17,000 students, over \$30,000 can be saved by eliminating disposable cups).

*reduce paper use:

- inspire double sided copying...if possible have one sided paper for draft copies in one tray of copy machines
- make an instructional sticker for all copy machines to explain how to make double-sided copies
- encourage paperless communication, use campus newsletter, e-mail lists, short everyone lists for paper memos in departments, route slips on memos that are not time specific
- purchase and use at least 50% recycled content paper, this will stimulate the recycling markets such that recycling can survive
- put recycling containers in all offices, copy and mail rooms and by all copy machines
- set-up "stop the junk mail" cards that folks can use to send to companies when they receive unwanted unsolicited mail from off campus...this is a huge waste generator
- if possible, get cloth towels on a roll for all bathrooms or blowers [If it isn't possible to create an alternate to paper towels, put stickers on the paper towel dispensers to get people to think about reducing paper towel use (Use Wisely, Paper=Trees), Of note: paper towels can be composted).]
- all printed memos should be 1/2 sheet and double-sided as default
- set up reuse place for envelopes, pens, paper clips and other office supplies
- charge students for printing off the computer. Free printing costs a lot of money in paper, electricity, computer and recycling costs

Charging for printing will encourage people to print what they need as opposed to pages of unwanted materials.

- set-up a policy so that folks have a commitment
- make recycling a part of the everyday life in these areas, have well signed, convenient and aesthetically pleasing recycling containers every where you can
- do a contest for reuse and waste reduction ideas and give an award of a gift certificate for recycled content products at the bookstore or other prizes (it is easy to get local donations for

prizes)

-work to establish on-line electronic forms for everything possible from customer service requests to print shop orders

Food Service Areas

*pay per serving vs. all you can eat charge system

*bulk serving vs. individually packaged item

*utilize reusable dinnerware, travel mugs, tupperware meal containers (create a deposit system for food service areas or sell reusables)

*Donate unsold meals to a local food bank

*reintegrate unsold food into next days' meal (if possible)

*use compostable (all paper) dinnerware where reusable is not possible

*purchase in bulk for meal prep

*use recycled content napkins

Facilities Custodial

*set-up blow dryers or cloth towels vs. paper towels

*use refillable soap dispensers vs. disposable bladder pouches

*utilize low density plastic bags that reduce cost and material

*purchase cleaning liquids in concentrate

*set-up toilet paper rolls such that there is never any toilet paper left, this can be done with new systems that put 2 large rolls in the dispenser so that there is always toilet paper available and the small amount left on a roll doesn't have to be disposed of (you can recycle or give away partially used toilet paper rolls)

Campus and Grounds

*grasscycling

*xeriscaping

*gray water systems

*purchase or create own compost as alternative to bagged soil amendments purchase bulk manure vs. bagged fertilizers

*compost all grounds waste, rent a chipper 2X./year if needed

*implement integrated pest management program

Trades

*save scrap pieces for use on smaller projects

*recycle all industrial waste

Motor pools

*recap tires

*integrate hybrid and electric vehicles in fleet

*have bicycles for short trips

*recycle motor oil, batteries, anti-freeze

General

*purchase carpet tiles which can be replaced in worn sections without replacing entire carpet

*purchase carpets with manufacturer take-back clause

*theater productions can reuse set frames, canvas and props for next production

*collect reusables at all residence hall move-outs

*purchase items that can be fixed, such as hand trucks that have replaceable parts

*encourage people to purchase what will be used

Too often valuable campus space is taken up with things that are outdated and not needed

There are endless opportunities for waste reduction and reuse on a college campus. This practice can save money, staff time and valuable resources. An added bonus is that this practice will enhance campus recycling efforts and demonstrate waste stream reduction.

Resources

Choose2Reuse

<http://www.choose2reuse.org/>

Dump & Run

<http://www.dumpandrunk.org/>

DormOutfitter.com

<http://www.dormoutfitter.com>

INFORM, Inc.

<http://www.informinc.org>

King County Washington Solid Waste Division

<http://www6.metrokc.gov/dr/swd/Recycle/Recycle.asp>

LabX.com

<http://www.labx.com/>

Massachusetts Materials Exchange

<http://www.materialsexchange.org/>

MAT_EX ONLINE

<http://www.recycle.net/matex/view.html>

MUSC ROSE

<http://www.musc.edu/recycle/roseprogram.htm>

Northwest Materials Exchange

<http://www.NWmaterialsmart.org>

Oregon Commercial Waste Reduction Information Clearinghouse

<http://www.deq.state.or.us/wmc/cwrc.html>

Oregon State University Surplus Property

http://www.property.orst.edu/Property/Surplus_Property/

ReDO

<http://www.redo.org/>

Reducing junk mail

<http://www.junkbusters.com>

<http://www.ecofuture.org/ecofuture/jnkmail.html>

R.O.S.E. (Reusable Office Supply Exchange)

http://www.uoregon.edu/~recycle/rose_text.htm

SCRAP (Scroungers' Center for Re_Usable Art Parts)

<http://www.aubergines.com/scrap/>

Texas Natural Resource Conservation Commission

<http://www.tnrcc.state.tx.us/exec/oppr/renew/renew.html>

The Recycler's Exchange

<http://www.recycle.net/exchange/>

The Stuff Exchange

<http://stuffexchange.studentcenter.org/>

The Surplus Exchange

<http://www.surplusexchange.org/>

UO ROSE

<http://darkwing.uoregon.edu/~recycle/rex.htm>

UNC Reuse Ideas

<http://www.fac.unc.edu/WasteReduction/Tips/reuse.asp#equipment>

University of Wisconsin_Madison's Surplus With A Purpose program (SWAP) <http://www.bussvc.wisc.edu/swap/swap.html>

UofM Exchnage Files

<http://www.plant.bf.umich.edu/grounds/recycle/ExchangeFiles/>

UVM OSCAR

<http://www.uvm.edu>

UVA ROSE

<http://fac.mgmt.virginia.edu/utilities/recycling/>



On most campuses, dining services operations are responsible for generating and managing enormous amounts of waste. This includes packaging, cardboard, food and napkin waste, for starters. With the fast food trend growing on college campuses, disposable food ware has increased this waste stream. Campus catering services are also incorporating more disposables into the offerings.

A college campus may have multiple dining facilities that offer various forms of dining including: all-you-can-eat sit down, purchase by item sit down, take out, snacks and fast food type of eateries. On some campuses, at certain times of year, dining services operations are open round the clock. From procurement and production to the serving line and the check out counter, decisions are made that impact the waste stream. This chapter will touch on some of the options available to reduce the waste, recycle and compost at campus food service operations.

Research

Research the food services waste stream on campus to determine what is generated, what can be recovered and how to reduce the overall production of waste.

Inventory the dining operations and answer several questions:

Are facilities operated in-house or contracted?

Is there more than one contractor?

How many facilities are there, where are these located, what are the operating hours?

Determine who does the ordering?

What is currently being done with the waste? What the waste composition?

What kind of space is available for recycling?

How is food served?

What type of disposables are generated?

Is there any contracting opportunities to reduce waste generated through the fast food operations (if it's a chain, does the chain have related policies?)

Performing a visual waste audit in prep areas, followed by a more in depth audit of the dumpsters, is a useful strategy to know where to begin. Also assess the purchasing and storage of items. This information is valuable and will provide the opportunity to have a good overview of the waste stream and strategies for reducing it.

Reduce

Start with waste reduction. Waste reduction starts with purchasing.



Food services generate large amounts of waste in packaging. Purchasing individually packaged items is costly and the waste adds up. Campus food service operations can save money, while reducing waste from purchasing quantities in bulk and working with vendors to reduce unnecessary and unrecyclable packaging. This works for food preparation and serving.

It is easier for kitchen staff to utilize and store bulk containers as there isn't the extra packaging to deal with in food prep. By purchasing quantities in bulk, it is easier to store items that could take up more space if it comes in smaller packages (which might occupy more space than if purchased in bulk).

Dining services can: purchase individual milk cartons or buy bulk milk to be dispensed to a reusable cup; distribute condiments in bulk instead in individual packets; soda by the fountain instead of can/bottle; vegetables and fruits in #10 steel cans; spices by the quart or gallon; flour can be purchased in huge quantities and pumped directly from a truck to a storage facility; margarine, oils, and sauces can be purchased by the gallon or larger.

Shipping crates can also be reusable. Milk, vegetables, fruits and bread are often shipped on reusable crates. Determine if any other vendors can provide this service. Bulk purchasing and purchasing reduced packaged items save money, while reducing waste.

Encourage kitchen managers to monitor the cooked but not served food quantities. There is a lot of waste in food services in preparing too much food. Assist campus food services in minimizing cooked but not served food. This saves money and valuable food resources.

Reduce use of disposable items as much as possible. Cups/Mugs programs are a good place to start:

Disposable cups make up 12%+ in food service operations. A reusable cup/mug is a tangible item that can be reused endlessly while offering an opportunity to promote waste reduction and a campus recycling effort.

Work to eliminate use of disposable cups in all residence hall food service locations. At the beginning of the school year, promote reuse by issuing reusable mugs to all new students and incoming freshman to use in the campus dining facilities. By eliminating disposables, residence hall dining areas accrue large savings (In 1990, the University of Oregon eliminated disposable cups in Housing food service areas, issued all new students refillable mugs, with a net savings just in cups cost of over \$30,000!). Savings from disposables funds mug programs.

Encourage use of refillable cups by providing a beverage discount at on-campus dining facilities. Encourage discounts off campus at nearby food vendors. Cups can be on-sale in the dining facilities, bookstore or at various events throughout the year. Proceeds can actually benefit purchase and distribution of mugs to future new students.

Reducing disposables starts in planning and purchasing. Fast food options mean more disposables. Ensure the recycling program has a seat at the table for planning new projects on campus related to food (such as a new cafeteria). Once the planning is done follow up to make sure that the use of disposables is minimal. It's important that college recycling efforts include involvement with any area on campus generating waste. Pre-planning can involve establishing collection areas for materials, determine feasibility of using or renting out reusable food ware and also help institute programs to recover items like food waste and paper ware.

Durable service ware versus disposables is a long debated issue. Initial purchase of durables, how to ensure items get returned, and creating/funding washing facilities are just some of the concerns of food service managers. Space and labor are necessary to collect and wash durables. Consider electricity, water, sewer expenses and theft of service ware. In a sit down, facility durables are more likely to be used. Take out facilities are designed to use disposables. Franchise packaging considerations are made in a boardroom and are written into contracts. If disposables are necessary, try to reduce the impact as much as possible with education.

One idea is in addition to the mug, give all incoming dorm residents a plate and fork or a reusable tupperware-like lunch box with foodware included. Students need to use these at all housing food service locations or they will be charged for a disposable plate. This will save money in disposables and trash costs while paying for the disposable. This is a good example of life cost accounting, determining the actual cost of the "item".

Low maintenance durables are also a great way to go. Reduce use of plates by utilizing plastic baskets with a paper liner. The food soiled paper can be composted and the basket can be reused.

Another waste reduction idea is to observe how things are getting served. Present alternatives to the food service managers. Some administrators will be very interested in easy to implement cost reduction strategies.

Some campuses have instituted a durables rental fee, deposit gets reimbursed upon return of item. Other ideas include charging the deposit on a “campus cash” card that is used to pay for food items. Some campuses rent and sell durables or lunch kits (Humboldt State University).

Reduce food waste. Food waste is generated in food prep, from food that is cooked and served, food that is cooked but not served and uneaten food including fruit and veggies that aren’t taken on the food line or sold in the campus convenient store.

Some campuses have utilized pig farms for pre and post consumer food waste. This is being limited by laws and because some pigs have been getting sick from unregulated waste. Another option is to work with a local garden project or food bank to take the prep waste for the garden, and the cooked but not served food for the food bank. Food banks will often pick-up materials making it easy for everyone.

The recovery of cooked but not served food, will help kitchen managers identify ways to reduce costs by reducing over production of food. Request amounts recovered to assist kitchen managers in reducing food prep, while adding to campus waste tracking.

Food waste composting programs may be able to compost food as well as some of the disposables such as paper plates and napkins. Encourage paper options where practical for composting. Work with campus and grounds to determine feasibility of on-campus composting.

Food waste can also be reduced in housing food service areas by designing meals charges based on portions as opposed to the buffet style. In buffet settings people often take more than they can eat. Charging by the portion is more equitable for student’s eating habits while reducing food waste overall. Some schools have also opted to reduce plate sizes, especially for buffet style settings. This helps as well.

As with any recycling effort, start small and work towards larger issues. Education is important in any program that is instituted. Food service areas are a good place to implement waste reduction practices and educational campaigns.

Napkins are an expensive item that are overwhelming in food service waste streams. Napkins can be purchased with post consumer recycled content made from office paper. These can also be chlorine free and are 2 important choices that support recycling efforts while reducing impact of chlorine on the community. Since napkins are not something that can be eliminated, educate students to take less. Table tents are a great educational tool in dining services as everyone sits at a table!

Table tents and signs on napkin holders are helpful to encourage waste reduction and educate students. Reminders on these type of dispensers are valuable tool in creating awareness and helping to reduce waste, especially in a dining setting.

Students can also control post consumer food waste. Education campaigns focused food waste reduction (take small portions and go back for more) can raise awareness. Share information with campus, on how much food is being wasted. Be sure and add something positive people can do to help reduce

this impact.

Performing food waste audits is an excellent hands on educational campaign (collect post consumer food waste and napkins as students are emptying trays in the dish areas, weigh these items, post the results and educate students about the audit with table tents).

Recycle

All campus food service areas generate easy to separate and identify, recyclables. Most commonly, cardboard, glass, metals, plastics, low grade paper are easy pickings in a kitchen area. Work with campus kitchens to set-up recycling areas that will be easy to utilize and service.

Create an easy to use guidelines poster for all kitchen staff to use as a reference. Icons on posters and signs are eye catching and the most user friendly for getting the information out to staff. Make sure all areas and containers are well labeled. One idea is to make signs that are printed on corrugated cardboard that are easy to read, stay in place and last a long time.

Educate kitchen staff and enlist them in reducing waste in the kitchens. Kitchen staff refreshers are helpful if done semi-annually. Work with kitchen staff to meet their challenges in integrating recycling into the many other tasks at hand. Show appreciation for the kitchen staff through promotional items. T-shirts, mugs and canvas bags with the program logo and a waste reduction message are always welcome and are a good incentive for the staff to pitch in. Likewise, check in with the kitchen staff regularly to answer questions and trouble shoot anything that can be streamlined to make the job easier for all of us!

RECYCLING...so simple, it WORKS!

Resources

Food For Thought

<http://www.upa.pdx.edu/SP/about/>

Humboldt State University Recycling

<http://www.humboldt.edu/~recycle/>

Inform Report "Getting an "A" at Lunch"

<http://www.informinc.org/getatlunch.php>

National Wildlife Federation Campus Ecology Program Dining Services Page

<http://www.nwf.org/campusecology/html/dspresearchinfrastructure.cfm#dining>



O verview

Much of the waste generated, occurs in the home environment. For a segment of a university's population, the home environment falls within university housing areas. University Housing facilities are more than a residential facility. Housing departments include residential facilities, food services, administrative offices, and purchasing. It is this composition that makes university housing a microcosm that is an essential area for waste reduction and recycling. There is tremendous waste recovery/waste reduction/education potential within these areas and including them is integral to waste reduction efforts on campus.

Dormitories, apartments, multi-family complexes, cafeterias, campus catering and other food related areas are just some of the options that fall under the umbrella of university housing. These areas can be grouped into on- and off-campus residential areas. Conducting operations on-campus where buildings are often clustered together is much different than accessing off-campus complexes.

Audit the Waste Stream

The volumes and types of materials generated among the numerous areas can differ greatly. By addressing the waste streams coming out of each area, recycling and waste reduction, can be very successful in university housing. An easy way to do this is through observation. Walk around these areas, look in dumpsters and observe which items are easily recyclable, have markets and are generated in large quantities. As mentioned, University Housing is a microcosm of a small city. Typically these areas generate the same materials that are already being collected on campus. An in-depth waste audit can also be done, see waste audit section of this handbook.

Food service areas typically generate large, bulk containers, larger volumes of lower grade paper products and food scraps.

On-campus dormitory areas generate more single use materials such as beverage containers and many types of paper both low and high grade paper.

Multi-family complexes generate multiple grades of paper as well as kitchen containers and packaging.

Housing Food Service Areas

Housing food service areas typically include several large cafeterias, fast food type of venues and often catering operations.

For traditional institutional kitchen recycling, see kitchen recycling section of this handbook.

Food services on college campuses are changing. Housing departments are following suit and diversifying the dining options available to students, particularly those living on-campus. Many campuses are moving away from offering only dine-in, buffet-style meals served on reusable dishware. Incorporating convenience into food services has become a main focus. Cafes and convenience stores, where students can purchase pre-packed, single-serving products and a la carte items, have become commonplace.

The move from reusable dishware and kitchen prepared meals to single-serving, disposable food products, undoubtedly has a huge impact on all aspects of waste generation in housing areas. Increased trash generation is typical due to the to-go dining ware and non-recyclable food packaging. Increased trash generation and greater recycling potential emerges due to these changing on-campus food services.

It is important to pay attention to these areas and monitor the waste stream. Garbage is increasingly expensive to manage and University Housing areas are having to pass these costs along to students. Waste reduction efforts in Housing food service areas is an important area to focus.

Here are some ideas on waste reduction opportunities in Housing Food Service areas:

- *Eliminate disposable cups in all Housing food service cafeterias, give each new resident a reusable mug to be used to take drinks out of the cafeteria and offer discounted beverages at “for pay” Housing food service areas. The refillable mugs can save thousands of dollars in disposable cups costs alone and can also be designed with the waste reduction message and campus logo.

- *Educate students in the cafeteria setting, to reduce napkin and food waste. A variety of messages can be placed on table tents, that students read when they eat at the cafeterias. Put messages on napkin dispensers and in food areas that remind students to take what they will use or eat, they can always go back for more. Little reminders help people reduce waste.

- *Offer minimally packaged items in bulk that are recyclable within the campus program, this is especially important in the mini-mart type of stores that are becoming more common place in University Housing areas and in general cafeteria food service purchasing. Buying in bulk reduces waste and saves money and people are happier getting ketchup out of a bulk squirt jar then trying to open and empty numerous single serving ketchup packets!

- *Utilize reusable plates, cups and ware at fast food type locations for customers who stay and eat, minimize disposable options. The trend towards fast food options is becoming a mainstay for college student unions and more recently in residence hall areas.

- *Create a ban on Styrofoam as it is a petroleum product that is the symbol of a disposable society

(gotta get the message out there!).

*Utilize reusables when possible and especially offer this in cases where students actually stay in or near the establishment for dining. Many schools issue students refillable mugs when they move in. This is a great opportunity to consider issuing a full non-breakable food ware set to all students when they move in. Plates can be made with the school logo. This can be given as a souvenir, like refillable mugs. Another option is to issue items that are considered part of the room and must be returned at the end of the year, if not, the student will be charged. When these items get lost or forgotten at fast food areas, institute a charge for the disposables. Be sure and consider waste generated in the equation. Chances are, students will indeed have the incentive to remember to bring and use reusables.

*Implement waste reduction at all food locations, which includes eliminating unnecessary disposable items and single-serving items. This is especially important in food store types of settings. Work with Housing department to reduce waste coming out of these locations. Provide opportunities for recycling at these sites.

*Another option for fast food types of operations is to offer paper food ware that is compostable. Ideally, this will accompany a compostables collection in these areas.

*Design reduced food ware options, for example: create a minimal pizza envelope for a pizza as opposed to using a standard paper plate to serve a slice of pizza, this will have a notable impact in reducing waste.

*Create options for renting or selling reusables (like Tupperware) as an additional mechanism for waste reduction.

...AND VOILA! A win win situation for all...waste reduction that literally costs the University Housing next to nothing while monetary savings from waste will be notable.

Waste generation in fast food and quick mart operations generate monstrous amounts of waste. Start simple and monitor the waste production in these areas. Be sure and consider both the public and vendor generation.

How to Build a Recycling Program in Campus Residence Halls

In order to build a recycling program in campus residence halls, it is important to:

*Create a proposal for waste recovery and reduction in these areas

*Work with Housing administrators to develop this plan

*At most colleges, Housing areas are an auxiliary, which indicates that they will be charged for a recycling service. With this in mind, determine how the garbage is handled and what options

are available for recycling collection. Some schools handle their own garbage, other schools pay outside contractors. Research the amount and costs to Housing for this service. Identify if the hauler includes recycling in their service and work to create this collection in these areas through an existing contractor. For schools that manage their own waste, work with the Waste Manager to determine how to implement a recycling program in Housing in an efficient and economically viable manner.

*Keep in mind that students are the “clients” in University Housing. Work with in-house student groups, residents and resident directors/assistants to support and provide input on recycling.

Enlisting the Residents and Student Staff

Getting the student population on board with the recycling effort is an important piece in ensuring success of the program in Housing areas.

*Do a student survey annually to gather information on ways to improve, expand and maintain an effort in these areas. Surveys provide valuable information and also serve as an opportunity to educate and assess the attitudes of the student population.

*Meet with RA’s and RD’s throughout the year but most importantly at the beginning of the year. Become a regular part of their orientation and education process. Introduce the recycling routine in Housing as part of Student Life on campus. This will help incorporate this practice into the daily life in Housing areas.

*Do presentations at Hall meetings

*Make in-roads with all Housing staff especially custodians and kitchen staff. These alliances will be beneficial to supporting the effort, gaining staff involvement and some leverage for making changes and adding new programs.

*Utilize Housing student volunteers to promote waste reduction and recycling on their “home front”

*Be aware and make contacts with the Residence Hall Governance Associations or any other student group that has input into Housing programming and activities. Sometimes these student associations have funding opportunities to assist with funding contest prizes, mugs, in-room dorm recycling bins and other promotional items.

*If possible, offer program facility tours to students living in University Housing areas

*Try and be included in new student orientation in housing areas and take opportunities to do promotional tabling or other educational activities at gatherings during new student week and other programming gatherings

Recycling Operations

There are several important factors to consider in establishing recycling collection in housing areas:

* *Central, convenient locations*

Locate potential interior and exterior sites that would be convenient for residents to use. The optimal scenario is to site recycling next to or near trash collection. This step minimizes the amount of trash contamination in recycling containers. Additionally, look to areas that are visited frequently by residents and are highly visible. Be creative with collection. Set up generation appropriate collection. For example, collect junk mail at mail rooms where residents receive mail and laundry boxes in laundry rooms.

* *Material generation*

Determine what types of materials residents will be generating. Consider where students will be getting materials.

In residence halls primarily bottles and cans, newspapers, and both high and low-grade paper are generated. Due to space limitations and a trend towards regular contamination, a collection for white, newspaper, mixed paper and cardboard is recommended. Having an additional colored paper category invites contamination and becomes a low grade mix anyway. It's less hassle to create a mix category that sorters will know to check for contamination while processing paper that can be upgraded by the program.

On and off campus apartments/houses will generate a diversity of materials because residents are able to prepare meals within their own units. Balance materials types with space restrictions and capacity needs. In order to provide a broad collection approach, it may be necessary to combine some materials in collection.

Site Accessibility of recycling is important to both users and those that will service the sites. Site recycling collection in areas in locations that are accessible to the users any time of the day. There are times when recycling sites can be overloaded and staff who are responsible for the upkeep of these sites, need to have access to these areas promptly.

Recycling collection should be located in trash areas. Create Waste/Recycling stations that are complete. Sitting certain materials in special locations (such as cardboard collection) will reduce the possibility that these materials will be collected. Convenience, consistency, good signage and well maintained areas will maximize recycling and reduce contamination.

In Residence Hall areas, it is ideal to have sites on floors but often the fire marshal will not allow floor sites. Review where garbage is centralized currently and work to incorporate recycling systems into collection. Set-up systems that minimize program/Housing labor needs.

Incorporate these systems into areas that generate special waste. For example: at all area desks

where students get mail, be sure and site a mail collection in those areas. The rule is: if there is a garbage collection, then are there any recoverables generated in the area that would require a recycling site?

Some schools have trash rooms, others have outside trash collection areas. Typically, students are required to dump these materials to central locations. The more centralized the collections are, the less it will cost for labor to handle these materials.

In family housing complexes, student housing apartments and houses, establish community Waste/Recycling areas. Typically these are trash enclosures and are often uncovered. There are many unique types of covered containers and units that are available which are suitable for these types of areas.

** Site maintenance*

Create a system where an employee, ideally a University Housing employee, monitors these areas.

Have a recycling employee go through sites daily and clean-out contaminants, high grade materials and keep area clean. Always check that signs are properly displayed and aesthetically pleasing. Keep bins clean, create maintenance switch out schedule for containers. Select areas that allow for easy clean-up. Keeping recycling areas clean and organized serve a greater purpose beyond just the ease of use. Well-kept sites continue the element of convenience for users and help the experience of recycle to be a positive one. Identify where recycling containers can be taken to be cleaned.

** Servicing Recycling Sites*

In determining a recycling collection system, work with Housing to determine how much they are willing to incorporate into their existing operations. Ideally, the more Custodians and Housing Personnel can assist in this effort, the less expensive the recycling service will be.

Determine whether staff would be available to move recyclables and trash from on/off-campus locations.

Present various scenarios to incorporate existing labor into this process as any little bit can help.

With sites monitored, clearly labeled and easily accessible, recycling crews can come in and quickly swap out barrels instead of emptying barrels into bags or other barrels. Bring materials back to warehouse/processing center to be sifted through as they are processed into marketing containers.

Of note: University Housing areas are notorious for creating contamination. Through monitoring, good signage, introduction of the practice with new student orientation and continuous promotion, recycling service will be efficient and effective.

**Container options*

When selecting recycling containers consider: fire code, location and facility (covered or not?), space restrictions, capacity needs, site organization, serviceability, aesthetics and ease of recycling.

Often in Residence Halls, outside areas are utilized. If areas are covered, 55 gallon drums are excellent for minimizing cost and compatibility with swapping out containers for servicing. These also have a generous capacity which reduces the need for increased servicing of containers.

In other outside uncovered areas, there are plastic barrel lids available at a minimum cost, but these are not ideal. There are many companies that make metal recycling units that enclose plastic 55 gallon containers and are aesthetically pleasing, fire safe and easy to service and maintain.

There are inexpensive galvanized garbage cans with lids available at home stores.

**Signage*

Creating appropriate signage is an important factor in ensuring participation in a recycling effort. As much as possible, replicate sorting categories and campus signage. Special considerations for Housing areas include making signs that are more universal as international students typically live in all varieties of University Housing facilities.

In family housing areas, children often are the ones charged with doing the recycling and garbage disposal.

Creating photographic signs and multi-lingual promotional information and posters are very helpful in reaching the potentially unique population living in these areas.

For Housing areas and other outside areas, corrugated plastic signs made by a sign company, is useful, sturdy and can be a good medium for operational and educational information.

**Recycling tools*

Providing tools to make recycling a convenience for residents is also important to a successful recycling effort. A simple tool, that also acts as a promotional item is a room or apartment recycling bin. The concept is modeled on curbside recycling bin programs that are successful across the country. Get residents involved in choosing recycling bins that would work best for their units.

Develop a system to implement in room/house/apartment recycling bins into the room inventory. They are considered part of the room and if they come up missing/damaged at the end of the year, the student is charged.

Of course, if there is a mechanism to give these to students outright, that is also an option.

Ideally, these bins will be a one-time investment and will be maintained through replacement cost system from inventory control.

The Program can also sell these to help generate revenue to purchase them for all University Housing areas.

Move-IN's, Move-OUT's and Large Material Generation Opportunities

Students in University Housing areas generate copious amounts of materials during Fall Move-Ins, Spring Move-Outs and somewhat before breaks and after term finals.

It is important to pay attention to these times, especially move-outs.

Move-In:



*Cardboard is generated in large quantities during move-in periods. Plan for extra collection areas and servicing, needed clean-out of cardboard containers and unreal piles appearing spontaneously. Keep in mind, on the move-in's, these are new students who are not focused on how things work in a University setting. Extra promotions and regular monitoring of these areas during move-ins are recommended.

Move-Out:

Move-outs are an unreal experience where students are under a time constraint to be moved out by the end of finals week. Imagine having a final on Friday AM and having to be moved out

by 5PM. This is a crazy time for the students and also for the staff. Plan AHEAD!

*Plan for daily extra pick-ups during move-out week. As the last minute deadline approaches, increase pick-ups to 3X a day. Coordinate recycling staff and make sure participate in the Move-out planning meeting that Housing organizes.

*Though cardboard boxes are a commodity during this period, there is still increased amount of cardboard generated.

*Set-up extra barrels at all sites

*Organize a collection of reusables and try and to keep it within the waste/recycling areas

*Housing Departments often set-up extra dumpsters in areas not near recycling collection. Stay in the loop and do what you can to set-up reusables and recycling areas next to extra dumpsters.

*Do extensive promotion for the 2 weeks ahead of time and start the reusables collection prior to move-out week

*Make move-out info. door hangers, put those on every door in the residence halls and family housing, these are well received.

*Plan to have a crew working until everything is cleaned out. For example: students have to be out by 5PM on a Friday, plan to have at least one crew (best to get as much help as possible) to work until all of the areas have been swept/emptied at least one time through. Many students wait until the last minute and recycling/waste areas will fill up the most during the final move-out day.

*Some schools have been very creative in setting up a place for students to do a giant yard sale. In the Family Housing areas, this has been effective as people live there year round. In the Residence Hall areas it is more difficult because students don't plan ahead and do everything at the last minute.

*Another idea is to work with a non-profit to gather these materials and re-sell them in the Fall to the new students as a fundraiser and waste reduction project.

*There is a project called Dump and Run, that helps colleges with move-outs. See resources below.

*Students become hectic and end up throwing a lot of items into a giant plastic bag and without removing and sorting recyclables. Issue students 2 or 3 large color coded labeled plastic bags for move-outs that will assist with this problem. One for garbage, one for paper and one for bottles/cans.

*Don't forget to debrief this process to find strategies for the following year (and exchange ideas with other schools)!!

Reuse/Exchange Areas

If possible, set-up an on-going area for materials exchanges and collection of reusables. If this can only be done at move-outs, oh well. But the more that can be recovered throughout the year, the better it is for everyone (including students who have tiny dorm rooms).

Create a small space or bin, promote it, monitor it and work to improve it with residents in the area. These should be located in high traffic areas or ideally within waste/recycling collection areas.

Laundry rooms are a popular dry space to set-up some reusables collection or an exchange. This is especially successful in family housing type of areas as children grow in and out of clothing and toys faster than these items become unusable.

Funding and Contracting Services

Recycling, like many other campus activities is a collaborative effort. Housing departments are considered auxiliary services by many colleges and thus contract recycling services with the Campus Recycling departments. As mentioned above, it is important for Campus Recycling to work with University Housing to design a plan that will reduce waste, streamline operations and keep costs affordable.

Colleges that have recycling incorporated into waste management, can more easily add recycling into the waste management system contract and fees. Many schools have recycling departments that are separate from waste management, which makes it more difficult to incorporate recycling into the big picture of waste management. Ideally under this scenario, working together with campus waste management is critical to creating a recycling service that reduces costs and services from waste management. With recycling as a separate entity, it is difficult to convince administrators that recycling is not an extra cost but something that will reduce garbage costs and services.

Regardless, it is important to come up an efficient, cost effective recycling service while demonstrating the reduction in waste costs. This is something that is a huge on-going challenge to college recyclers but necessary. Somehow administrators take trash for granted and don't scrutinize garbage service costs as it is accepted as a given. When recycling comes along, it is highly scrutinized and viewed as an extra.

Don't forget to stay tuned on larger events that Housing stages. There will be opportunities to reduce and recycle waste that is beyond the daily generation.

When establishing contracted services with University Housing, work with the administration to develop or designate an administrator to oversee recycling operations, waste reduction and educational activities in Housing areas. Make sure to meet with them regularly and stay apprised of what is going on in Housing. Don't get blind sided when new trash enclosures are built and they forgot to make enough room for recycling, or when they have meetings on move-outs. Establish additional contacts and advocates within Housing such as Custodial, Off-Campus, Student Living Groups etc....

Be sure and plan ahead for future possibilities and work to streamline operations. Track all the materials that are collected as this is valuable information to re--negotiate or justify the recycling service. Stay in tune with the population changes in Housing as well. If new facilities are being added or there is a record amount of students, the recycling charge will increase. Try not to lock a set price in, but if it is locked in, add a little extra in there just to make sure not to underestimate the reality of recycling possibilities. Don't forget to consider that these contracted services include labor and administration including tracking and educational activities.

Education

Education is an important factor in creating an effective, well-utilized system in University Housing areas.

There are unique educational opportunities that exist in university housing. One of the primary functions of a housing system is to provide residential populations with educational, social and cultural programs and recycling/waste reduction fits nicely into this goal. These programs are put together by housing staff, residence leaders and volunteers. It is these groups of students that can help incorporate recycling education and promotion into the daily life of residents. Here are some ideas:

- *Enlist the help and experience of resident assistants in developing and promoting educational events. Utilize this leadership in addressing problems areas with residents.
- *Make contact with staff from many levels Housing from decision-making administrators to enthusiastic resident assistants. They can help with gaining an understanding of the structure of Housing and how information flows among the different areas of operation and service.
- *Do regular training and staff in-service presentations from orientation to once/term refreshers. This is especially important with the kitchen/cafeteria and other food establishment staff.
- *Attend residence hall meetings to provide recycling demonstrations, answer questions and perhaps do some awards or games for motivation
- *At the beginning of each school year, give each student an in-room recycling bin, refillable mug (maybe some reusable food ware), Program brochure and a guide to waste reduction in University Housing flier
- *Make a variety of info. and factual table tents for cafeteria tables, change these periodically
- *Do regular promotional tabling with general information, best located by cafeterias
- *Make up and display posters around housing areas and in cafeterias, focus on simple concepts such as waste reduction and recycling opportunities
- *Get media coverage for promotional events in Housing areas
- *Submit information to Family Housing newsletters or other Housing correspondences
- *Do periodic surveys to educate and also gather information
- *Post charts of recycling recovery in Housing areas, thank people for their effort, let them know it makes a difference
- *Food waste and napkin waste audits are very effective in creating awareness to reduce the amount of food and napkins people take....a theme and variation on this is to have your staff dress up in some kind of t-shirts or waste busters outfits (tyvek abatement suits work great! Also lab coats with your program symbol) and go to a meal, set-up barrels in the dish area for food waste, napkins and trash. As people come into the dish rooms, have folks (student volunteers from Housing are ideal!) instruct students to place the items in appropriate bin. At the end of the meal,

weigh and track material generated. This is especially helpful in demonstrating waste reduction through educational activities and also garner info. for a future campaign for composting.

*Have well signed recycling areas, with easy to read posters...multi-lingual and photographic signs are especially useful in Family Housing areas

*Do regular promotional events such as waste audits and contests

Recyclemania

Ohio University started a college competition for Housing recycling areas around the country. This can be done within a college setting as a inter campus competition or a school can compete with other schools housing areas in an intra-collegiate competition. For more information contact Ohio University

Resources

Dump & Run

<http://www.dumpandrunk.org/>

INFORM

<http://www.informinc.org/>

Ohio University Residence Hall Recycling Competition: RECYCLEMANIA

<http://www.facilities.ohiou.edu/fm/departments/recycle/recyclemania.htm>

Southern Illinois University

<http://www.siue.edu/HOUSING/recycle2.html>

University of Michigan

<http://www.housing.umich.edu/services/environ/efforts.html>

University of Oregon

<http://darkwing.uoregon.edu/~recycle/housing.htm>

Recycling And Beyond: Chapter 13 *Printing Departments*



Colleges generate copious amounts of paper in the form of memos, handouts, course packets, office, school paper and beyond. This involves paper choices and includes: distribution, copy machines, printers and other technology that involves resources and environmental impact. Campus Printing Departments are a key area where use of environmentally friendly products and practices can make a huge impact in waste reduction, recycling and sustainability.

Making alliances with the campus printing department is critical in closing the loop on a campus recycling effort. (After all, college recycling programs recycle more paper than any other item). By purchasing recycled content paper, the campus is supporting the demand for collected recycled materials, a vital piece in the viability of a college recycling effort.

Here is a list of some of the possibilities:

*Create a recycled paper policy (see example below) that requires the campus to utilize post consumer recycled content paper, chlorine free, tree free papers. Some campus policies go as so far as to put a surcharge on neon and heavily dyed papers (which are toxic and can only be recycled as low grade). These policies also specify 1/2 sheet and double sided copies as the default for all orders unless otherwise specified.

*Establish a short campus everybody department list so that departments only get a small amount of fliers, announcements etc... encourage departments to have a bulletin board for these postings.

*Create a campus “stop the junk mail” postcard that can be ordered through Printing. These postcards should have text on them to request to be removed from mailing lists, a place to tape the mailing label and of course the flip side needs to be addressed to whatever company you are asking to stop the mailing. College campuses get hordes of unsolicited off campus mail. This material is expensive for the college to process and deliver, while creating a lot of trash and paper recycling that also has associated costs. The “stop the junk mail” card has been successful on many campuses and thus has saved money in labor, handling and disposal.



*Encourage the Printing Department to offer chlorine-free, recycled and tree free papers. Be sure and consider working on the getting the campus stationary and business cards printed on envi-

ronmentally friendly paper as well. Assist the department in promoting the use of these papers to create a campus demand.

*There are many paper buying cooperative opportunities out there to save money for schools looking to purchase environmentally friendly papers

*There are great soy based and vegetable inks available for use in the printing process. Many colleges have been looking at this option. Inks and dyes used for paper, are some of the most toxic substances in our environment. These new inks reduce the risk to the workers and the environment while offsetting a past hazardous practice and creating compliance with the Clean Air Act. Additionally, all campuses have to consider hazardous material disposal costs. With environmentally friendly inks and dyes, this situation eases.



*Encourage creation of on-line ordering of Printing Department orders. Colleges process thousands of orders on printing and copying. On-line ordering saves paper (usually in triplicate!) and other hassles.

*And of course, don't forget to work with your Printing and Copying Departments to ensure maximum recycling. There is a lot of valuable paper that can be recovered from these areas.

There are many other things that Printing Departments can do to reduce toxic chemical use and waste generation. Processes like image processing, plate processing, cleaning, use of fountain solutions can be very toxic processes. The good news is that there are more and more non-toxic alternatives and new systems out there to alleviate this impact.

*Build alliances with campus Printing Departments, as they are the foot in the door on recycling, environmentally friendly purchasing, toxics reduction and waste reduction.

Sample of a Recycled Paper Policy

It is the policy of the University of ---- to purchase and use recycled paper products in its operations in accordance with Executive Order No. ----, dated ----. This policy requires the purchase and use of paper products made from recycled materials when such products are of a quality to satisfy applicable specifications, are available in the desired preferential rules of the State of ---- Model Public Contract Manual.

Any University of ---- request for bids or quotes for purchase of paper products, including authorized printing from outside vendors, shall include a solicitation of bids or quotes for recycled paper and papers that have not been bleached with chlorine or other hazardous materials. No specification shall require the use of paper products made exclusively of virgin materials, nor specifically exclude the use of recycled paper or tree-free products, as provided in ---- State statutes.

University Printing Services shall have the authority to specify the minimum recycled content standard in bid solicitations to accomplish the purpose of this policy. The default for all office equipment that uses paper, such as copiers, printers and fax machines, shall be set to reflect these specifications, and be in compliance with the State of ---- policy guidelines. Every effort will be made to eliminate excessive or unnecessary paper use. Strategies for doing so include: electronic mail or other paperless communication, double side copying, half sheets of paper for all brief, printed on campus communications, short distribution and targeted mailing lists to reduce volume.

In accordance with the guide lines stated above in this policy, the official stationery program as shown in Graphic Style of the University of ---- shall be determined by the Office of University Publications and University Printing Services, with approval by the Environmental Issues Committee. The use of heavily dyed paper or paper which requires special handling for recycling will be subject to additional charges.

Resources

Conservatree

<http://www.conservatree.com/paper/Choose/PaperSelection.shtml>

Gans Ink and Supply Company

<http://www.gansink.com/news/inklink/2.htm>

Living Tree Paper

<http://www.livingtreepaper.com/>

Safety Kleen

The Recycled Products Purchasing Cooperative (RPPC)

<http://www.recycledproducts.org/>

ReThink Paper

<http://www.rethinkpaper.org/>

Reach for Unbleached (RFU)

<http://www.rfu.org/>

Recycled Paper Coalition

<http://www.papercoalition.org/aboutus.html>

Xerox Green World Alliance

http://www.xerox.com/go/xrx/template/o2oe.jsp?Xcny=USA&Xlang=en_US

Recycling And Beyond: Chapter 14 *Construction and Demolition Recycling*



Recycle construction waste to reduce disposal and landfill costs and possibly generate income. The Engineering and Facilities Department can recycle day-to-day waste. Make sure to define what types of wastes are created.

According to the EPA, construction and demolition (C&D) debris consists of the waste generated during construction, renovation, and demolition projects. Usually a good list is wood, scrap metal (see special materials), tile, concrete, brick, asphalt, carpet, vinyl flooring, laminate, sheetrock, ceiling tiles, air filters, wiring, yardwaste or tree stumps (see Chapter 9 Composting), soil, glass, roofing materials, insulation, etc. Most of these products are not harmful to the environment in their original state but once adhesives, laminates, fasteners, paints, caulk, and various hazardous chemicals are applied these same materials can leach those hazardous waste into the ground in a landfill for many years.

Reducing C&D debris conserves landfill space, reduces the environmental impact of producing new materials, and can reduce overall building project expenses through avoided purchase/disposal costs.

Monitor what the maintenance staff does with waste. Though many campus construction projects are controlled by outside contractors, it is important to manage the waste generated from campus construction projects. This can be done through contract specifications and education. Work with the

construction department to incorporate waste reduction language into contracts that require projects to reduce, reuse and recycle all waste generated from demolition and construction. Create an educational brochure with information on what the local options are for reuse and recycling. Encourage construction project managers to consider donating items for reuse (lockers, cabinets, etc....), reuse existing items in new construction/remodels, reduce waste generated from the project while maximizing recycling opportunities.



Incorporate project waste into campus waste stream as possible. For example: if there is a campus cardboard contractor, work with the contractor to provide (and possibly charge) a

project for this service (depending on how much cardboard is generated of course!). Offer on-site paper and bottles/cans recycling for free to the construction company. This good will gesture will indirectly encourage the contractor to participate in recycling of construction materials.

In utilizing contract language, be sure to include a reporting mechanism to ensure waste is being handled accordingly and there is an opportunity to demonstrate this effort to support the campus recycling/waste reduction efforts. The material generated in these large projects is noticeable and the impact of waste reduction supports the recycling effort.

If possible, make presentations on this issue at the pre-construction meetings as is done with fire safety, asbestos and hazardous material generation. Be sure and provide contact information for further assistance. Surprisingly, more and more contractors are seeing waste recovery as a way to save money in disposal fees.

Remember to provide campus construction and maintenance shops with well labeled recycling bins. These areas can produce a large amount of waste and manage most campus re-model projects. Educate, educate, educate!

Wood (see Chapter 16 Special Materials, Chemicals and Hazardous Wastes)

Wood from C& D can take many forms including trim ends, plywood scrap, solid lumber from cabinet and furniture construction, plywood, oriented strand board, particle board, fiberboard, laminated beams, I joists, and treated wood such as decking, utility poles, marine pilings, and fence posts. Other wood products include: saw dust, wood chips, shingles, shavings, crates, spools, boxes, etc. During remodeling, wood could be in the form of items that can be reused such as a finished piece of furniture, doors or cabinets. Recycling wood is not straight forward. Many areas have local wood recyclers. Be sure and coordinate what is acceptable with the wood recycler. Label collection bins and educate users on what material is acceptable.

Sawdust, chips, and shavings are easy to compost with yardwaste. *** Make sure not to compost treated wood waste.*** Composting operations can use ground particle board or plywood as bulking agent for compost. Dimensional lumber is often ground for landscape mulch. See the special waste section...

Charity organizations like Goodwill and Salvation Army will accept furniture and cabinets. The campus carpentry shop may already be reusing cabinets and doors on campus on a regular basis. The local landfill might have a section just for C&D recycling. There also might be local private companies that accept wood for recycling. Another option would be to find a company that accepts wood for use as a biofuel.

Go to wood related links...

Land-Clearing Debris

Like the wood category, land-clearing debris contains a lot of wood as trees. Trees can be sent to wood processing plants to be processed into particle board, chip core, or laminates, animal bedding, mulch or decorative landscaping material, pulp and paper products or composting material. Dirt

is often sent to landfills to use as cover material or construction sites to use as fill. Other debris like shrubs, grass and flower material should be composted.



Asphalt Pavement and Shingles, Brick and Concrete

Concrete is made up of cement, water and aggregate, such as crushed stone, sand or grit. Recycling concrete reduces the need to mine new materials. Mixed with cement, crushed concrete can be used for projects that call for a cement stabilized base. This recycled material is less expensive than the crushed rock alternatives, and it helps preserve the environment. Larger pieces of crushed concrete

can be used as rip rap or 3" to 5" bull rock. Brick can be taken to a landfill where it is crushed to make roadbed material around the landfill. Brick can also be reused when recycled as whole brick. Contractors commonly incorporate recycled asphalt paving into new asphalt mixes. Asphalt shingles are recycled into new shingles or pavement products. Chances are there is a local company or landfill that will recycle these products in the area. Ask contractors to keep disposal records.

[Go to related links...](#)

Ceiling Tiles

The Armstrong ceiling tile recycling program will accept material as long as there is at least 30,000 sq. ft. of tiles that meet its recycling criteria and are being replaced with new Armstrong products. Armstrong will cover the cost of hauling the tiles. For less than 30,000 sq. ft. of tiles, Armstrong will still recycle these but the campus will have to pay for shipping. Additionally, contact other local institutions, etc...to see if others are looking to recycle tiles but don't have 30,000 sq. ft. Perhaps some networking will net the amount that will waive shipping and get the material recycled.

[Go to related links...](#)

PVC Piping

PVC is a difficult material to recycle, but things change quickly. With the increased use of PVC, hopefully a recycling market will surface. To pursue this further, check with the plastic industry groups listed below.

[Go to PVC related links...](#)

Scrap Metal, Paint Cans, Aerosol Cans

All steel has recycled content. According to the Steel Recycling Institute, all steel is made with at least 25 percent recycled material and the type of furnace used establishes the recycled-content level. There are two kinds of steel making furnaces: basic oxygen and electric arc. The basic oxygen furnace uses about 28 percent steel scrap to make new steel. The steel from this furnace is made into thin sheets for cans, cars and appliances. The electric-arc furnace uses virtually 100 percent recycled steel to make products such as rebar and structural beams.

Recycling scrap metal from a construction site is usually a day-to day occurrence. Provide campus construction managers with a permanent scrap metal dumpster for smaller construction jobs. This dumpster can be put on a schedule or called in when full and should be a very economical way to handle this type of waste. Local scrap dealers often have collection systems in place for large scale scrap recycling. The material is cheaper to collect than garbage and often yields revenue.

Hazardous Waste

Surprisingly (or not), campus construction projects generate notable amounts of hazardous waste. Make sure all hazardous waste is handled properly during deconstruction. Many campuses have Environmental Health and Safety Departments to manage this area. Consider the following: asbestos, mercury, PCB's, CFC's, lead, oil or fuel tanks, lab chemicals and beyond.

Go to Hazardous Waste related links...

Resources

Asphalt Pavement and Shingles, Brick and Concrete

Asphalt Recycling & Reclaiming Association
<http://www.arra.org/>

California Integrated Waste Management Board-asphalt
<http://www.ciwmb.ca.gov/condemo/FactSheets/ShingleIntro.htm>

Concrete Crushing and Recycling
<http://www.concretecrushingandrecycling.com/>

Shingle Recycling
<http://www.shinglerecycling.org/index.asp>

Ceiling Tiles

Armstrong
<http://www.armstrong.com/commceilingsna/environmental.html>

Chapter 14 - Construction and Demolition Recycling

California Integrated Waste Management Board-Drywall
<http://www.ciwmb.ca.gov/condemo/Wallboard/>

Healthy Building Network
<http://www.healthybuilding.net/>

Hazardous Waste

Construction and Demolition of Buildings With Mercury Containing Devices
<http://abe.www.ecn.purdue.edu/~mercury/src/construct.htm>

Reel Solutions
<http://www.enreel.com/>.

PVC Piping

American Plastics Council
<http://www.plastics.org/>

EPA Jobs Through Recycling-Netshare-PVC
<http://www.epa.gov/jtr/netshare/plaspipes.htm>

Greenpeace-PVC
http://www.greenpeaceusa.org/media/factsheets/pvc_fail.htm

PVC Recycling in Italy-Just for fun
<http://www.plastics-technology.com/projects/ferrara/>

PVC Recycling in Europe
http://www.ecvm.org/code/page.cfm?id_page=116

The Vinyl Institute
<http://www.vinylinfo.org/recycling/index.html>

Vinyl by Design-Database of Companies that Recycle Vinyl
<http://www.vinylbydesign.com/site/page.asp?TrackID=&VID=1&CID=6&DID=7>

Wood

EPA Commodities Page –Wood
<http://www.epa.gov/epaoswer/non-hw/recycle/jtr/comm/wood.htm>

EPA Commodities Page-Construction Materials

<http://www.epa.gov/epaoswer/non-hw/recycle/jtr/comm/construc.htm>

MINNESOTA SUSTAINABLE DESIGN GUIDE

<http://www.sustainabledesignguide.umn.edu/MSDG/guide2.html>

Northeast Sustainable Energy Association

<http://www.nesea.org/buildings/>

National Association of Home Builders Environment Page

<http://www.nahb.org/category.aspx?sectionID=211>

Recycling And Beyond:

Chapter 15

Events Recycling: From Sustainability To Zero Waste



College campuses go beyond the classrooms and facilities. Most college campuses have athletic events, conferences, festivals, workshops and meetings. All of these types of gatherings have the potential to generate tons of waste, including food and beverage waste, paper and beyond.



These gatherings hold a wonderful opportunity for campus recycling programs to reduce waste, institute food and composting collections, educate the campus community and demonstrate cost savings. There are many other subtle benefits from these practices such as overall cleaner grounds, reduced clean-up costs and involvement of volunteers.

There are many strategies and considerations in creating an events waste reduction effort. Each event has different variables, generate different types of trash and have various focuses. There is no blanket set of procedures for maximizing waste reduction and recovery. It is important to evaluate each type of event

and make a determination on collection strategies.

General Guidelines for Events Waste Reduction and Recovery

Prior to Event:

1. Get a list of Annual and Special Events

*athletics

*conferences, meetings, training

*festivals and other large gatherings

Get a monthly list of all of the on-campus events from the campus scheduling office. Get on a scheduling mailing list to get the calendars to stay current on these through on-line calendars.

2. Waste Assessment for Events

Create a spreadsheet that can act as a waste assessment tool and tracking mechanism. This tool can be used to get organized, plan ahead, provide a historical perspective, track materials recovered and review for future implementation.

Assess:

*materials generated at each event

*location of where and when materials will be generated

*equipment needed

*event contacts, scheduled set-up and pick-up (who's doing what when)

*add a notes section and keep a record through any photos collected from past event waste recovery operations

*determine if existing recycling collection would suffice

*track collected materials, compile with overall materials collected at all campus events

***Ideally, the best scenario is to set-up waste recovery as a regular part of events especially in Athletics. Coordinate efforts with outside haulers. Work with Athletics personnel to handle collections as possible. Work to minimize the amount of extra planning needed to provide a service.

3. Preliminary Contacts

Be aware of scheduled campus events. At least one month prior to each event, make contact with the event coordinators and meet to discuss waste management needs.

Ideally, after doing one event, the coordinators will integrate waste management into future event planning. Encourage event organizers to contact the recycling program prior to future events.

Even in the event planning process, contact all secondary haulers as needed.

4. Create Events Operations Manual and Set-up Kit

Incorporate an event assessment sheet into a manual. For larger events, create a separate notebook to collect all of the information related to the event including: past strategies, material tracking, volunteer list, contract information, etc...

5. Promotions and Education

Prior to events, especially larger events with food vendors, create a Vendor Guide to Waste Reduction at Event. Incorporate this into any preliminary contracts as to create a serious requirement for vendors to follow.

During events, have well signed waste recovery stations. Place these signs above the crowd so stations can easily be identified during the event. A good idea is to have wooden stanchions at each site with a simple identification sign “Events Waste Recovery Station”.

Make sure to have stations at all garbage cans and likewise have garbage cans at all stations.

For places that there are permanent garbage cans, and no recycling collection, cover these during the events and put a sign on the covering that says something like “Please help us reduce waste, utilize Event Waste Recovery Stations for your disposal needs”.

As is possible, make announcements during the event to encourage people to help out and recycle. Announcers at Athletic Events and Festivals are usually happy to help. (Go TEAM!)

Encourage waste reduction at all events. Ask event promoters to sell or encourage folks to bring their own refillable mugs to event. Some events will even promote that if you don’t have a mug, no disposables will be available but mugs will be available for purchase. This will also help advertise the event and reduce waste.

During Event:

1. Set-up

- *assess materials to be collected

- *make sure signs and containers are easy to read and consistently labeled (Use stanchions for easy identification)

- *make sure recycling options are available at every garbage site and vice versa

- *at larger events, provide vendor recycling/composting stations for vendor use only

- *for vendor sites, include collection for: cardboard, glass, metals, plastic and low grade paper

(If possible, include food waste composting. It’s helpful to provide each vendor with a composting bucket that is well labeled. Workers and volunteers can help by doing compost collection at each booth if possible. Community gardens always welcome additional compost.)

2. Collection and Maintenance

- *assign workers/volunteers, monitoring and collection duties

*monitoring sites is very important to assist in reducing contamination and educating the public

*keep sites/signs well maintained

*keep good notes as to trouble-shoot operations and for future improvements

3. Tear Down and Clean-up

*know when to tear down sites, remember materials are still generated in events clean-up process

*make sure materials are processed, containers are cleaned, re-label if necessary and record data in events and assessment documents

*make sure collected materials are weighed, including garbage, create graphs/charts and data spreadsheets to track events collection and savings

*debrief with outside haulers, confirm pick-ups

From Recycling to Compostables to Reusables: the Road to Zero Waste Events

It is important to start with a pilot project, establish the idea of waste recovery at events, and continue to incorporate further waste reduction activities as possible. There are different variables with each type of event, determine course of action based upon support from the event organizers.

Athletics:

For working with Athletic events, there are many areas generating waste: stadium, beer garden, sky boxes, parking lot. Incorporating cardboard recycling into all athletic events is standard. Evaluate materials generated at athletic events, propose any waste reduction strategies (bulk condiments for example), and encourage Athletics to purchase plastic cups that are recyclable especially in beer garden areas. Though outside drinks are prohibited, encourage Athletics to allow the recycling program to establish collection for newspapers, event programs and bottles/cans around the stadium.

Participate in the clean-up process and evaluate additional recovery possibilities from there. In the evaluation of the clean-up process, take an overview of the items that are getting collected, estimate percentages and propose a trial run where the clean-up crews are divided into trash teams. Have each team collect one type of item, newspaper/events brochures, bottles/cans and garbage. When these are in bags, determine percentage of waste stream made up by each item. Demonstrate benefits of

this process to Athletics and work with them to encourage some waste recovery. Some schools (Penn State, University of Nebraska at Lincoln), have been successful in implementing biodegradable's at athletic events. Besides recycling, the move towards zerowaste is enhanced through a dedicated effort on compostables recovery. Remember that every effort is an important one. Start with collection within the stadiums and grow from there.



Ideally, the best scenario is to set-up waste recovery as a regular part of the events, especially Athletics. Coordinate the efforts and have outside haulers handle as much of the collection as possible with assistance from Athletics personnel to centralize materials. Minimize the amount of extra planning and work done by the recycling program.

Reducing:

Work with events to reduce the waste prior to the events. The best way to approach this is through

the vendors. Create a waste reduction plan for vendors that is incorporated into their event contract. Ideally, this will encourage vendors to generate items that are compatible with the event collection system.

Recycling:

Take existing campus recycling collection and implement it within events. Generally, all events generate paper and bottles/cans. This seems simple, but a good place to start.

With larger events, incorporate all the “kitchen recyclables” into a vendor waste recovery station. Locate this in the food vendor area of the event. Generally collection includes: cardboard, low grade paper, plastics, metals, glass compostables and cooking grease.

Composting to Compostables:

If the campus already has a composting program, then a mechanism already exists to include compostables in the events collection system. Composting has been evolving and events are a good opportunity to incorporate this material. With the development of new biodegradable foodware products, many campuses are looking at utilizing these items for events (and incorporating them into their food service areas as well.).

If there isn't a food waste composting program on campus, check with local forest products companies to see if they would work with campus to recover compostables at these events. Many forest products companies are needing more soil amendment and thus are looking at ways to increase yields through food waste and other festival type of compostables.

Before purchasing expensive biodegradable food ware, consider the compostability of existing food-ware such as paper plates, napkins, chopsticks, waxed paper cups and festival/event pre and post consumer food waste. Biodegradable food ware isn't always necessary, is expensive and requires a change in thinking and purchasing practices for the event and vendors. This could be a hard sell, so start with items that are already inherently biodegradable and focus on waste reduction (eliminate lids and straws for example). Also note that to ease collection, purchase cornstarch bags or use plastic bags that you can easily empty onto a compost pile as these won't degrade and will be a contaminate in the composting process.

When moving to a compostables collection, maximize the potential for success by utilizing monitors at each collection site. This will help reduce contamination, ensure proper disposal and educate the public.

Be sure and track collection of all recyclables/compostables. When moving to compostables, there will be a noticeable reduction of materials going to the waste stream.

If possible, set-up a list of acceptable items for vendors. Remember that not all paper plates are just paper, some have plastic non-compostable liners. Work with a local foodware distributor to identify what foodware is compatible with your waste recovery system and try and offer a vendor discount through the distributor.

The Ultimate: Reusables

The largest percentage of the events waste stream comes from plates and cups. Encourage people to bring their own refillable mugs for drinks. If it isn't possible to eliminate disposable cups as part of an event, work with event organizers to provide a cheaper drink for folks who bring their own mugs. Don't forget to promote this as people like the idea of saving money from refillables. Provide reusable cups if possible and waste will be reduced. Offer refillable mugs for sale at events. This will generate some money for the recycling effort/event and provide an opportunity to educate the public.

The next challenge is plates. Disposable plates make up the largest single item in the waste stream at events that provide food. The challenge is in washing the plates or any reusables. For events that are located or held in areas where there is access to a dishwasher, evaluate whether there is an opportunity to borrow, rent or purchase reusable plates (preferably plastic or melmack). This is a very labor intensive process. Assess labor needs, facilities and availability of plates to institute this practice.

As with other events, reduce garbage collection areas and consolidate into waste recovery stations. Create public waste recovery stations to collect recyclables, compostables and dirty plates. For collection of the plates, be sure and have rolling toters for portability and ease in switching containers. Have a crew dedicated just to plates. This crew will focus solely on, switching toters, washing dishes and re-stocking food vendors.

It is difficult to do this at free events. Ideally, charging a deposit will ensure that the program doesn't lose plates and replacement costs are covered.

Charging Vendors an Environmental Deposit and Fee

Something to consider is to charge vendors a 2 part fee, one part is refundable, the other is a charge for the waste services. When vendors leave events, they often are tired and want to get home as fast as possible. Often this entails a “dump and run” mentality. Encourage the event organizers to implement a cleaning deposit, that is refundable upon check out of each booth (this will create an incentive to clean-up and get the deposit back).

The other part of the fee would be a charge for waste reduction. With reusables, food vendors can save money through savings in plate purchases. This fee will help offset the large labor costs of managing waste reduced events.

Using Volunteers

Volunteers are plentiful on a college campus. Also many areas have volunteer organizations that are happy to assist in an events waste recovery program. Volunteers participate in a community event that creates visibility for their organization, gives them free entry to the event (football games are popular) and gives them a sense of satisfaction from doing something that is making a difference.

For larger events, create a training program for the volunteers. Be organized and thorough. Follow through with a survey for volunteers at the end of the event for some feedback. If possible, especially with the larger events, give volunteers t-shirts, mugs or a token item (or free food!) to thank them for this effort.

When doing general promotional events on campus, it is always good to get a list of folks who want to volunteer. There are a lot of students who are interested in being a part of this. Likewise, this experience is valuable in teaching students how to apply this strategy in other areas outside of campus.

Well Worth the Effort

Managing waste at events is a big job. Events are an important opportunity for colleges to educate the public and to make a difference. Gather data on these events to demonstrate that these efforts do work and make a big difference!

Events are a great place to test out more intense waste recovery efforts that can be applied back to a college waste stream. There are many areas that have been a concern that can benefit from these projects. Learn from events waste reduction efforts and evaluate/transfer these lessons to improve and increase existing daily recycling efforts. Use this information to evaluate and improve recovery in food service areas, that have become increasingly geared towards fast food and disposables. Additionally, events waste reduction efforts are opening the door to the next horizon, composting. With the possibility of compostables, there is a new horizon ahead in waste management for all colleges.

Resources

The Center for Energy and Environmental Education at the University of Northern Iowa
<http://www.uni.edu/ceee/>

EnviroWare® products
<http://www.envirobrands.com/products.html>

Simply Biodegradable, a good source of cornstarch biodegradables
www.simplybiodegradable.com

The Festival for the Eno
<http://www.enoriver.org/festival/trash.html>

Grassroots Recycling Network
<http://www.grrn.org/>

The Zero Waste Alliance
<http://www.zerowaste.org/>

Zero Waste at GRRN
http://www.grrn.org/zerowaste/zerowaste_index.html

Zero Waste at Eco_Cycle
<http://www.ecocycle.org/ZeroWaste/>

Zero Waste Picnic
<http://www.wsu.edu/recycle/zerowaste.html>



What's this thing? What does it do? What's in it? Can it be recycled? Is there a reuse opportunity (in-house, locally?) Does it need to be disposed in a landfill? Does it need to be disposed of as a special waste?

Waste management and recycling require research to find answers to these questions. It is important to ask questions and learn where the resources can be found. Fortunately, there are many experts to consult and college campuses have a plethora of information on many aspects of issues facing college recyclers.

Most campuses have a department of safety and health (environmental health and safety). This department typically oversees chemical, nuclear, biohazardous and other waste known as universal waste. Recycling Coordinators are increasingly being asked to handle universal waste.

Another good relationship to foster is with procurement. This area of campus is knowledgeable on what the campus is purchasing and where most materials end up. The procurement official can help set up contracts for recycling and disposal of various materials.

If possible, locate recycling/reuse markets for as many materials as possible. Recycling materials may save money and reduce the hassle of paperwork. Universal waste is not always recyclable but proper disposal of "special wastes" is important in reducing toxins in landfills.

Asphalt, Brick and Concrete, see Chapter 14 Construction and Demolition Recycling

Automotive (tires, batteries, oil, antifreeze, oil filters)

Transportation shops on campuses, operate in various ways:

- *perform maintenance in-house
- *contract out service on all campus vehicles to several local shops
- *do some in-house work and contract out special service as needed.

Fortunately, there are specific regulations for disposing of special waste generated in auto shop operations, thus reducing the need to monitor this at off-campus sites. For in-house campus auto shops, work to find markets/outlets for recycling tires, batteries, oil, oil filters and antifreeze. The OSHA department on campus is responsible to regulate any hazardous materials generated in auto shop areas. Request a record of amounts of materials recycled in campus auto shop areas to add to campus waste tracking. Create and distribute monthly tally sheets that can be submitted to the recycling program that track how material was handled. Utilize conversion factors to determine how much each item weighs. If the item is not on conversion charts then weigh the item a few times and use an average weight.

Tires are being recycled into many things including: alternate fuels, speed bumps, mats, cushioning, flooring, tiles, irrigation, decking, office supplies, planters, sound barriers, swings and truck bed liners. One of the most promising uses is asphalt rubber.

Most tires are recycled through local tire dealers. For community collection, contact the local waste management division to find a drop off location. Though each state has different procedures, collections range from tire stores to service stations. In some states, there is an advanced recovery fee charged when purchasing new tires. Unfortunately, many consumers are unaware of this and thus illegal dumping often includes tires.

Oil is a commonly recycled item, while only some areas have oil filter recycling. Places that recover oil often recover antifreeze. Contractors handle these items and auto shops have storage containers for collection of these materials for pick-up and processing.

Go to Automotive related links...

Cassette Tapes (Audio and Video), CD Roms and Diskettes

Other items generated on campus include: cassette tapes, CD roms and diskettes. Research options for recycling these items. There are organizations that take these types of materials for craft projects. Check with the local recyclers on possible collection with materials already being recycled from campus. Large recyclers are always working to increase marketing of materials. CD Roms have the best recovery through plastic recyclers, while cassette type tapes and smaller computer disks can be recycled through a company called Eco Media and Green Disk.

Go to Related Links...

Cell Phones

The “Donate-a-Phone” campaign was launched in September 1999 to collect and refurbish a portion of the 24 million wireless phones no longer being used. The phones are reprogrammed with 9-1-1 and other emergency numbers so domestic violence victims can access emergency services and hotline

numbers at the touch of a button. This is a way to help victims of domestic violence by donating old wireless phones.

Go to Cell Phone related links...

Other organizations such as AT&T Wireless have programs to take back unwanted phones. Cell phones that can be salvaged are donated to the Red Cross, while other phones are recycled.

Chemical and Hazardous Waste

Campuses generate chemical and hazardous waste in campus operations and through academic classes that perform research and laboratory experiments. Many campuses generate these items in art studios, photo labs, through agricultural practices, in campus hospitals and engineering departments. Other departments also may be generating this type of waste in offices as even microfiche is made with silver emulsion (and may contain confidential material that will need a serious look before choosing the proper disposal method).

Many of campuses are placed in the high-volume generator category for chemical and hazardous waste. Thankfully more and more recycling programs are becoming available for some of these wastes. Find out how the safety (or campus environmental health office) is managing these chemicals and hazardous materials. The safety (or campus environmental health) office should have records on what chemicals are produced and where. Some of these chemicals are probably being recycled. Even if the recycling program doesn't handle these materials, the program should be aware of how to handle these materials and should be tracking recycled materials along with other campus recyclables.

Often the campus safety or environmental health office, has an inventory of what's produced on campus. Typically, departments contact these offices for pick-up on items that need disposal. Materials are collected according to hazardous material handling laws which include storage regulations. Encourage campus departments to buy what they need as over purchasing can create expensive disposal practices.

Campuses work with local hazardous material contractors to dispose of toxic wastes. Perform reference checks on contractors and require certificates of disposal and track amount of waste generated and note whether material is recycled or disposed as hazardous waste.

Though lead is a scrap metal, it might be needed to be handled as a hazardous/special waste. Medical facilities generate lead in various practices while lead paint, lead lined walls and pipes can contain lead. There are even lead aprons that might be generated. The lead from these pigs can be recycled if the batch of lead is removed from the plastic and accompanied by a certified letter stating that there is no radiation. Check with scrap metal dealers on this when establishing scrap metal recycling. Many scrap metal dealers are not collecting lead items.

Mercury, another scrap metal is also a hazardous waste. It's found in light bulbs, thermostats, ther-

mometers, blood pressure devices, esophageal dilators, batteries, automobile switches, etc. Check with the safety department on what programs are in place to capture mercury for the source. Options are growing for mercury recovery, while laws are being created to reduce the use of mercury in products and practices. Lead and mercury use should be discouraged. These materials are expensive to manage in the disposal process.

Chemical waste may also go to a facility that will blends chemicals to make a fuel. Another area of concern is underground storage tanks for fuel oil. These tanks are a growing issue which is requiring campuses to replace the units as they can leak. Other above ground tanks used for propane and oil storage should be monitored regularly.

Work with the safety department and campus auto shop to ensure that motor oil, anti-freeze and other gas mixtures are being recycled. Campus automotive areas (including academic shops) are full of potential recyclable items including: auto parts for scrap metal, fluids like oil and anti-freeze, batteries, and tires.

Go to Chemical and Hazardous Waste related links...

Clothing and Canned Food see Chapter 12 Housing

Clothing and canned foods can be collected during move out and donated to local charities. Contact local charities to create this collection. Charities will often set up collection boxes and service these. One option is to have a vendor set up a drop-off location on campus for these items throughout the year. Monitor these collections as often garbage will end up in these containers. Another option is to have a vendor set up a temporary central drop-off location that is staffed. Publicize this special collection to encourage participation.

College residence halls and family housing areas are the best places to site these type of collections. Especially during move-outs, students are in a hurry to dump items. The amount of reusables available generated can be staggering. Recovering reusables during a move-out can benefit the local community while reducing the impact on the landfill.

Some schools have created “yard sales” where students can sell or trade items they want to get rid of, while generating some extra income for these students. Other options include collecting items that are reusable and re-selling items back to new students in the fall. This can be a fun activity that can reduce the campus waste stream while involving the campus community in being responsible for items that they are no longer using.

Campus food drives are another opportunity to help the community at large. Food drives are another opportunity to educate the campus on waste reduction.

Cooked food or raw food waste can be recycled or donated. Some schools have programs set up with local charities (food banks) to donate leftover prepared but not served, food. Direct collection from

the kitchens can be set-up with the food bank. There are food preparation rules that need to be followed and the kitchen manager or food bank manager should know about the rules governing this practice. Otherwise look at composting left over food waste and yardwaste. see Chapter 9 Composting

Go to Clothing and Can Food Related Links...

Computers

The issue of electronics waste, especially from computers, is growing. College campuses turnover computer equipment regularly thus generating an impressive waste stream. With computer equipment containing toxic metals, more colleges are looking at responsible strategies for managing this waste stream.

Computers are no friend of the environment. Though the PC industry is thought of as “green,” the reality is that the nature of this industry involves pollution. Computers contain hundreds of harmful and even toxic metals, acids and plastics. Proper disposal of computers is important to reduce environmental impact from the toxic materials contained in these items.

One strategy is to work with procurement to encourage computer manufacturers to adopt take-back programs. If possible, add language to computer equipment vending contracts to address this issue. Include the “take back” and responsible disposal by the company, in the purchasing agreement. There is also some grassroots campaigns encouraging take back programs. This is a good opportunity to get students on board to send e-mails encouraging buy back programs.

See “Clean Computer Campaign”

Old computers are often thought of as “junk.” The reality is that thousands of schools, community-based organizations and other groups can get good use out of an old computer. Used working computers are valuable.

If disposal is the only option, it may be necessary to remove the toxic elements prior to disposal. Do this with great caution. In addition to hazardous materials, computers carry an electrical charge in the power supply, long after being unplugged. Tampering with such devices can cause serious injury due to electric shock.

Some campus recycling programs have full-scale computer and electronics recovery/recycling programs where machines are dismantled into various components. To institute a program like this, make sure to work with the campus safety and environmental health departments. Demanufacturing projects can be incorporated into “education and technology” programs. Of course re-building computers by swapping parts, is the best strategy to reduce the actual final waste going into the landfill. As this issue grows, more opportunities are evolving to capture waste from electronics including plastic casing from these items.

The deluge of obsolete computers and other electronic equipment will only get bigger. The Department of Energy's National Energy Technology Laboratory, West Virginia University and other sponsors have created an electronics recycling resources website. Resources include a directory of recycling companies, links to state initiatives, message forums, news, and a calendar of events.

Go to computer related links...

Confidential Paper

College campuses generate large amounts of paper materials that might be considered confidential. Handling confidential materials is a serious matter and should not be overlooked in handling recyclables (especially paper).

One option is to have an in-house operation. This is a labor intensive process that requires keeping the material separate, a high-speed shredder and plenty of room to store loose shredded paper or bales for market.

Collecting pre-shredded materials from departments is a cumbersome and expensive method to manage these materials. Shredding is labor intensive for departments (equipment and labor), a drain on campus electricity, expensive for recyclers to handle high volume/low density material and an inefficient method for collecting this valuable paper.

Another option is to pay a contractor to come in and shred the material either on-campus in a special shredding truck or off-campus in a secure facility. This is the best method for cost-effectiveness, security and efficiency. Some contractors actually pulp the material after it is collected.

It is up to the campus departments to follow all state and federal rules pertaining to document retention. It is best to defer this issue to the records/archives department to determine the best method for handling this material.

Cooking Grease

Cooking grease is a common item that is recycled on a local level. Check with campus kitchen managers to determine if cooking grease is getting recycled. If not, look in the phone book for the nearest dealer or contact local restaurants to determine where local cooking grease is being recycled. Local restaurants will have dumpsters to collect cooking grease. Dumpsters are labelled with the company logo and phone number. Don't forget to collect cooking grease at athletic events and other campus events that serve food.

Electronics

For information on other electronics recycling, check out the EPA Plug in to eCycling:

Envelopes (Tyvek, Padded and Other)

College campuses generate large quantities of envelopes. Encourage reuse of padded and other envelopes for on and off campus mailings. Campus mail services is also a place that will take these. Reuse as many envelopes as possible including for on-campus mailing. If there is a surplus of these, another option is to use letter envelopes for scratch paper.

Padded envelopes can be made with a recyclable fiber (low grade) or be lined with plastic bubble wrap (these are not recyclable so find areas to reuse these). As the recycling program is processing materials, save these instead of discarding or recycling. As these build up, keep the campus community posted and often times these will be needed somewhere on campus. These are also something to place in the campus reusable office supply exchange.

There are recycling programs for Tyvek envelopes. Shipping is paid by the campus but the material is indeed recycled at no charge. If these are getting generated in a large quantity in one area, work with that area to collect and send for recycling. If there are smaller quantities, have these sent through campus mail, collect them in recycling and send off as needed.

For more information:
Dupont Tyvek

Film (Transparencies, Radiology, Print Shop, Art Studios, etc.)

Transparency film can be recycled. Check with local sources to locate any recycling in the area. If there is nothing available locally, encourage campus departments to ship this material directly for recycling (see links on the 3M transparency recycling program). Small amounts can be collected through the recycling program but be cautious about taking this material in large amounts as it is heavy and shipping is expensive.

Radiology, print shop, art/movie studios produce film that can be recycled. This is highly specialized recycling. To locate recycling for this material, contact the company that produces the film. Be sure and determine if different types of film can be recycled together.

Go To Related Links

Furniture, Office Equipment, Miscellaneous

Check with the surplus department to found out how campus property is discarded. Many college

recycling programs end up working with or actually managing surplus items.

As with other materials mentioned in this handbook, here's some ideas on handling surplus items:

*create a department surplus property listserve where departments can post "surplus" items to give away or for sale, this is a great opportunity for campus to share resources

*state colleges typically run leftover items through a state surplus operation, where items get sold at public auction, often this ends up costing campus users to ship item to state surplus

*many campuses have created on-campus surplus operations which include a store and/or auction, warehouse space and personnel are necessary (on-campus surplus operations can be successful while generating the funding to operate and turn a profit that can be put into operating recycling programs)

*establish a small space for an on-campus furniture (other equipment) free exchange, this can save departments money in furnishing an office space (this can be open as little as an hour 2 or 3X/week, thus costing a small amount to manage while generating large amounts of cost savings for campus)

Go To Related Links..

Getting the Word Out

It is sometimes difficult to get the word out about all the opportunities available through the campus recycling program. Here's some ideas on making resources available that encourage awareness and inspire campus participants to ask the question: Can it be recycled or reused?

*create a departmental contacts email list, be sure to post important program resources annually, don't forget to include student groups in these postings

*create a materials recovery list that is accessible from the program website, promote the website, promote the materials list

*target areas that generate special materials and keep personnel informed on new markets and procedures

Example of materials list: University of Massachusetts Amherst

Imaging/Copier Supplies

Laser printer, ink jet, copier, and fax machine imaging supplies can be remanufactured. Programs range from donating, being paid or exchanging empties for credit towards a purchase of a new or remanufactured one. With laser cartridges, departments can often work directly with the contractor.

For items that are not exchanged or credited, the recycling program can receive payment for collected cartridges from campus. This is an excellent opportunity for the program to receive revenue with little effort.

Ideally departments will close the loop by purchasing remanufactured cartridges (which saves money) and turning in the empties to be remanufactured. Savings can reach 30-50% depending on the type of cartridge.

When instituting a program, educate campus about the recycling process of cartridges. Encourage the purchase of remanufactured cartridges. Make sure the remanufacturing company is reputable and the remanufactured cartridges perform well. Solicit feedback from faculty and staff using the products to ensure quality.

Ink jet cartridges can be collected through campus mail. Often contractors/companies, provide small collection containers for departments. Other options include providing departments with pre-paid shipping mailers or labels to send these in for recycling.

Remanufactured laser cartridge companies typically collect empties when delivering new cartridges. Since offices often have a few extras on hand, empties will build up before being collected by the company.

There are many options of centralizing these, which might generate substantial revenue for the program:

- *have these sent to recycling program through campus mail (though usually this isn't a preferred method for campus mail services)

- *designate a collection area in each building or by recycling areas that are serviced by the program

- *designate a collection area in all department copy rooms and ask that department personnel call for a pick-up when the container is full

- *some cartridges come with a pre-paid mailing label that can be used on the original box, to ship back for recycling

Go to Imaging/Copier supplies related links...

Junk Mail

All campuses receive unsolicited mail from off-campus. Other areas receiving this type of bulk mail is in the housing areas. This mail cost campuses a substantial amount of money to receive, deliver and dispose of or recycle. By reducing campus unsolicited bulk mail, recycling programs are assisting campuses in reducing costs and increasing efficiency.

For mail that comes to campus personnel and departments, work with the campus printing department, to create a printed postcard that requests to be taken off of mailing lists. On the card, leave a space to paste the mailing label from the unsolicited mail. Address the postcard to the appropriate company and send it off through the department mail. Departments can have these on hand for staff.

The Mail Preference Service is a non-profit organization that takes requests to be removed from bulk mailing lists. Create a postcard that is addressed to the Mail Preference Service and distribute these at mailbox outlets such as the post office in the student union and all area desks in housing.

These small efforts will be a big payoff for reducing unsolicited mail.

(Related links...)

Office Supplies

Surplus office supplies that are still usable can be donated to an on-campus reusable office supply exchange program. R.O.S.E. (reusable office supply exchange) is an acronym commonly used on campuses for this program. OSCAR (office supply collection and reuse) is another one. Establish this as a self-serve area that is staffed for shelving and maintaining the area. Be sure to track what items are taken and determine replacement costs if the item was purchased new. This can be used for documenting cost savings, a very compelling thing to determine. A college that has a population of 25,000, can easily save \$15,000 from sharing file folders, notebooks and other office supplies that have traditionally ended up in the campus dumpsters.

Have a key available for check out from the nearest department in order to facilitate self service. Encourage campus departments to establish smaller versions of this within offices. Shelves work great for smaller items.

See Office Supply related links

Pallets and Wood Waste

College campuses generate large quantities of wood waste and pallets. Fortunately, wood waste recyclers are plentiful and should be easy to locate in the area. Collecting wood waste separately often can be less expensive (and definitely a better environmental alternative) than landfilling. Often local garbage companies will provide commercial drop boxes specifically for wood while another option would be to work directly with a wood waste process (forest products company). Be sure to be aware of the rules on what is acceptable in wood waste. Typically cedar, laminate and particle board are not accepted. Post a sign on the wood waste dumpster and alert staff and contractors on proper handling of wood waste.

Pallets can pile up on college campuses. Sending these for wood recycling is a good alternative though not optimal. This practice just re-creates the resource intensive process all over again.

Reuse pallets on campus as much as possible. Often large cardboard gaylords are used to collect paper for market. Work with the paper recycler to see if pallets can be used for staging the gaylords. Paper recyclers often take pallets for reuse.

In some cases, pallets are valuable to the “shipper”. CHEP is an international company that reuses pallets. Look for pallets painted blue on the sides. These are most likely a CHEP pallet. Some pallets are made from precious rainforest wood and others are made from less valuable wood. In any case, these are a “packaging” item that is often viewed by the “sender” as disposable. Some companies actually take them back and reuse them, which is a great practice. Try and work with procurement on building a “take back” of pallets, back into the vending contract.

Second step is to be creative and try to give pallets away locally before considering the wood recycling option. Look for a local company nearby that will accept pallets for reuse.

If none of the above options are available, work with a local wood or pallet recycler. Be sure and determine the most cost effective method for collection and what materials are acceptable (i.e. pressure treated lumber is not acceptable, some pallets might even be made of plastic, be aware).

These can be centralized to a wood waste dumpster or pallet dumpster or pile. Campus and Grounds or Recycling staff can collect these from loading docks and bring them to the central location. Some pallets might be resold for reuse or ground up and sold as biofuel.

If the campus owns a tub grinder, it is possible to grind up pallets on site and apply as mulch on campus grounds.

Phone Books

Campus communities receive phone books once or twice a year: one campus directory and one local phone company phone book. Encourage the campus telephone services department to print the campus directory on white paper to facilitate recycling.

Local telephone books are usually made from low grade newspaper. Work with the local phone book distributor to establish recycling collection for these. Through the campus telephone services, determine if the phone book distributor will take back the books directly, thus reducing the burden of marketing these with program materials.

Consider that a crew on campus (typically facilities crew), gets paid by campus telephone services, to deliver new phone books. Create the same arrangement to be paid for the labor and costs involved through the recycling program, to handle these. Collecting these from campus is a labor intensive effort. If the recycled paper broker charges for these to be recycled, that is another important cost that

needs to be passed along to campus telephone services. In some cases, the local phone company will work with the recycling process to absorb any recycling costs on the “disposal” end. Internal costs need to be dealt with through campus telephone services.

Campus telephone books, if printed on white or recyclable paper, can be recycled with the daily recycling collection. Determine what category these need to be recycled with and alert the campus on the proper procedure for recycling these.

Local phone books are a low grade paper. Check with the paper broker on how to prepare these for market. Most likely, these will need to be collected in a separate toter or gaylord in order to be accepted for market. Coordinate with the crew delivering the phone books and have a memo delivered to each department along with the phone books. An easy way to handle these is to have departments call for a pick-up of 25 or more. Schedule a weekly route to pick these up and taper off the collection after a month. Typically, the paper broker will have a limit on how long these will be accepted as they are marketed and recycled as a special seasonal market.

Scrap Metal and Appliances

According to the Steel Recycling Institute, steel is the #1 recycled material in North America. The overall recycling rate for steel is 64%.

There are two processes for making steel. The first is Basic Oxygen Furnace processing, which is used to produce the steel needed for packaging, car bodies, appliances and steel framing, it uses a minimum of 25% recycled steel. The second is Electric Arc Furnace processing, which is used to produce steel shapes such as railroad ties and bridge spans, it uses virtually 100% recycled steel.

Each year, steel recycling saves the energy equivalent to electrically power about one-fifth of the households in the United States (or about 18 million homes) for one year. Every ton of steel recycled saves 2,500 pounds of iron ore, 1,400 pounds of coal, and 120 pounds of limestone.

Locate a local metals recycler to determine the process for recycling this material. There are many grades of scrap metal which yield various prices. Collection will need to be centralized. Work with the metal recycler to determine the most cost effective method in collection and delivery of materials to market. Some campuses do the collection, maintain the area the material is collected and haul materials to market. Other options include negotiating an arrangement that might involve the metals processor providing a dumpster and doing the pick-ups. This method is efficient and probably more cost effective than doing the hauling to the processor.

The campus maintenance division and construction contractors will be generating and handling most of this material. Collection is typically done in a 20 yard dumpster or larger. Handle low-grade metals, refrigeration units and appliances this way and have the high-grade metals stored separately if theft is a big problem. Make sure that all refunds for this and other materials are made by check not cash. Make sure to get all receipts pertaining to any recycled materials. If a building is torn down on

campus ask the contractor to keep track of the steel recycled as a result.

Other more specialized metals such as silver, gold, copper, brass are some of the other metals generated on a college campus that can be sold for recycling. Collect copper and brass separately from other metals. Silver is present usually in production like radiology, movie and photo studios and microfilm processing. There are devices that can be attached to the sinks that take the silver out of the waste liquids. Dental departments regularly recycle gold fillings and probably have some lead amalgam. Gold can be found in Art studios as well.

Styrofoam Peanuts, Bubble Wrap, and Six Pack Rings

Styrofoam peanuts are plentiful on a college campus and are not recyclable. The good news is that these are easy to get reused. Offer this material to campus departments, mail services, the college bookstore. Other options include local mailing companies (mailboxes etc...) and product distributors. Purchasing styrofoam peanuts is expensive and there are many options for reuse locally.

Bubble wrap is another packing material that has a demand in reuse. Check with mailing services and campus departments before disposing. Bubble wrap is expensive to purchase new and there is always someone who needs it.

There are no recycling markets for block Styrofoam (like computer packaging) and this material is generated regularly on campuses. Currently, this material is trash, unless it can be reused in campus art projects. It is a problem because it doesn't break down in the landfill and is wieldy to place in campus dumpsters.

In a hospital, specimens are shipped in Styrofoam boxes that usually have a pre-paid mailing label attached. Educate researchers and staff about the label and encourage its' use. There may be some reuse within departments. Some departments have to buy these boxes or might have a secondary use. Keep campus departments informed of items like styrofoam blocks as there may be an occasional request for this.

Another method is to encourage departments to return styrofoam items back to original vendor with a note requesting that the material is reused or recycled. Unfortunately, often computers and other items, are purchased without bids or vendor agreements. Work with campus procurement to include a clause encouraging waste reduction of packaging in vendor contracts and services. Include language that requires vendors to provide reduced waste packaging/products, with a preference for products/packaging that will be taken back and reused by the vendor or at a minimum, can be recycled compatibly with the campus recycling program. Keep campus departments informed of the need for these options for purchases that don't go through procurement. If purchasing is de-centralized, keep departments informed on opportunities to reduce campus waste through purchasing.

Six pack rings are being collected and recycled. These are generated through the campus vending contract, in campus kitchens and small campus convenience stores. Work with these areas to encour-

age vendor take back as part of the purchasing agreement. Check with the processor that handles campus plastics, to determine if there is a market locally.

A company called ITW Hi-Cone will send pre-paid mailing slips. Package the rings and send them off. The easiest way to do this through the soft-drink supplier. Since the soft drink vending company fills drink machines, arrange to have the rings “taken back” as opposed to ending up in a large pile in the garbage can next to the vending machines. If the recycling program ends up handling these, work with the vending company to collect and centralize these.

Local schools have been known to use six pack rings to make pot holders, snowflakes and even volleyball nets. If nothing else, try and locate organizations that might use these for craft projects (including on campus child care centers).

Go to related links...

Tracking

On most of these items listed above, the largest part of the job will be tracking the amount of materials generated and determining how materials are being disposed. Establish a variety of tracking systems that include a comprehensive documentation of the campus waste stream while separating out areas and materials: special wastes, composting/organics, reusable supplies, housing areas, facilities, student union. Keep record of cost of recycling disposal and revenue paid. Tracking is the most important documentation for a recycling program as it provides endless information that will support the existence of the program while documenting cost effectiveness which could be re-invested into future efforts.

See Chapter 26

Universal Waste

The EPA claims that regulations have streamlined hazardous waste management standards for the federal universal wastes (batteries, pesticides, thermostats, and fluorescent tubes or lamps). The regulations govern the collection and management of these widely generated wastes. This facilitates environmentally sound collection and increases the proper recycling or treatment of the universal wastes mentioned above.

These regulations also ease the regulatory burden on retail stores and others that generate or wish to collect these wastes. The regulations facilitate the development of programs to reduce the quantity of these wastes going to municipal solid waste landfills or combustors. It also assures that the wastes subject to this system will go to appropriate treatment or recycling facilities pursuant to the full hazardous waste regulatory controls.

States can modify the universal waste rule and add additional universal waste in individual state regulations. Check with the state for the exact regulations that apply.

More and more recycling programs are handling the disposal of universal wastes. It is common to have recycling employees collect, store and monitor these wastes. Consult with the safety department to ensure that the program meets the state guidelines for universal waste. It can be very expensive to dispose of these wastes and not all of these can be recycled. There are plenty of contractors available to manage this waste stream. Make sure to work with a reputable contractor. If the material is being collected for recycling, check out the recycling facilities and/or get a certificate of disposal to guarantee that items are being disposed of/recycled properly. There have been issues with items getting dumped illegally.

Go to Universal Waste related links...

Resources

Automotive (tires, batteries, oil, antifreeze, oil filters)

Automotive Service Equipment

<http://www.asedeals.com/ARU2.html>

Battery Council International

<http://www.batterycouncil.org/recycling.html>

EPA Antifreeze Factsheet

<http://www.dtsc.ca.gov/PollutionPrevention/VSR/vsrfactsheets/Antifreeze-recycling02.pdf>

Filter Manufacturers Council

<http://www.filtercouncil.org/>

Rechargeable Battery Recycling Corporation (RBRC)

<http://www.rbrc.org/index.html?sp=true>

Steel Recycling Institute

<http://www.recycle-steel.org/index2.html>

Toolsource.com

<http://www.toolsource.com/ost1/default.asp>

Used oil recycling .com

<http://www.classfd.com/index.cfm>

Cassette Tapes (Audio and Video), CD Roms and Diskettes

ECO MEDIA

<http://ecomedia.net/>

Greendisk, Inc.

<http://www.greendisk.com/>

VidTape Inc

340 Eastern Parkway

Farmingdale, NY 11735

Phone: 516.454.1234 x222

Takes CD's & DVD's. Ship UPS, sender pays for shipping, no charge for recycling

Lacerta Group recycles magnetic media and plastic products

<http://www.lacerta.com/recycling/index.htm>

Polymer Recovery Services

Phone: (408) 748-9715

Polymer Recovery Corporation

Phone: (704) 391-2470

Plastic Recycling Incorporated

Phone: (317)-780-6100

Cell Phones

Collective Good

www.collectivegood.com

Pledge a Phone

<http://www.pledgeaphone.com/about.html>

Wireless Foundation

<http://www.wirelessfoundation.org/12give/>.

Chemical and Hazardous Waste

Carolina Recycling Association Household Hazardous Waste Council

<http://www.cra-recycle.org/hhw.htm>

CBG Biotech (solvent recycling company)

<http://www.cbgbiochem.com/>

Clean Harbors

http://www.cleanharbors.com/http://www.cleanharbors.com/Sites/TD_Site/Recycling_Tech/recycling_tech.html

EPA

<http://www.epa.gov/epaoswer/osw/hazwaste.htm>

Mercury Poisoning Reduction State Legislation

<http://www.serconline.org/mercury/stateactivity.html>

Clothing and Canned Food

Goodwill

http://www.goodwill.org/index_gii.cfm/517/

Kidney Foundation (may collect various donations in your community)

<http://www.kidney.org/>

Salvation Army

<http://www1.salvationarmy.org/>

Text of Emerson Good Samaritan Food Donation Act

<http://www.usda.gov/news/pubs/gleaning/appc.htm>

Computers

Computer Donations

www.cristina.org

GRRN Computer Take Back Campaign

<http://www.grrn.org/e-scrap/index.html>

Dell Exchange

http://www.dell.com/us/en/dhs/topics/segtopic_dell_exchange.htm

Gateway Trade-ups

<https://www.gateway.tradeups.com/welcome.asp>

Donate used computers with a national nonprofit group

<http://www.usedcomputer.com/nonprof.html>

State-by-state listing of organizations that recycle computers
http://www.microweb.com/pepsite/Recycle/recycle_index.html

Donate computers to a charity or school
<http://sharetechnology.org/>

Computer recycling options by zipcode
<http://www.cleanup.org/Default.asp>
University of Massachusetts at Amherst
http://www.oit.umass.edu/publications/at_oit/Archive/faloo/campbell-recycle.html

The Orion Blue Book
www.orionbluebook.com

Film (Transparencies, Radiology, Print Shop, Art Studios, etc.)

3M™ Transparency Film Recycling Program
http://www.3m.com/us/office/meetings/product_catalog/trans_recycle.jhtml

Diagnostic Imaging
<http://www.diagnosticimaging.com/>

ECOMEDIA
<http://ecomedia.net/>

Furniture, Office Equipment, Miscellaneous

Arizona State University
<http://property.asu.edu/surplus/index.cfm>

University of Vermont
http://www.uvm.edu/~uvmppd/Services/Recycling_and_Solid_Waste/

Imaging/Copier Supplies

Canon
<http://www.canon.com/environment/index.html>

HP Recycling
<http://www.hp.com/hpinfo/community/environment/envprogram/index.htm>

Recycle First (Ink and Laser jet cartridge recycling)

<http://www.recyclefirst.com/>

Recyclers USA

<http://www.recyclersusa.com/>

Xerox

Click Here To Visit...

Junk Mail

Get Off the List

<http://opt-out.cdt.org/submit.shtml>

Mail Preference Service

<http://www.dmaconsumers.org/offmailinglist.html>

N.C. DPPEA junk mail site

http://www.p2pays.org/main/junk_mail_optout.asp

Privacy Rights Clearinghouse

<http://www.privacyrights.org/fs/fs4-junk.htm>

University of Oregon Campus Recycling Junk Mail Reduction Campaign

http://www.uoregon.edu/~recycle/events_topics_junkmail_text.htm

Office Supplies

R.O.S.E. (Reusable Office Supply Exchange)

http://www.uoregon.edu/~recycle/rose_text.htm

See Chapter 10...

Styrofoam Peanuts, Bubble Wrap, and Six Pack Rings

Polystyrene Packaging Council

<http://www.polystyrene.org/environment/environment.html>

RingLeader

<http://www.ringleader.com/quest/welcome.asp>

Universal Waste

Bethlehem Apparatus Company

<http://www.bethapp.thomasregister.com/olc/bethapp/>

Clemson Pesticide Information Program

<http://entweb.clemson.edu/pesticid/saftyed/rns55gal.htm>

Eastern Environmental Tech

<http://easternenvironmental.com/index.shtml>

EPA

<http://www.epa.gov/epaoswer/hazwaste/id/univwast.htm>

Hospitals for a Healthy Environment/Mercury

<http://www.h2e-online.org/tools/mercury.htm>

Pesticide Action Network

<http://www.panna.org/>

Rechargeable Battery Recycling Corporation (RBRC)

<http://www.rbrc.org/index.html?sp=true>

Virginia Department of Agriculture and Consumer Services

<http://www.vdacs.state.va.us/pesticides/disposal.html>

Miscellaneous Resources

University of Oregon

<http://darkwing.uoregon.edu/~recycle/links.htm>

Campus Consortium for Environmental Excellence

<http://www.c2e2.org/>

Colorado Materials Exchange sponsored by the University of Colorado Recycling Services

<http://www-ucsu.colorado.edu/comex/index.asp>

The Consumer Recycling Guide

<http://www.obviously.com/recycle/guides/common.html>

Gifts in Kind

<http://www.giftsinkind.org/>

The Global Recycling Network

<http://grn.com/>

Iowa Waste Exchange

<http://www.recycleiowa.org/>

North American Hazardous Materials Management Association

<http://www.nahmma.org/>

Obvious Implementations Corporation

www.obviously.com/recycle/guides/hard.htm

Pacific.Recycle.Net

<http://pacific.recycle.net/>

Renew resource Exchange

<http://www.tnrcc.state.tx.us/exec/oppr/renew/renewtx.html>

Southern Waste Information eXchange, Inc.

<http://www.wastexchange.org/>



Recycling And Beyond: Chapter 17 *Legislative Compliance*

Recycling legislation has become an important component of successful recycling programs. Research any and all possible legislative action concerning recycling on all levels of government. Continue to follow legislation that affects recycling and solid waste. There are laws that govern recycling/composting and waste management that affect how a campus program is operated. Additionally, the law can be helpful in supporting a campus recycling effort.

National laws have an opportunity to affect recycling through market development in a much broader manner than state laws. The best-known national solid waste legislation is the Resource Conservation and Recovery Act (RCRA). According to the EPA the Acts goals are to:

1. Protect from the hazards of waste disposal
2. Conserve energy and natural resources by recycling and recovery
3. Reduce or eliminate waste, and
4. Clean-up waste, which may have spilled, leaked, or was disposed of improperly.



RCRA has been followed up by a list of rules, regulations and policies. The act specifies how materials need to be managed for disposal.

State recycling laws typically include language that require counties and state agencies to reduce and recycle a certain percentage of their waste stream. These laws can also include recycled product purchasing goals, bottle bills, market development, up front environmental fees for items purchased that are harmful if disposed of improperly (usually called advanced disposal fees), reporting and grant programs.

Most National and State laws will be unfunded mandates. It's up to the local governments to follow the new rules. Money often drives decision making on this level. Local ordinances usually describe how solid waste and recycling programs will be implemented and funded. An example of an ordinance that encourages recycling is called the pay-as-you-throw system.

Pay-as-you-throw systems require residents to pay for solid waste by the bag or size of the container.

Recycling usually does not require a fee. Other funding options often applied include general taxes where the amount of money paid is rolled up into a larger amount and not broken out for the consumer to see and solid waste fees that show up as a separate line item on the property tax bill. Neither of these options encourages waste reduction or recycling. Some communities pay private haulers directly for collection services. The private haulers usually bid on the government contract.

Many state systems of higher education and individual schools have implemented policies that require recycling and buying recycled. These policies are often called recycling, sustainability or environmental policies. The student policy arm, Student Government, can also have a big effect on the administration by passing bills that support starting or improving recycling programs, buying recycled products or increasing student fees for recycling.

Though legislation is an important tool in supporting the institutionalization of recycling programs, its implementation is dependent upon the support and desire of folks willing to work towards a law's success. Having a law, doesn't guarantee the success of recycling. Laws of this genre must be accompanied by incentives and consequences to support the action the law is mandating. Find out if state or local government has a recycling law. Utilize laws and policies to support campus efforts in establishing, implementing and augmenting recycling programs. These laws have been very successful tools for establishing recycling programs at universities and colleges. Laws that require reporting are also helpful in supporting materials tracking. Tracking materials, performing cost benefit analyses and legislative compliance are very powerful tools in establishing and maintaining recycling efforts.

Resources

Bottle Bill Resource Guide

<http://www.bottlebill.org/>

European Recycling and the Environment

<http://www.tecweb.com/recycle/eurorec.htm>

US EPA Laws and Regulations RCRA

<http://www.epa.gov/epaoswer/osw/laws-reg.htm>

US EPA Laws and Regulations

<http://www.epa.gov/epahome/lawreg.htm>

Municipal Solid Waste by State

<http://www.epa.gov/epaoswer/non-hw/muncpl/states.htm>

Raymond Communications Recycling Laws Update

<http://www.raymond.com/>

Sustainable Campus Policy Bank

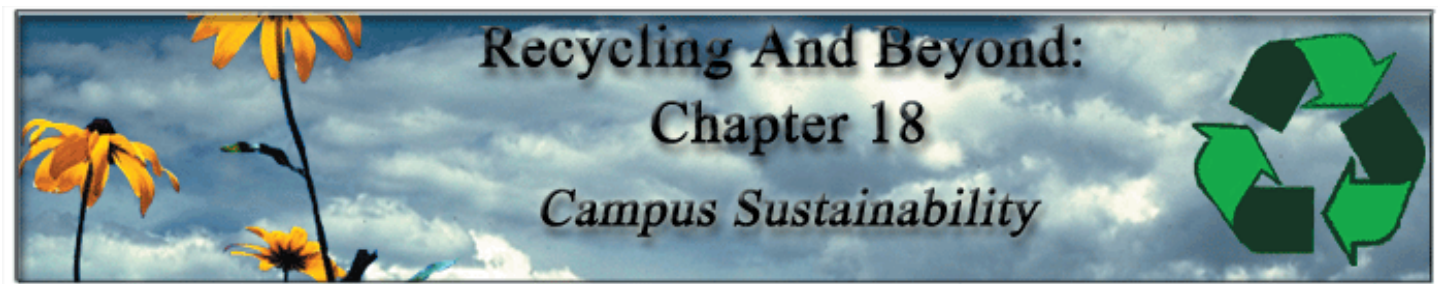
<http://192.197.196.001/educate/policybank.asp>

The Talloires Declaration

http://www.ulsf.org/programs_talloires.html

University of Oregon Policy Page

<http://darkwing.uoregon.edu/~recycle/UOPolicies.htm>



History

The idea of global sustainability, which focuses on the human relationship to the environment, has been evolving through history. Some experts have traced its origins back 4000 years to the beginnings of agriculture and irrigation. Go to related links...

Other references of the idea of sustainability, include the industrial revolution (1750 and onwards) and more recently, the United Nations Environmental Program(UNEP) and the National Environmental Protection Act (which was the catalyst for the creation of the US Environmental Protection Agency). The idea grew further through the UN Earth Summit in 1997 and the Sustainability Summit in 2002. The idea of sustainability has been around for centuries. It is being manifested, redefined and implemented in modern practices, and colleges are leading the way.

What Is Sustainability?

According to Webster's dictionary, sustainability can be defined as follows:

Main Entry: sus tain able

1. capable of being sustained
2. a : of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged <sustainable techniques> <sustainable agriculture> b : of or relating to a lifestyle involving the use of sustainable methods <sustainable society>

The definition from Webster's is the foundation of the general meaning of sustainability. The idea of sustainability has taken on many forms and has been interpreted and implemented from many perspectives.

College Sustainability Overview

College campuses are becoming the garden of sustainable practices. Solid waste and recycling issues have been the foot in the door for campuses to evolve into other sustainable campus practices such as resource conservation, composting, sustainable building, environmentally preferable purchasing and environmental studies. Many college recycling programs have been evolving to define and implement sustainable campus practices.

College recycling coordinators are being brought in to the discussion on extended campus environmental responsibility. As a result, many college solid waste and recycling coordinators are evolving to

become campus sustainability coordinators.

As the outside world evolves on the issue of sustainability, higher education is finding unique opportunities to be involved in the global discussion and modeling of sustainable practices. Governments, industry, business, academia and local communities are embracing key elements of sustainable practices and are instituting policies, practices and theories on how sustainability works. The Natural Step is one such organization.

The Natural Step

The Natural Step has been one of the most outspoken leaders in the discussion and implementation of sustainable practices globally. The Natural Step is an international organization that uses “a science based framework to help organizations and communities understand and move towards sustainability. The Natural Step engages in training and consulting, research and development and community outreach.”



The Natural Step has defined a technical framework for organizations to follow. The basic premise is to recognize human impact on the environment while identifying practices to reduce this impact and establish systems that result in continuous cycles, which are renewable. Many colleges, businesses, industry and government agencies are embracing The Natural Step. As a result, these

agencies are working to implement sustainable systems in all areas of business, commercial, government, industry, school and home environments. The Natural Step offers workshops and shorter presentations, all over the world.

College Sustainability Practices

College campus sustainability is taking on numerous forms. Here are some examples of what colleges are doing on sustainability:

- *performing benchmark and sustainable campus assessments
- *developing campus environmental and sustainability policies
- *creating long range sustainable campus plans
- *developing and implementing sustainable development guidelines
- *implementing sustainable events programs (use of real foodware, reduced waste, use of graywater systems, alternative and reduced energy)
- *implementing resource conservation programs and using savings to purchase windpower
- *creating model sustainability demo houses

- *creating model waste reduction programs that encourage waste reduction, reuse, recycling and composting
- *streamlining transportation to and from, such as purchasing bus passes for all university students, staff, faculty and administration
- *green building and c/d waste recovery programs
- *installing passive solar systems

These are just a few examples of the exciting sustainability projects that colleges are implementing. These practices save resources, create continuous systems and renewable resources. Sustainable college practices provide an opportunity for students to be involved in real world issues. This has been manifesting impressive results as students leave campuses and continue work on sustainability, to help alleviate some of the worlds problems. Truly, the goal of higher education.

Funding Opportunities

Colleges are managing to incorporate the sustainability agenda by integrating practices into existing campus operations and academia.



One of the greatest challenges of sustainability, is finding the funding to create new programs and projects. As the world becomes more environmentally educated, there is more interest from donors to support campus environmental practices. With the plethora of students demanding environmentally focused academics, there is a new generation of alumnus who are interested in contributing to campus sustainability. With this in mind, there is an opportunity for fundraising.

Colleges are beginning to build funding opportunities to support existing sustainable programs and work towards a sustainable future. Though not covered here, there are grant and foundation opportunities as well. A good example of this is through Harvard University. Harvard has a Green Campus Initiative which includes a \$3 million Green Campus Loan Fund for capital and non-capital projects. This endowment is just one of the opportunities for developing green/sustainable campus projects.

Resources

Alternative Fuels Data Center

http://www.afdc.doe.gov/refueling_mapsite.shtml

Blueprint for a Sustainable College Campus

<http://www.princeton.edu/~rcurtis/earthsum.html#Blueprint>

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EPA New England's College and University Home Page
<http://www.epa.gov/NE/assistance/univ/index.html>

Global Ecovillage Network
<http://gen.ecovillage.org/>

Good Company
<http://goodcompany.cc/gc/>

Green Campus Loan Fund
<http://www.GreenCampus.harvard.edu/gclf/index.html>

Harvard Green Campus Initiative Vision
<http://www.GreenCampus.harvard.edu/about/vision.html>

HSU Campus Center for Appropriate Technology
<http://www.humboldt.edu/%7Eccat/>

Leadership in Energy & Environmental Design (LEED™)
http://www.usgbc.org/LEED/LEED_main.asp

The Natural Step
<http://www.naturalstep.org/>

Second Nature
<http://www.secondnature.org>

South Carolina Sustainable University Initiative
<http://www.sc.edu/sustainableu/>

Sustainable Buildings Industry Council
<http://www.sbicouncil.org/>

The Sustainable Business Network (SBN)
<http://sbn.netforchange.com/>

Sustainability on a College Campus: A Tool Kit (College Env. Policy Bank)
<http://iisd.ca/educate/default.htm>

The Talloires Declaration
http://www.ulsf.org/programs_talloires.html

University Leaders for a Sustainable Future (ULSF)
<http://www.ulsf.org/>

University of Tennessee's Energy, Environment and Resources Center Education for Sustainable Development Toolkit

<http://www.esdtoolkit.org/>

U.S. Department of Energy's Smart Communities Network

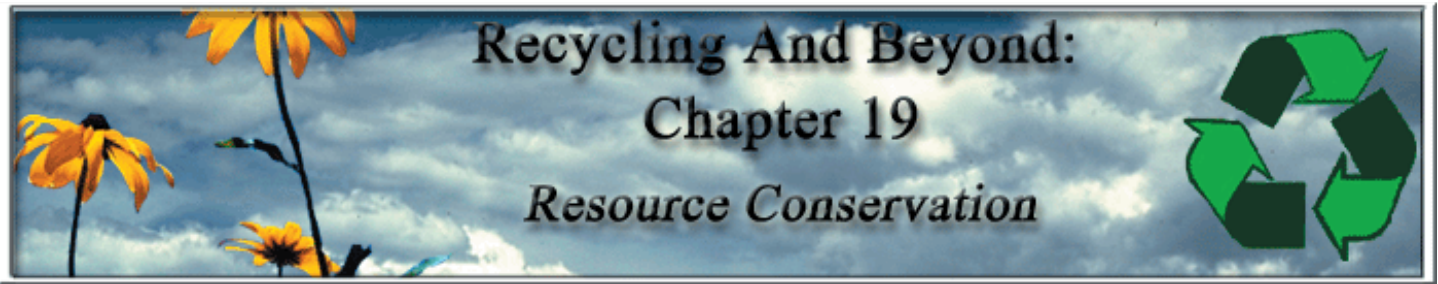
<http://www.sustainable.doe.gov/>

World Energy

(http://www.worldenergy.org/wec-geis/publications/reports/liow/the_concerns/sustainability.asp)

Yale University

<http://www.yaledailynews.com/articlefunctions/Printerfriendly.asp?AID=20148>



College Recyclers have been demonstrating that individuals play an important role in campus resource use. As a result, many college recycling coordinators, managers, directors and the like, are being drawn into discussions on campus resource conservation. College recyclers are being involved in research, brainstorming, networking on what other campuses are doing, and developing educational activities to reduce energy/water and resource use on campus.

Education is an important tool in reducing campus impact. With new challenges in energy and water use, resource conservation education is playing an important role in creating individual awareness. By challenging people to use less and educating them on their impact, like with recycling, small changes have big results.

College campuses have the greatest resource in students. Utilize students for internships, class projects and independent study. (Professors in all disciplines are always looking for relevant class projects for students. Journalism students can create an advertising campaign. Business students can perform a survey. Environmental Studies students can give “class raps” on resource conservation.

Utilize a variety of methods to reach the diverse population of campus. Target message to groups as needed (students, faculty, staff, administration). People respond to different cues so it is a good plan to alter methods of educating the public (For example: use newspaper and radio advertising)

Here are some resource conservation education ideas:

- *make an energy conservation logo(s)
- *create a list of 10 things individuals can do to reduce “Campus Environmental Impact”...make a 1/2 sheet flier and send to all campus departments ask them to post, include in all new employee/student information
- *make conservation stickers “Use Wisely”: apply as needed to printers, copy machines, light switches and over water faucets
- *use sticker designs for banners, post around campus in strategic spots
- *use sticker designs for ads in the paper
- *do advertising on campus radio station (30 seconds costs \$10)
- *put energy tips/factoids in faculty/staff newsletter

- *encourage the student paper to cover global energy issues and also focus on what the campus is doing and how people can help
- *generate press releases that feature impacts of use and how conservation helps
- *install light switch sticker covers to remind people to shut off lights (add a catchy phrase: Shut off lights, every watt counts!)
- *make plastic no glue peel off/stick-on decals for areas that will be occasionally cleaned, these work great on mirrors
- *create and distribute table tents in food service areas, on library tables, with factoids, include information on what people can do to help reduce the impact
- *make decals or posters for back of toilet stalls
- *put up/change occasionally, factoid signs by elevators and building entrances
- *promote positive things that are being done on a public level, for example: “This exit sign is run by a compact fluorescent which uses (x)% less energy than a incandescent bulb”
- *make stickers for computer monitors that say: Use wisely, every watt counts. Help conserve energy, shut off monitor, printer, computer and log off when not in use. Thanks for conserving!
- *create a general campus brochure about resource conservation efforts on campus; distribute in all new employee and student packets
- *make portable displays/posters for around campus
- *regularly display factoids on university website
- *make an campus energy conservation webpage, display university energy use facts, provide information on how individual actions help (footnote all facts!)
- *write up a “class rap” to send to all professors, ask them to read it in class OR have an intern go around to all classes and give a short rap on the issue of resource use and conservation
- *create resource conservation class, institute campus projects
- *hire students (or enlist a class or student volunteers) to walk around campus and shut off lights and computer monitors (they can wear t-shirts to promote conservation)
- *incorporate placement of decals on light switches etc.. into above mentioned project
- *create a “Report Wasted Energy” decal and put in all classrooms and departments, let folks report

energy waste

*create a listserv of on-campus staff for contacts

*send conservation info, updates to all department contacts

*have an energy person go to department meetings and discuss things individuals can do and explain how to heat and cool areas in resource efficient manner (this will give folks a chance to ask questions and work as a team to reduce energy such as use of space heaters and air conditioners)



*break down myths (For example: people think that computers have energy saving devices so why shut off a computer? Because even on low energy, the computer is still drawing energy. Shutting it off reduces the energy use to a trickle.)

*get support from the President of the University through a campus “directive” on energy use, especially limiting abuse of energy system (leaving heat on high all weekend for one person to come in for 2 hours!)

*do regular tabling in public areas

*invite the local utility to contribute displays coupons or free low watt light bulbs, any rebates etc....

or even sell compact fluorescent light bulbs at cost

*do a survey of the campus to find out what areas need education

*find ways to tap into energy being generated in work out facilities: work with campus facilities to set-up all campus exercise bikes power themselves!

*turn down ALL campus hot water heaters

*turn down thermostats to 68 degrees in the winter and 75 degrees in winter

*educate but also innovate: make conservation the rule not the exception. (i.e. lock out hot water cycle on all campus washing machines).

*create incentives for commuters to ride bikes to campus (giveaways, reduced parking passes)

*work with administration to encourage telecommuting, even one day a month

*get the word out through logo decals distributed around campus (Like recycling, a resource con-

ervation symbol is a good way to reach many people!)

Other Ways Universities Can Reduce Energy Use

- *form a Resource Conservation team of facilities managers and encourage development and implementation of educational strategies
- *form a student government task force to assist in getting the word out to students
- *increase maintenance especially on leaking systems...this can greatly reduce energy leakage
- *implement exit lighting project to reduce lighting impact
- *team up with local utility to do projects and share costs (such as sensors etc.)
- *install low use sensors on vending machines
- *install energy sensors on zipstrips (surge protector strips) for use on non-essential electrical items (plug loads still draw energy)
- *evaluate possible easy solutions to heating and cooling such as adding shades, planting trees etc.
- *sponsor energy challenges in the dorms to reduce energy use, award prizes (see Ohio University energy challenge info below)
- *work with local bus company to develop a campus contract to provide free bus service to the campus community (student government will help with a financial contribution to provide this service)
- *investigate server software to power down campus monitors and computers from a central server (see resources below)

Sample of Resource Conservation Tips for Campus Users:

Resource Conservation Information for Students and Staff

Ten Things You Can Do To Reduce University of ---- Environmental Impact

1. Report Wasted Energy and Water
Contact Facilities Services at ---- to report any drips or lights left on.

2. Reduce Paper Use

Do not print large quantities of web pages, report drafts, or class notes. Reuse bags, envelopes, and scrap paper. Make double-sided copies, use route slips, and electronic communication when possible.

3. Turn Off Lights When Not In Use

Buy fluorescent desk lamps and replacement bulbs instead of incandescent or halogen ones.

4. Turn Off Monitor When Not In Office Or Room

Turn off computer when not in use. Buy energy efficient computer equipment with the Energy Star label

5. Buy Products Containing Recycled Material....So we can recycle the products we buy!

6. Bike, Walk, Carpool, Or Take The Bus

Remember, the bus is FREE to the U--- Community... Just show your campus I.D.

7. Conserve Water

When washing your hands, use only enough water to wet your hands and rinse off the soap. Turn off the faucet in between these times. Every drop counts!

8. Regulate Your Own Temperature

Dress appropriately for the season. Wear sweaters during winter instead of turning up thermostats and using space heaters. Use energy wisely!

9. Avoid Disposable Products

Use a refillable mug (available at Campus Recycling). Reuse shopping bags (or buy a canvas one). Select products with reduced and recyclable packaging.

10. Recycle Used Materials

Paper, cardboard, and beverage containers can be recycled in designated sites around campus.

Thank you for conserving resources and recycling at the University of -----.

Ohio University's Energy Challenge

In Fall 2001, Ohio University did an energy competition called the Energy Bowl in the residence halls. There are 41 residence halls at Ohio University. The competition lasted 10 weeks. 15% of the savings went back to the halls in the form of a check as 9 halls got prizes. The money was a kick back from energy savings.

All halls competed with each other in their areas (3 campus areas). At the end of the 4 weeks, top

halls from each area competed for the rest of the competition, 3 halls from each area. Each was ranked 1st, 2nd and 3rd for a total of 9 winners. There was a quarter final competition, which narrowed the 9 winners down to 3 first place winners. Then to a semi-final, then final, which determined the overall 1st, 2nd and 3rd place winners. The Energy Bowl took the top hall and competed with another close by college for the grand pooba prize. The 3 hall winner got PR during homecoming, reps from each winning hall had their photos taken with the President and put in the newspaper. Each resident hall in the top 9 halls, got cash awards (money went to hall councils for fun stuff):

1st place hall winners \$1,346

2nd place hall winners \$561

3rd place winners \$337

Additionally, the competition was complemented by an “Energy Week” during the middle of this.... lots of speakers, giveaways, information tables, energy fair with companies displaying energy conservation products, contests on factoids (with prizes like a piece of pizza), career info. on energy, local kids were asked to participate. In the middle of this week, the town Mayor issued a proclamation designating an Energy Conservation Week, there was an alternative energy car show (including an electric race car...whohoo!)

At the end of all of this, there was also a banquet for all of the winners. Housing provided the banquet at no cost. The banquet included recognition of halls and waste busters who participated. The average amount each hall reduced was 20%. Of course each hall is on a separate meter so it makes it easy to monitor the use.

The total energy cost reduction was \$75,000 over a 10 week period. The total cost of implementing the program was ~\$18,000. Those costs went towards paying student workers to carry out the program, 2 student executive directors got \$500 each, plus 5 student assistants got \$200 each, 14 other student waste busters for \$75 each.

This was done as a project with a student group called Wastebusters PLUS the consulting agency (including meter readings, admin work, signs, t-shirts, ads, a float in the homecoming parade, table tents, other promotions (including a “beat writer” to keep the stories flowing in the student paper. A student also did a video about this which was included in the cost and aired on public and campus TV. They worked with the Residence Hall Assistants to promote the program. This was endorsed by the Student Senate which passed a resolution to support this. The idea is to make this an annual competition with follow up education and promotion during the year. A little invested and a lot saved! Kudos to Ohio University for this innovative resource saving competition!

Resources

University Conservation Programs:

University of Buffalo Green Computing

Chapter 19 - Resource Conservation

<http://wings.buffalo.edu/ubgreen/>

Iowa State University

<http://www.fpm.iastate.edu/utilities/energyefficiency/>

University of Michigan

http://www.plantops.umich.edu/utilities/energy_management/conservation_guide.html

University of Texas Medical Branch

<http://www2.utmb.edu/supserv/energy/enerhme1.htm>

Western Michigan University

<http://www.pp.wmich.edu/ms/ec/index.html>

Other Resources

DOE, (EnergyPlus)

http://www.eren.doe.gov/buildings/energy_tools/energyplus/

EPA (Energy Star)

<http://www.eere.energy.gov/buildings/energyplus/>

Total Efficiency Network (TEN)

<http://www.energy.wsu.edu/ten/>

University of Oregon Campus Recycling Resource Conservation

<http://www.uoregon.edu/~recycle/Conservation.htm>

Water Conservation Tool

<http://www.eere.energy.gov/femp/index.cfm>

Recycling And Beyond: Chapter 20 Education and Promotion: Getting The Word Out



Promoting the idea of recycling/waste reduction and your program, is essential to the success of this practice. Unlike most operational areas, recycling/waste reduction implementation requires a change in the cultural behavior. In order to implement this system, creative education and promotional activities must compliment the operations. It is important to train folks to incorporate a new practice into daily activities. The goal includes refocusing our way of thinking as a culture.

Recycling is just one step from the garbage can and is just a stop gap measure. The larger picture involves waste reduction and material reuse. This involves pre-cycling, which is consuming less by buying products that are not disposable and instead choosing things that can be fixed. Pre-cycling also involves choosing products that are minimally packaged in recyclable packaging. Additionally, in order for recycling to be successful, there needs to



be a demand for the materials. This demand is only created through consumers demanding recycled content products. Recycling is more than just another garbage can, it involves closing the loop. Reduce, Reuse and Recycling...this maximizes resources. The key to the success in closing the loop is through excellence in education and promotion of these ideas to the culture while stimulating a consciousness that follows this path: “Buy Recycled Products So We Can Recycle The Products We Buy”.

Where to Begin?

Where to Begin?

When considering educational opportunities, remember there is not one panacea for getting the word out. People respond to different cues. Some respond to pictures, others to printed words. Diversify educational/promotional activities, which will increase the opportunity to reach more of the campus community.

There are many opportunities to implement waste education into all campus practices. Incorporating this information into all program materials and operations is just the beginning.

There are several things that can be done with printed materials, but promoting waste reduction and recycling is also something that can be coordinated into actual activities and events such as Earthday and America Recycles Day. There are many opportunities to promote the idea of waste reduction and recycling and also promote the campus and program in the process.

Promoting recycling and waste reduction can be inexpensive or involve higher costs. There are many options that are effective. The key is to be creative and resourceful but be sure and not to be limited to just one strategy. Being on a college campus is a plus. There are numerous resources in an educational institution. Professors are always looking for practical application projects for classes. This is especially true in journalism and advertising classes. College classes are a good place for students to do projects that can be utilized within a class and also benefit a recycling program. Professors are often open to incorporating these projects into their classes. Through classes, internships or practicums, students can produce brochures, business plans, waste stream analysis, posters, ad campaigns, the list is endless. Being on a college campus is a bonus as there is a diverse population of experts and students who are looking for real life hands-on experiences to compliment academics.

With the new generation of computer literacy, there is a huge opportunity to get students to produce graphics and web site materials at little or no cost. The program gets some free PR materials and the students get an opportunity to see work published. This is a great opportunity for students to build portfolios and gain practical experience.

Program Visibility

Recycling Programs on college campuses serve another important function for Universities: great PR! Recycling Programs offer great PR opportunities for Universities just merely by the presence of recycling systems on campus. When students preview Universities to attend, seeing recycling containers gives a message that the school has an environmental awareness and cares for the campus community.

Additionally, as institutions of higher education, our job is to create contributing community citizens. After all, "Recycling IS Higher Education!"

Here's a list of some great basic ideas to begin educating on campus:

*create a program name

Many campuses call the recycling department: "Campus Recycling". Others incorporate the name of the school for example: "Vermont Recycles". Due to the inconsistency of where recycling programs end up being administered, it is important to create a name that makes the program accessible. Folks do not automatically know that the recycling department is located within facilities or the administration or student government. Additionally, recycling programs are very unique in being an operational function that involves much more administration than typical trade or custodial functions. Recycling Programs also incorporate ed/promo into operations and involve other aspects such as creating conservation practices within existing University procedures. With good PR and convenient collections, waste management will become an economic success.

*create a catchy program logo

This can be put on all recycling collection stations, program vehicles, signs, printed materials, employee T-shirts, newsletters, posters, recycling containers. A program logo is the foundation for building a recycling program. It identifies the program and also inspires the practice. This could just be as simple as utilizing the generic recycling symbol with the name of the college.

- *design a materials collection poster using program logo, graphics, sorting guidelines

Don't make this too wordy. Establish clear common sense guidelines.

- *set-up user-friendly, aesthetically pleasing recycling collection sites

A strong presence is the best education strategy. Most college recycling programs have inexpensive collection containers. Keep these well signed and clean, which can make up for any aesthetic issues.

- *create decals and/or signs, for labeling all collection containers

This works best in conjunction with posted sorting guidelines.

- *create recycling program brochures that can be included in new student/employee packets, these are a valuable resource to introduce this practice into daily life on campus

- *create a program website

At a minimum, post operational information on a website. A materials list, site locations and resource guide is helpful to the campus community.

- *create a self service recycling information center located in the student union

- *create annual/bi-annual campus waste reduction newsletters, keep the campus staff and student newspapers informed

- *create a department list serve that the program can utilize to keep campus departments informed

- *create an awards/recognition program for campus departments, groups and individuals

- *solicit media coverage to promote program projects and successes

- *perform a waste audit in front of the student union

- *work with student union food service and nearby campus food vendors to provide cheap refills with refillable cups

- *make refillable cups with the program logo, sell at all campus food areas, use these for giveaways, also give all new employees and new students refillable mugs (this promotes the program and

reduces campus waste)

*include helpful hints, facts and other sayings on university literature including messages on pay-check envelopes and course schedules

*give away's are great PR (refillable mugs, reusable lunch bags, etc....a lot of on-campus and local businesses will donate items as well)

*put messages on magnets that can be attached to campus service vehicles, be sure and identify program trucks

*create multi-lingual program posters for international students

This is a great project for academic credit. These can be useful in areas where large populations of international students (often with children) reside on campus or in family housing areas.

*create generic posters with photographs of what category is being collected

*set-up displays that can be put in various locations on campus. Set-up displays and bulletin boards in areas on campus that have display cases etc...

*make table tents to put in campus dining areas

*door hangers work great for info. in housing areas

*make signs with all kinds of factoids and place them around campus

People love facts! Put interesting facts on stakes and get permission to set them throughout campus.

*advertisements in the campus newspaper help get the message across

*offer presentations in campus departments and classes

*offer program tours

*program surveys are not only informative but educational

*plan activities for Earthday, Recycling Awareness Week and America Recycles Day

There are endless ways to promote waste reduction and recycling on campus. Enlist students to help determine what works to get attention. There's some great ideas that come from brainstorming.

Resources

California Integrated Waste Management Board

<http://www.ciwmb.ca.gov/Schools/Curriculum/default.htm>

DEQ Waste Prevention and Management

<http://www.deq.state.or.us/wmc/solwaste/edu.html>

EPA - Kids, Students, and Teachers

<http://www.epa.gov/epahome/students.htm>

Global Learning and Observations to Benefit the Environment

<http://www.globe.gov>

Grassroots Recycling Network

<http://www.grrn.org>

Recycling Resource Project

<http://www.recyclingproject.com>


Sharing Environmental Education knowledge

<http://www.seek.state.mn.us>

University of Oregon Campus Recycling Ed/Promo Section

http://darkwing.uoregon.edu/~recycle/edu_promo.htm

Recycling And Beyond: Chapter 21 *Policies*



A policy is a written course of action adopted by an organization designed to influence and determine decisions. With that said, it is a good thing to have a campus environmental policy. Policies formalize a university commitment while supporting existing campus environmental efforts and inspiring further environmental stewardship. There is a perception that policies, like laws, are worthless unless they are enforced. Policies are a valuable mechanism for building bridges and ultimately to protect campus environmental programs.



Many colleges and universities are developing policies that encourage waste reduction, recycling and general environmental stewardship. These policies are often called recycling, sustainability or environmental policies. A strategy is to develop a comprehensive campus environmental policy as an umbrella for development of future sub-policies.

Policy implementation involves notification and follow-through, but ultimately it takes education and making conservation the practice not the exception. When making policies, make sure to provide the tools needed to make the policies successful. **MAKE CONSERVATION THE RULE AND WASTE THE EXCEPTION!!**

How to develop a campus environmental policy:

- 1) find out how the campus is governed

There may be a clear path to having a policy written and approved or the path may be very complicated.

- 2) enlist the Campus Environmental Issues Committee to help create environmental policies
- 3) research other campus environmental policies
- 4) determine what type of policy to create: a general policy or a comprehensive policy
- 5) if there is a law that backs up the need for a policy, site the law in the policy
- 6) submit the policy for approval

It will be up to the administration and the board of directors to approve the policy.

7) make a plan to implement the policy

This plan can be a part of the policy or not. It can be a separate document submitted with the actual policy or not. Include the following:

- a. purpose
- b. detail description of goals and strategies for implementation
- c. education ideas

8) make sure to follow up, review and update the policy

9) Student Government, can also have a big effect on the administration by passing campus “bills” that support starting or improving recycling programs, buying recycled products or increasing student fees for recycling

10) do continual reminders and education annually, to remind campus about these important campus environmental policies

IMPLEMENTATION COMES FROM EDUCATION!

In summary, campus environmental policies, make for a strong advocate for campus recycling programs.

Resources

Association of University Leaders for a Sustainable Future (ULSF)
http://www.ulsf.org/programs_talloires.html

International Institute for Sustainable Development (IISD)
<http://iisd.ca/educate/default.htm>

Second Nature
<http://www.secondnature.org/>

Uedge.org
<http://www.bigtenu.org/>

UO Comprehensive Environmental Policy
http://darkwing.uoregon.edu/~recycle/Pol_Compre.htm

UO Confidential Materials Policy

http://darkwing.uoregon.edu/~recycle/Pol_confidential.htm

UO Recycled Paper Policy

http://darkwing.uoregon.edu/~recycle/Pol_Recpaper.htm

UO Sustainable Development Guidelines

<http://darkwing.uoregon.edu/%7Euplan/sustainable.html>



Committee involvement is an important component of establishing and maintaining a campus recycling effort. Establishing a campus committee to address waste, resource and environmental issues, can be valuable in many ways. These committees can work to create and implement, advocate, develop, support and generate funding for college recycling programs. Committees are a good place to garner support and create a campus environmental policy, sustainability guidelines and other waste reduction/resource conservation efforts. Additionally, these committees are valuable to educate and involve the campus community in environmental initiatives. Many schools are implementing committees that deal with recycling, waste management, resource conservation and environmental issues.

Here's an example of some college committees:

Solid Waste Advisory Board

Environmental Issues Committee

Recycling Committee

Waste Management Board

Campus Sustainability Committee

Green Team

Official college committees are typically created by the President's office and require faculty, staff and administration participation. Some schools include students on the committees as well, though it is difficult to recruit contributing students to committees.

There are also opportunities to create internal or informal committees that are not necessarily sanctioned by a College President. The ones sanctioned by a college typically have chain of command, a formal structure of membership and a charter. Additionally, these committees have reporting requirements as well. Other informal committees can be just as effective in making recommendations and supporting campus environmental stewardship. The key is to involve influential dedicated players in the effort. There is a lot of work that a committee can do but it takes people who are interested in environmental issues and are willing to contribute to the effort.

Besides college recycling committees, it is worthwhile for campus recycling programs to be represented on city, county, state, national, professional committees that deal with waste management and college operations as well. Check with the local/regional area to identify committees that exist on these

issues. As a college, it is important to be represented on these committees.

The government type of committees, will keep the program current on laws, operations, changes, future plans etc. This could effect the way that the recycling program is operated. Professional types of committees, provide an opportunity to network and partner with other professionals, which plays an important role in being resourceful. All of these committees help a college recycling program gain visibility, take an active role in waste management, help stimulate recycling practices in the greater community and provide access to resources and networking, all which enhance a college recycling effort. All of these committees also give the program a chance to be represented and open the door to influence issues beyond the campus community.

Resources

Lane Community College Recycling Committee
<http://www.lanecc.edu/presoffc/committee/recycle.htm>

National Recycling Coalition/College and University Recycling Council
<http://www.nrc-recycle.org/>

Sustainable Bowdoin College
<http://www.bowdoin.edu/sustainablebowdoin/currentprojects.shtml>

Texarkana College Earth Club
<http://www.texarkanacollege.edu/earthclub/committees.php4>

University of Oregon Environmental Issues Committee
<http://darkwing.uoregon.edu/%7Eeic/>

Recycling And Beyond: Chapter 23 *Networking and Outreach*



Involvement in professional organizations and committees is an important opportunity for recycling professionals. These organizations and committees provide professional information, resources, support, networking opportunities and input on impact on issues related to any discipline.



There are also several environmental focused “listservs” available at no cost for participation. A “listserv” allows you to subscribe and enter into a dialogue with other professionals on the listserv. Often times these are available either in a per posting form or a digest can be created that can be read weekly. A “listserv” is an on-line discussion group.

With numerous participants in a “listserv”, there may be discussions that are not relevant to you.

In that case, don’t forget the delete button on your keyboard but don’t give up on a listserv because an occasional topic might come up that doesn’t apply.

There are thousands of listservs addressing endless topics. These can be accessed from an internet search engine. On the internet, search for a topic “listservs”.

Resources (All listservs, email address provided or follow listed instructions)

The Carbohydrate Economy
jnelson@ilsr.org

Education for Sustainability
jwalton@efswest.org

Green Schools
<http://listserv.brown.edu/archives/grnsch-1.html>

Green Building News
greenclips@aol.com

EPA Global Climate Change
<http://www.epa.gov/globalwarming/visitorcenter/lists.html>

Nat'l Waste Prevention Coalition
tom.watson@metrokc.gov

Recycle Digest
recycle@envirolink.org

BigGreen listserv
This greenbuilding dialogue is sponsored by CREST For instructions send e_mail to
greenbuilding_request@crest.org

ENVIRO_LINK
To subscribe send an e-mail message to listproc@envirolink.org
with subscribe name of list your full name as the only line in the message, substitute "name of list"
with the actual name and "your full name" with your actual name. For example, subscribe environews
Jane Doe with nothing else in the body of the message.

GreenYes Listserv
To post to the greenyes list, send a letter to: greenyes@earthsystems.org To unsubscribe, send a mes-
sage to: greenyes_request@earthsystems.org with the subject unsubscribe. If you have any problems,
please write to <http://www@earthsystems.org>. GreenYes is archived on the GrassRoots Recycling
Network web site: <http://www.grrn.org>

RECYC-L College Recycling
To subscribe, send a message with the subject "SUB REQUEST" to recyc_l@listserv.brown.edu

Recycling Works Listserv
The National Recycling Coalition's "Recycling Works" listserv. You can sign up by going to http://www.nrc_recycle.org and then click on NRC Programs, then on Recycling Works.

Recycling And Beyond: Chapter 24 *Grassroots*



Grassroots is an effective way to get the word out, provide support for college recycling efforts and keep folks involved in pertinent issues. There are many opportunities that can arise through grassroots activities. Many issues impact the ability for a campus to be involved in recycling or any other environmental issues (especially relating to markets for recycled content materials). Grassroots efforts span the spectrum from local to global issues that have a direct impact at home.

There are numerous issues out there that could use a voice from college campuses, for example:

*Some colleges have created recycling programs through grassroots efforts. This has been used in the form of petitions, surveys, letter writing campaigns, phone calls to administration, newspaper coverage etc....students have been the catalyst of many college recycling programs which have started from a grassroots effort.



*Encouraging Coca-Cola to stick to their word to utilize recycled content plastic in plastic soda bottles. Coca-Cola produces 8 billion plastic containers annually. College campuses purchase these products which end up in the waste stream. If Coca-Cola doesn't use recycled plastic in these bottles, then these items will end up in the landfill from campus.

*Large quantities of bottles/cans are generated on a college campus. Some colleges are assisting by jumping on the bottle bill bandwagon, which hopefully will create a home for all of these materials generated on campus while hopefully gaining some revenue in the process.

*Colleges purchase millions of dollars of copy paper. Doing a grassroots education and action activity can let folks know that it is important for them to purchase recycled content paper because it provides a market for materials collected on your campus. This also is an opportunity to let the campus printing department know that people want to purchase recycled content paper. Though this seems simplistic, many colleges resist purchasing/selling recycled content paper and yet this is a vital step to support a recycling materials collection at colleges.

*Encouraging producer responsibility on electronics and packaging waste

There are endless opportunities to educate and activate folks and a college campus is a great place to do it. Grassroots plays an important role in providing a voice on important campus and global environmental issues. People on college campuses are interested in taking steps to support environmental issues. It's all about education to action.

Especially on Earth Day, it is great to do a letter writing campaign or petition drive on a recycling or environmental issue. There are many opportunities for providing education and support on issues that effect recycling and waste reduction. This can be a good opportunity to get students to write letters to the University administration in support of campus recycling or maybe another environmental issue on campus. The Grassroots Recycling Network always has some excellent campaigns going that are pertinent to college campus interest. Check the web site for more info. on their different activities and legislative updates.

“Never doubt that a small group of concerned citizens can't change the world, because in fact, it's the only thing that has” Margaret Mead

Resources

Grassroots Recycling Network
<http://www.grrn.org>



Before looking at contracts, find out how the campus operates the garbage and recycling programs. There is no cookie cutter strategy on this as all campuses have different challenges that determine how these operations are managed. Some campuses contract everything and some keep all the work in-house. Then there are campuses that have hybrid programs where the garbage is contracted out and the recycling is done in house.

If the campus collects garbage and recycling with in-house labor and vehicles, assess if this is being done in a cost effective manor. Determine the cost per unit and compare that to a contractors cost per unit. If the campus contracts garbage and recycling services, make sure the service that is outlined in the contract is being met.

It is feasible to change an entire system from in-house to contracting or vice versa. If the campus is considering a change to a system that has been in place for a long time, create a plan to make this transition. Remember, there may be resistance to change from the administration or employees.

Generally, a contract is written for a good or service when the price exceeds a certain price limit. The limit will be different for each State or private entity. As with any new program implementation, research how other campuses are managing garbage and recycling. Evaluate the campus variables and maintain a broad perspective in creating contracts. There are many components that are essential to the efficacy of the recycling/waste reduction effort that are not self evident in creating these contracts. Don't sell the campus short on any of these issues.

Contracts, also called solicitations, usually go out for bid every 3-5 years. Start making changes to a contract a year in advance. In government run entities there are usually lots of rules to comply with that can slow down the process. Think ahead and allow plenty of time to get the contract in place. Talk with the procurement department to find out the procedures for changing a contract and bidding. It is recommended that to read a copy of the campus procurement code.

There are several methods of procurement. Here is how many state colleges manage contracts:

- 1) **Competitive Sealed Bidding:** A written or published solicitation issued by an authorized procurement officer for bids to contract for the procurement or disposal of stated supplies, services or construction, which will ordinarily result in the award of the contract to the responsible bidder making the lowest responsive bid.

- 2) **Request for Proposal:** A written or published solicitation issued by an authorized procurement officer for proposals to provide supplies or services, which ordinarily result in the award of the contract to the responsible bidder making the proposal determined to be most advantageous to the State. The award of the contract must be made on the basis of evaluation factors, which must be stated in

the RFP.

3) **Competitive Best Value Bidding:** The purpose of best value bidding is to allow factors other than price to be considered in the determination of award for specific goods or services based on pre-determined criteria identified by the State.

4) **Competitive On-line Bidding:** This is basically the same as #1 above but it is accomplished on-line. Could be the way to go for a recycling contract since you are encouraging the use of the computer over paper right from the start.



Contracts generally follow a pattern. There is a top sheet that probably has the State or school name, addresses and phone numbers, a description of the solicitation and time period, a due date, and a bid opening date. The next several pages are called the boilerplate containing information that is standard for all contracts. The requirements are commonly known as the specifications. There are parts of the specifications that can be standard so if this is being created from scratch ask for a copy of several contracts that have already been bid and awarded.

See below for links to PDF versions of contracts from a few schools. Imagine what the process for garbage and recycling collection will look like

from beginning to end and make a flow chart. Also, consider being creative and writing a contract that creates an incentive for waste reduction and recovery.

The following information came from a power point presentation written by Laura Pergolizzi, Recycling Coordinator, for the University of South Carolina. Please note: minor changes have been made to meet formatting of this book.

Prioritize Campus Needs:

reliability of service

cost of service

flexibility of service

aesthetics of dumpsters and collection sites

weight or volumes of trash generated

length of contract

Think About Containers:

Ask vendors to go over all options for containers. This is also a way to learn about new options and know what kind of containers to request.

Lease, own, or lease to own?

Who does maintenance?

Who sanitizes and how often?

Do you want to change the size, style or color of your dumpsters or recycling bins?

Does pick-up frequency need to be altered?

Do site/bin signs need updating?

Ask for pressure gauges on compacting dumpsters to know when they are full.

Make sure that all equipment meets OSHA safety standards.

What Does the Program Want from the Vendor:

Designated liaison?

Weight or volumes reported on a monthly basis?

A daily, weekly, or monthly log from the vendor that documents problems?

A weekly or monthly meeting with a designated vendor liaison?

A monthly invoice formatted to program needs?

Two-way communication with the driver?

Designated time and days of service and/or on-call service?

Designated response time for on-call or emergency pickups? (confirmation #)

Cleanup of dumpster sites?

Assistance with annual or semi-annual waste audits?

Call campus police to tow cars that block containers?

Dedicated truck or route?

Name of recycling facility, landfill, transfer station, MRF or incinerator used for contract?

Pay a flat fee, fee per pickup per size, fee per ton or volume?

Pay the landfill or incinerator fee to the landfill or the contractor?

Revenue from the sale of recyclables?

Have a Pre-Bid Meeting:

*review contract expectations with bidders

*require bidders fill out a questionnaire stating how the requirements of the bid would be met

*take bidders on a tour

Provide an Out:

*if contractor fails to meet contract needs

*if service needs change

Create Operating Seasons:

Academic (38 weeks)

Winter (2 weeks)

Summer (12 weeks)

Performance Guarantee:

If vendor meets certain requirements, consider creating a bonus for exceeding expectations of the contract.

If vendor fails to meet the minimum requirements, one option is to establish that the vendor will issue a credit to the University.

Provide the contractors a list of internal contract managers and all contact information and the address to send invoices. The last part of the contract is a price sheet. It should be a list of everything including service and equipment and prices. For example:

Dumpster Location	# of Containers	Size	Days of week collected	Rater per Month	Rater per Year
Science Build.	1	8 yds.	MWF		
Dorm #1	1	30 yds. comp.	TTHS		
Student Center	4	90 Gallon Recycling	MWFS		

The total of the yearly rates would be the price of the contract. A more complicated price sheet would ask for prices for all services including dumpsters you currently have and dumpsters you may need in the future. For example, there may be a 6 yd emptied 3 days a week but because a new building is being built next door it will need an 8 yd emptied 6 days a week in the future. Create a price sheet asking for the price of all dumpsters at all frequencies. It is important to know what the price will be if a change comes up down the road.

Pricing associated with fixed costs can complicate the price sheet. For example, a 30 yard compactor may have a fixed cost of \$100 a month for the lease rate, steam cleaning may be fixed cost that is charged variably, a third cost will be the haul rate and there might be a landfill rate. The total cost of the invoice will vary monthly based on how many times the dumpster is emptied that month.

One way to handle this would be to ask to be billed an average monthly price. Another way to handle this is to have two price sheets. The first price sheet will be the basic sheet asking for monthly and yearly rates. The second sheet will have the detail for the monthly break down costs. Make sure to differentiate between recycling containers and garbage dumpsters throughout the specifications.

Finally, the procurement officer may request a bidders list. Open the phone book and find available bidders, typically 3 is the minimum. It is ultimately the responsibility of the bidder to find the contract solicitation. Identifying reputable contractors to invite to the bidding process can be valuable.

If something is left out of the original contract specs, a change order can be added. Just follow the rules. Work with the campus procurement officer.

There are many different types of contracts. The focus has been on service contracts, which are a foundation in a campus recycling effort. With a campus recycling program there are many opportunities to write and work with contracts. Contracts for equipment are very similar. Be thorough in contracting as contracts can even include specs for delivery!

Examples of other services or equipment that could involve a contract:
 Rechargeable toner cartridges purchase and service for recycling the old ones
 Dumpster equipment

Recycling equipment
Composting equipment
Recycling services for universal waste

Try to get language that supports recycling placed in contracts that are already written. Contracts for engineering and architectural work on new buildings should have green or sustainable building language. Contracts for the vending machines should have recycling language. Also contracts for the food service on campus should require that the vendor recycle materials generated from the contract.

Resources

American Bar Assoc.
<http://fatty.law.cornell.edu/topics/contracts.html>

Public Contract Law
[http://www.abanet.org/contract/MUSC Recycling and Refuse Specifications .pdf](http://www.abanet.org/contract/MUSC%20Recycling%20and%20Refuse%20Specifications.pdf)

Resource Management Through Contracts:
<http://www.epa.gov/wastewise/wrr/rm.htm>

Wisconsin Food Service Contract Language .pdf

Legal Information Institute
<http://fatty.law.cornell.edu/topics/contracts.html>

USC Refuse Specifications pdf



Tracking the campus waste stream and cost benefits of recycling, is an important component of managing a recycling program. Tracking the breakdown of the waste stream into garbage, hazardous material, compost and recyclables, is a valuable method for monitoring the efficacy of the program.

Other information that is valuable to track includes: revenue generated from recyclables; savings from reuse programs; use of volunteers and academic interns; and cost avoidance from avoiding trash costs. This information is invaluable in terms of: keeping records for program and campus waste stream monitoring and improvement; legitimizing funding needs; demonstrating success of program, projecting budgets and being able to compare to other colleges.

Utilize tracking mechanisms in reporting to the campus administration and state. Share and compare this information with other colleges, especially locally, in an effort to assess how well the program is doing. Review tracking records critically to assess progress, labor needed and areas of potential program improvements.

Tracking is a laborious process and requires a regular time commitment. Build tracking into a paid position so that one staff member is responsible to maintain the program tracking system. This is a technical duty.

Creating A Tracking Mechanism

Excel is a good software program to utilize for program tracking. If possible, create a “program staff” only shared file on the server. Within that, create a “tracking” folder where all this information can be easily located. Besides a folder on tracking, this shared file can contain endless folders relating to other valuable program information that staff needs to access.

Here are some tips on creating a template for program waste stream tracking:

- *determine what is being tracked and research which areas handle these materials (see template below)
- *request copies of all receipts, if necessary provide tally sheets to areas like campus and grounds, the auto shop, in order to keep a record
- *track everything in tons, utilize material conversions for other materials (see below)
- *track waste reduction through annual comparisons of overall waste generated campus wide, it is

impressive to see the results of educational campaigns on recycling and waste reduction, don't forget waste reduction overall saves the college garbage costs (hauling, truck, dump fees, dumpsters)

*track as many separate areas as possible, for example: housing, admin buildings, student union, architecture studios

*track events waste recovery and reduction

*have a section on garbage totals, recovery rate, waste reduction, hazardous materials

*perform in depth breakdowns and separate charts, the more information that is available, the less work there will be in the future, especially in dealing with charges on services to auxiliaries

*track program labor hours and develop pay codes to identify specific areas and/or materials: bottles/cans, student union, etc...

*remember to track costs, revenue and cost avoidance (per ton cost of trash including hauling, truck, dump fees, dumpsters, how much would it have cost to throw recyclables in the waste stream, this is a cost avoidance)

*take totals from the master data charts (Excel spreadsheets) to create charts and graphs that reflect various combinations of information:

~separate materials (chart for paper, another one for kitchen recyclables, dorm recyclables etc...)

~general recyclables bar chart with different materials represented in several bars per year



~comparative chart with recyclables vs. garbage

~collective charts reflecting all years of operation

~revenue and cost avoidance charts

~individual program charts (i.e. track monthly savings, yearly totals and long term savings) for reusable office supply exchange, this chart is added insurance that this program will continue

~track areas that are on contract for the program, this will help assess actual charges and give customers a true understanding of service and cost

~track revenue, cost avoidance and savings

This is just an example of the infinite possibilities for creating an extensive tracking for a campus recycling program. The more tracking, the better. Spreadsheets, charts and graphs will be an important tool for the success of the program.

Utilize tracking to internally benchmark the campus recycling program to meet program, university, state and federal goals.

Resources

Environmental Benefits Calculator

<http://www.crra.com/nrcfiles/calculator/coverletter.html>

EPA Recycling Measurement (for states but you can get ideas)

<http://www.epa.gov/epaoswer/non-hw/recycle/recmeas/>

NRC Source reduction Measurement

<http://www.nrc-recycle.org/councils/SRF/measurement.htm>

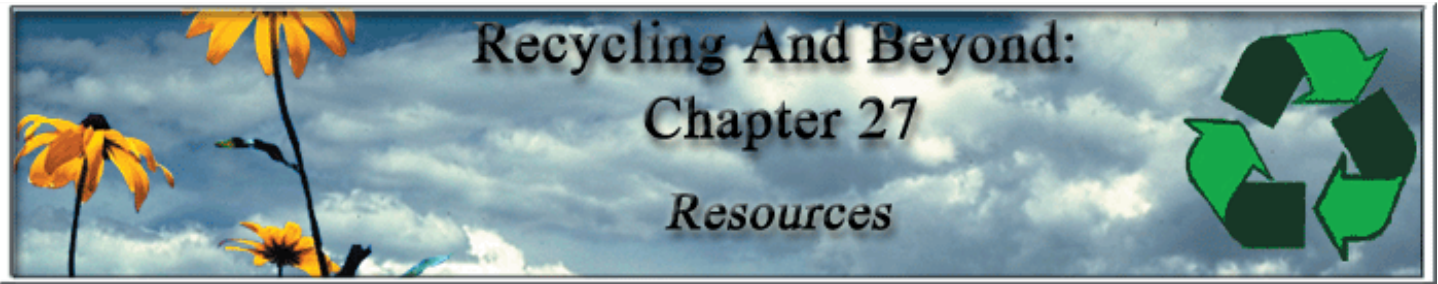
Tracking at the Medical University of South Carolina

<http://www.musc.edu/recycle/progress.htm>

<http://www.musc.edu/recycle/benefits.htm>

University of Oregon Campus Recycling Material Tracking

http://www.uoregon.edu/~recycle/PrgmStru_material_text.htm



There are endless resources available on recycling and waste reduction. Research and networking provide the gateway to successful college recycling programs. We have made every effort to find substantive resources to get help colleges get started recycling. If you find a link that is not working anymore please alert us at knowaste@uoregon.edu. If you know of other good resources tell us and we will try to make updates on a regular basis. Some of the links will lead to other links pages and other resources not found on the web.

Other collegiate recyclers are the best resource. If they don't have the answer, they will probably be able to forward you to someone who does. You can find collegiate recyclers by going to your State Recycling Organization. Check out the National Recycling Coalition affiliates web page. If your State is not affiliated with NRC you may be able to call your State Dept of Health and Environment, see the EPA web site to find a contact. The University of Oregon Campus Recycling website maintains a list of college recycling programs.

For college recyclers including administrators and students, there is a national organization called the College and University Recycling Council (CURC). To join, become a member of the National Recycling Coalition and you will be eligible to participate in any of their technical councils. CURC is a technical council of the NRC and all it takes is checking a box on the membership application.

Recyc-L (A project of the College and University Recycling Council)



Recyc-L is a list serve for collegiate recycling matters. Recyc-L is a mailing list dedicated to the discussion of recycling programs at College and University campuses, and related topics of interest to persons responsible for planning and implementing such programs. Such topics might include: recycling in residence halls, cafeterias, stadiums, offices & laboratories. Staffing, equipment, vehicles, education/promotion tactics, costs, hard to handle wastes, waste reduction/prevention, re-use, housekeeping or custodial, contracts, markets, buying recycled, town & gown relations, etc. as these issues relate to campus operations and academics. If you are a university or college recycling coordinator and would like to

subscribe, send an email to:

RECYC-L@listserv.brown.edu

with the subject:

Subscribe RECYC-L your name

in your message:

Write a brief introduction about you and your program for the group to read.

Congratulations, you've made it to the end of this epic journey. The work you've embarked upon is challenging but life changing. So, remember DON'T GIVE UP because you're moving mountains and we're with you every step of the way. So, get goin' and....

THANKS for recycling!

Resources

Conferences

Ball State Greening of the University
<http://www.bsu.edu/provost/ceres/greening/>

BioCycle Conference and others search engine
<http://www.environmental-expert.com/events.htm>

NRC Recycling Conference
<http://www.nrc-recycle.org/congress/index.htm>

SWANA Conference
<http://www.swana.org>

Magazines

BioCycle
<http://www.jgpress.com/>

Chapter 27 - Resources

MSW Management

<http://www.forester.net/msw.html>

Resource Recycling

<http://www.resource-recycling.com/>

Sustainable Times Webzine

<http://www.sustainabletimes.ca/home.htm>

Sustainable Industries Journal

<http://www.sijournal.com/>

Waste Age

<http://www.wasteage.com>

Other University Links

University of Oregon Recycling Program (including extensive list of campus links)

<http://darkwing.uoregon.edu/~recycle/links.htm>

Professional Organizations

Biocycle

<http://www.environmental-expert.com/magazine/biocyte/>

CCRA (California Collegiate Recycling Association)

<http://www.crra.com/ccrc/index.html>

CRA (North Carolina Collegiate Recycling Association)

<http://www.cra-recycle.org/CRC.htm>

CURC (College and University Recycling Council)

<http://www.nrc-recycle.org/councils/CURC/default.htm>

National Recycling Coalition

<http://www.nrc-recycle.org>

North American Association of Environmental Educators

<http://naaee.org/>

SWANA

<http://www.swana.org/>

US State Recycling Organizations

<http://www.grrn.org/resources/sros.html>

OTHER RESOURCES

100 Top Recycling Sites

<http://www.100toprecyclingsites.com/>

California Integrated Waste Management Board

<http://www.ciwmb.ca.gov/>

EPA Waste Wise

<http://www.epa.gov/epaoswer/non-hw/reduce/wstewise/>

Grassroots Recycling Network

<http://www.grrn.org/>

State Recycling Organizations List

<http://www.grrn.org/resources/sros.html>

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Oh, the Places You'll Go!

by Dr. Seuss

Congratulations!
Today is your day.
You're off to Great Places!
You're off and away!

You have brains in your head.
You have feet in your shoes
You can steer yourself
any direction you choose.
You're on your own. And you know what you know.
And YOU are the guy who'll decide where to go.

You'll look up and down streets. Look 'em over with care.
About some you will say, "I don't choose to go there."
With your head full of brains and your shoes full of feet,
you're too smart to go down any not-so-good street.

And you may not find any
you'll want to go down.
In that case, of course,
you'll head straight out of town.

It's opener there
in the wide open air.

Out there things can happen
and frequently do
to people as brainy
and footsy as you.



And when things start to happen,
don't worry. Don't stew.
Just go right along.
You'll start happening too.

OH!
THE PLACES YOU'LL GO!

You'll be on your way up!
You'll be seeing great sights!
You'll join the high fliers
who soar to high heights.

You won't lag behind, because you'll have the speed.
You'll pass the whole gang and you'll soon take the lead.
Wherever you fly, you'll be the best of the best.
Wherever you go, you will top all the rest.

Except when you don't
Because, sometimes, you won't.

I'm sorry to say so
but, sadly, it's true
and Hang-ups
can happen to you.

You can get all hung up
in a prickly perch.
And your gang will fly on.
You'll be left in a Lurch.

You'll come down from the Lurch
with an unpleasant bump.
And the chances are, then,
that you'll be in a Slump.

And when you're in a Slump,
you're not in for much fun.
Un-slumping yourself
is not easily done.

You will come to a place where the streets are not marked.
Some windows are lighted. But mostly they're darked.
A place you could sprain both your elbow and chin!
Do you dare to stay out? Do you dare to go in?

How much can you lose? How much can you win?

And IF you go in, should you turn left or right...
or right-and-three-quarters? Or, maybe, not quite?
Or go around back and sneak in from behind?
Simple it's not, I'm afraid you will find,
for a mind-maker-upper to make up his mind.

You can get so confused
that you'll start in to race
down long wiggled roads at a break-necking pace
and grind on for miles across weirdish wild space,
headed, I fear, toward a most useless place.
The Waiting Place...

...for people just waiting.
Waiting for a train to go
or a bus to come, or a plane to go
or the mail to come, or the rain to go
or the phone to ring, or the snow to snow
or waiting around for a Yes or a No
or waiting for their hair to grow.
Everyone is just waiting.

Waiting for the fish to bite
or waiting for wind to fly a kite
or waiting around for Friday night
or waiting, perhaps, for their Uncle Jake
or a pot to boil, or a Better Break
or a string of pearls, or a pair of pants
or a wig with curls, or Another Chance.
Everyone is just waiting.

NO!
That's not for you!

Somehow you'll escape
all that waiting and staying.
You'll find the bright places
where Boom Bands are playing.

With banner flip-flapping,
once more you'll ride high!
Ready for anything under the sky.
Ready because you're that kind of a guy!

Oh, the places you'll go! There is fun to be done!
There are points to be scored. there are games to be won.
And the magical things you can do with that ball
will make you the winning-est winner of all.
Fame! You'll be famous as famous can be,
with the whole wide world watching you win on TV.

Except when they don't.
Because, sometimes, they won't.

I'm afraid that some times
you'll play lonely games too.
Games you can't win
'cause you'll play against you.

All Alone!
Whether you like it or not,
Alone will be something
you'll be quite a lot.

And when you're alone, there's a very good chance
you'll meet things that scare you right out of your pants.
There are some, down the road between hither and yon,
that can scare you so much you won't want to go on.

But on you will go
though the weather be foul
On you will go
though your enemies prowl
On you will go
though the Hakken-Kraks howl
Onward up many
a frightening creek,
though your arms may get sore
and your sneakers may leak.

On and on you will hike
and I know you'll hike far
and face up to your problems
whatever they are.

You'll get mixed up, of course,
as you already know.
You'll get mixed up

with many strange birds as you go.
So be sure when you step.
Step with care and great tact
and remember that Life's
a Great Balancing Act.
Just never forget to be dexterous and deft.
And never mix up your right foot with your left.

And will you succeed?
Yes! You will, indeed!
(98 and 3/4 percent guaranteed.)

KID, YOU'LL MOVE MOUNTAINS!

So...
be your name Buxbaum or Bixby or Bray
or Mordecai Ali Van Allen O'Shea,
you're off to Great Places!
Today is your day!
Your mountain is waiting.
So...get on your way!