



Household Hazardous Waste Identification

Objective

Students will be able to identify household hazardous waste products and learn about less hazardous alternatives. Students will also learn where and how they can reduce, reuse, recycle, or safely dispose of household hazardous waste items.

Grade levels

6, 8

Science TEKS

Grade 6	Grade 8
6.1B	8.1B

Prerequisites

- Verify which Extensions to use for your class.
- Print out enough Worksheets for the number of students in your class.
- If choosing to do the optional activity, collect all optional materials before starting the lesson.

Materials

Materials Students Bring to Class	Other Materials	Other Materials (Optional)
Index cards (3 per student)	Markers	(3) 8 oz. spray bottles
	Colored pencils	Measuring cups/Funnel
		Mixing bowl/Spoons

Worksheet (provided) -

Extensions

- Texas Commission on Environmental Quality - What Do I Do with It Now? A Quick Guide to Recycling Resources - https://www.tceq.texas.gov/assets/public/comm_exec/pubs/gi/gi-288-print.pdf
- Texas Commission on Environmental Quality HHW Collection Programs Document - https://www.tceq.texas.gov/assets/public/assistance/hhw/hhw_contacts.pdf
- Texas Commission on Environmental Quality - Household Hazardous Waste: A Guide for Texans - <https://www.tceq.texas.gov/p2/hhw/hhw.html>
- Take Care of Texas - Questions about Eco-Friendly Cleaning Products? - <http://takecareoftexas.org/hot-wire/questions-about-eco-friendly-cleaning-products>
- Take Care of Texas - What Should I Do with Chemicals at Home? - <http://takecareoftexas.org/hot-wire/what-should-i-do-chemicals-home>

- Environmental Protection Agency - Reducing HHW in Your Home and Safe Management - <https://www.epa.gov/hw/household-hazardous-waste-hhw>
- Environmental Protection Agency Introduction to the Safer Choice Label Video (length 0:30) - https://youtu.be/XywBduC1neQ?list=PLBhfkkujnoRA6FacOpY36K6vOIC_XYCKp
- Environmental Protection Agency Safer Choice—labeled products in action videos (length 0:15) - <https://www.epa.gov/saferchoice/connect-safer-choice#epavideo>
- Environmental Protection Agency Safer Choice for Schools Fact Sheet - <https://www.epa.gov/sites/production/files/2016-10/documents/saferchoice-factsheet-schools.pdf>
- Environmental Protection Agency Search for Safer Choice Products Tool - <https://www.epa.gov/saferchoice/products>
- PBS LearningMedia Natural Household Cleaners Video (length 3:25) - <http://www.pbs.org/video/natural-household-cleaners-ev7ysq/>
- Poison Control National Capital Poison Center - What to do if exposed - <https://www.poison.org/>

Note: Some of these extensions are from external sources and may not reflect the views of the TCEQ. Before using an extension, please verify that it is appropriate for your students.

Introduction

Some left-over or used household products contain chemicals that can present safety concerns if not managed properly. These products are often labeled as household hazardous waste (HHW) and can include items like cleaners, fluorescent light bulbs, fuels, mercury, paints, pesticides, pool chlorine and acid, and wood stains or varnishes. Hazardous products can be identified by having a label with words like caution, warning, danger, corrosive, reactive, ignitable, or toxic. When these materials are disposed of in the trash, the chemicals can leak through the landfill and contaminate groundwater or other drinking water supplies.

Using the Reduce, Reuse, and Recycling principles, proper disposal methods, and safer alternatives ensures that household hazardous waste products are managed safely and properly. Some ways you can use these principles are:

- **Reduce** the amount of hazardous waste you generate by only buying what you need, applying pesticides according to the label's directions, use the recommended amounts, and choose products carefully using [EPA's Safer Choice Label tool](#).
- **Reuse** hazardous products by giving them to a neighbor, friend, or family member who needs it once you no longer have a use for it.
- **Recycle** household hazardous waste items at your local HHW Recycling Centers or by using the TCEQ's [What Do I Do with It Now? A Quick Guide to Recycling Resources](#) Extension.
- For unusable or unrecyclable hazardous products, the best **disposal** option is to check with your local waste management authority, environmental agency, or health department to find out if your community offers an HHW collection program or visit TCEQ's [HHW Collection Program by County](#) document to search for one.
- One way to avoid any household hazardous waste is to make your own **alternative** product using non-hazardous materials. Use the [Take Care of Texas Questions about Eco-Friendly Cleaning Products?](#) Extension to learn how to make your own cleaning products.

Key Terms, Vocabulary

- **Corrosive:** a chemical agent that reacts with the surface of a material, causing it to deteriorate or wear away.
- **Household Hazardous Waste:** leftover or used household products that contain chemicals that can present safety concerns if not managed properly and are identified as toxic, corrosive, ignitable, reactive, or is listed in federal regulations as hazardous to health.

- **Ignitable:** capable of burning or causing a fire.
- **Reactive:** hazardous wastes that are normally unstable and readily undergo violent chemical change.
- **Recycle:** the collection and processing of materials that would otherwise be thrown away as trash and turning them into new products.
- **Reduce:** prevention of waste by eliminating the use of energy, water, materials, and toxic products to create products. This option is sometimes called source reduction because it reduces waste at the source.
- **Reuse:** using something again and again until it can't be used anymore. Reuse keeps a product in its original form, while recycling turns the product's material into a new resource for manufacturing.
- **Toxic waste:** can produce injury if inhaled, swallowed, or absorbed through the skin.
- **Waste:** any unwanted, discarded, or abandoned material or product that is no longer needed or used for its intended purpose.

Procedure

1. Begin the lesson with a discussion and ask your students what they think household hazardous waste is and how they can identify a hazardous product at home. Use the Introduction, Key Terms and the TCEQ's [Household Hazardous Waste: A Guide for Texans](#) Extension to explain.
2. Ask the following questions for students to develop their critical thinking: What happens to hazardous waste when it is disposed of improperly? How can we minimize the impact of hazardous products and chemicals on the environment? Use the Introduction, 3 R's principles, and the TCEQ's [What Should I Do with Chemicals at Home?](#) Extension to answer these questions.
3. Now that the students know what HHW is and how to identify it, ask them to provide some examples of common HHW items that they might find around their homes.
4. Inform your students that there are safer alternatives to many household hazardous products. If feasible, show them how to use the [EPA's Safer Choice Label tool](#) to search for some examples. Tell them that another alternative is to create your own products for common household needs.
5. Provide a Worksheet for each student and have them answer all questions in 3-5 complete sentences before starting the activity.
6. Assign your students the task of creating three recipes for safer alternatives, including all-purpose cleaner, glass cleaner, and furniture polish. Instruct them to do the following:
 - a. On the blank side of the index card, draw a picture of the product and label. Feel free to get creative and come up with your own name for the product. Use markers and colored pencils to draw your product.
 - b. On the other side of the index card, list the ingredients and directions for creating the safer alternative cleaning product.
 - c. Repeat steps a and b for each of the three products listed.
 - d. Take them home and enjoy!
7. **Optional Activity:** Create three safer alternative products using the recipes in the worksheet. Use these products to periodically clean the classroom and ask your students to help.
 - a. Bring in (3) 8 oz. spray bottles prior to the start of the activity.
 - b. Using a mixing bowl, funnel, and measuring cups, follow the directions in the Worksheet.
 - c. Each recipe makes slightly more than 8-oz. to ensure enough liquid per bottle.
 - d. Discard any leftover liquid safely in a bathroom sink.