



## The Truth about Plastic Bags

By Simone Smith

### INTRODUCTION:

This lesson will inform students about the scope of the worldwide plastic bag problem, and provide them with ways to reduce plastic bag generation and waste.

### LESSON OVERVIEW:

**Grade Level & Subject:** K-12 (K-8 recommended); Science and Social Studies

**Length:** 90 minutes (with a preliminary homework assignment and potential follow-up activities)

#### Objectives:

After completing this lesson, students:

- Will be able to discuss the downsides of plastic bags
- Will know how to lessen the damages associated with plastic bag use

#### National Standards Addressed:

This lesson addresses the following National Education Standards.<sup>1</sup>

- **Content Standard:** [NS.K-4.1](#), [NS.5-8.1](#), [NS.9-12.1](#) **Science as Inquiry**

As a result of their activities in grades K-12, all students should develop:

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

- **Content Standard:** [NS.K-4.6](#), [NS.5-8.6](#), [NS.9-12.6](#) **Personal and Social Perspectives**

As a result of their activities in grades K-12, all students should develop an understanding of:

- Personal and community health
- Population growth
- Natural resources
- Environmental quality
- Natural and human-induced hazards
- Science and technology in local, national, and global challenges

- **Content Standard:** [NSS-G.K-12.3](#) **Physical Systems**

As a result of their activities in grades K-12, all students should:

- Understand the physical processes that shape the patterns of Earth's surface.

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<sup>1</sup> <http://www.education-world.com/standards/>

- Understand the characteristics and spatial distribution of ecosystems on Earth's surface.

- **Content Standard: NSS-G.K-12.5 Environment and Society**

As a result of their activities in grades K-12, all students should:

- Understand how human actions modify the physical environment.
- Understand how physical systems affect human systems.
- Understand the changes that occur in the meaning, use, distribution, and importance of resources.

**Materials Needed:**

- Paper
- Drawing/writing utensils
- Computer with internet access and a projector
- Copies of **Reproducible #1 - At Home: Getting to Know Your Plastics!** for each student

**Assessment:** Students will be assessed on the following:

- Preparatory homework assignment
- Classroom activities such as Activity Five
- Overall participation.

**LESSON BACKGROUND:**

**Relevant Vocabulary:**

- Decompose: To break down into small parts or elements.
- Reuse: To use again.
- Recycle: To take old, used materials and make them into something new.

**Information:**

Plastic bags cause a significant amount of global environmental damage. Because they are so abundant, plastic bags are quickly discarded and only 1-3% are recycled. The 500 billion to 1 trillion plastic bags that end up as trash every year devastate fragile ecosystems and take around a thousand years to decompose. In the 1980s, plastic trash was estimated to have killed over 100,000 marine mammals and sea turtles annually<sup>2</sup>.

While plastic bags are doing a great deal of damage, it is possible for the average person to make a difference. People must first become informed about environmental problems associated with plastic bags, then spring to action by using reusable shopping bags, bringing their own plastic bags to designated recycling venues (at grocery stores, etc...) and pushing for laws that ban plastic bags from stores all together.

**LESSON STEPS:**

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<sup>2</sup> [http://www.cawrecycles.org/living\\_green/shopping\\_list/bags/bag\\_facts](http://www.cawrecycles.org/living_green/shopping_list/bags/bag_facts)

**Warm Up: Homework Assignment** – For the Night Before

1. Send students home with **Reproducible #1 - At Home: Getting to Know Your Plastics!**, encouraging them to think about plastic bag usage and accumulation. The worksheet will:
  - Ask students to count the number of plastic items in their houses;
  - Ask students how they can use their plastic waste;
  - Ask students to collect plastic shopping bags and bring them to class the following day.

**Activity 1: Getting a Grip on the Plastic Problem**

1. Have students **deposit all of the plastic bags** they have collected into one large pile.
2. **Discuss** how large the pile would be if:
  - a. Every student in the school brought in bags
  - b. Every family in the city brought in bags
  - c. Every family in the state, country, etc...
3. Have students **calculate** the raw numbers and compare their results with the following statistics:
  - a. The average American uses roughly 300-700 plastic bags every year.
  - b. There are 306,550,000 people in the US, (as of May 2009) and the numbers continue to grow<sup>3</sup>.
    - i. That means that every year, Americans use over *100 billion* bags<sup>4</sup>!!  
And that's *just* the United States!
4. **Discuss** the final destination of most waste (landfills). Then have students share what they think can be done with the bags, aside from recycling and disposal.
5. **Discuss** the impact that plastic bags have on the natural environment:
  - i. Introduce the North Pacific Gyre (aka the Great Pacific Garbage Patch): A naturally occurring system that has gathered flotsam for thousands of years, only the last 50 or so has been gathering things that don't break down. You can't see it from the sky, or on Google, because it is comprised of very small pieces.
    1. To help them realize the scope of the Gyre, encourage students to imagine their pile of bags, stretching across the ocean in a big clump twice the size of Texas and 30 yards deep!
6. **Give each student a bag** and ask them to imagine they were a bird or sea creature. Next, ask them what they would think the bag is if they saw it floating around in the ocean.

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<sup>3</sup> <http://www.census.gov/population/www/popclockus.html>

<sup>4</sup> <http://www.nytimes.com/2007/09/30/nyregion/30towns.html>,

<http://www.reuters.com/article/environmentNews/idUSN225508520080125>

- i. Jellyfish think some of the particles are zooplankton, and eat them, and the plastic particles move their way up the food chain.
- ii. Turtles, fish, and other birds sometimes swim into the refuse and get caught, or mistake it for jellyfish or other fish and eat it.

### Activity 2: Gorilla in the Greenhouse

Watch the Gorilla in the Greenhouse film on [Earth Day TV](#) (In the Classroom channel, 07:43).

### Activity 3: So What Is Plastic, Anyway?

1. Give students these following four facts and ask them to share how the use of plastic bags leads to potential problems. Make a mind map, diagram or brainstorm representation of the class' findings on a white/chalk board, overhead projector, or document camera.
  - a. Plastics are made from petrochemicals.
  - b. Plastic bags are thin and usually disposable.
  - c. Plastic bags, both conventional and biodegradable, do not decompose in sanitary landfills.
  - d. Even when plastic bags to start to break into smaller pieces, their tiny particles continue to exist in the environment and food chain.
  - e. Littered plastic bags may end up in storm drains and wash to other places.

### Wrap Up: Fix the Problem!

1. **Pack plastic bags away** so that they can be taken back to grocery stores to be recycled. Encourage students to do the same thing with the bags at their house.
2. **Provide success stories** of cities, states, and countries that are fighting the plastic bag epidemic:<sup>5</sup>
  - a. Germany, Ireland, Netherlands, Israel, Bangladesh, and China
    - i. Plastic shopping bags are not free. People get accustomed to always bringing their own bags.
  - b. San Francisco
    - i. The first US city to pass legislation banning plastic bags in grocery stores
    - ii. Portland, Oregon is soon to follow
    - iii. Similar legislation has been proposed in Washington, DC
  - c. Bhutan
    - i. Plastic bags (along with tobacco and MTV) are banned on the grounds that they make the country less happy<sup>6</sup>
  - d. Hong Kong
    - i. Launched a “No Plastic Bag Day” in 2006
  - e. Zanzibar
    - i. Prohibited the import and use of plastic bags in November, 2006<sup>7</sup>

<sup>5</sup> [http://en.wikipedia.org/wiki/Plastic\\_shopping\\_bag#cite\\_note-9](http://en.wikipedia.org/wiki/Plastic_shopping_bag#cite_note-9)

<sup>6</sup> [http://news.bbc.co.uk/1/hi/in\\_pictures/4782636.stm](http://news.bbc.co.uk/1/hi/in_pictures/4782636.stm)

<sup>7</sup> <http://news.bbc.co.uk/2/hi/africa/6135886.stm>

3. **Have students discuss** various ways in which they can reduce the amount of waste in their homes. Make sure they touch on:
  - i. Reusing materials;
  - ii. Creating other purposes for waste;
  - iii. Using alternatives and using less;
  - iv. Using materials that can be substituted for disposable materials (such as canvas shopping bags).
  
4. Have students choose between three creative tasks:
  - a. **Design a poster** for stores encouraging people to bring their own bags;
  - b. **Write a letter** to the local city council, encouraging the passage of legislation banning plastic bags;
  - c. **Design a reusable shopping bag.** Use the following success stories for inspiration:
    - i. **Political Activism: The Plastic Bag Monster:**  
 In February 2008, a Santa Monica high school student dressed up in 600 plastic bags (the average number of bags a person disposes of every year) to speak before the Santa Monica city council on plastic bag legislation. The audience loved him and he made a huge impact<sup>8</sup>!
    - ii. **Bag Design:**  
 A limited edition \$15 reusable bag designed by Anya Hindmarch embroidered with the phrase “I’m not a plastic bag” was such a hit in the fashion world that people queued up outside of grocery stores at 2:00 in the morning to make sure they snagged one before they sold out. After they hit the market, these bags sold for over \$400 on E-Bay. This goes to prove that bringing your own bag to the grocery store can be very cool.

### **Extension:**

Additional activities:

- A. **Canvas bag craft day and fundraiser:** Have students decorate canvas shopping bags and sell them in a silent auction to raise money for the school or an environmentally friendly cause.
- B. **Plastic bag drive:** To raise awareness, have classes compete to see which group of students can collect the most plastic bags. The winning class can have a pizza party or celebration of some sort. Each class will create plastic bag balls, each made out of 1,000 plastic bags, to demonstrate that every reusable bag replaces 1,000 plastic ones. Plastic bag balls can be created by tying plastic bags into ropes and winding them together into a ball. When the school is finished with the plastic bag balls and they need to be disposed of, bring them to a recycling center or grocery store to ensure that they do not end up in a garbage dump.

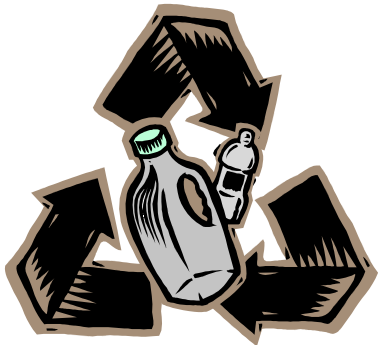
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<sup>8</sup>For footage of his appearance: <http://www.youtube.com/watch?v=I2VZ23SzwCU>

**CONCLUSION:**

Plastic bags play a large role in environmental degradation. Their excessive use is common in our society, and their disposal ultimately loads landfills with a non-biodegradable material, which causes the untimely death of plant and animals species. It is possible for people to curb such environmental damage by using reusable totes instead of plastic bags, and reusing and recycling plastic bags.

# At Home: Getting to Know Your Plastics!



Take a moment to count everything in your house made of plastic. How many items did you find?

\_\_\_\_\_

Most plastic items can be reused and/or recycled. Do you know the difference? Explain:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

List five things you can do with your plastic waste (other than throwing it away):

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## Plastic Bag Treasure Hunt!

What does your family do with their shopping bags after they get home from the store?

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If your family doesn't throw your plastic bags away, bring them to class. We'll use them, and tell you what you can do with them too!