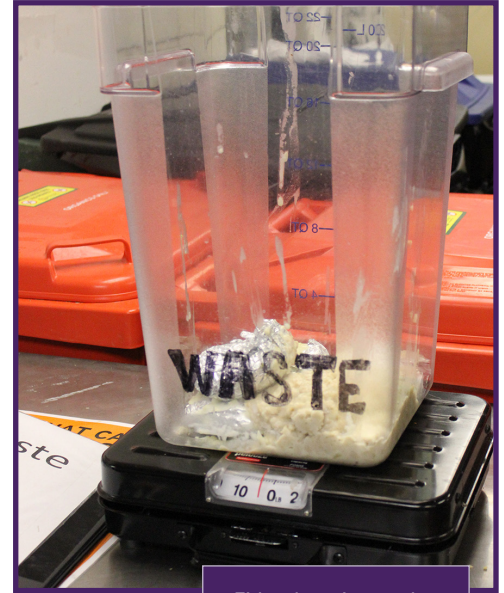


Conducting Post-Consumer Cafeteria Waste Sorts at K-12 Schools

Conducting a cafeteria waste sort to measure waste from students' trays is an effective method to identify prevention and reduction opportunities that can help minimize disposal costs. A waste sort essentially allows food waste from students' trays to be separated into categories and measured. Once a baseline of various waste streams has been calculated, goals can be set and strategies implemented to prevent and reduce waste.

Categories such as whole, unopened, and uneaten foods, compostable items, liquid beverages, cold lunch waste, food waste, recyclable items, and trash are the most commonly separated waste streams. The easiest method to conduct a waste sort is to include students by requiring them to sort the waste on their trays after breakfast and lunch. This method is far easier than hand separating when students toss all waste into one bin, plus getting students involved and interested can help promote student-led initiatives to help divert waste from the landfill.

Choosing the right scale to weigh each category is important and will affect the method you utilize to weigh waste. Hanging luggage scales or fish scales work well because the maximum weight limit usually far exceeds the weight of each garbage bag, plus they are very inexpensive. The downside of luggage scales is that they require you to attach the garbage bag and let them freely hang to get an accurate weight. If garbage bags have gotten too heavy, this may become difficult. A floor scale works well, but these are generally much more expensive than luggage or fish scales. The table to the right provides costs associated with items you will need to conduct your waste sort.



Either hanging scales or countertop scales can be used to measure food waste.



SUPPLIES

You will need some basic supplies to conduct a waste sort.

- Trash bags
- Garbage bins
- 5-gallon bucket
- Rubber gloves
- Tracking sheets
- Scale

ITEM	APPROXIMATE COST
Trash Bags	\$20
<ul style="list-style-type: none"> • 55 gallon bags • 50 per box 	
Garbage Bin	\$50
<ul style="list-style-type: none"> • 55 gallon 	
5-gallon Bucket	\$10
Disposable Gloves	\$10
<ul style="list-style-type: none"> • 100 per box 	
Scale	\$20

Methodology

First, you must decide what categories you would like to measure. If your school district is interested in food waste composting, you may want to have students sort out items that are not compostable, like meats and dairy. Likewise, you may want to separate paper products like napkins and non-dyed paper boats that are compostable. You will need a container or garbage bin for each waste stream you are measuring.

Once you have decided on categories you would like to measure, you will need to clearly label bins so students can easily identify which waste goes into which bin. Using photos or large, easy-to-read text, you can label each bin, taking into consideration the age group of students that will be sorting their tray waste and creating signage they will understand.



(above) Students can help by sorting waste from their trays after eating breakfast and lunch. Plus, involving students creates awareness about the issues of food waste.

(at right) Food waste comes in many forms. Inedible food waste is perfect for composting or anaerobic digestion.

Proper placement of bins will foster an easy, smooth transition of students through the sorting line. For example, providing a bucket for students to pour out unfinished beverages next to a receptacle for silverware first will eliminate two wastes right off the bat. The next bin should be for trash since students will have an empty

milk carton in their hands anyway. Food waste should ideally be the last bin since students generally slap their trays on the inside of the bin to get all the food off.

Next, inform students that they will be sorting their tray waste after eating and explain which items go into which bins. This is a great opportunity to get students involved and a quick 5-minute training session for students willing to help their peers sort waste can help promote waste reduction and sustainable ideas among students.

Once students are finished eating, they will need to go through the sorting line with their trays. It will be imperative there are staff and/or students standing behind the sorting bins guiding students through the process and helping them along the way.



SORTING PROCESS

1

The first garbage bin is a great location for cold lunch waste. Students that bring their own lunch will probably not need to go through the rest of the sorting line. Label this garbage bin as "COLD LUNCH."

2

Have students place all unopened, whole, and uneaten foods on a cart at the front of the sorting line. This is food you can donate.

3

Students then place silverware in a tub with or without soapy water.

4

Students are provided with a 5-gallon bucket labeled "BEVERAGES" or "LIQUIDS" to pour unfinished milk or juice into.

5

Next, students throw milk cartons and any other items that are not compostable or recyclable into a garbage bin labeled "TRASH." This will include flimsy plastic packaging, chip bags, and any other items that do not have the recycle stamp on the packaging.

6

If separating compostable paper products, have students throw all paper products like napkins and paper boats into a garbage bin labeled "COMPOSTABLES – Napkins and Paper Boats."

7

Recyclable items like plastic water bottles, fruit cups, and any other item stamped with the recycle symbol can be tossed in a garbage bin labeled "RECYCLABLES."

8

Finally, the last bin should be labeled "FOOD WASTE." When students throw their food waste away, they typically slap their trays on the inside of the garbage bin to remove all food so it's best if, at this point nothing else remains on their trays.

bag however buckets and bins should be tared from the total weight of each category.

- 2) When counting all unopened, whole, uneaten food items such as apples and bananas, don't forget to put these items into the food waste bin prior to weighing but after counting if they are normally thrown in the garbage. If unopened, whole, uneaten foods are normally rescued and donated at the school, then record the count and place them on the donation table. Then you can resume weighing and recording each category.

Analyzing the Data

Once the waste sort is completed, analyzing and extrapolating the data can help identify yearly averages per category, or averages of student waste per day. With prevention and reduction strategies in mind, set goals to prevent and reduce the amount of waste for specific categories. For example, uneaten, whole, unopened foods can be donated to a local non-profit organization that feeds the food insecure in your community with federal regulatory protection against liability should the food cause illness or harm. Since you counted leftover edible foods and also weighed them, you will be able to estimate how much leftover edible food you will divert from the landfill. Once prevention and reduction strategies are in place, conducting additional waste sorts can help gauge the success of implemented strategies.

After each breakfast and/or lunch shift, or when garbage bins are full, you will need to weigh each category and record the results on waste sort tracking sheets. Two important things to mention:

- 1) Make certain you subtract the weight of containers from the total weight of each category; this is called the tare weight. Since garbage bags weigh virtually nothing, you will not need to subtract the weight of the garbage

Food Waste Prevention and Reduction Strategies

Most K-12 schools that conduct a cafeteria waste audit will find that their largest waste stream is food waste. Many strategies to prevent and reduce food waste at K-12 schools are simple and cost-effective to implement. Knowing which strategies you are interested in implementing before the waste sort can help you decide which waste categories you'd like to measure. Likewise, knowing how much waste is generated per category can help plan implementation of strategies. For example, if you would like to compost your food waste, then you will need to know how much food waste you will be composting weekly so you can calculate how much carbon you will need to keep your composting operation active. Regardless of which strategies you decide to implement, there are many options to divert food waste from the landfill and understanding your waste stream will help you plan implementation of techniques that will prevent and reduce food waste.



Waste sorts don't have to be messy. Rather than sorting through garbage bags of waste, have students sort waste from their trays after meals.

PREVENTION

The most preferred method to divert food waste from the landfill is to not even generate it in the first place. There are strategies that can help prevent food waste at K-12 schools.

1. Analyze the most common foods/entrees being thrown away and find a solution to prevent these items from ending up in the trash. For example, a recipe change may be in order if menu items aren't well received and large quantities end up in the trash.
2. Repurpose foods into new recipes. For example, left-over buns can be turned into garlic bread.
3. Schedule recess before lunch to increase appetites. This strategy also promotes a calmer eating environment since students have expended energy before lunch.
4. Order less food more often so it's easier to manage and use.
5. Make certain students have at least 25 minutes to eat lunch.
6. Inventory foods frequently and move older foods to the front to be used first.
7. Always check food deliveries for freshness and make certain foods will not expire prior to use.
8. Store foods at optimal temperatures and conditions to extend shelf-life.



Be sure to subtract the weight of your container when weighing each category.

REDUCTION

Food waste reduction strategies work to find alternative uses for food waste and left-over edible food rather than sending it to the landfill. Food waste reduction strategies at K-12 schools require planning and forethought before implementation can occur. Involving students in both the planning process and implementation can be a valuable educational experience that has far reaching effects as students take sustainable ideas with them when they graduate and begin their adult lives. The following food waste reduction strategies can be implemented at your K-12 school and the Iowa Waste Reduction Center can help.

1. Donation

Leftover edible food can be donated to a local food pantry, soup kitchen, churches, and other organizations that help feed the food insecure in your community. The Bill Emerson Good Samaritan Food Donation Act provides liability protection to donors who donate edible food in good faith.

Share tables have become popular at K-12 schools to rescue uneaten, whole, unopened foods from students' trays. Once students are finished eating breakfast and lunch, a share table provides a location in the cafeteria students can place foods not consumed or opened such as whole fresh fruits, prepackaged bags of chips or pretzels, and condiment packages. This food can then be donated to a local non-profit that feeds food insecure people or it can be donated to students. In the State of Iowa, according to the Iowa Department of Inspection and Appeals, perishable items that need refrigeration like milk, cheese, and yogurt cannot be included on share tables to be offered to students.

Additionally, leftover prepared foods can also be donated to local organizations that feed the food insecure. Some organizations that feed the food insecure do not accept prepared foods, but some do. Contact local churches, food pantries, and food banks that accept food donations and ask if prepared foods are accepted as well and what the criteria are to donate prepared foods. Some organizations require prepared foods to be frozen right after serving before donating.

2. Composting

Composting is a great way to recycle food waste and can provide a valuable science-based educational experience for students. If composting food waste in Iowa, as long as you compost food waste generated only at the school, on the school's property, you are not subject to acquiring an organics composting permit, however there are basic requirements that the Iowa Waste Reduction Center can walk you through.

Composting food waste requires planning before you can commence operation. You will need to find a reliable carbon source such as leaves, wood chips, hay, or corn stalks to mix with your food waste. Also, you will need to water and mix your compost to keep the pile active and continually breaking down. Another thing to consider, is transportation of food waste and carbon to your composting site, as well as the types of tools/machinery you will need. Once again,



Compost made with food waste has beneficial uses and can beautify campus turf and gardens.

the Iowa Waste Reduction Center can help with regulatory requirements and technical aspects of caring for your composting operation.

3. Anaerobic Digestion

Anaerobic digesters use organics to generate biogas and heat. Iowa has very few anaerobic digesters that currently use food waste as a feedstock. Anaerobic digesters can be found in an agricultural setting on farms or connected to municipal wastewater treatment plants. If you are located near one, check out if they accept food waste and how to get your school district's food waste turned to energy through anaerobic digestion.

4. Feeding Animals

Fruit and vegetable trimmings or prep waste such as pineapple peels and tops, banana peels, or broccoli stems can provide much needed nutrition for various animals. Creating a partnership with a local farmer can help you divert food waste from the landfill while the farmer utilizes your prep waste to feed animals.

Although this does foster a win-win partnership, there are regulations in Iowa to be aware of. Feeding cattle fruit and vegetable trimmings requires the food to be heated to 212° Fahrenheit for at least 30 minutes. Additionally, the food must not have come into contact with any animal proteins. This goes the same for all ruminants like sheep, goats, cattle, or deer.

It is prohibited in Iowa to feed swine any food waste unless they are your own pigs and the food waste is your own food waste. Feeding swine is not an option for K-12 schools trying to reduce food waste in Iowa.



 **Want More Information?**

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In short, conducting a post-consumer waste sort is the first step towards setting food waste reduction goals followed by implementation of strategies that both prevent and reduce food waste.

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Waste Sort Tracking Sheet for K-12 Schools

Contact person and information _____
 Number eating breakfast _____
 Number eating lunch _____

Item	Pre-consumer Kitchen Food Waste (Fruit and veg trimmings, prepared foods, expired or moldy foods)	Breakfast (Waste from students' trays)	Lunch (Waste from students' trays)	Other (Snacks)
Food Waste				
Recyclables				
Compostables				
Trash				
Liquid Waste				
Unopened, whole, uneaten foods				
Other				

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