

Waste Audits

SOLID WASTE

Each year, Americans throw away over 200 million tons of trash (EPA). Per capita waste generation in the United States is twice that of any other country and the amount of garbage we produce is rising. 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. Doing a waste audit is the first step to assessing any waste stream to be able to determine what materials would be the best to target for waste reduction and recycling. This is an important tool that can be utilized in many different ways and in any scale from auditing a desk side trash container to auditing an entire city's waste stream.

Solid waste audits are a great tool for finding valuable information but also an opportunity for visibility of a UO Zero Waste Program. At the University of Oregon, we have done waste audits (from building samples) on Earth Day. We also have piled up garbage collected from around campus, and made a giant pile of trash in the middle of the student courtyard. This is a very effective PR tool.

Here is some information on how to do a waste audit, you determine the scale of the audit.

PRELIMINARY FACT FINDING

- How much solid waste does your campus generate? What is the composition of campus waste?
- Who is in charge of solid waste disposal contacts? 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 landfilled, incinerated, recycled, and composted?
- Does your 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 your 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 your 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 your campus compare to other institutions?

WHERE TO FIND INFORMATION

- To get an idea of what is in the campus waste stream, you can conduct your own waste stream analysis (see "How To Conduct A Campus Solid Waste Stream Analysis" on the following pages).
- Contact the 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 campus 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 your 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 your campus and local community newspaper(s) for the volume of newsprint distributed on campus.

Recommendations To Consider

A successful waste management policy supports a resource-conserving hierarchy: source reduction, reuse, composting, and recycling first, waste-to-energy incineration, and landfilling last. Many schools are creating campus zero waste policies with action items. This is a very helpful tool in reducing campus waste from cradle to cradle and often includes purchasing policies.

HOW TO CONDUCT A SOLID WASTE STREAM ANALYSIS

Conducting a waste stream analysis will provide a good snapshot of waste composition at your school. 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.

1. **Materials:** Gather the following materials and resources before you begin your waste analysis: sorting tables, a large scale for weighing the waste, bins for all your sorting categories, gloves, a calculator, and volunteers.
2. **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).
3. **Do a Trial Waste Audit:** Prior to the actual audit, you will find it helpful to 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 your methodology.
4. **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 their collection point.
5. **Calculate Weight and Volume:** Once you've transferred all of the garbage to your sorting site, calculate the total weight and volume collected from each region before you begin sorting. Remember to weigh the sorting containers. Carefully sort each bag of garbage into categories. Once you've completed the sorting for one region, 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 ($V=2pRH$).
6. **Waste Categories:** Sort your waste into the following categories. You can expand the categories 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 your area. The following list will give a basic guideline for the different categories:

White paper, Colored paper, Low Grade paper, Newspaper, Magazines & Books, Plastics, Glass, Metals, Drink Boxes, Corrugated cardboard, Food Waste

Other wastes as determined by waste generation-or what you're trying to identify. In a food service area, you might be targeting disposable beverage containers, plates, napkins, food waste as that is what is generated mostly in a food service area, for example.

- Using the Information:** If you don't know the total amount of waste that a particular area generates, represent your figures as a percentage. You can say, for example, that newspaper represents about 15 percent of the waste generated from the food service area on campus. If you do know the total weight of all food service wastes, you can 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.

Use this information to gather support for increasing collection and diversion programs. Also this is a great opportunity for some media coverage of the Recycling Program efforts. Because you only can analyze a small amount of the total campus waste stream in a single day, use the figures conservatively. They will, however, provide important information about the general types and quantities of waste your school generates. Also, get you 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	Weight	Volume	% Total Weight	% Total Volume
White Paper				
Colored Paper				
Computer Paper				
Low Grade Paper				
Newspaper				
Magazines & Books				
Plastics				
Glass				
Metals				
Drink boxes				
Corrugated Cardboard				
Food Waste				

Trash				
Total Materials				