



TAKE CARE OF TEXAS: EDUCATOR MATERIALS

LESSON PLAN

What Is Household Hazardous Waste?

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

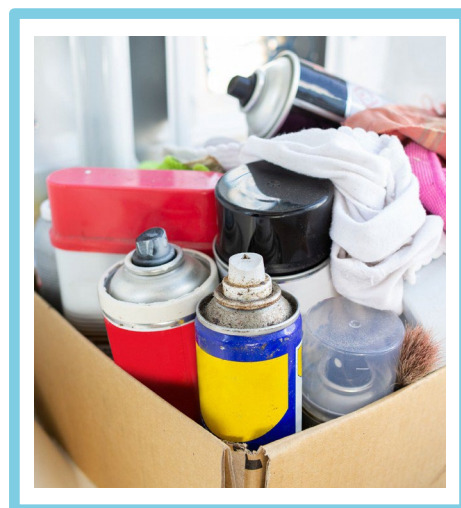
- Verify which References to use for your class, print out enough handouts for each student/pair, collect all materials before starting the lesson.

Duration

45 minutes

Materials

- Large anchor chart paper with a Frayer model drawn on
- Sticky notes
- What is Household Hazardous Waste? handout
- (4) 8 oz. spray bottles
- Measuring cups/funnel for each station (4)
- Mixing bowl/spoons for each station (4)
- (4) pieces of stained fabric
- (4) mirrors or glass items
- (4) wooden items
- Sustainable Actions Plan *Optional Extension Activity*



Introduction

TEACHER BACKGROUND

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

LP19 (03/26)



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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 the groundwater and other drinking supplies. Using the Reduce, Reuse, and Recycle principles, proper disposal methods, and safer alternatives ensure that household hazardous waste products are managed safely and properly.



DISCUSSION

Start the lesson with a discussion on what students think are household hazardous waste. Create a Frayer Model with definition, characteristics, examples, and non-examples boxes. As students give you their definitions, use a sticky note to fill in the Definition box. Next, ask students what makes something a household hazard. Use student responses to fill in the Characteristics box. Now, ask students to provide some examples and non-examples of household hazardous waste. Write the items in the appropriate box. Pause and review the filled-in Frayer Model and go back to the Definition box and ask students to finalize their definition of household hazardous material. Inform students that there are safer alternatives to many hazardous household products. Show them how to use the **EPA’s Safer Choice Label tool** to search for some examples.

Now with a definition, pose the following questions to students:

- 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?

Pause and give students an opportunity to give some possible answers. Show students **Proper Disposal of Household Hazardous Waste Explainer Video**. After watching the video, explain to students there are several ways to dispose of household hazardous material.

- 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**.
- 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 search using **TCEQ’s HHW Collection Program by County**. Pull up the website and search your local area using the collection program.
- Tell them that another alternative is to create their own products for common household needs.

Using the last way, creating your own products, provide students with the following list of common household items that can be used to create product alternatives. *Item list: baking soda**, vinegar**, lemon juice, salt, and hydrogen peroxide*. Explain to students they will be working with these items to create recipes and then eventually create their own recipe for an alternative cleaning product.

****Note:** While you can mix vinegar and baking soda, doing so does not create a “super cleaner” and it is recommended that these products be used sequentially, one after another, rather than mixed. Also, never store the mixture together as that could create a hazardous situation.

Procedure

1. Provide a What is Household Hazardous Waste? handout to each pair and explain they will be rotating through four stations where they will be creating their own recipes for alternative cleaners.
2. For each station, students will make a recipe, try it out on some stained fabric, and record the findings.
3. At three stations, provide a given recipe, the materials to make it, and soiled fabric for students to clean.

Students can take turns making the recipe and then using it to clean with their partner. Afterwards, have students record their observations by answering the following questions:

- a. Was the cleaner able to clean the stain?
 - b. Was the recipe easy to follow and to make?
 - c. What ingredients do you think helped clean the stain more?
4. At one station, students will create their own recipe based on the information they gained from the other stations. Students cannot participate in this station until they have gone to two previous stations and completed their observations.
5. **Creation Station:** At this station, students will use their observations to create a new recipe based on the safe alternatives used in the previous stations. Students will need to discuss with their partner and decide which ingredients they will use from the provided list. Students can use up to four ingredients but need at least two to mix.

EXTENSION ACTIVITY

Now that students have learned about household hazardous waste, extend their understanding by having them create a household action plan. Allow students to read through the following blogs:

- **Six Surprising Items in Your Home You Didn't Know Were Hazardous**
- **How to Dispose of Household Hazardous Waste**
- **4 Things to Know About Household Hazardous Waste**

After learning some tips on how to dispose household hazardous waste, students create an action plan using the **Sustainable Actions Plan** handout.

Have students implement their action plan at home for a week then report back on how it went, what went well, and what could be improved. If it is not possible for home implementation, students can create an action plan centered at school or in the classroom.

Glossary

- **Corrosive** – a chemical agent that reacts with the surface of a material, causing it to 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 waste 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

- **6th Grade** – Section 112.18.b. 1A,B; 2A; 3A,C.
- **7th Grade** – Section 112.19.b. 1A,B; 2A; 3A,C.
- **8th Grade** – Section 112.20.b. 1A,B; 2A; 3A,C.

References

- Texas Commission on Environmental Quality – **What Do I Do with It Now? A Quick Guide to Recycling Resources.** <https://takecareoftexas.org/resources/what-do-i-do-it-now>
- Texas Commission on Environmental Quality – **HHW Collection Programs.** <http://www.tceq.texas.gov/p2/hhw/contacts.html>
- Texas Commission on Environmental Quality – **Household Hazardous Waste: A Guide for Texans.** <http://www.tceq.texas.gov/p2/hhw>
- Take Care of Texas – **Six Surprising Items in Your Home You Didn't Know Were Hazardous.** <https://takecareoftexas.org/about-us/blog/six-surprising-items-your-home-you-didnt-know-were-hazardous>
- Take Care of Texas – **How to Dispose of Household Hazardous Waste.** <https://takecareoftexas.org/about-us/blog/how-dispose-household-hazardous-waste-0>
- Take Care of Texas - **4 Things to Know About Household Hazardous Waste.** <https://takecareoftexas.org/about-us/blog/4-things-know-about-household-hazardous-waste>
- Environmental Protection Agency – **Household Hazardous Waste.** <http://www.epa.gov/hw/household-hazardous-waste-hhw>
- Environmental Protection Agency – **Safer Choice Videos.** www.epa.gov/saferchoice/connect-safer-choice#tab-2
- Environmental Protection Agency – **Search for Safer Choice Products.** <http://www.epa.gov/saferchoice/products>
- PBS Learning Media – **Natural Household Cleaners.** <http://www.pbs.org/video/natural-household-cleaners-ev7ysq/>
- Poison Control National Capital Poison Center – **What to Do If Exposed.** <http://www.poison.org/>
- YouTube - **Proper Disposal of Household Hazardous Waste Explainer Video.** <https://www.youtube.com/watch?v=MJX0rvGsRpA>

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.