

## Household Toxic Chemicals

*(Adapted from Earth Day 1990: Lesson Plan & Home Survey - K-6, Stanford University, CA)*

### GRADE LEVELS: 4-6

**SUBJECT AREAS:** science, social studies

**CONCEPT:** Household hazardous waste.

**OBJECTIVE:** To realize that chemicals and toxics are all around us and that we can make a choice whether or not to use them.

### MATERIALS:

- 4-5 cleaning products, solvents, pesticides, etc.
- tape
- paper, pencil or pen
- handouts: [Home Toxics Survey](#) and [Possible Substitutions for Household Toxics](#)

**KEYWORDS:** toxic

**BACKGROUND:** A toxic is any substance that is capable of harming a person if ingested, inhaled, or absorbed through any body surface. Toxic substances vary widely in the types of harm they cause and the conditions under which they become harmful. The effects of the toxic substances vary widely, too. Acute reactions are sudden ones such as vomiting or dizziness. Chronic reactions occur over longer periods and include symptoms such as decline in mental alertness, change in behavior, cancer, and mutations that can harm unborn children of exposed parents. Because toxics can cause both acute and chronic reactions, they are a broader category than poisons, which produce acute reactions only. For this reason, the words toxic and poison are not interchangeable.

Nobody is "for" toxic chemicals in the sense of wanting to endanger ourselves and others, and yet many toxic substances seem to be a necessary part of our lives and have come to be considered essential in our homes, our workplaces, and our schools. This predicament of needing substances that sometimes produce undesirable effects forces people to make choices about what is acceptable to them. Different people are willing to take different risks related to toxic chemicals and have varying concerns about the effects of toxins on themselves and people around them. Some people know that many of the products they use are potentially toxic but consider the risk worthwhile. Others try to avoid toxics and thus forego the benefits of certain products.

Many people do not know that household chemicals can be toxic. Most of the dangerous substances in the home are found in cleaners, solvents, pesticides, and products used for automotive care.

**NOTE:** It is not always possible to avoid the use of toxic substances (i.e. - if you have termites, you can either move out or use a pesticide to remove them).

In this activity, students survey themselves and their families to find out attitudes and beliefs people hold about toxics. Older students are also introduced to the term toxic, risk, and benefit (a risk is a possible danger; a benefit is an advantage).

### PROCEDURE:

1. Collect four or five familiar cleaning products. Tape the lid on so that students cannot open the

containers. Prepare a chart on butcher paper titled "Toxics Survey Results" that students can use to record the results of their surveys. The chart should list all of the survey questions and allow space for recording the responses.

2. Introduce the activity and the unit by displaying the household products you have gathered. Ask students, "What are these things? What are they used for? What do we know about them? Is there anything dangerous about using them? What don't we know about these things that might be important to know?" In order to find out more about what we as a class think about toxics, complete the [Home Toxics Survey](#).

3. Hand out one Home Toxic Survey to each student and explain that the survey is not a test, students do not need to write their names on the survey; there are no right or wrong answers. Give the student a few minutes to complete the survey.

4. Divide students into groups of four. Have each group discuss the following questions using the survey:

- What are toxics
- Where do we find toxics?
- Who uses toxics? Why?
- Are we always aware of the presence of toxics?

5. Have each group share their responses to these questions with the class. Accept all responses; do not provide answers at this point. This is a time for students to begin thinking about toxics and for you to assess their initial understanding and attitudes. Talk with students about the idea that nobody is "for" toxics but most people think these substances are a necessary part of their lives. Tell them some people know many of the products they use are toxic yet consider it beneficial to continue using them, while other people avoid toxics by using an alternative or doing without certain products altogether.

6. Introduce the words risk and benefit. Help students discuss the meaning of these words.

7. Tell students that people's knowledge of toxic differs, as do their opinions, and that over the next two days the students are going to learn more about toxics. They will interview their family to find out what they know and think about toxics.

8. Ask students to interview one of the adults in their home.

9. Discussion questions:

- Are most people concerned or not concerned about toxics?
- What does toxic mean?
- What ideas did most people in the survey agree on?
- What else have we learned?
- Was there anything that surprised you?
- What does opinion mean?
- What is the difference between fact and opinion?
- What would you like to learn about toxics?
- What choices can we make that are more beneficial to the environment and therefore to all of us?

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## Home Toxics Survey

1. What is your age? \_\_\_\_\_ Are you a male or female? \_\_\_\_\_

2. What do you think of when you hear the word toxic?

3. Which of the following do you use? Which of the following do you consider toxic? (Leave blank if you don't use these products.)

Item	Use	Consider toxic
Laundry detergent used to wash clothes.		
Cleanser used in your house to clean sinks & bathtubs.		
Furniture polish used to clean & shine furniture.		
Drain cleaner used in sink & bathtub drains.		
Glass cleaner used to clean windows & mirrors.		
Baking soda used in cooking.		
Air freshener used to make the air smell fresh.		
Ant spray used to kill ants in & around the house.		
Hair spray some family members use to keep their hair in place.		

4. When do you think it is okay to use something that is toxic?

5. What room in your home do you think contains the most toxics? \_\_\_\_\_

6. Which statement best describes your home?

- There are no toxics in my home.  
 There are some toxics in my home.  
 I do not know if there are toxics in my home.

7. Would you want to be told if something you are about to buy might be toxic?

- Yes  
 No  
 Sometimes

8. Do you think that people who work where there are toxics should be told this when they are hired?

- Yes  
 No  
 Sometimes

9. Do you think individuals should decide whether to buy and use toxics, or do you think the government should make it illegal to sell toxics?

- Individual should decide.

Government should make it illegal.

I don't know.

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### Possible Substitutions for Household Toxics

(Source: Edited from A Guide to the Safe Use and Disposal of Hazardous Household Products, Metropolitan Area Planning Council, Massachusetts.)

<u>Instead Of:</u>	<u>Try:</u>
Air Freshener	Set vinegar out in an open dish.
Drain Cleaner	Pour boiling water down the drain, or use a plunger or a metal snake.
Furniture Polish	1 tsp. lemon oil in 1 pint mineral oil, or rub crushed raw nuts on the wood for an oily polish.
Houseplant Insecticides	Wash leaves with soapy water, then rinse.
Mothballs	Put clothes in cedar chests, or place cedar chips around clothes.
Oven Cleaner	Salt, baking soda, water (and elbow grease!).
Roach Spray	Chopped bay leaves & cucumber skins, or boric acid (sold in powdered form), or 1 part borax & 1 part brown sugar set out in dishes (these are not as effective, & the latter two may be hazardous to animals & children).
Silver Cleaner	Soak silver in 1 qt. warm water containing 1 tsp. baking soda, 1 tsp. salt, & a piece of aluminum foil.
Toilet-Bowl Cleaner	1/2 cup bleach.
Window Cleaner	2 tbsp. vinegar in 1 qt. water.

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