

# Toxicity and hazardous waste

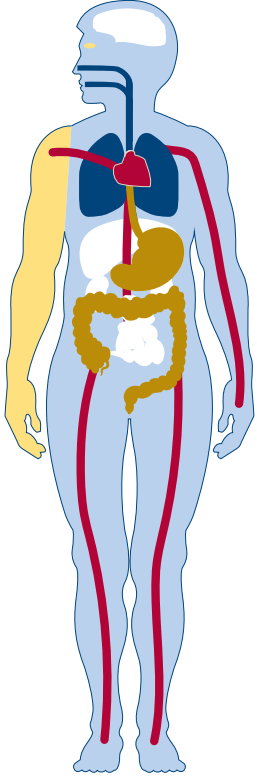


According to the U.S. Environmental Protection Agency, only a fraction of registered chemicals have gone through complete testing for human health concerns. Some chemicals have immediate toxic effects. Others are toxic to our bodies only after repeated, long-term exposure. In addition, many products we use in our homes contain heavy metals or other hazardous materials that can pollute the environment if improperly disposed of. Because of the potential dangers associated with hazardous products in the home, it is important to know how to identify and properly use, store and dispose of them.

## Exposure pathways

Chemicals can enter our bodies through a number of "exposure pathways."

### Exposure pathways



**Chemicals can get into your body through:**

- Inhalation**  
Gets into the lungs through the nose and/or mouth.
- Contact**  
Gets on skin, and/or in the eyes, nose or throat.
- Ingestion**  
Gets into the body through the mouth.
- Injection**  
Gets into the bloodstream through a cut or puncture in the skin.

Children and pets are impacted more significantly by the negative effects of chemicals. Pound for pound, children and pets breathe more air, drink more water and eat more food than adults. When children play, they crawl and put things in their mouths. Pets can pick up harmful chemicals on their bare paws, which they can then ingest when they clean their paws. As a result, children and pets have an increased chance of exposure to potential pollutants.

## What are hazardous wastes?

Hazardous wastes in our homes include unwanted chemical products that are flammable, toxic, or dangerous when combined with other products. They are also products that contain hazardous materials, including electronics, batteries and some types of light bulbs and thermometers. Hazardous wastes should be brought to a drop-off location and must not be placed in the trash.

### Hazardous waste includes:

- **Automotive materials**

- Antifreeze
- Brake and transmission fluid
- Fuel and oil
- Lead acid batteries



- **Household, lawn and garden products**

- Batteries
- Cleaning products
- Drain cleaner
- Fluorescent light bulbs
- Paints, stains and thinners
- Pesticides
- Thermostats and thermometers (that contain mercury)



- **Personal care products**

- Hair spray
- Nail polish remover
- Perfume

- **Electronics**

- Cameras
- DVD players
- Computers
- Game systems
- Printers
- Telephones
- Televisions
- Radios and music players
- Speakers



- **Appliances**

- Air conditioners
- Microwaves
- Ovens
- Refrigerators
- Washers and dryers
- Water heaters



- **Tires**



## Safely dispose of household hazardous waste

Improper disposal of household hazardous waste, such as throwing it in the garbage or pouring it down the drain or storm sewer, could harm your family or garbage hauler. Improper disposal contaminates our air, water and soil. We all have a responsibility to protect the environment.

### Disposal options



- Dispose of hazardous waste year-round at Hennepin County's drop-off facilities in Brooklyn Park and Bloomington. Find facility information at [www.hennepin.us/dropoffs](http://www.hennepin.us/dropoffs).
- Bring hazardous waste to a community collection event. Find an event near you at [www.hennepin.us/collectionevents](http://www.hennepin.us/collectionevents).
- Some hardware stores and electronics retailers accept certain hazardous wastes, including electronics and fluorescent light bulbs.
- Find other disposal options for household hazardous waste at [www.hennepin.us/greendisposalguide](http://www.hennepin.us/greendisposalguide) or call 612-348-3777.

## Become a label reader



Federal law requires labeling of hazardous products by using signal words. By understanding the difference in the use of the signal words, you can determine how hazardous the product is.

Less hazardous



More hazardous

| Signal Word | Hazard Level                                   |
|-------------|--|
| Caution     | mild/moderate hazard                           |
| Warning     | moderate hazard                                |
| Danger      | extremely flammable, corrosive or highly toxic |
| Poison      | highly toxic                                   |

### Hazard levels of common household products

#### Caution

- All-purpose cleaners
- Ammonia
- Dishwashing detergent
- Laundry detergent
- Soft scrub cleaner

#### Warning

- Antifreeze
- Bathroom tile cleaner
- Pine-based floor cleaners

#### Danger

- Chlorine bleach
- Drain cleaner
- Lighter fuel
- Metal polish
- Oven cleaner
- Rubber cement

#### Poison

- Ant/insect sprays
- Lye
- Mouse/rat poison

## Smart purchasing and storage

### Watch out for greenwashing

Greenwashing is a marketing strategy in which companies use several tactics to mislead consumers into thinking their products are better for the environment than is actually the case. Beware of these signs!

| Watch out for:      | Description  |
|---------------------|--|
| "Best in class"     | Declaring you are slightly greener than the rest, even if the rest are highly hazardous.   |
| Biodegradable       | Products that are biodegradable are not always environmentally friendly.   |
| False labels        | Companies often make up certifications and labels for their products that required no verification. See below for validated certifications |
| Fluffy language     | Words or terms with no clear meaning. For example: eco friendly, earth friendly, natural.  |
| Irrelevant claims   | Emphasizing one small green attribute when everything else is not green. For example: "Does not contain acid."                             |
| Suggestive pictures | Green images that indicate an unjustified green impact. For example: flowers blooming from exhaust pipes.                                  |

Sins of Greenwashing. (2010, January 1). Retrieved February 1, 2015, from <http://sinsofgreenwashing.com/findings/the-seven-sins>

### Safe storage tips

- Keep products out of reach of children and animals.
- Store all hazardous products on high shelves or in locked cabinets away from food.
- Store products that say "prevent freezing" (such as latex paint) indoors.
- Never mix chemicals together (such as bleach and ammonia).
- Keep products away from heat, sparks, flames or other sources of ignition.
- Only buy the amount of product that you will use.
- Keep products in their original containers and make sure the label is legible.
- For long-term storage, place waterproof transparent tape over product labels to prevent them from falling off.

## Reducing hazardous chemicals in your home

- Remove your shoes at the entrance to your home so you don't track chemicals from outside throughout your house.
- Use pump spray products instead of aerosols as aerosol mist is more easily inhaled.
- Avoid chemical air fresheners and candles.
- Avoid chemicals used in traditional dry cleaning.
- Buy fewer household hazardous products by avoiding specialty cleaners, using multipurpose cleaners and using single-ingredient products like vinegar or baking soda for cleaning.
- Use a fabric shower curtain instead of a vinyl as vinyl releases chemical gases.
- Use mercury-free thermometers such as alcohol or digital ones. Take mercury thermometers to a hazardous waste collection site.
- Dispose of hazardous products properly.
- Avoid chemical pesticides and herbicides.

### Beware of toxic look-a-likes

Children and pets often do not know the difference between toxins and food. Be sure to safely store chemicals and hazardous products out of reach of children and pets. Never store household chemicals in food containers.



# IDENTIFY HAZARDOUS PRODUCTS

We use a variety of products and chemicals every day to clean and fix our homes, maintain our vehicles and take care of our lawns. According to the U.S. Environmental Protection Agency, only a small fraction of the more than 75,000 registered chemicals have gone through complete testing for human health concerns. These days, it seems like every product comes with a warning, so you may not pay much attention to the words on the label. However, when it comes to hazardous products, reading the label is the easiest way to identify them.

## Outcomes

Participants will learn what the words and symbols on product labels tell them about a product's toxicity and how to use and store them safely.

## Audience

Youth (ages 12+), adults

## Time

20 - 40 minutes

## Concepts

- A product's label tells you many important things about a product if you know what to look for, including the product's hazard level, why the product is hazardous, and steps you should take to use the product safely.
- The words caution, warning, danger or poison on a product label indicate the level of toxicity of that product, with caution being the least hazardous and poison being the most hazardous. Choose the least hazardous product for the job.
- There are many things we can do to reduce our exposure to hazardous chemicals in our homes and ensure the products we do have are stored and used safely.
- Hazardous products require special disposal at a drop-off facility and must not be thrown in the trash or poured down the drain.

## Supplies

- Common household products such as window cleaner, disinfectant wipes, all-purpose cleaner, bleach, and lawn and garden items or sample products from the Hennepin County Household Hazardous Waste Learning Trunk
- Chemicals in the Home quiz and Label Reading Activity available in the Appendix
- Handout: How to identify and reduce hazardous chemicals in your home brochure
- Handout: Hennepin County Drop-off Facilities brochure
- Handout: Green Cleaning Recipes guide



# IDENTIFY HAZARDOUS PRODUCTS

## Preparation

- Ask participants in advance to discuss or provide a list of products they use around their homes, such as in the kitchen and bathroom, on floors, woodwork and windows, or in the yard and garden.
- Gather examples or ask adult participants to bring in some of the products they regularly use. Do not have youth participants bring in items. These products could be hazardous and should only be gathered for the activity by an adult.

## Procedure

- Have the participants complete the Chemicals in the Home quiz (see Appendix).
- Again, ask the participants to list household products they use in their household.
- Write the list of the household products participants use on a blackboard, whiteboard or large piece of paper.
- Have participants conduct the label reading activity:
  - Have participants divide into pairs and give each pair two examples of household, yard or garden products.
  - Give each person a copy of the How to identify and reduce hazardous chemicals in your home brochure.
  - Have each pair complete the Label Reading Activity worksheet, then share the information they found with the larger group.
  - Discuss what people can do to reduce hazardous products in their home. See the How to identify and reduce hazardous chemicals in your home brochure and the Green Cleaning Recipes guide for ideas.
- Discuss steps participants can take to safely store and use products in their home, and review disposal options.
- Discuss the concept of greenwashing with participants using information from the How to identify and reduce hazardous chemicals in your home brochure. Greenwashing is a marketing strategy in which companies use several tactics to mislead consumers into thinking their products are better for the environment than they actually are.
- Ask participants if they look for environmentally friendly certifications when buying products. Certifications include the Green Seal certification and the U.S. EPA Design for the Environment. See the Green Cleaning Recipes guide for examples.

## Discussion questions

- Have you read labels on products in the past? If yes, what were you looking for? What did you find?
- In the past, did you ever consider the products you use as “harmful” or “hazardous”?
- What are some easy first steps you’ll take to reduce harmful chemicals in your home?
- What did you learn about the products you are currently using?

## Additional activity ideas

### Tour the Hennepin County Drop-Off Facility in Brooklyn Park

This tour highlights the importance of reducing, reusing, recycling and preventing pollution. A household hazardous waste focused tour is also available. For ages 7 through adults. Visit [www.hennepin.us/environmentaleducation](http://www.hennepin.us/environmentaleducation) to sign up.

## Resources

- Chemicals in the Home quiz, Label Reading Activity and a Home Hazardous Products Survey (see Appendix).
- Handout: How to identify and reduce harmful chemicals in your home brochure
- Handout: Hennepin County Drop-off Facilities brochure
- Handout: Green Cleaning Recipes guide
- Household Hazardous Waste Learning Trunk. This trunk will help explain the importance of proper use, storage, disposal and safety information of household hazardous products. Check out a learning trunk at [angela.ziobro@hennepin.us](mailto:angela.ziobro@hennepin.us) or visit [www.hennepin.us/environmentaleducation](http://www.hennepin.us/environmentaleducation).
- Green Cleaning Learning Trunk. This trunk helps explain the simplicity, safety and effectiveness of home-made cleaners. Check out a learning trunk at [angela.ziobro@hennepin.us](mailto:angela.ziobro@hennepin.us) or visit [www.hennepin.us/environmentaleducation](http://www.hennepin.us/environmentaleducation).

# CLEAN AND GREEN

According to the U.S. Environmental Protection Agency, only a fraction of registered chemicals have gone through complete testing for human health concerns. You can protect your health and the health of your family, pets and the environment by making your own cleaning products with simple, less-toxic ingredients. Many common household products, such as baking soda, lemon juice, vinegar and liquid dish soap, can make effective and inexpensive cleaners.

## Outcomes

Participants will learn how to make an all-purpose cleaner from simple ingredients and learn other ways to reduce the use of chemicals in their homes.

## Audience

Youth (ages 10+), adult

## Time

30 - 45 minutes

## Concepts

- There's a lot we don't know about the chemicals we use in and around our homes. Making your own cleaners from simple, less-toxic ingredients is one way to reduce the amount of hazardous chemicals in your home.
- Make sure to use a recipe from a trusted source and do not mix other cleaners and products together.
- Reduce the toxicity of the products you purchase by choosing the least hazardous product for the job, looking for environmentally friendly certifications on products you do buy, and being aware of resources to learn more about the products you buy.

## Supplies

- 12 oz. spray bottles (available from Hennepin County)
- White vinegar
- Water
- Liquid dish soap
- Labels printed with the recipe and clear packaging tape to secure label to the bottle (if not using Hennepin County bottles, which have the recipes pre-printed on the bottle)
- Liquid measuring cups and spoons
- Funnel
- Handout: Green Cleaning Recipes
- Lemon juice (*optional*)



# CLEAN AND GREEN

## Preparation

Set up stations with each ingredient for the all-purpose cleaner or set up a demonstration of how to make the cleaners.

If you are not using bottles pre-printed with the recipe, you may want to label the bottles ahead of time by using clear packaging tape to make the labels waterproof.

## Procedure

- Discuss the cleaning products that participants use around their homes. Discuss why they chose those products and ask them to think about how they define a clean home (it is a certain look, smell, etc.) Ask participants what they know about the ingredients in the cleaning products they use and if they are aware of any health or safety concerns.
- Provide each participant with a spray bottle and the recipe for the all-purpose cleaner.
- Have participants make cleaners:
  - Ingredients:
    - ¼ c. white vinegar
    - 1.5 tsps. liquid dish soap
  - Directions: In a 12 oz. spray bottle, use a funnel to add the vinegar and fill with water. Add the dish soap last. Add 2-5 drops of lemon juice as desired.
- Adults should supervise youth making cleaners.
- Participants may want to test the cleaner in the program space or compare its effectiveness with other cleaners.
- Hand out the Green Cleaning Recipes guide and discuss the cleaning properties of the basic cleaning ingredients and other homemade cleaning recipes.

## Discussion questions

- What did you learn that was new?
- Why should we care about the products we use?
- What are some reasons to make your own cleaners at home? (Healthier, less expensive, etc.)
- What other ways could you reduce the amount of toxic chemicals in your home? (See Additional activity ideas for suggestions).
- Will you or another family member use the cleaner at home?
- What did you learn that you want to share with someone else? Who will you share it with?
- What do you want to learn more about?

## Additional activity ideas

### Make additional cleaners

Refer to the Green Cleaning Recipes guide for additional products to make, such as tile cleaner or window cleaner.

### Discuss ways to reduce hazardous chemicals in your home

Ask participants to commit to taking one or more action. Some ideas include:

- Remove your shoes at the entrance to your home so you don't track chemicals from outside throughout your house.
- Use pump spray products instead of aerosols as aerosol mist is more easily inhaled.
- Avoid chemical air fresheners and candles.
- Avoid chemicals used in traditional dry cleaning.

- Buy fewer household hazardous products by avoiding specialty cleaners, using multipurpose cleaners and using single-ingredient products like vinegar or baking soda for cleaning.
- Use a fabric shower curtain instead of vinyl as vinyl releases chemical gases.
- Use mercury-free thermometers such as alcohol or digital ones. Take mercury thermometers to a hazardous waste collection site.
- Dispose of hazardous products properly.

### Tour the Hennepin County Drop-Off Facility in Brooklyn Park

This tour highlights the importance of reducing, reusing, recycling and preventing pollution. A household hazardous waste focused tour is also available. For ages 7 through adults. Visit [www.hennepin.us/environmentaleducation](http://www.hennepin.us/environmentaleducation).



# CLEAN AND GREEN

## Resources

- Handout: Green Cleaning Recipes guide
- Household Hazardous Waste Learning Trunk  
This trunk will help explain the importance of proper use, storage, disposal and safety information of household hazardous products. Check out a learning trunk at [angela.ziobro@hennepin.us](mailto:angela.ziobro@hennepin.us) or visit [www.hennepin.us/environmentaleducation](http://www.hennepin.us/environmentaleducation).
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# Chemicals in the home quiz

Circle True or False

1. Manufactures of household cleaners are required to list all ingredients of their products. .... T or F
2. Labels of all home and garden products must be precise, showing exactly what substances are present and the amount of each..... T or F
3. Household products must be tested for their long-term health effects before being placed on the market..... T or F
4. Products placed on the market are not guaranteed to be safe..... T or F
5. If ingredients are listed as "inert," they are harmless. .... T or F
6. "Active" ingredients make up the major portion of a product. .... T or F
7. A hazardous substance is described as highly toxic, flammable or combustible, corrosive, an irritant, a strong sensitizer, radioactive, capable of generating pressure, or capable of causing substantial illness or injury. .... T or F
8. How often do you read product labels at the store to find the least toxic alternative when buying cleaners and other household products? Check one.  
 Never     Infrequently     Sometimes     Most of the time     Almost always     Always
9. Do you make your own green household cleaners or use non-toxic alternative cleaners? Check one.  
 Never     Infrequently     Sometimes     Most of the time     Almost always     Always
10. Indicate how you dispose of these household items:
  - Paint  
 Throw in the trash     Take to a drop-off facility     Take back to the store for recycling
  - Compact fluorescent light bulbs  
 Throw in the trash     Take to a drop-off facility     Take back to the store for recycling
  - Mercury thermometer  
 Throw in the trash     Take to a drop-off facility     Take back to the store for recycling
  - Rechargeable batteries  
 Throw in the trash     Take to a drop-off facility     Take back to the store for recycling

## Answers and notes

| #: | Answer: | Notes:   |
|----|---------|--|
| 1  | False   |  |
| 2  | False   |  |
| 3  | False   |  |
| 4  | True    |  |
| 5  | False   | "Inert" ingredients, in limited cases, may still cause a chemical reaction if combined with other substances.  |
| 6  | False   | An "active" ingredient is an agent that is specifically intended to kill, repel, or otherwise deter a target organism. For example, the active ingredient in Drano and other conventional drain cleaners is sodium hydroxide, otherwise known as a caustic soda or lye. It is a man-made chemical used for its corrosive properties. |
| 7  | True    |  |
| 8  |         | It's important to recognize the "signal" words on the label. These words indicate levels of hazard.  |
| 9  |         | Making your own green cleaners from common household items such as baking soda, vinegar and lemon juice, is an easy alternative to store-bought cleaners.  |
| 10 |         | Items should be taken to a drop-off facility or recycled at the store where purchased.   |

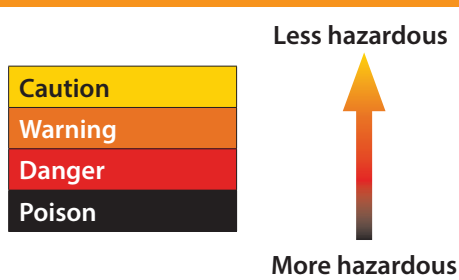
# Label reading activity

| Name of product | Signal words – level of hazard | Characteristic words – type of hazard | Precautionary statements | Directions for storage | Directions for disposal |
|-----------------|--------------------------------|---------------------------------------|--------------------------|------------------------|-------------------------|
|                 |                                |                                       |                          |                        |                         |
|                 |                                |                                       |                          |                        |                         |
|                 |                                |                                       |                          |                        |                         |
|                 |                                |                                       |                          |                        |                         |



## Signal words

If the product is hazardous, it will include one of the following words, which indicates the level of hazardous.



## Characteristic words

Labels may include the following words and/or precautionary statements for different types of hazards:

| Flammable/combustible   | Corrosive  | Toxic   | Reactive   |
|---|--|---|--|
| <ul style="list-style-type: none"> <li>• Flammable</li> <li>• Inflammable</li> <li>• Ignitable</li> <li>• Combustible</li> <li>• Petroleum distillates</li> <li>• Do not use near flame</li> <li>• Do not store near heat</li> <li>• Keep in cool, dry place</li> </ul> | <ul style="list-style-type: none"> <li>• Causes burns to skin</li> <li>• Caustic</li> <li>• Contains lye</li> <li>• Contains acid</li> <li>• May cause burns on contact</li> <li>• Wear rubber gloves</li> </ul> | <ul style="list-style-type: none"> <li>• Poison</li> <li>• Harmful or fatal if swallowed</li> <li>• Vapor harmful</li> <li>• Harmful if absorbed by skin</li> <li>• Avoid skin contact</li> <li>• Skull and cross bones symbol</li> </ul> | <ul style="list-style-type: none"> <li>• May react violently</li> <li>• Explosive</li> <li>• Store separately from other products</li> </ul> |

# How hazardous is it and how do I store it?


## Signal words

Federal law requires labeling of hazardous products by using these signal words. By understanding the difference in the use of signal words, you can determine how hazardous a product is.

### Become a label reader

Reading the label on household products can tell you how hazardous a product is. Look for signal words on labels and choose the least hazardous product.

Less hazardous



More hazardous

| Signal Word | Hazard Level                                   |
|-------------|--|
| Caution     | mild/moderate hazard                           |
| Warning     | moderate hazard                                |
| Danger      | extremely flammable, corrosive or highly toxic |
| Poison      | highly toxic                                   |

## Characteristic words

Characteristic words indicate the type of hazard posed by a product and are usually found after the signal word on the label.

- Flammable/combustible ..... Easily set on fire
- Corrosive..... Results in chemical reaction that can burn skin or eyes and destroy other material
- Toxic..... Causes injury through ingestion, inhalation or skin absorption
- Reactive..... May explode from heat exposure, shock or pressure. May product toxic gas if combined with other substances.