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What Your Home Haz: A Household Hazardous Waste Game

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Teacher guide

Not in my home...

Your home and garage may seem safe, but take a look around. If you see any of these types of products, your house may contain potentially hazardous materials:

- Paints and solvents
- Pesticides
- Household cleaners
- Automotive products
- Batteries
- Arts and hobby supplies

Through this fun activity, children and adults can evaluate their knowledge of household hazardous waste facts. It also helps players think about the consequences of their personal lifestyle choices.

Materials needed

- A chalkboard or large sheet of paper
- The list of questions
- A bell, coffee can and spoon, or another way for teams to signal that they have an answer.

Instructions

- **On chalkboard or a large pad of paper set up a gameboard following the format of the TV show, *Jeopardy*** (Table 1). The categories are: Daily Living, Health Effects, Disposal, Safer Substitutes, and Environmental Effects. Write the category headings across the top and then the question values, 10 to 50 points, down the side for each category.
- **Divide the group into two teams**
Decide whether to allow the members of a team to confer before answering a question. You can have each team's players form a line, with each player getting a turn to answer a question.
- **Toss a coin to determine which team begins**
The beginning team selects a category and point value (for example, "Disposal for 30"). Read a question for that category and point value. (See Game Questions.)
- **The first team to signal gives its answer to the question**
If the answer is incorrect, the team loses that point value. Then the other team is given a chance to provide the correct answer. You are encouraged to set a time limit for receiving answers.
- **When a correct answer is given for a question, cross out that space on the game board**

Add the points to the team's score. Have the player who answered correctly select the next question by choosing a category and point value (for example "Health Effects for 10"). Continue until all the questions on the game board have been selected or your time period runs out. You may direct players who provide correct answers to sit out from the game so that all players have an opportunity to answer a question.

- **The team with the most points wins**

The point values assigned to each question are suggested values. Please feel free to change the point values to reflect the informational emphasis you have used in your classroom.

There are more questions provided below than are needed for one game. We encourage you to select or develop questions appropriate for your class. If possible, please share questions you develop with HHWP. These may be added to future editions of What Your Home Haz with appropriate credit.

Table 1
Sample gameboard format

Daily living	Health effects	Disposal	Safer substitutes	Environmental effects
10	10	10	10	10
20	20	20	20	20
30	30	30	30	30
40	40	40	40	40
50	50	50	50	50

Game questions

Daily living

- **10 points**
What household product may work by deadening your nasal nerve endings so you can not smell?
Air fresheners.
- **10 points**
Name two hazardous products often found in our homes.
Accept all reasonable answers.
- **20 points**
How are the solvents used in household products different from industrial and commercial solvents?
There are no differences.
- **20 points**
Name one popular cosmetic that is mostly composed of organic solvents.
Nail polish or nail polish remover.
- **20 points**
How much trash does the average person produce per day?
Four to six pounds.
- **30 points**
You have some leftover window cleaner. What should you do with it?
Use it up, give it to someone who can use it, or flush down the drain with plenty of water.
- **30 points**
Why should you always be sure that the door to a house with an attached garage is closed and the garage door open when the car is running?
To avoid breathing poisonous carbon monoxide fumes from the car exhaust.
- **30 points**
Name one of the two pieces of safety equipment you should wear when you add gasoline to your lawn mower.
Gloves and goggles.

- **40 points**

Name three words found on product labels that indicate a product is hazardous.

Danger, poison, warning, caution, irritant, caustic, flammable, combustible, radioactive, or explosive.

- **40 points**

It is your turn to clean the stubborn stain in the bathtub. Why should you never add ammonia to strengthen the power of the chlorine-based scouring powder you are using?

Ammonia plus chlorine produces a poisonous gas.

- **50 points**

Why are consumers often uncertain about the ingredients contained in the products they buy and use?

Vague terms are used; label requirements are not specific; chemical terms are unfamiliar.

- **50 points**

Why should aerosol spray cans be stored away from heat or flame sources?

They can explode when exposed to high temperatures.

Health effects

- **10 points**

Define "toxic."

A substance that can cause injury, illness, or death.

- **10 points**

How long does it take an acutely toxic substance to produce adverse health effects?

Immediately or in a very short time period.

- **10 points**

How can you protect your eyes from splashes when pouring hazardous liquids like bleach?

Wear protective goggles.

- **20 points**

How can you protect yourself when using toxic products that are absorbed through the skin, such as organic solvents?

Wear gloves and protective clothing.

- **20 points**

What is chronic exposure to a toxic substance?

Exposure to small amounts of a toxic substance over a long period of time.

- **20 points**

Name three ways toxic substances can enter your body.

Inhalation, ingestion, skin contact, and skin absorption.

- **30 points**

You are going to paint your room with oil-based paint. Why should you remove your soft contact lenses before beginning?

Soft lenses absorb vapors and hold them against the eye; can cause eye damage.

- **30 points**

What would happen if you touched a hazardous product that is corrosive or caustic?

It would burn and destroy your skin where contacted.

- **30 points**

Name two of the actions you should take when the directions on a product label instruct you to avoid breathing vapors.

Work outdoors, open a window, have a fan blowing the vapors away from you, or wear a respirator.

- **40 points**

What do the "active" ingredients in pesticides do?

They repel or kill a pest.

- **40 points**

While you are babysitting, the child swallows a toxic substance. What should you do?

Call the Poison Center, the local emergency room, or trauma center.

- **40 points**

You need to buy some laundry soap and you notice that the label of one brand reads "nontoxic." What is the

federal regulatory definition of nontoxic?

None, nontoxic is an advertising word.

- **50 points**

Your friend has spilled acid on her arm. What should you do?

Remove any clothing with acid on it and flood the skin with water, then seek medical advice. DO NOT attempt to neutralize the acid on her skin.

- **50 points**

Why are aerosol sprays potentially harmful to your health?

You could breathe the particles when they are dispersed; the can could explode when near source of spark or heat.

- **50 points**

Name one of the two federal regulations that is responsible for determining the labeling requirements of household hazardous products.

FHSA — Federal Hazardous Substances Act or FIFRA — Federal Insecticide, Fungicide, and Rodenticide Act.

Disposal

- **10 points**

You helped change the motor oil in the family car. What should you do with the used motor oil?

Recycle it by taking it to your nearest collection point for used oil, such as an automotive center.

- **10 points**

Name one household hazardous product that can be recycled.

Includes motor oil, automotive and household batteries, paint, and paint thinner.

- **10 points**

What is a solid waste transfer station?

A central collection facility for the garbage picked up at the curb. Most of the garbage in Missouri is later taken to a sanitary landfill.

- **20 points**

When is a product hazardous?

When its use or disposal poses a threat to your health or the environment.

- **20 points**

One gallon of oil can contaminate the taste of how many gallons of water?

One million gallons of water.

- **20 points**

What is leachate?

Liquid material that runs off or seeps down from the surface into groundwater and surface water. Leachate may contain toxic materials. Also known as garbage juice or garbage tea.

- **30 points**

Where do storm sewers in most Missouri (your) towns lead?

Directly to surface waters such as rivers, lakes, creeks, or streams — or depends on your locality.

- **30 points**

Where does hazardous waste go when it is placed in the trash?

Trash collectors take it to the municipal landfill — or depends on your locality.

- **40 points**

Where do wastes and water go when flushed into the sanitary system?

To the local wastewater treatment facility — or depends on your locality.

- **40 points**

Where do wastes and water go when flushed into a septic tank system?

Into the septic tank and then into the lateral drainage field.

- **40 points**

If your home is connected to the sanitary sewage system, diluted antifreeze can be disposed of by flushing down the drain. Why should you avoid doing this if you are connected to a septic system?

Heavy concentrations of certain chemicals in a septic tank can slow down or destroy the microorganisms that make the system work.

- **50 points**
What can happen when hazardous waste is placed in the landfill?
Any liquids, heavy metals, and water-soluble chemicals may be carried as leachate into the groundwater and surface water, thereby contaminating them.
- **50 points**
You have used the pesticide in a container and rinsed the container three times. What should you do with the rinse water?
Use it as though it were the full strength pesticide.
- **50 points**
Why are empty aerosol cans still hazardous?
The cans retain pressure. If heated or punctured, they can explode with great force.

Safer substitutes

- **10 points**
You are cooking a hamburger and the grease catches on fire. What common kitchen product could you use to put out the fire?
Baking soda or table salt.
- **10 points**
You painted your room using latex paint. What solvent will you use to clean your brushes and you?
Water.
- **20 points**
Name two common kitchen products that can be used in safe household cleaners.
Includes baking soda, salt, vinegar, cream of tartar, club soda, lemon juice.
- **20 points**
What safe bathroom product can be used to clean and polish gold?
Toothpaste.
- **30 points**
You borrowed your sister's blouse and spilled chocolate ice cream on it. What kitchen product can remove the stain safely?
Club soda (soak before washing).
- **30 points**
Name a safer alternative to using an aerosol can.
Includes using a pump spray bottle, spray gun, paint brush.
- **30 points**
Name a fragrant herb that will repel mosquitoes when planted around your home.
Basil or Tansy.
- **40 points**
Name a common Missouri tree that produces large fruits that can be used to repel cockroaches.
Osage Orange, also known as hedge apple or Bois d'arc.
- **40 points**
You have many natural predators around your home that help control pests. Name two of them.
They include frogs, spiders, ladybugs, praying mantis, dragonflies, birds, and cats.
- **50 points**
Name four of the words found on labels that tell you a product is hazardous.
Danger, poison, warning, caution, irritant, caustic, flammable, combustible, radioactive, or explosive.
- **50 points**
Name two advantages of using safer alternatives.
Accept all reasonable answers.

Environmental effects

- **10 points**
What do the letters "DNR" stand for?

Department of Natural Resources.

- **10 points**
What do the letters "ppm" stand for?
Parts per million.
- **10 points**
What do the letters "EPA" stand for?
Environmental Protection Agency.
- **20 points**
Why do small children and animals taste and drink antifreeze, even though it is poisonous?
Because it has a sweet taste and attractive color.
- **20 points**
What does combustible mean?
Can be easily set on fire.
- **20 points**
What is responsible for breaking down the wastes in a septic tank?
Bacteria and microorganisms.
- **30 points**
What is a "food chain?"
The link between organisms in an ecosystem that begins with the primary producers (plants) and the organisms that eat them and each other (animals, fungi, microorganisms).
- **30 points**
What does a solvent do?
Dissolves another substance.
- **40 points**
What is an aquifer?
An underground, geological formation in which the cracks in rocks, sand, or gravel are filled with water.
- **40 points**
How can improper disposal of household hazardous wastes into a storm sewer disrupt the food chain of an aquatic environment?
The wastes could kill the primary producers (such as phytoplankton) leaving the food chain without a base.
- **50 points**
Define bioconcentration.
The concentration of chemicals in the fatty tissues of living organisms.
- **50 points**
Define bioaccumulation.
The concentration of a particular substance in the bodies of organisms, increasing with the animal's level in the food chain.
- **50 points**
Every year Missouri households produce approximately how many pounds of hazardous waste?
100 million pounds

Extending the activity

- Have your students create additional questions for each other or for younger students.
- Have a "Household Hazardous Waste Knowledge Bee," possibly including additional classrooms.

The Household Hazardous Waste Project would appreciate receiving any comments you may have concerning this activity.

Supporting materials

- The *Guide to Hazardous Products Around the Home* is a personal action manual for protecting your health and the environment. This comprehensive, 178-page handbook explains product ingredients, safety issues, disposal, recycling outlets, safer product alternatives, and more! Promoted by Greenpeace, the United Nations

Environmental Programme, *50 Simple Things You can do to Save the Earth and The Green Consumer*. The **Guide** was written by the Household Hazardous Waste Project, winner of the 1991 President's Environment and Conservation Challenge Award.

- *Household Hazardous Waste: What You Should and Shouldn't Do* is available through the Water Pollution Control Federation, 601 Wythe St., Alexandria, VA 22314. This four-color educational brochure provides a household hazardous waste chart with preferred disposal options for over 70 products.
703-6842430
- *The Nontoxic Home: Protecting Yourself and Your Family From Everyday Toxics and Health Hazards* (1986) by Debra Lynn Dadd is available through bookstores. It covers many categories including cleaning and laundry products, drugs, personal care products, food, and office supplies.
- *Hazardous Wastes from Homes* (1986) is available from Enterprise for Education, 1320-A Santa Monica Mall, Santa Monica, Calif. 90401. This colorful magazine covers types of wastes considered hazardous and suggested disposal methods, reduction and recycling opportunities, and sources to contact for additional information.
- *Making the Switch: Alternatives to Using Toxic Chemicals in the Home* (1988) from Golden Empire Health Planning Center, distributed by Local Government Health Planning Commission, 909 12th St., Suite 205, Sacramento, Calif. 95814. This consumer booklet discusses methods for reducing exposure to some toxics in the home environment and offers many safer alternatives to using household hazardous products.

The following magazines have current information and may be available at your local library.

- *Garbage: The Practical Journal for the Environment*, published bimonthly by the Old-House Journal Corp., 435 Ninth St., Brooklyn, N.Y. 11215.
- *E Magazine*, published monthly by Earth Action Network, Inc., 28 Knight St., Norwalk, Conn. 06851.
- *P-3 Magazine* (for kids), P.O. Box 52, Montgomery, Vt. 05470.
- *Environmental Action*, published bimonthly by Environmental Action, Inc., 1525 New Hampshire Ave., NW, Washington, D.C. 20036.

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Related MU Extension publications

- WM5000, SWAP Your Waste
<http://extension.missouri.edu/p/WM5000>
- WM5002, Home Hazardous Product Survey
<http://extension.missouri.edu/p/WM5002>

Order publications online at <http://extension.missouri.edu/explore/shop/> or call toll-free 800-292-0969.



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