

## LESSON 9: SOLUTIONS FOR GARBAGE AND HAZARDOUS WASTE

### **OVERVIEW:**

*The purpose of this activity is to encourage students to develop a sense of duty and possibility that garbage and hazardous wastes can be successfully addressed, even if at a local scale. Students will learn about the Three-R's (and composting), and then develop an action plan to deal with garbage at a local level, such as in the school offices or cafeteria, or through the local community or neighborhood. Students will explore and discuss traditional and innovative approaches to hazardous and material waste problems, learn to think about presenting information appropriately for their audience, and develop and action plan to address a school- or community-based waste concern.*

### **SUB-QUESTION:**

What are ways that garbage and/or hazardous waste can be addressed in my local school or community?

### **Ways of Knowing Urban Ecology:**



Students will...

#### **Understand**

- Explore the benefits of reducing, reusing, recycling, and composting waste (*human impact, ecosystem state and structure, forces and drivers, ecosystem services*).

#### **Talk**

- Select different kinds of information for appropriate audiences.

#### **Do**

- Analyze cultural journalism data collected from local residents, leaders, neighbors, and family members on local land use over time.
- Construct a cohesive story of land use over time.
- Present the social histories of the local area that they construct through their ongoing cultural journalism.

#### **Act**

- Develop a “marketing plan” to promote action and address the waste production at the school cafeteria, offices, or local neighborhood community.

### **SAFETY GUIDELINES:**

None

### **PREPARATION:**

Gather materials

Reserve computer lab, if necessary

### **Time:**

2-3 class periods

Day 1: Activity 9.1

## Activity 9.2

Day 2: Activity 9.3

**Materials:****Activity 9.1**

Computer with projector

Video clips

**Activity 9.2**

PowerPoint presentation

**Activity 9.3**

For each student:

Copies of student sheets

**INSTRUCTIONAL SEQUENCE:****Activity 9.1: The Intersection between Science Knowledge and Stakeholders**

1. Remind students of the structure of the action planning process (Science Knowledge, Investigate Site and Envision Possibilities, Identify Stakeholders, Identify Resources, Construct Actionable Steps, and Motivate). Let your students know that as a class you will be looking at how science knowledge can be used as a way to inform stakeholders.
2. Tell students that they will be watching a video of a talk given by Majora Carter (M4 L9 MajoraCarter).

***Teacher Background Knowledge***

Majora Carter is the Executive Director of Sustainable South Bronx (<http://www.ssbx.org/>), an organization dedicated to environmental and economic justice in the South Bronx area of New York City. This presentation was given at the 2006 TED (Technology, Entertainment, and Design) Conference and can be found in its entirety at <http://www.ted.com/index.php/talks/view/id/53>.

3. Before watching the video, ask students to keep the following questions in mind:
  - Who are the intended audiences and stakeholders for this talk?
  - What are the kinds of information she is presenting (statistics, personal stories, photographs, maps)?
  - How does each kind of information speak to the different audiences and stakeholders?
4. After watching the video, ask students to write down in the table in the student handout at least two pieces of information from the video, who they think is the intended audience for each piece of information, and why. Let them know that they will be discussing their findings with others, as small groups or as a class.
5. Discuss students' findings as small groups or as a class.

**Activity 9.2: Exploring The Three-R's (and Composting)**

1. Ask your students if they have heard of the "Three-R's." Have the students brainstorm as a class what each of the R's represents: **Reduce**, **Reuse**, and **Recycle**. Ask students to describe what they think these terms mean. You may refer to the

Teacher Background Knowledge Document (M4\_L9\_T\_background.doc) for detailed information.

2. If it does not come up, inform the class that you will be adding a “C,” for **Compost**. Ask the class if anyone knows what composting is.
3. Describe the terms (Reduce, Reuse, Recycle, and Compost) in detail. You may use the provided PowerPoint presentation to project or print out and share with your students.

### ***Teacher Background Knowledge***

Extensive background information can be found at the EPA’s website on Resource Conservation at <http://www.epa.gov/epawaste/conserves/rrr/index.htm>.

### **Activity 9.3: Stakeholders and Garbage and Hazardous Waste**

1. Tell your students that they will now be considering action planning around garbage and hazardous waste in and around the school. For the purposes of this activity, the focus is on identifying stakeholders, although you may have your students complete a full action plan depending on time and interest.
2. Using the board or newsprint, brainstorm with your students the sources of waste production in the school or neighborhood. In the school, *offices* and *the cafeteria* are two important sources of waste production. As a class, choose one source as the context to explore as your garbage or waste *problem*.
3. Guide your students through the steps of the action planning framework as a class and consider each step concerning garbage, hazardous waste, and the particular context the class has chosen.
4. When “Envisioning Possibilities,” here are some ideas that you can share with your students (this list is by no means inclusive):
  - Start a school-wide paper recycling program
  - Start a compost pile for food waste from the cafeteria
  - Encourage re-usable – or even compostable – trays and plates
  - Develop a paper-reduction program by encouraging electronic communications
  - Planting rain gardens around the school to slow water run-off and the distribution of hazardous materials (see the in-depth guide with suggestions of appropriate local plant options from the Brooklyn Botanical Garden [[http://www.bbg.org/gar2/topics/design/2004sp\\_raingardens1.html](http://www.bbg.org/gar2/topics/design/2004sp_raingardens1.html)])
5. Make sure to include a discussion of **Reduce, Reuse, Recycle, and Compost** with your students when discussing and envisioning possibilities.
6. Ask your students to consider who the stakeholders are, and the kinds of evidence (statistical or scientific evidence, personal stories, impact of the problem, benefits of the solution, etc.) they must present to convince them. Have your students complete the table on the worksheet listing the stakeholders and the kinds of evidence these stakeholders would find convincing. This requires that students view the kind of environmental action they are promoting from another’s perspective and may have to be strongly encouraged to do so. The worksheet may be completed individually, in small groups, or as a class.

### **Concluding the Lesson**

1. Ask your students to consider what they have learned over the course of the module, as well as the Action Plan process including their presentations.

2. Encourage your students to discuss what they learned – content as well as action – they can do to address issues of garbage and hazardous waste.
3. Ask your students to consider how they would have presented differently if they were presenting to a different audience, such as a community group or school or city officials, instead of their classmates and their teacher. Ask your students to share their thoughts.