**Food Waste Audit**

**Background:**

Each day, the average person in San Diego County throws away about 5.6 lbs. of waste, a rate higher than both the state and national averages. Over the course of one year, this adds up to 2,044 lbs. of waste per person. Unless this waste is diverted through methods such as recycling or composting, it will end up in a landfill. A landfill is a designated area where waste is disposed of by being compacted together and buried under layers of soil. Organic matter makes up 39% of San Diego’s Miramar Landfill. While this matter will decompose over time, it takes up valuable space and emits methane, a potent greenhouse gas, as it breaks down. Inorganic material, such as plastic, does not break down and progressively accumulates.

To conduct an audit means to conduct an assessment of something. Assessing waste allows an individual to reflect on what they are throwing away and how small actions can add up over time. The state of California’s goal to decrease organic waste by 75% by 2025 (compared to 2014 levels) will require individual habit changes as well as large scale efforts. An audit builds perspective on what adjustments should be taken first to have the largest impact on lowering one’s waste production. In other words, it’s more realistic and doable to lower your waste when you know what you are wasting! According to the EPA, an average-size middle school creates over 40,000 pounds of lunch waste a year. Since wasted food makes up the largest percentage of any one material sent to the landfill, identifying this type of waste should be priority when conducting an audit.

**Sources:**

<https://www.calrecycle.ca.gov/climate/slcp>

<https://www.sandiego.edu/soles/hub-nonprofit/initiatives/dashboard/waste.php#tab-panel1>

<https://www.epa.gov/sites/production/files/2015-08/documents/r5_fd_wste_guidebk_020615.pdf>

**Activity:** Food waste audit/observation and discussion. Specifics of the activity will depend on which version you select. All versions will begin with the generic introduction below.

**Goal**: By participating in an audit focused on food waste, students will identify first-hand what is actually being thrown away in their homes or school. This will empower them to take accountability for their waste and proactively brainstorm realistic steps to reducing it. Through conducting a waste audit, students will also become familiar with what characterizes organics, recyclables, and landfill waste.

**Introduction (15 min):**

Lead a discussion with students about what an audit is and its purpose (see background for more information). Review general safety and hygiene precautions and expectations. Clarify the waste categories listed below. For visual guides and examples, you may reference the San Diego County recycling guide and the Waste Free SD waste sorting guide included in this lesson. Discuss the pre-audit questions listed below as a class.

Waste Categories:

* + Organics: food and yard waste (focusing on food waste in this audit)
  + Recyclables: metal, paper, glass, plastic bottles and containers
  + Landfill: all other waste items such as wrappers, plastic ware, straws, and soft plastic

Pre-audit questions:

* What item(s) do you anticipate will be most common? Why?
* What percentage of the waste do you anticipate being food?
* Why is it important and beneficial that we conduct this audit?

**Audit Version 1: In-Class Waste Sorting**

**Time:** Prep time (10 min) and audit time (45 min)

\*Note: Parent and school administration permission may be required for this version.

**Supplies**:

* 1-2 larger waste bins or bags for initial waste collected
* 3 smaller bins for weighing each category
* Waste category signs for smaller bins
* 2-3 waterproof tarps
* Plastic gloves and safety glasses/goggles for every student
* Weighing scale
* 9-12 “Waste Audit Tally Card” worksheets
* 1 “Waste Audit Weight Totals” worksheet
* Calculator (optional)

**Pre-Audit Procedures (10 min)**

Gathering and preparing the waste to be assessed:

Option 1: Use classroom waste after a cooking class period. At the end of class, combine all waste in the room into one bin or bag and save for the audit.

Option 2: Use lunchtime waste by collecting one of the trash bins or bags from the lunch area. You may need to communicate with lunch staff to ensure that if they clear waste immediately after lunch, they are able to save a bin or bag for the audit.

With either option, collect enough waste to be able to gain an accurate representation of what is being tossed, but not more waste than can fit on the tarps or be audited by the class in the time period available. If your school collects recycling in a separate bin, do not include that in the waste sample, since this audit is focused on materials being sent to the landfill.

**Food Waste Audit (45 min)**

In-Class Prep (After general introduction above):

Have students put on gloves and glasses/goggles.

Before beginning the audit, assign students into roles and designate where temporary piles and bins for each of the waste categories will go. Place the waste category signs signifying recycling, trash, and food scraps (included in this lesson) on the appropriate smaller bin.

Waste audit roles:

1. Sorters (~8-10 students) will sort through the large waste pile and separate organics, recyclables, and landfill items into temporary sub-piles. If food is inside packaging, it should be taken out and separated.
2. Recorders (~9-12 students- 3-4 per waste type) will go through the items in each sub-pile and note them by type on their “Waste Audit Tally Card” worksheets. Once they have tallied them, they will put them into the corresponding smaller bin for the Weighers.
3. Weighers (~6 students) will wait until the smaller bins have a substantial amount of waste in them, then place the bin on the scale and note the weight on the “Waste Audit Weight Totals” worksheet in the “weights” column. One student may be in charge of listening to and noting weights on the worksheet. Remember to take the weight of the empty bin first, note that at the top of the worksheet, and subtract that from waste weight measurements (a calculator may be used if available). Once the waste in a bin has been weighed and noted, that waste can be disposed of. At the end, Weighers will calculate totals for each kind of waste in the “totals” column.

Bring the large bin or bag of waste being audited to the auditing area. Before sorting, weigh total waste, then lay the waste out onto the tarps. If you weigh the waste in a bin, weigh the empty bin after laying the waste on the tarps and subtract the weight of the bin from the total. Have one of the Weighers note the total waste weight at the top of the “Waste Audit Weight Totals” worksheet.

Remind students of their roles and begin sorting, recording, and weighing.

If done properly, the total weights of recycling, food scraps, and landfill waste should add up to roughly the total weight taken at the beginning of the audit on the “Waste Audit Weight Totals” worksheet.

If Weighers dispose of waste after weighing it, cleanup should be minimal.

Post-audit questions and discussion:

1. What percentage of your waste consisted of food by weight? What percentage of your waste consisted of food by item number (tally)?
2. Was there a difference in edible vs. nonedible food thrown away?
3. How many items were in your waste that could have been recycled? Why do you think students did not recycle these (unless recycling is not available at school)?
4. What were the most commonly found items? Were your predictions correct? Are you surprised?
5. How much of the waste was truly meant to go to the landfill?
6. What can we do to prevent this waste in the future?
7. What goals can we make as a class in reducing our waste? How do we spread awareness to others in school or at home? Is this a topic you feel comfortable discussing?

**Waste Audit Tally Card (Double-Sided)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Waste Type** | **Item** | **Tally # of Items** | **Total #** |
| **Recyclable** | **Plastic** |  |  |
| **Metal** |  |  |
| **Paper/Cardboard** |  |  |
| **Glass** |  |  |
| **Organics** | **Edible Food (ex. partially eaten banana)** |  |  |
| **Inedible Food (ex. apple core)** |  |  |
| **Waste Type** | **Item** | **Tally # of Items** | **Total #** |
| **Landfill** | **Straw** |  |  |
| **Wrapper** |  |  |
| **Plastic Utensil** |  |  |
| **Other** |  |  |

**Waste Audit Weight Totals**

Weight of all the waste at the beginning of the audit: \_\_\_\_\_\_\_\_\_\_ lbs.

* Remember to subtract weight of empty bin

Weight of empty small bin: \_\_\_\_\_\_\_\_ lbs.

* Remember to subtract this anytime you weigh waste in a bin

|  |  |  |
| --- | --- | --- |
| **Waste Type** | **Weights (lbs.)** | **Total (lbs.)** |
| **Recycling** |  |  |
| **Organics (food waste)** |  |  |
| **Landfill** |  |  |

**Audit Version 2: School Lunchtime Observations**

**Supplies**:

* “Waste Audit Tally Card” worksheets for each student
* Pens/pencils
* Calculator (optional)

**Food Waste Audit (45 min)**

In-Class Prep (After general background and introduction on pg. 1-2):

Instead of collecting a waste sample to audit, as in version 1, students will observe lunchtime waste habits by recording what items are being thrown away during lunch.

Assign observation times and locations for each student. Students may either all record observations simultaneously during one lunch period, if there are enough waste bins around the lunch area, or be split up among various days’ lunch periods.

Students will record their observations on the “Waste Audit Tally Card” (pg. 5-6).

Post-audit questions and discussion:

1. Do you think students’ waste behaviors changed knowing that you were there recording?
2. What percentage of your waste consisted of food by item number (tally)?
3. Was there a difference in edible vs. nonedible food thrown away?
4. How many items were thrown away that could have been recycled? Why do you think students did not recycle these (unless recycling is not available at school)?
5. What were the most commonly found items? Were your predictions correct? Are you surprised?
6. How much of the waste was truly meant to go to the landfill?
7. What can we do to prevent this waste in the future?
8. What goals can we make as a class in reducing our waste? How do we spread awareness to others in school or at home? Is this a topic you feel comfortable discussing?

**Audit Version 3: Independent Home Waste Sorting**

**Supplies**:

* “Waste Audit Tally Card” worksheets for each student
* Pens/pencils
* Bin or bag for waste sample
* Calculator (optional)

**Food Waste Audit (45 min)**

In-Class Prep (After general background and introduction on pg. 1-2):

Instead of collecting a waste sample to audit as a class, as in version 1, students will audit a waste sample from home. This may either be done independently (outside of class time) or simultaneously while meeting virtually.

Students will record their observations on the “Waste Audit Tally Card” (pg. 5-6).

Post-audit questions and discussion:

1. What percentage of your household’s waste consisted of food by item number (tally)?
2. Was there a difference in edible vs. nonedible food thrown away?
3. How many items were thrown away that could have been recycled? How familiar are members of your household with recycling rules?
4. What were the most commonly found items? Were your predictions correct? Are you surprised?
5. How much of the waste was truly meant to go to the landfill?
6. How much of a role do you play in food purchasing? Do you think this influences how comfortable/uncomfortable you are with wasting food?
7. What percentage of your household’s waste would you guess you throw away?
8. What can you do to prevent this waste in the future? Is this a topic you feel comfortable discussing with your family?