

How-to Guide for Conducting a Waste Sort



Contents

How a waste sort differs from a waste audit	3
Determining the purpose of your waste sort	3
Approval	3
What to collect	4
Sorting categories	4
Sorters	4
Equipment and training.....	5
Collection of material to be sorted	6
Storage	7
Sorting area layout	7
Recording data	8
Disposing of waste	8
Analyzing data	8
For more information	8
Appendix A	9
Appendix B	10

How a waste sort differs from a waste audit

A waste audit is a process used to quickly assess a facility's waste (kinds and quantities) and how that waste is managed. A waste sort is a type of audit in which waste is collected and sorted thoroughly. Whereas a less detailed waste audit consists of visually assessing waste to get a general idea of the characteristics of the waste stream and how well waste is being managed, a waste sort gives much more definitive results.

Before beginning to plan a waste sort, it is important to consider that waste sorts are time-intensive, labor-intensive and messy. In the end, detailed information such as waste generation, waste composition, capture rates of recyclables and contamination levels may prove useful to improving waste management practices at your facility. However, when deciding whether to conduct a waste sort, the beneficial results that may come from a waste sort should be weighed against the time and effort required to properly conduct the waste sort.

If you decide to conduct a waste sort, the following information will help your facility organize and implement a successful sort.

Determining the purpose of your waste sort

Given the amount of work involved in planning and carrying out a waste sort, considering the reasons you are conducting a waste sort is an important first step.

Here are some situations that may call for one:

- Determining the feasibility of adding organics recycling. Important data to collect is the amount of organic waste and key locations where the most organic waste is generated.
- Determining how well occupants are recycling. Measure the contamination rate, otherwise known as the amount of non-recyclable material placed in recycling receptacles and how many recyclables are disposed of in the trash.
- Determining waste composition in the cafeteria for low-waste lunch initiatives.
- Determining the feasibility of separating paper by grades. The ratio of high-quality office paper to low-quality paper is a deciding factor.

Approval

Notify facility management of your proposed waste sort and include reasons for conducting a sort. Facility management will need to be notified that the waste sort is taking place on the property, as well as any visitors that will be on site for the sort. Facility management may also be interested in the results of the study.

What to collect

What you collect depends on what you are trying to find out through your sort. There is no reason to collect a large amount of waste unless you are particularly interested in studying a broad range of the waste stream for a full waste composition study. Some organizations may only be looking to reduce and recycle in the cafeteria, some organizations may be interested in the potential for reduction and recycling in restrooms, and others would like to know the big picture and sort through an entire day's worth of waste.

Sorting categories

The number of waste-sort categories will be based on the importance of that information to your facility in current and future discussions regarding waste management. Waste can be sorted into as few as two categories (trash and recycling) to as many as 20 or more categories, in which waste is further divided into specific materials of interest.

For example, trash subcategories may include Styrofoam products, plastic film, plastic containers and textiles. Recycling may consist of plastic bottles, glass bottles, mixed paper, office paper, metal cans, and cardboard. Organic waste usually consist of non-recyclable paper products and food. Liquid can be a category by itself or included with trash or organics. Hazardous waste and electronic waste should not only have their own categories but will need to be disposed of appropriately.



Increasing the amount of categories will increase the workload — more containers for sorting, more figures to record and report, and more intricate sorting of waste.

Sorters

Sorting is carried out by internal staff as well as by recruiting outside volunteers as needed. Minors will need parental consent to participate in sorting waste. A minimum of two “teams” is recommended. Most setups accommodate four to six sorters per table, which means two tables set up for sorting with 8 to 12 total sorters. There is no clear guideline for the amount of waste sorters required other than to obtain plenty of helpers!

One person will need to be the designated data recorder. To minimize errors, the data recorder should have no other job than to record data. Another practice to minimize error is to appoint one person at each table or one person for the entire study to transport waste from the storage area to the sorting area. Through this division of labor, people become efficient at their roles.

Dress appropriately, wear protective equipment and use common sense to prevent injuries. Prior to the sort, a notice should be sent to volunteers encouraging them to bring along a clean set of clothing and shoes to change into after completion of the waste sort.

Equipment and training



Safety Training

Sorters should be trained on the potential hazards of sorting through discarded material. In addition to safety equipment, follow these and other precautionary procedures:

- Be aware of sharp objects
- Be aware of hazardous chemicals
- Use available tools to take apart clumps of waste
- Look before grabbing items from the waste stream

Protective and personal equipment

- Wear sturdy shoes and dress appropriately for sorting through waste
- Tyvek ® suits and aprons
- Safety goggles
- Protective mask
- Rubber gloves. This is a thinner glove that is to be worn beneath a tougher work glove as a secondary layer of protection from leaks.
- Work gloves. Look for ones that are made of a thick rubbery material on the palm side to prevent puncture yet remain waterproof and with the upper side made of cloth for better fit and flexibility (pictured above).

Other equipment

- Toters, also known as carts, which are used to store waste.
- Bins for sorting waste. Having uniformly sized containers is helpful, but a mix of various containers is not a problem.
- Squeegees to help with collecting liquid.
- Hand rakes and trowels for taking apart clumps of waste
- Weight scale
- Data sheets or laptop for recording data electronically
- Sorting surface, such as a long table or a piece of large, half-inch-thick oriented strand board balanced on posts, totes or other vertical surfaces
- Nearby access to a drain or sink, soap and hot water
- Adhesive labels, tape
- Thick marker



Collection of material to be sorted

Collection of waste should be done in a manner that results in a representative sample. The day on which waste is collected should be as normal of a day as possible. Unexpected events can affect waste generation and composition that skews the data. Also, it is critical to keep the public uninformed of the waste sort so that results truly reflect how well people understand and participate in recycling. If people know there is a waste sort happening, they will change their behavior.

Working closely with the facility's custodians is crucial to the successful collection of waste for the study. Provide a checklist as well as constant reminders to ensure waste is being properly collected. Check in with collection personnel regularly leading up to the collection day(s) as well as during the day of collection. Place signs in areas where waste is normally disposed of to remind custodians to divert waste for the study. For a sample checklist, see Appendix A.



Keep in mind that waste sorts do not happen often, so make the most of your waste sort by collecting information that will be useful in the future. Every bag of waste should be properly labeled with information regarding which waste stream it was discarded as (trash, recycling or organics) and the place of origin (e.g., office, classroom, kitchen, etc.) as well as any other information that you deem important.

Storage

To prevent study samples from being accidentally taken away by your waste hauler or being mixed up with prior days' waste, provide separate containers for collection during the study period. These containers should be labeled by waste stream and placed in obvious locations so custodians remember to collect and separate waste for the sort. Whoever is collecting waste samples will place trash in the carts labeled for trash, recycling in the carts labeled for recycling, and organics in the cart labeled for organics if organics recycling is already available. The combination of labeled bags and labeled carts will help keep things organized.



You may want to notify your waste hauler that your facility is conducting a study so there is no confusion about the lack of waste during regularly scheduled service. You may even want to cancel pick ups during the study period to ensure the collected materials are not accidentally picked up by your hauler before the waste sort occurs.

Once collection is complete, move the containers to the designated sorting area to await sorting.

Sorting area layout

The sorting area is designed around the inflow of waste to be sorted and the outflow of the same waste after it is weighed.

To start, set up a designated staging area for waste waiting to be sorted. Waste is then sorted on a table. The number of tables to be used depends on the number of sorters (one table fits approximately four to six sorters). Surrounding each table are containers into which waste is separated by category (the number of containers around a table is based on how many categories the waste is being separated into). Label each of these containers with the type of waste it will contain (e.g., food, mixed paper, glass bottles and metal).



After waste is sorted, each container is weighed and that data is recorded. The final step in the design is an area designated for waste that has been sorted, weighed and is now ready for disposal.

Recording data

More often than not, waste is weighed in containers. If this is the case, be sure to subtract the tare weight of the container. Tare weight is the weight of the container in which the items are weighed. Obtain tare weights on all containers prior to the waste sort and affix a label onto each container displaying its tare weight. After the waste and the container are weighed, subtract the tare weight from the total weight to get the net weight of the waste. See Appendix B for sample data sheets. Lone items or bulky materials such as cardboard boxes may be placed directly on the scale, in which case there is no tare weight.



Disposing of waste

After sorted waste is weighed, it should be moved from the main sorting area to avoid being mixed with samples that have not been sorted. Dispose of waste properly. Make sure all containers are empty and the sorting table is clear before beginning to sort subsequent samples. Any hazardous material should be handled and disposed of properly at a hazardous waste drop-off site if your building does not have onsite collection of such material.

Analyzing data

The following are some facts and figures that can be obtained as a result of the waste sort:

- Total waste generation in a specific time period (e.g., day, week) or in a specific area (e.g., cafeteria, kitchen, bathroom, etc.)
- Waste generation per capita
- Waste composition
- Recovery rate. This is the percentage of a recyclable material that was placed in the recycling stream rather than discarded in the trash. This statistic can be calculated for recycling or organics recycling streams. Recovery rate equals the weight of X material in the recycling divided by total weight of X material.
- Contamination rate. This tells how much non-recyclable material was mistakenly placed into recycling containers. This statistic can be calculated for the organics recycling stream. Contamination rate equals the weight of non-recyclable material divided by the total weight of non-recyclable material and recyclable material in the recycling stream.

For more information

If you have further questions about setting up a waste sort, you may contact Hennepin County staff at 612-348-5893.

Appendix A: Collection checklist

- Inform waste hauler of waste sort as necessary.
- Inform and train all individuals who will be involved with collection.
- Know which locations are included in the waste sort if not the entire building.
- Remind collectors about waste sort the day before collection day.
- Remind collectors about waste sort the morning of collection day.
- Remind collectors about waste sort throughout the collection day.
- Make sure all of previous day's waste is disposed of to prevent it from being mixed with waste from the study day.
- Set up carts for collection in areas that are traveled regularly by collection personnel.
- Label carts accordingly.
- Post signs by waste disposal areas, such as exit doors, to remind collection personnel to divert waste for study into the proper containers.
- Produce labels for labeling bags of waste by location and waste stream. All bags of waste collected for the study must be labeled. Have markers and extra blank labels on hand.
- Collect all waste from designated study period or day.
- Move designated carts to the sorting area.

Appendix B1: Sample data spreadsheets

The following is a simple data sheet format that you can build from to collect data from your waste sort.

Trash Composition		
Material	Weight (lb)	Proportion
Recycling		
Trash		
Organics		
Liquid		
Total		

Recycling Composition		
Material	Weight (lb)	Proportion
Recycling		
Trash		
Organics		
Liquid		
Total		

Organics Composition		
Material	Weight (lb)	Proportion
Recycling		
Trash		
Organics		
Liquid		
Total		

Appendix B2: Sample data spreadsheets

These data sheets are designed to accommodate weights from a wide range of categories rather than simply trash, recycling, and organics.

Trash				
Material	Gross	Tare	Total Weight	Net Weight
Non-recyclable paper				
Milk/juice cartons				
Compostable trays				
Styrofoam trays				
Food waste				
Liquid				
OCC				
White office paper				
Mixed paper				
# 1 & 2 plastic bottles				
Metal cans				
Glass bottles				
Reusables				
Plastics # 1 - 6 (Not #1 & 2 bottles)				
Plastic film				
True garbage				
C & D				
HHW				

Appendix B2: Sample data spreadsheets

Recycling				
Material	Gross	Tare	Total Weight	Net Weight
Non-recyclable paper				
Milk/juice cartons				
Compostable trays				
Styrofoam trays				
Food waste				
Liquid				
OCC				
White office paper				
Mixed paper				
# 1 & 2 plastic bottles				
Metal cans				
Glass bottles				
Reusables				
Plastics # 1 - 6 (Not #1 & 2 bottles)				
Plastic film				
True garbage				
C & D				
HHW				

Appendix B2: Sample data spreadsheets

Organics				
Material	Gross	Tare	Total Weight	Net Weight
Non-recyclable paper				
Milk/juice cartons				
Compostable trays				
Styrofoam trays				
Food waste				
Liquid				
OCC				
White office paper				
Mixed paper				
# 1 & 2 plastic bottles				
Metal cans				
Glass bottles				
Reusables				
Plastics # 1 - 6 (Not #1 & 2 bottles)				
Plastic film				
True garbage				
C & D				
HHW				