

School Recycling Club SHIP

(Supporting Home Instruction Program)



Lesson Plan 4

- Grade Level: 9-12
- Lesson: I—What is Household Hazardous Waste?
Assessing Awareness
- Source: *Teaching Toxics*
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- Activity/Craft: Autumn Air Fresheners You Can Make PDF
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- Video Link: What To Do With Your Household Hazardous Waste
(<https://www.youtube.com/watch?v=rCC3SRraeFg>)
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- Earth Day Link: Stay At Home Coloring Page (<https://www.crayola.com/free-coloring-pages/print/stay-at-home-creativity-flowers-coloring-page/>)

Lesson Matrix Grades 9-12

Teaching Toxics

Lesson	Concept	Objective	Common Core Alignments	Skills
9-12 Assessing Awareness	An informed public is more likely to make responsible decisions about household hazardous waste disposal.	<ul style="list-style-type: none"> Assess community awareness regarding household hazardous waste Conduct a survey 	Grade 9-10 CC.RI.9-10.1 CC.SL.9-10.1 CC.HSS.ID.6 Grade 11-12 CC.RI.11-12.7 CC.W.11-12.2 CC.HSS.ID.5	<ul style="list-style-type: none"> Analyzing Applying mathematical concepts Gathering data Synthesizing
9-12 Contamination on the Move	Contamination does not stay in one spot; it moves through the environment.	<ul style="list-style-type: none"> Understand how contaminated water can move through the environment 	Grade 9-10 CC.RST.9-10.3 CC.SL.9-10.1 CC.WHST.9-10.1d	<ul style="list-style-type: none"> Developing models Observing Predicting Using evidence
9-12 All Things are Connected: Native American Philosophy	All species in an ecosystem are connected. Hazardous waste entering the ecosystem will disrupt its balance.	<ul style="list-style-type: none"> Examine how our actions affect the environment Examine how all species in an ecosystem are connected 	Grade 9-10 CC.RH.9-10.4 CC.SL.9-10.1 CC.W.9-10.4	<ul style="list-style-type: none"> Analyzing Communicating solutions Defining problems Interpreting
9-12 Hazardous Materials in Your School	Materials Safety Data Sheets (MSDS) are useful tools for properly managing hazardous products.	<ul style="list-style-type: none"> Become familiar with how to use the MSDS for products used in schools 	Grade 9-10 CC.RI.9-10.1 CC.W.9-10.6 CC.HSS.IC.3	<ul style="list-style-type: none"> Interviewing Investigating Problem solving Researching
9-12 Silent Spring: A Book that Awakened a Nation	<i>Silent Spring</i> illustrates ecological principles central to responsible environmental decision making.	<ul style="list-style-type: none"> Examine how U.S. society became aware of pesticides' environmental impact. 	Grade 9-10 CC.RI.9-10.3 CC.SL.9-10.1a CC.W.9-10.4	<ul style="list-style-type: none"> Analyzing Gathering information Providing evidence
9-12 Household Hazardous Waste Collection Options	Household hazardous waste disposal is the next focus in solid waste management.	<ul style="list-style-type: none"> Examine household hazardous waste management issues 	Grade 9-10 CC.RI.9-10.6 CC.SL.9-10.4 CC.WHST.9-10.4	<ul style="list-style-type: none"> Analyzing Communicating information Problem solving Questioning

Checklist of Things To Do

Assessing Awareness

- ✓ No advanced preparation is needed.

Contamination on the Move

- ✓ Collect materials needed for the student experiment. (See the Materials Section.)
- ✓ Invite a representative from your state's department for emergency management to talk to the class about what is involved in spill response.

All Things Are Connected; Examining Native American Philosophy

- ✓ No advance preparation is needed.

Silent Spring: A Book that Awakened a Nation

- ✓ Obtain copies of *Silent Spring*, by Rachel Carson, for students.

Hazardous Materials In Your School

- ✓ Check with your principal and any department heads to see if they are willing to answer student's questions regarding their use of hazardous materials.
- ✓ Select some hazardous products that are used in the school and obtain their Material Safety Data Sheets. Note: If they are not on file, you will have to write to the product manufacturer or distributor. If you need to send for the sheets, allow three weeks before conducting the lesson.

Investigating Household Hazardous Waste Collection Options

- ✓ One week before conducting the role play, arrange for a representative from your solid waste department, planning or zoning commission to visit the class to discuss household hazardous waste collection options. This will help students in their research.
- ✓ Obtain a video recorder to video the role play.
- ✓ Spend some one-to-one time with the student facilitator. Discuss ideas for running a meeting.

9 -12: Assessing Awareness

Subjects

Social Studies, Language Arts, Mathematics, Practical Skills

Skills

Analyzing, applying mathematics, concepts, gathering data, synthesizing

Materials

Student survey sheet, Albuquerque Survey Summary Sheet

Time

Three class periods, homework

Related Teaching Toxics Activities

4 - 6 Hazardous Home?
7 - 8 What's Hazardous?

Concept

An informed public is more likely to make responsible decisions about household hazardous waste disposal.

Objective

Students will assess their community's awareness about household hazardous waste by conducting a survey.

Background

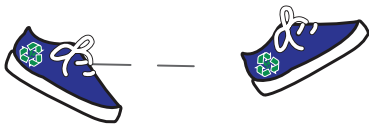
See Information Section, pages 119-121, 127, 139

The results from a 1986 residential survey of the city of Albuquerque indicated that 40% of those surveyed could name only one type of household hazardous product. While awareness of toxics has improved, hazardous products are still widely used in the home. The average household, however, contains a variety of hazardous products, ranging from shoe polish to flea collars. The survey also indicated that there is a wide range of opinions about what types of household products are considered hazardous. Of those surveyed, 25% did not regard used motor oil as a hazardous waste. However, it is extremely hazardous. Other hazardous products not generally recognized as such include furniture polish, shoe polish and paint thinners.

Procedures and Activities

Surveying the Situation

- Pass out copies of a sample survey to student groups. Have each student answer the questions. This survey will help students assess their own awareness of hazardous products.
- Hand out the student sheet summarizing the Albuquerque survey results. In small groups, have students compare the Albuquerque study results to their own. Students should discuss why they think people are not aware of the hazardous products they use. Have the groups predict how their community will respond to a similar survey. Record these predictions.
- As a class, discuss small group reactions.
- Tell the class that they will test their predictions by conducting a survey to find out how much their community knows about household hazardous waste.



Common Core Alignments

GRADE 9-10

CC.RI.9-10.1

Reading Informational Text:
Key Ideas & Details

CC.SL.9-10.1

Speaking & Listening:
Comprehension & Collaboration

CC.HSS.ID.6

Mathematics:
Statistics & Probability

GRADE 11-12

CC.RI.11-12.7

Reading Informational Text:
Integration of Knowledge & Ideas

CC.W.11-12.2

Writing:
Text Types & Purposes

CC.HSS.ID.5

Mathematics:
Statistics & Probability

Designing a Survey

- As a class, discuss how to design a survey:
 - What questions need to be asked to attain the survey's goals?
 - How do you develop a procedure for survey taking?
 - Students need to survey a representative sample of the community in order to avoid bias.
 - Students should define how they want to use the survey results. Survey questions can then be developed to meet those goals.
 - What questions would be useful to get these results?
 - Summarize the survey planning process. (Set the goal, define the procedure, define the results.)
 - Based on class discussion, have student groups design survey.
 - Compile the small group work into one class survey.

Putting the Survey to Work

- Work out the logistics for taking the survey. For example, if the class chooses to survey the school, one group may be responsible for questioning teachers, another group a certain grade, etc., in order to avoid replication.
- For homework, ask students to survey a certain number of people. Students should make sure these people have not already taken the survey.
- After the surveys are complete, compile the data. In small groups, have students organize the data in a meaningful way. Groups can then present major findings to the class.
- As a class, discuss the following questions. What can you conclude from the results of the survey? What are the problems? How can you use this information to solve the problems?
- Evaluate the survey process. What difficulties were encountered? Do students have any suggestions for doing things differently? Discuss the accuracy of this type of data collection. What biases may have been present?

Action Planning

- In student groups, create a community education plan to address the needs indicated by the survey. Plans could include an information brochure, radio announcements, TV public service announcements, etc. Groups should create at least one example from their plan (e.g.: design a brochure, tape a radio announcement.)
 - Have groups create a theme slogan*. The following questions will help guide a brainstorming session.
 - Who is your audience?
 - What do you want these people to do?
 - Create a list of words that describe your goals.
 - Put the word lists into phrases that combine positive descriptions with specific suggestions.
 - Submit the survey results and the education plans to your local solid waste department.

*An example of a slogan to promote oil recycling is from the Vermont Department of Natural Resources "Don't Spoil the Soil, Recycle Used Oil."

Pointers for an Effective Slogan

- Make sure the message is not conflicting.
- Don't force a rhyme; make sure your slogan makes sense.
- Negative messages don't motivate people; they depress them.

Extensions

- Find out if your solid waste department has conducted a similar survey. If so, compare results.

Student Survey Questions

1. What do you think of when you hear the words "household hazardous waste?"

2. When is a product hazardous? During:
 - A. Its use
 - B. Its disposal
 - C. Its production

3. Do you have hazardous products in your home? If so, name them.

4. Circle the items that you think are hazardous products.

household batteries	motor oil
shoe polish	furniture polish
nail polish remover	oven cleaner
antifreeze	turpentine
window cleaner	gasoline

5. Does your home generate any household hazardous waste? If so, what specifically?

6. Do you know of any household hazardous waste that can be recycled? If so, what specifically?

STUDENT WORKSHEET

Albuquerque Survey Summary Sheet

Albuquerque depends entirely upon groundwater for its municipal water supply. After one of its wells became contaminated, the city needed to identify the source of contamination. In January of 1983, city officials surveyed 386 households to see what waste generation habits could be contributing to water contamination.

The interviewers asked the householders to identify as many types of household hazardous waste as possible. Of those surveyed, 12% could not name any and an additional 28% could only name one type. Thus 40% of those surveyed could not name more than one type of household hazardous waste. Interviewers also asked householders to rate how hazardous they thought certain items were. See the chart below for the results. The next step in the survey was to try to determine how much household hazardous waste each household generated and how the house-holders disposed of such waste.

Product	Not Hazardous	Slightly Hazardous	Hazardous	Very Hazardous	Extremely Hazardous
Pesticides	3%	4%	12%	21%	60%
Cleaners	12%	20%	31%	22%	16%
Polishes	25%	30%	27%	10%	9%
Drain Openers	2%	4%	10%	16%	68%
Motor Oil	25%	20%	33%	12%	10%
Antifreeze	11%	10%	24%	30%	25%
Paint Thinners	5%	11%	14%	23%	46%

Discussion Questions

- What does this survey show about people's awareness?
- What is surprising to you?
- How do the results compare to more recent surveys on the same or similar topic?

Autumn Car Fresheners You Can Make at Home

From our Friends at diyideacenter.com

This image courtesy of craftcreatecook.com

Essential Oil DIY Air Freshener

By: Kari from craftcreatecook.com



Inevitably there comes a time when our cars smell rather unpleasant. Save your nose from further distress with this Essential Oil DIY Air Freshener. Sometimes no matter how long we roll down the windows, scrub the car seats, or sit in denial, our cars stink. This homemade air freshener is a quick DIY that will make driving a much more enjoyable experience. Using your favorite essential oils will ensure that you will love the smell of your finished craft. Pop one in your car and wrap up the rest to gift other drivers with suffering noses.

[Click Here for DIY Craft](#)

- Estimated Cost: Under \$10
- Time to Complete: In an evening
- Primary Technique: DIY Craft
- Season: Fall
- Project Type: Make a Project