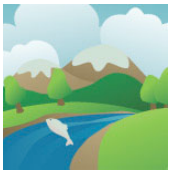


What Makes a Product Hazardous?

It is estimated that the average house contains 3 to10 gallons of hazardous products. Many of the products we use for housework, gardening, home improvement, or car maintenance contain potentially hazardous substances. When used or disposed of improperly, these products can become personal health and safety concerns and can also cause problems in the environment. Therefore, it is important to understand what makes a product hazardous, how to identify hazardous substances, and learn how to use and handle these products safely.

Hazardous Substances

A **hazardous** substance is defined in federal government regulations as "one that may cause substantial personal injury or illness during reasonable handling or use, including possible ingestion by children." According to the **Federal Hazardous Substances Act (FHSA),** household products are hazardous if they contain substances that have one or more of the following **hazardous properties**:

Corrosive: A product that can burn or destroy living tissue, such as skin or eyes or by chemical action. *Examples:* Drain cleaners, oven cleaners, and lye.

Irritant: A product is an irritant if it is not corrosive and causes injury to the area of the body that it comes in contact with after immediate, prolonged, or repeated contact.
Examples: Toilet cleaners, chlorine bleach cleaners, and some pool chemicals.

Strong Sensitizer: A product that can cause an allergic reaction upon repeated uses of the same substance. Usually this does not happen when a person first comes in contact with the product, but after a second exposure.
Examples: Dyes, oils, tars, rubber, soaps, cosmetics, perfume, insecticides, wood resins, plants, paints, plastics, glues, fiberglass, metals, and polishes.

Flammable: Any substance, liquid, solid, or the contents of a self-pressurized container, like aerosol cans, that can be easily set on fire or ignited. Extremely flammable, flammable, and combustible are the three types of flammability based on testing.
Examples: Paint thinners, some solvents, adhesives, rubber cement, and hair spray.

Toxic: In addition, a product is toxic if it can cause long-term effects like cancer, birth defects, or neurotoxicity (toxic to nerves).
Examples: Brake fluids, fungicides, insecticides, fertilizers, rat poison, and antifreeze.

Routes of Exposure

A product is hazardous if it can produce personal injury or illness to humans when inhaled, swallowed (ingested), or absorbed through the skin.

1. **Ingestion** – eating or drinking hazardous substances or contaminated foods and water and absorbing these substances through your gastrointestinal tract.
2. **Inhalation** – breathing in gases, vapors, and sprays that are absorbed through the lungs and enter the bloodstream.

3. Dermal (skin or eye contact) – some hazardous products can be absorbed through the skin or your eyes and cause injuries. ***How Do You Know if a Product is Hazardous?***

The FSHA requires that if a product contains a hazardous substance, the product must bear a label of specific size, and the label must contain certain information, depending on the toxicity of the product. ***"Signal Words"*** are found on every hazardous product label and show how toxic or hazardous a product can be. If there is no signal word on a product it is not hazardous.

Table 1. FSHA Signal Words for Household Products

Signal Words	Properties	Examples
POISON	highly toxic	varnish remover, antifreeze
DANGER	extremely flammable, corrosive, or highly toxic	bleach, WD-40
WARNING CAUTION	for all other hazardous products	carpet cleaner, cleanser

Other Hazardous Household Products - Pesticides

Pesticides are defined as chemicals used to prevent, destroy, or repel pests: insect, mice, weeds, fungi, and bacteria. Pesticides also include household products, such as disinfectants or cleaners that are used to destroy the growth of harmful bacteria, viruses, or fungi on household surfaces. The Environmental Protection Agency (EPA) registers and regulates pesticides under the **Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)**. These products must meet the basic standards: (1) the product will not cause harmful effects to human health or the environment and (2) that product labeling must meet FIFRA requirements. Examples: insecticides, rodenticides, herbicides, fungicides, etc.

Pesticides also have signal words, but they are based on the degree of toxicity or how poisonous the product is. Tests are conducted to determine the Lethal Dose50 (LD50) of each pesticide. Lethal Dose50 is when 50% of the test population, which is usually mice or rats, dies when administered a specific dose of a pesticide. The oral LD50 of a substance is expressed in milligrams of chemical per kilogram of body weight (mg/kg). Table 2 indicates how signal words are determined for use on pesticide labels.

Table 2. FIFRA Signal Words and Toxicity Rating Scale

Signal Words	Toxicity	Oral LD50 (mg/kg)	Examples
DANGER-POISON	highly toxic	0 - 50	indoor/outdoor insect killer
DANGER	highly toxic/corrosive	0 - 50	toilet bowl cleaner
WARNING	moderately toxic	50 - 500	flea spray
CAUTION	slightly toxic	500 - 5,000	rat poison

Read Before You Use!

Besides signal words, product labels contain other important information, such as instructions for safe handling, use, and storage; active ingredients; and first aid safety. As a consumer, make it a habit to read all label information before using any product.

STUDENT WORKSHEET: **Name**_____

Reading Hazardous Household Product Labels
There is a lot of information on product labels, but this activity focuses on identifying hazardous household products.

Procedure:
1. Read ten product labels for the various household products on display. Find the Hazardous Properties, Signal Words, and Route of Exposure for each product.
2. Refer to Student Handout 1: What Makes a Product Hazardous? to help you complete the table below.

SAFETY: **Be sure that ALL products are handled safely. DO NOT open any products.**

Product	Hazardous Properties - List properties that make it hazardous.	Signal Word	Route of Exposure (Ingestion, Inhalation, Dermal – skin or eye contact)

Conclusion Questions:

1. Which hazardous properties were most common?

2. Which signal word was most common?

3. Which products are most toxic? How did you determine this?

4. What are the three routes of exposure? Which route was most common?

5. What product(s) determine the signal words based on toxicity testing?

6. What did you learn from this activity?

PESTICIDE LABELS FOR MOLD CONTROL:

LYSOL® DISINFECTANT – Antibacterial Kitchen Cleaner

FRONT LABEL

BACK LABEL

DIRECTIONS FOR USE: It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

To Operate: Turn nozzle counter clockwise to spray. Adjust to desired pattern.

General Kitchen Cleaning: Spray soiled area, then wipe clean. No rinsing! On painted surfaces, test a small area. Not recommended for use on acrylic plastics.

To Disinfect/Sanitize/Deodorize: For hard, nonporous surfaces, spray until thoroughly wet.

To Sanitize/Deodorize: Let stand for 30 seconds before wiping.

To Disinfect/Deodorize: Let stand for 10 minutes before wiping.

For heavily soiled surfaces, first clean according to General Kitchen Cleaning directions. To disinfect nonporous cutting boards, spray until thoroughly wet, let stand for 10 minutes, then rinse thoroughly.

*Kills 99.9% of Salmonella choleraesuis (salmonella), Escherichia coli (E. coli), Staphylococcus aureus (staphylococcus), Streptococcus pyogenes (streptococcus).

PRECAUTIONARY STATEMENTS: HAZARDS TO HUMANS AND DOMESTIC ANIMALS.
CAUTION: MAY CAUSE EYE IRRITATION. AVOID CONTACT WITH EYES.
FIRST AID: If sprayed or splashed in eyes, immediately remove contact lenses and rinse eyes with plenty of ... for at least 15 minutes.
STORAGE/DISPOSAL: Store in areas inaccessible to small children. Refill container only with LYSOL® Antibacterial Kitchen Cleaner. If not refilling, rinse empty container thoroughly and discard in trash or recycle.

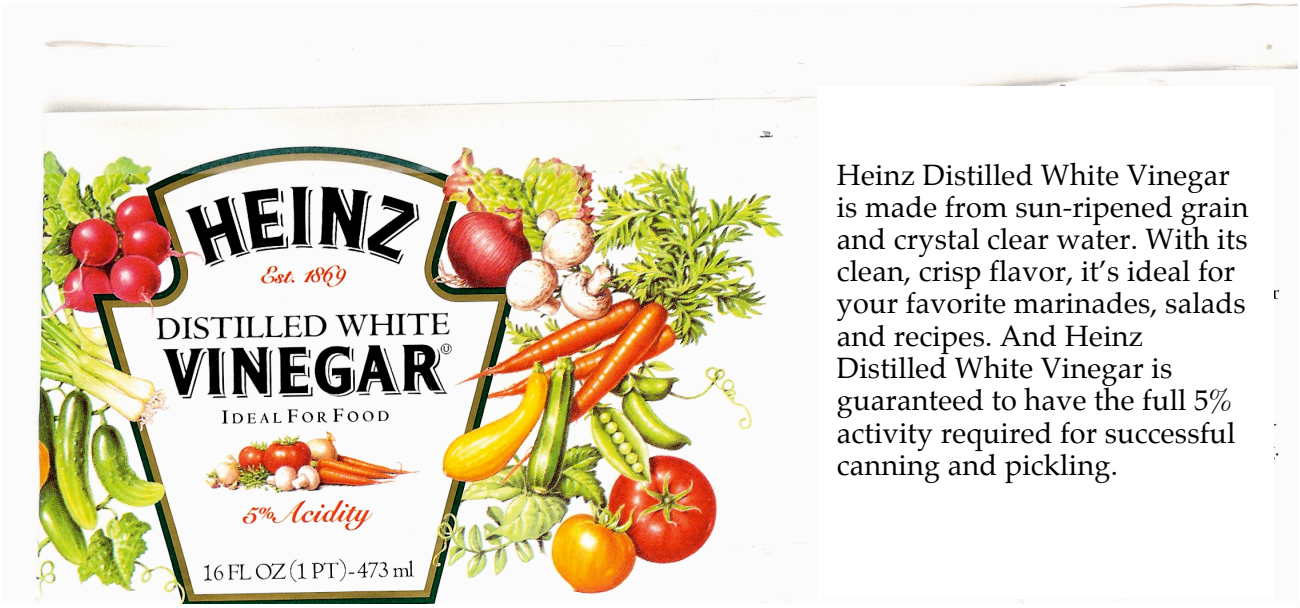
Important Facts About LYSOL Antibacterial Kitchen Cleaner:
Contains no phosphates.
Contains biodegradable cleaning agents.
This bottle is made of 25% post-consumer recycled plastic.
Encourage your local authorities to establish a program to recycle this bottle.

E.P.A. REG. NO. 777-66 E.P.A. EST. NO. 777-NJ-2, 8791-MO-1
QUESTIONS? COMMENTS? CALL 1-800-228-4722
Household Products Division (See Bottom or Side)
Reckitt & Colman Inc., Wayne, NJ 07474-0945

369342

PESTICIDE LABELS FOR MOLD CONTROL:

HEINZ® - Vinegar



Heinz Distilled White Vinegar is made from sun-ripened grain and crystal clear water. With its clean, crisp flavor, it's ideal for your favorite marinades, salads and recipes. And Heinz Distilled White Vinegar is guaranteed to have the full 5% activity required for successful canning and pickling.

INGREDIENTS:
Made from select sun-ripened grain diluted with water to a uniform pickling and table strength of 5% (50 grains) acidity.

PESTICIDE LABELS FOR MOLD CONTROL:

TILEX® – Mildew Remover

FRONT LABEL

BACK LABEL