Performing a Waste Sort

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I. INTRODUCTION

A. What is a Waste Sort?

A waste sort is a process of hand-sorting onsite waste in order to quantify the amount and type of solid waste generated by businesses, organizations and municipalities to determine how much waste is ultimately ending up in the landfill. Data from waste sort events assists in identifying current waste practices and the feasibility of implementing commodity specific waste reduction, recycling and education programs.

B. Why Perform a Waste Sort?

The objective of a waste sort is dependent on the goals of the business, organization or municipality. These objectives may include:

- Collecting baseline data regarding the amount and type of waste and recyclables going to the landfill.
- Measuring the overall effectiveness of purchasing, waste management and recycling programs that currently exist.
- Identifying opportunities for improving in-house purchasing, recycling and recycling education programs.
- Identifying opportunities to reduce front-end waste thus reducing costs associated with purchasing raw materials.

Measuring, documenting and implementing improvements to current waste management and recycling systems not only enhances and preserves our natural resources but could potentially reduce costs associated with material purchases and the logistics of waste pickup and hauling.

II. PRESORT PLANNING

A. Logistics

Work with your waste hauling company, custodial staff and/or other stakeholders, review transportation logistics and determine how many days worth of waste you will be sorting.

Regardless if you are sorting one day's trash or one week's trash, it is important that your sample represent a "typical" cycle. For example, if your business or production plant is on shut-down for holidays or maintenance a typical waste cycle will not be represented by the trash collected because a number of people would be absent. If you are sorting one week's worth of trash, it is not necessary to "hold" trash for the week as it could be sorted and recorded daily.

If custodial or other staff members are responsible for collecting the waste and delivering it to a dumpster, work with them in consolidating the waste facility wide and delivering it to the preselected sorting location. If all waste is delivered directly to the onsite dumpster, work with the waste hauling company to determine how many times per week they pick up. This information will assist in determining how many days worth of waste you will be sorting and the best day of the week to perform the sort. You can extrapolate those data to determine annual estimates with regard to the various commodities. Once you have discussed the logistics, set a date and time for your sorting event and begin recruiting sorting team members/volunteers as soon as possible. In addition, it is advisable to remind sorting team members a few days before the event. If utilizing volunteers see the *Volunteer Management* section of this document.

B. Determining Duration

In determining how long the waste sort will take and the number of sorting team members and/or volunteers that will be needed you should contact staff members and stakeholders that handle the garbage at your location to assess the volume that will be produced during the time period (in cubic yards). In addition, you can observe waste collection for a similar period of time and estimate the approximate amount (in cubic yards) of waste that will be sorted. A good rule of thumb is the 2-2-2 rule – two trained sorters and two cubic yards of waste material will take approximately two hours to sort, weigh and record. After you have obtained an estimate regarding the amount of material that will be sorted, you can then determine how many sorting team members/volunteers will be needed and the approximate amount of time the sort will take.

C. Determining Sorting Location

Working with all staff members and other stakeholders, determine the size of area that will be needed for the sort and determine a location to perform the sort. If smaller quantities will be sorted a large indoor room might be ideal. If large quantities of waste will be sorted, a large, flat area such as a parking garage or shipping and receiving area is preferred. The area selected should be an open area in order to expedite clean up after the sort is completed. It is advisable to sort in a sheltered area to provide cover from adverse weather, but outdoor areas can be utilized. If you hold your sort in an outdoor area you will want to be cognizant of the weather. When scheduling a date for your sorting event you might also consider scheduling a "rain-date" in case of inclement weather. In the outdoor scenario you will also want to be cognizant of wind issues including but not limited to putting up a wind fence to collect renegade trash and designating individuals on the sorting team to be responsible for picking up stray litter. In addition and depending on the type of trash and the number of volunteers utilized the process could generate noise levels that may be disruptive to others, so you will want to use a location that is far enough away as to not disturb other staff members.

D. Determining Waste Streams to be Sorted

Determining how materials will be categorized and sorted is dependent upon varying factors including:

- What recycling services and facilities are available in your area?
- What commodities can be picked up from your location?
- If commodities cannot be picked up onsite can they be delivered by staff members?
- Is delivery of commodities cost effective?

Contact companies in your area that provide recycling services and determine not only what materials they will accept but subsequently how they should be sorted. For example, some recycling

companies collect chipboard/wetboard (cracker boxes, tissue boxes, paper towel rolls) with corrugated cardboard while others may accept chipboard/wetboard with newspaper/white paper/office paper. Some areas may provide single-stream recycling services and therefore you would only need one container for all recyclables. Plastic containers are numbered 1-7, but all facilities may not accept all plastics. If composting is available in your area or if you are determining the feasibility of onsite composting, you will also want to have a separate container for food waste/organic materials. In addition, you will want to have one container specifically allocated for materials that cannot be recycled and must be thrown in the trash. In some cases, confidential information may be found. If this happens contact your human resources department or other responsible party and make them aware that this type of information was found in the trash. Waste sorting categories might include but are not limited to the following:

CARDBOARD

- OCC (Old corrugated cardboard)
- Chipboard (paper towel rolls, tissue boxes)

GLASS

- Clear
- Blue
- Brown
- Green
- Other

METALS

- Aluminum
- Ferrous (tin cans)
- Non Ferrous (aluminum cans)

ORGANIC MATERIALS

- Food Waste
- Animal Waste
- Compostable paper products (napkins, paper towels)

PLASTICS

- #1 Plastics
- #2 Plastics
- #3 Plastics
- #4 Plastics
- #5 Plastics
- #6 Plastics
- #7 Plastics

PAPER

- White paper

Colored paper (including manila folders and envelopes)
Mixed paper
Magazines
Books

REDEEMABLE BEVERAGE CONTAINERS

Plastic
Aluminum
Glass

WOOD

Untreated (no chemical preservatives)
Treated (treated with chemical preservatives i.e. landscape timbers, piling)

III. SUPPLIES

In preparing for your sorting event, the following supplies are suggested.

Sorting containers – Generally 35-55 gallon, one for each category.

Bags – 35-55 gallon size depending on containers used. While using bags slightly increases the amount of waste generated, it makes weighing much less difficult, assists in expediting the cleanup process and eliminates the need to rinse out every container following the event.

Signage – Place one sign on each container indicating the commodity the container has been designated for.

Tape – To hang signs on containers.

Sorting Table – To eliminate continuous bending and promote ergonomics a table should be used.

Plastic Sheeting – If sorting takes place indoors it is advisable to place plastic on the floor. In addition, it is advised to place plastic on your sorting table regardless of the venue. Although it produces a small amount of waste, it makes cleanup much easier and much more sanitary.

Litter Grabbers – If sorting in an outdoor venue, these are used to pick-up renegade waste. In addition, if you are sorting from the dumpster, litter grabbers assist in reaching the bags at the bottom of the container and eliminate the need to climb into the dumpster to obtain waste materials.

Clipboard/Paper/Pens – Used in documenting weights and volumes of sorted materials.

Wet Wipes/Hand Sanitizer – These items allow members of the sort team to cleanup in the interim if a restroom or sink area is not available.

Scale – Used to weigh sorted waste. The scale used will be dependent on the amount of material you are sorting. In many cases a fishing scale or a bathroom scale may be used. In other cases a platform scale may need to be obtained.

IV. SAFETY

Throughout the waste sorting process the following safety procedures should be followed and provided to participants:

1. No eating, smoking, or drinking during sorting activities. Food and liquids should be away from the sorting area. If the event lasts over a meal period, hands and faces should be washed before eating or drinking.

2. The following safety equipment should be onsite and utilized by sorting participants:

   First Aid Kit

   Nitrile Gloves – Plan on at least two pair for each participant.

   Eye Protection/Safety Glasses – Optional, depending on your budget. You can also request that sorters that wish to have eye protection bring their own safety glasses/goggles.

   Tyvek Suits/Aprons – Optional, depending on budget. You can also request that sorters that wish to have Tyvek or an apron bring their own. In addition, sorters should be made aware that they should wear garbage appropriate clothing and comfortable shoes.

3. Although hazardous materials should not be found in the waste stream, in the event that they are present these materials should be set aside and handled in accordance with EPA and DNR guidelines. For more information with regard to handling of hazardous materials contact the Iowa Department of Natural Resources or your Iowa Waste Exchange Area Resource Specialist.

4. Due to the potential presence of glass, needles and other sharp objects, sorters should only grab what they can see and should never use their hands to dig down through the waste. Use a rake, small shovel or litter grabber to pull/push the material to the side and continue sorting. Sort from the top down.

V. THE DAY OF THE EVENT

A. Setting up the Sorting Area

The first thing you will want to do is set up your sorting area which includes placing plastic sheeting on the floor (if sorting in an indoor area) setting up sorting containers, lining them with bags and attaching signage regarding which designated waste material is being collected in which container as well as setting up and covering sorting table(s).

B. Instruction and Documentation

After the sorting area has been set up, provide sorting team members and/or volunteers with project background, objectives, instructions, safety information and answer any questions they may have. In addition, show team members and/or volunteers where safety equipment and other supplies are located. Once all members have obtained the appropriate safety equipment needed begin sorting waste into corresponding containers. Once all waste has been sorted weigh each bag and document the weights. In addition and because waste fees are generally charged by the number of times the container is emptied rather than the weight of materials, you should also document the volume (cubic yards) of each material – this is generally done by visual observation.

C. Clean up and Debriefing

Once all materials have been weighed and weights and volumes have been documented, clean up the area and thank sorting team members and/or volunteers for their assistance. In addition obtain feedback regarding the sort i.e., things that worked, things that could have been improved and observations made.

VI. POST SORTING ACTIVITIES

A. Data Analysis

Once all data has been collected, you will need to format these data in order to assemble a visible "snapshot" of the wastes produced onsite. In addition,

formatting the data in this manner will assist in reviewing purchasing, recycling and education areas that need to be explored and/or improved. The following provides a detailed example of how to calculate data collected using waste streams that include cardboard, glass, plastics, paper, tin and trash.

B. Calculating Percent by Weight

Waste Stream	Weight of Sorted Material (lbs)	Percent by Weight (Weight of sorted material divided by total weight)
Cardboard	25	20%
Glass	5	4%
Plastics	10	8%
Paper	15	12%
Tin	6	5%
Trash	65	52%
Total	**126**	**100%**

Using the weights above and dividing by the number of days that material was collected you can extrapolate these data to calculate an estimated annual total. When estimating an annual total, be sure to only include days that the building or area is occupied. For example, if you are in a location that is not open on weekends and certain holidays you would want to subtract these days from your total.

365 (total days in the year) – 110 (total days location is closed) = 255.

Using this number and assuming that this waste sort looked at two days worth of trash, we have calculated the estimated annual weight of the commodities below.

Waste Stream	Weight of Sorted Material (lbs)	Weight of Sorted Materials/Days Material was collected	Annual Totals (Daily Weights x 255 Days)
Cardboard	25	12.5	3187.5
Glass	5	2.5	637.5
Plastics	10	5	1275
Paper	15	7.5	1912.5
Tin	6	3	765
Trash	65	32.5	8287.5
Total	**126**	**63**	**16065**

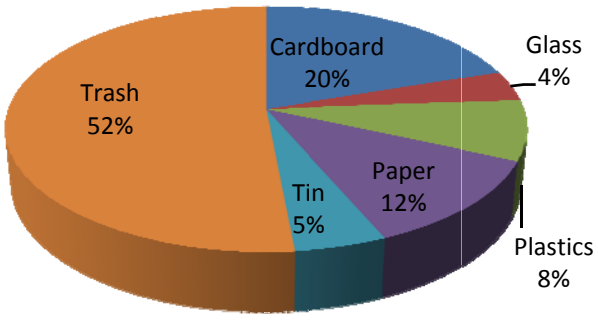
C. Calculating Percent by Volume

If your organization is charged by container pulls as opposed to weight, you will also want to calculate the percent by volume. Estimating the percent by volume for each waste stream is done visually. This can easily be done by counting the number of 55-gallon bags for each waste stream. One 55-gallon bag is equal to .27 cubic yards.

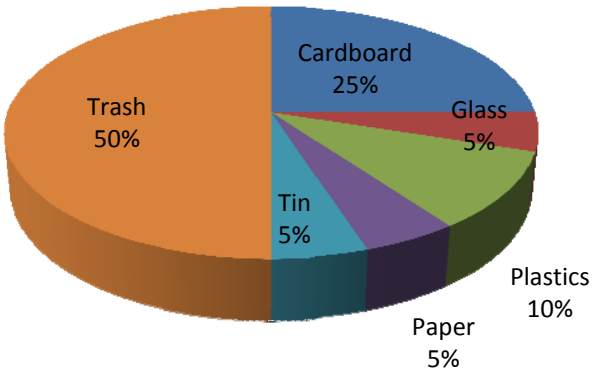
Waste Stream	Percent by Volume
Cardboard	25%
Glass	5%
Plastics	10%
Paper	5%
Tin	5%
Trash	50%
Total	**100%**

From these spreadsheets, you can create a presentation of the data collected by incorporating them into pie charts. This will provide a visible display regarding the weights and volumes of materials being produced, which will assist in the assessment process. The spreadsheets above are graphically represented below.

Percent by Weight



Percent by Volume



VII. NEXT STEPS

After analyzing the data your business, organization and/or municipality will have a better idea of purchasing, recycling and education programs that warrant additional consideration and further investigation. For example, the data above indicates that a cardboard recycling program might be advantageous both in terms of weight and the amount of volume cardboard is occupying in the

dumpster. By eliminating this volume from going to the landfill you not only reduce your ecological footprint but can quite possibly reduce your waste hauling fees. Keep in mind that if a recycling service is picking up materials from your location there may be a charge assessed. At the very least you can reduce your costs in hauling wastes and transfer those costs into recycling services thus improving your ecological footprint without adversely affecting your overall budget.

When investigating potential recycling programs that can be implemented you will want to contact several recycling service providers and compare the services offered and the fees charged. In addition if you plan on hauling the recyclable materials in-house, you will want to determine the internal costs of doing so including labor and transportation.

VIII. VOLUNTEER MANAGEMENT

A. Recruiting Team Members/Volunteers

Once the date and time of your activity has been scheduled and regardless if you are using internal team members or outside volunteers you must begin recruiting them as soon as possible. You can do this by making connections that count or using your networks. Examples include:

- People you know (other team members, family, friends, neighbors, students).
- Friends of friends.
- Social Networking – Facebook, Twitter, e-mail solicitation.
- Create and post flyers.
- Publicize your waste sort event in newspapers, web sites and newsletters.
- Don't be afraid to "tap" people's emotions (happiness, anger, fear, passion) and incite them to get involved.
- Partner with organizations, associations and businesses.
- Talk personally with people to "sell" your objective and get their support.

B. During the Sorting Event

Thank volunteers! Provide volunteers with project background, objectives, instructions, safety information and answer any questions they may have. Take care of all paperwork including having volunteers sign in and provide their contact information. In addition, have them read and sign any liability waivers that might be required. Throughout the event provide positive reinforcement and continued assistance. If people are working together that are not acquainted with each other, take some time for introductions and/or provide name tags to assist the volunteers in getting to know one another. In addition, be a leader –find a place for everyone. For example, perhaps someone would enjoy volunteering but does not particularly want to dig through trash. Find a place for them whether that place is taking photos or documenting results. All volunteers are valuable and as the team leader it is your responsibility to ensure that they have a role and a positive volunteer experience.

C. After the Sorting Event

Thank volunteers again! Give positive reinforcement for a job well done. During the debriefing portion of the day encourage positive reflection i.e. what have they learned from participating, what things could have been improved, what things worked well. In addition send a personal thank you to all volunteers (preferable via email) as well as providing them with a copy of data compiled, links to any news releases issued and/or photos taken pertaining to the event.

IX. FAQs

Q: Should I empty beverage containers that still contain liquids?

A: Yes, beverage containers that still contain liquids should be emptied as they affect the weight of the overall waste composition.

Q: Are food contaminated paper and plastic products recyclable?

A: Paper products such as cardboard and tablewares and plastics such as clam shells that have been contaminated by food materials are no longer recyclable. However, contaminated paper materials can be composted if facilities exist in your area.

Q: Where do foam cups, plates and packaging materials go?

A: Unfortunately, very few recycling programs accept foam materials. Therefore the best option is to reduce consumption of Styrofoam by switching to more eco-friendly items such as reusable cups,

tablewares or packaging media. During a waste sort these items will more than likely need to go into the trash stream.

Q: What do we do if we find hazardous materials in the waste stream?

A: Although hazardous materials should not be found in the waste stream, in the case that they are, set them aside and contact the Iowa Department of Natural Resources or your Iowa Waste Exchange Area Resource Specialist for information regarding proper disposal.

X. Resources

For additional assistance, resources and questions regarding completing a waste sort for your company, business or organization contact the Iowa Department of Natural Resources Financial and Business Assistance section (www.iowadnr.gov/FABA) or the Iowa Waste Exchange. The Iowa Waste Exchange is a confidential and non-regulatory program of the Iowa Department of Natural Resources and is managed by Region XII Council of Governments. Area Resource Specialists can offer assistance regarding planning, implementing and calculating data as well as locating recycling services and markets in your area. Learn more about the Iowa Waste Exchange and find your Area Resource Specialist by visiting www.iowadnr.gov/FABA.