



TAKE CARE OF TEXAS: EDUCATOR MATERIALS

## LESSON PLAN

# Household Hazardous Waste Identification

## Objectives

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.

## Prerequisites

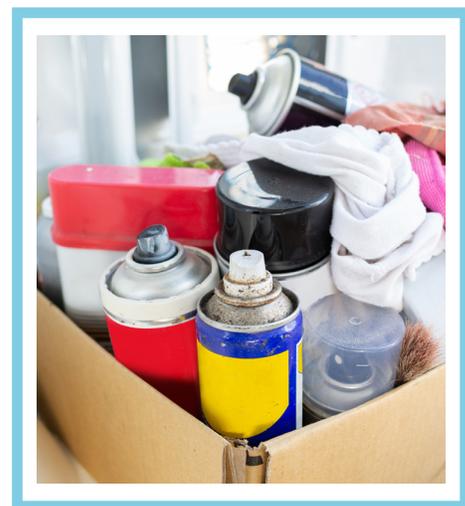
- Verify which References to use for your class.
- Print out enough Worksheets for the number of students in your class.
- If choosing to do the optional activity, collect all optional materials before starting the lesson.

## Duration

45 minutes

## Materials

- Household Hazardous Waste Identification Worksheet
- Index Cards (3 per student)
- Markers
- Colored Pencils
- Optional
  - » (3) 8 oz. spray bottles
  - » Measuring cups/funnel
  - » Mixing bowl/spoons



## Introduction

Some leftover or used household products contain chemicals that can present safety concerns if not managed properly. These products are often referred to as household hazardous waste (HHW) because they often exhibit hazardous characteristics such as being toxic, corrosive, flammable, etc. They can include items like



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cleaners, fluorescent light bulbs, fuels, mercury, paints, pesticides, pool chlorine and acid, and wood stains or varnishes. If left in their original packaging, hazardous products can be identified by a warning label and a description of the dangers associated with the materials like “corrosive,” “reactive,” “ignitable,” or “toxic.” When these materials are not disposed of properly in our homes or illegally dumped outside, they can cause chemicals to enter our environment and possibly contaminate our groundwater and other drinking supplies. Using the Reduce, Reuse, and Recycle 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, using the recommended amounts, and choosing 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](#).
- 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.
- Avoid household hazardous waste by making your own alternative products using non-hazardous materials.

## Procedure

1. Begin the lesson with a discussion. 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](#) to explain.
2. Ask students the following questions 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 Rs principles, and the TCEQ’s [HHW Guide](#) to answer these questions.
3. Now that the students know what household hazardous waste is and how to identify it, ask them to provide some examples of common household hazardous waste items that they might find around their homes.
4. Inform your students that there are safer alternatives to many hazardous household 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 their own products for common household needs.
5. Provide a Worksheet for each student and have them answer each question in 3-5 complete sentences before starting the activity.
6. Assign your students the task of creating three recipes for safer alternatives to household hazardous waste. Using all-purpose cleaner, glass cleaner, and furniture polish as product examples, instruct students to:
  - a. Draw a picture of the product and label on the blank side of the index card. 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 instructions 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. Discard any leftover liquid safely in a bathroom sink. (Each recipe makes slightly more than 8 oz. to ensure enough liquid per bottle.)

## Worksheet Questions and Answer Key

1. Define household hazardous waste. How can you identify a household hazardous product?

**Household Hazardous Waste** is any 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. Hazardous products can be identified by having a label with words like caution, warning, danger, corrosive, reactive, ignitable, or toxic.

2. Based on what you've learned, provide some examples of common HHW products that you might find around your home.

Some common products often labeled as household hazardous waste include items like all-purpose cleaners, bathroom cleaners, glass cleaners, carpet cleaners, vehicle cleaners, degreasers, furniture polish, fluorescent light bulbs, fuels, gasoline, propane, mercury, paints, pesticides, bug sprays, 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.

3. How can you use the 3 Rs principles to minimize the impact of household hazardous waste on the environment?

You can reduce the amount of hazardous waste you generate by only buying what you need, applying pesticides according to the label's directions, use only the recommended amounts, and choose products carefully using the [EPA's Safer Choice Label online tool](#). You can 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. You can recycle household hazardous waste items at your local HHW Recycling Centers or by using the [TCEQ's guide to recycling resources](#).

4. What are the health and environmental impacts of hazardous materials and chemicals when they are disposed of in the trash? If the 3 Rs principles cannot be used, who should you contact to properly dispose of these materials?

When these materials are disposed of in the trash, the chemicals can leak through the landfill and contaminate groundwater or other drinking water supplies. 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.

## Glossary

- **Corrosive** – a chemical agent that reacts with the surface of a material, causing it to deteriorate or wear away.
- **Household Hazardous Waste (HHW)** – 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 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.

## Applicable TEKS

- **6<sup>th</sup> Grade** – §112.18.b. 1A,B; 2A; 3A,C,D.
- **7<sup>th</sup> Grade** – §112.19.b. 1A,B; 2A; 3A,C,D.
- **8<sup>th</sup> Grade** – §112.20.b. 1A,B; 2A; 3A,C,D.

## References

- Texas Commission on Environmental Quality – **What Do I Do with It Now? A Quick Guide to Recycling Resources**. [www.tceq.texas.gov/assets/public/comm\\_exec/pubs/gi/gi-288-print.pdf](http://www.tceq.texas.gov/assets/public/comm_exec/pubs/gi/gi-288-print.pdf)
- Texas Commission on Environmental Quality – **HHW Collection Programs**. [www.tceq.texas.gov/assets/public/assistance/hhw/hhw\\_contacts.pdf](http://www.tceq.texas.gov/assets/public/assistance/hhw/hhw_contacts.pdf)
- Texas Commission on Environmental Quality – **Household Hazardous Waste: A Guide for Texans**. [www.tceq.texas.gov/p2/hhw/hhw.html](http://www.tceq.texas.gov/p2/hhw/hhw.html)
- Environmental Protection Agency – **Household Hazardous Waste**. [www.epa.gov/hhw/household-hazardous-waste-hhw](http://www.epa.gov/hhw/household-hazardous-waste-hhw)
- Environmental Protection Agency – **Safer Choice Videos**. [www.epa.gov/saferchoice/connect-safer-choice#tab-2](http://www.epa.gov/saferchoice/connect-safer-choice#tab-2)
- Environmental Protection Agency – **Search for Safer Choice Products**. [www.epa.gov/saferchoice/products](http://www.epa.gov/saferchoice/products)
- PBS Learning Media – **Natural Household Cleaners**. [www.pbs.org/video/natural-household-cleaners-ev7ysq/](http://www.pbs.org/video/natural-household-cleaners-ev7ysq/)
- Poison Control National Capital Poison Center – **What to Do If Exposed**. [www.poison.org/](http://www.poison.org/)

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