

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF GENERAL SERVICES



Conduct a Waste Study for Growing Healthy Schools Week! (and beyond)

The first step toward solving a problem is realizing that you have one! In our society it is very easy to throw things “away” and never think about the consequences. However, once students start exploring questions about where stuff comes from and where it goes after we throw it away, they often naturally begin to realize why it matters and want to know what they can do about it. Conducting a waste study is a great first step in leading students to take concrete actions to reduce waste in their school. For Growing Healthy Schools week we hope you will start down this path of waste reduction:

1. **Study!** Let us know by September 15, 2014 which waste study you plan to conduct during Growing Healthy Schools week, and/or sign up to receive assistance in conducting a more in-depth waste study later in the year using [this form](#).
2. **Act!** Based on your study, recommend an action your school can take to reduce waste. Find ways to communicate your recommendation, such as through presentations to school leadership or students, newsletters, announcements, posters, or videos.
3. **Share!** Share your data and stories using [this form!](#)

To help you get started, see below the list that DGS of waste study options. Options 1-3 are simple studies based on visual observations that do not require any materials other than pen and paper. Options 4-5 are more in-depth studies which require more materials and schools can request assistance in conducting later in the year. *We would love to hear from you if you opt for an Option 6: Design your own study!*

Conduct a Waste Study Options
1: Estimate your diversion rate. Make a simple estimate of what % by volume of your school’s waste gets recycled or composted rather than landfilled or incinerated. This is a question on the Green Ribbon Schools application!
2: Start a classroom competition. Create a team of recycling monitors and find out how many bins are being used correctly.
3: Do a mini food waste audit. Observe how much whole uneaten food is wasted in one day.
4: Do or sign up to do a full cafeteria waste audit. Sort, measure, and weigh one day of waste from the cafeteria. DGS can directly support DCPS schools with materials and can also provide technical assistance to charter schools.
5: Sign up for the AWAY project (grades 6-12; limited to 10 schools). The 1to1 Movement can provide materials and presentations for 10 classrooms to lead students in an experiment about personal consumption by examining what students normally throw “away.”

Contact: Beth Gingold, Schools Conservation Coordinator, DC Department of General Services, beth.gingold@dc.gov, 202-727-3587

More information: <http://dgs.dc.gov/page/healthy-schools>

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1: Estimate your diversion rate

Summary: Monitor outdoor containers (e.g. dumpsters) to determine how much of each type of waste the whole school produces in one week.

Purpose(s): To estimate the school's diversion rate; to find out whether your schools is *really* recycling; to estimate how much waste your school produces; to inform decisions on dumpster sizes and pick up services.



Types of containers include dumpsters (left), toters (right), and compactors (not pictured)

If your school does not currently recycle this study is a great first step toward determining your recycling needs. Note that under DC Municipal Regulations all schools are required to recycle paper, cardboard, glass, certain plastics, and aluminum. If you think your school recycles this may teach you otherwise – your school is not actually recycling unless the materials are reaching a recycling facility!

Procedures:

- 1) **Train your team** – Ask your head custodian about your school's pick up services. Have him/her show them to you and your students and describe how each container is used. Record a list of serviced containers, their volume, acceptable materials (e.g. paper recyclables, mixed recyclables, organics, trash), the pick up days and which hauler provides the services.
- 2) **Try to find out where your waste goes** – Call the hauler to find out where the waste is actually taken and add this information to this list. If the hauler is unable or refuses to provide this information, this is also interesting information to note!
- 3) **Monitor fullness of containers at pick up** – Record the % full (e.g. 25%, 50%, 75%) of each container at the end of the day before it is picked up. *Bonus:* Ask your head custodian to join! Observe whether there is any **contamination** – that is, if any of the containers contain unacceptable materials (e.g. if there is trash in the recycling dumpster). Brainstorm ideas with your custodial staff on how to solve any identified problems.
- 4) **Estimate diversion rate** - Try to answer question 9A on the [Green Ribbon Schools application!](#) *Bonus:* Estimate your total capacity for each material type and estimate the % capacity your school uses. Report this to the manager of your hauling contract (for DCPS schools this is DGS).
- 5) **Share!** – present your findings to your school and share with DGS using [this form!](#)

Resources:

- To get students thinking, watch The Story of Stuff <http://storyofstuff.org/movies/>
- For legal requirements to recycle, see: <http://dpw.dc.gov/service/commercial-recycling>
- OSSE's Green Ribbon Schools website: <http://osse.dc.gov/service/green-ribbon-school-program>
- Ask for help! Beth Gingold, beth.gingold@dc.gov, 202-727-3587

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Diversion Rate Calculation – from Green Ribbon Schools Application!

Element 3A: Waste

19A. What percentage of solid waste is diverted from landfilling or incinerating due to reduction, recycling and/or composting? ____%

Complete all the calculations below to receive points.

A - Monthly garbage service in cubic yards (garbage dumpster size(s) x number of collections per month x percentage full when emptied or collected):

B - Monthly recycling volume in cubic yards (recycling dumpster sizes(s) x number of collections per month x percentage full when emptied or collected):

C - Monthly compostable materials volume(s) in cubic yards (food scrap/food soiled paper dumpster size(s) x number of collections per month x percentage full when emptied or collected): _____

Recycling Rate = $((B + C) \div (A + B + C) \times 100)$: _____

Monthly waste generated per person = $(A/\text{number of students and staff})$:

Notes:

- *The Healthy Schools Act set a target diversion rate of 45% for DCPS schools.*
- *The waste industry convention is to calculate diversion rates by weight rather than volume. Since food waste is heavier than other types of waste most likely the diversion rate of this school calculated by industry convention would be even higher.*
- *A good discussion for middle or high school students would be comparing the implications of calculating the diversion rate by weight v. by volume and/or the implications of using a diversion rate as a metric for success. (Example question: What would likely happen to your diversion rate if you switched the default printing setting on all computers to double-sided printing, without making any other changes?)*

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2: Start a classroom competition!

Summary: Create a team of recycling monitors to determine what % of classrooms are recycling correctly.

Purpose(s): To achieve correct recycling in classrooms; increase amount of paper recycled; reduce contamination in recycling bins.



*Some recycling competitions award schools for recycling the most. This is not a good metric for success because the long run goal is to reduce all types of waste including recyclables. A better metric for success is whether the school is recycling **correctly**, meaning that any materials that can be recycled are being properly. That is they are not **contaminated** with non-recyclable materials, especially food waste. Unfortunately, when recycling bins are contaminated everything in them becomes trash!*

Note: If your school does not have recycling bins in classrooms ask for help! (see Resources below)

Procedures:

- 1) **Train your team** – Select a group of students or “green team” to be “recycling monitors.” Make sure all the students on the green team know what is supposed to go in each bin. What is “correct” is dependent on the school program.
- 2) **Count classroom bins** – Determine how many classrooms will be included in the study. Make a list of each classroom and record the number and types of bins they contain. Take note of whether bins are labeled. If they are not, labels are a good next green team project.
- 3) **Audit**– Have your team check each classroom bin and record whether it contains the correct materials. Do not inform staff or students outside of the green team about the audit, since this is likely to change their behavior.
- 4) **Announce** - After the audit announce the number and % of correct and incorrect recycle bins and trash bins; and let everyone know that you’ll be conducting the audit again! You may want to display the results prominently or leave “thanks for recycling” notes on “correct” bins.
- 5) **Repeat and share!** –Repeat the audit every day and announce the results each time. Hopefully over the week it will improve. You may find it useful to repeat on a monthly basis, unannounced. Share your results with DGS using [this form!](#)

Resources:

- To get students thinking, watch The Story of Stuff <http://storyofstuff.org/movies/>
- For what is correct for DCPS see <http://dgs.dc.gov/node/878632>
- See Green Schools Alliance example worksheet and instructions: <http://www.greencupchallenge.net/recyclechallenge/challengeinstructions.html>
- Ask for help! Beth Gingold, beth.gingold@dc.gov, 202-727-3587

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3: Do a mini food waste audit

Summary: Visual audit of whole, unopened, uneaten food wasted in one day.

Purpose(s): To start a conversation about reducing food waste; to estimate how much whole uneaten food waste could be reduced or recovered.

In 2014, students at Cardozo High School found that unopened uneaten items accounted for 20% of the cafeteria waste! A “waste audit” is an analysis of types and amounts of waste generated by a facility or activity. Depending on the goal of the audit, the methods can range from simple visual inspection to detailed collection of volume and weight data. Visual waste audits are a no cost effective way to quickly identify major types of waste that students can brainstorm ways of addressing immediately, and can also be used to guide more detailed studies. If you are interested in conducting a more in-depth study, please let DGS know [using this form!](#)



Procedures:

- 1) Train your team** – Select a group of students or “green team” to be “food waste monitors.” Review the EPA’s food waste hierarchy for background discussion.
- 2) Determine food items to monitor** – Observe the cafeteria to determine what items are commonly thrown away completely whole, unopened, or uneaten. This could be limited to food items or also include wrapped utensils. Make a data sheet for recording how many of these items are thrown away in one lunch period.
- 3) Count!**– Have the green team count how many of each of the items are thrown away by students during each lunch period (or as many lunch periods as possible). Ideally do not inform other staff and students of what you are doing since this can change behavior.
- 4) Analyze** – Based on the data collected, estimate how many of each item is likely wasted per day, per month, and per year at your school. Start a discussion about the implications of this waste (in terms of money, nutrition lost, resources used, etc) and brainstorm ideas on steps that could be taken to address it.
- 5) Share!** –Share your results and recommendations with DGS using [this form!](#)

Resources:

- To get students thinking, watch The Story of Stuff <http://storyofstuff.org/movies/>
- E.P.A’s Food Waste hierarchy <http://www.epa.gov/foodrecovery/>
- Different types of waste assessments <http://www.epa.gov/smm/wastewise/approach.htm>
- Ask for help! Beth Gingold, beth.gingold@dc.gov, 202-727-3587

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4: Do or sign up to do a cafeteria waste audit

Summary: Sort, measure, and analyze one day of cafeteria waste!

Purpose(s): To generate ideas from students on how to reduce waste in the cafeteria; to inform waste hauling services (i.e. how many containers and pick ups are needed for each type of waste).

Waste audits conducted by students last year found that more than 75% of cafeteria waste in DCPS schools is compostable or recyclable. Detailed waste audits require good planning and materials such as gloves, scales, and tarps. See the documents posted on <http://dgs.dc.gov/page/healthy-schools> for more detailed instructions. Note that these instructions assume that there is not already recycling in the cafeteria – if there is already recycling in the cafeteria the methods can be adjusted. If you would like to sign up for assistance from DGS please let us know [using this form!](#) DGS can provide direct assistance including supplies to DCPS schools, and technical assistance to charter schools.



Procedures:

- 1) Prepare**– Speak with your custodial staff to make a plan for collecting one day’s worth of cafeteria waste and identifying where it can be sorted and measured. Determine which categories of waste will be analyzed (e.g. organics, recycle, trash). Review the EPA’s food waste hierarchy for background discussion.
- 2) Set Up** – Gather materials and set up for measuring and sorting. Prior to sorting weigh and estimate volume of all unsorted bags of waste, and select the bags to be sorted by students (you may choose to only sort a sample of bags, depending on the total amount of waste).
- 3) Sort** - Have teams of students sort waste into selected categories.
- 4) Analyze** – Collect visual observations, weight, and volume data. Based on the data collected, estimate how many of each item is likely wasted per day, per month, and per year at your school. Start a discussion about the implications of this waste (in terms of money, nutrition lost, resources used, etc) and brainstorm ideas on steps that could be taken to address it.
- 5) Share!** –Share your results and recommendations with DGS using [this form!](#)

Resources:

- To get students thinking, watch The Story of Stuff <http://storyofstuff.org/movies/>
- See example methods and data sheets at <http://dgs.dc.gov/page/healthy-schools>
- E.P.A’s Food Waste hierarchy <http://www.epa.gov/foodrecovery/>
- Ask for help! Beth Gingold, beth.gingold@dc.gov, 202-727-3587

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5: Sign up your students for the AWAY Project

Summary: The AWAY Project is a week-long educational waste audit in which middle and high school students learn about their personal consumption and waste production.

Purpose(s):

Students will:

1. Identify where their waste comes from and where it goes.
2. Sort waste into recyclables and trash
3. List most commonly found items
4. Develop personal and tangible solutions to reduce their use

The AWAY Project is an environmental education program of the 1to1 Movement in San Diego, California. 2,619 students have participated in the program, collecting an average of 23.17 pieces of waste per person and collectively sorting 60,682 pieces into reuse, recycling, or trash piles.



Procedures:

1. **Waste 101** – a 1to1 Movement educator leads a 45 minute presentation on waste, the impacts of waste on the environment, and introducing the AWAY Project as an experiment on a Monday
2. **Students learn by doing** – each student receives his/her own duffel bag. The duffel bag is their portable waste receptacle for the rest of the week, to carry and collect any trash or recycling they generate (with exception to biodegradable, sanitary, or hazardous waste)
3. **Discuss**– a 1to1 educator returns to the classroom on Friday to facilitate a discussion about students’ findings and reactions.
4. **Dissect** – On Friday, students count how many pieces of waste they collected and sort into piles of reuse, recycling, and trash. In small groups, students identify the three most commonly found items and develop tangible solutions to reduce their use in the future.
5. **Share** – Connect with the 1to1 Movement on social media to share your classroom’s experience.

Resources:

- Sign up using [this form](#).
- For more information about the AWAY Project, visit: www.awayproject.org
- For more information on The 1to Movement, visit: www.1to1movement.org
- Ask for help! Beth Gingold, beth.gingold@dc.gov, 202-727-3587
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