

## LESSON 4: NOT ALL WASTE IS CREATED EQUAL

### OVERVIEW:

*In this lesson, students will learn about the distinction between hazardous waste and other forms of waste as well as discuss the current challenges we face in finding ways to safely dispose of this waste. First, students will discuss their own conceptions of hazardous waste. Then, they will view a teacher-directed PowerPoint which provides additional information about hazardous waste. The lesson then concludes with the viewing of videos that relate to e-waste management issues.*

### SUB-QUESTION:

Why are hazardous wastes so dangerous and where do these wastes go in the ecosystem?

### WAYS OF KNOWING URBAN ECOLOGY:



*Students will...*

#### Understand

- Understand the proportional nature of toxicity. (*ecosystem state and structure*)
- Understand that hazardous waste is classified using four categories: flammability, corrosiveness, reactivity and toxicity. (*ecosystem state and structure*)
- Understand that the e-waste produced in the United States is impacting other countries like China and India. (*ecosystem state and structure, ecosystem change, scale*)

#### Talk

*No specific goals connected with acting on urban ecology in this lesson.*

#### Do

- Make predictions about the lethal dose of a variety of substances.
- Propose ways in which they can reduce their solid waste contributions.

#### Act

*No specific goals connected with acting on urban ecology in this lesson.*

### SAFETY GUIDELINES:

None

### PREPARATION:

#### Time:

1 class period

**Materials:****Activity 4.1**

Student Worksheet

**Activity 4.2**

Hazardous Waste Power Point Presentation

LCD Projector

**Activity 4.3**

Video clip #1

Video clip #2

**INSTRUCTIONAL SEQUENCE:****Activity 4.1: Anything can be toxic, but when is it Hazardous?**

1. Refer students to the previous brine shrimp lesson. Ask them, “Would you consider the tested substances to be toxic to brine shrimp?”
2. Then distribute the student sheet for Activity 4.1. Tell students that you will be discussing the toxicity levels of various substances that affect animals including humans.
3. Have students review the table and answer the questions on the worksheet. Student answers to these questions should then be discussed prior to the Power Point presentation so that they have a basic understanding of hazardous waste before taking notes.

**Activity 4.2: Power-Point of Hazardous Waste**

1. Show students power point about hazardous wastes and discuss their understandings of the terms being presented. Key points that students should know are
  - *The four criteria that are used to classify hazardous waste.*
    - *Flammability*
    - *Corrosiveness*
    - *Reactivity*
    - *Toxicity*
  - *Three categories of hazardous waste*
    - *Synthetic organic compounds*
    - *Household wastes*
    - *Heavy Metals*
  - *The concentration of wastes are important in determining how hazardous they are.*
  - *Some examples of hazardous waste in each of the categories.*

**Activity 4.3: YouTube Videos:**

1. Tell Students that you are going to show them two short videos that provide different perspectives on e-waste management. After each video, students should be given an opportunity to voice their opinions on what they saw.
  - Clip #1- <http://www.youtube.com/watch?v=EXzsqTFwV3Q>  
“E-waste: Dumping on the Poor” created by the Asia Society (4:35)

**Teaching Strategy**

Possible Questions to aid in the discussion of Clip 1:

- Why should we care about how our waste is affecting those countries that are accepting our e-waste?
- How can throwing electronics in the garbage impact our own community?

- Clip #2 : “The Green Way to Throw Out E-Waste” created by NBC News (2:19 minutes)- <http://www.youtube.com/watch?v=S4xBFXymDNU>

**Teaching Strategy**

Possible Questions to aid in the discussion of Clip 2:

- Why do you think the recycling of e-waste is not more common?
- Do you know of any e-waste recycling companies in your area?
- What do you think happens to the e-waste you throw in the trash?

**Concluding the Lesson**

1. Have students brainstorm hazardous wastes that they may come across in their daily lives.
  - How do they dispose of them?
  - How might they avoid using hazardous wastes?