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Michigan State University Extension Service

Alice E. Marczewski and Michael Kamrin, Center for Environmental Toxicology

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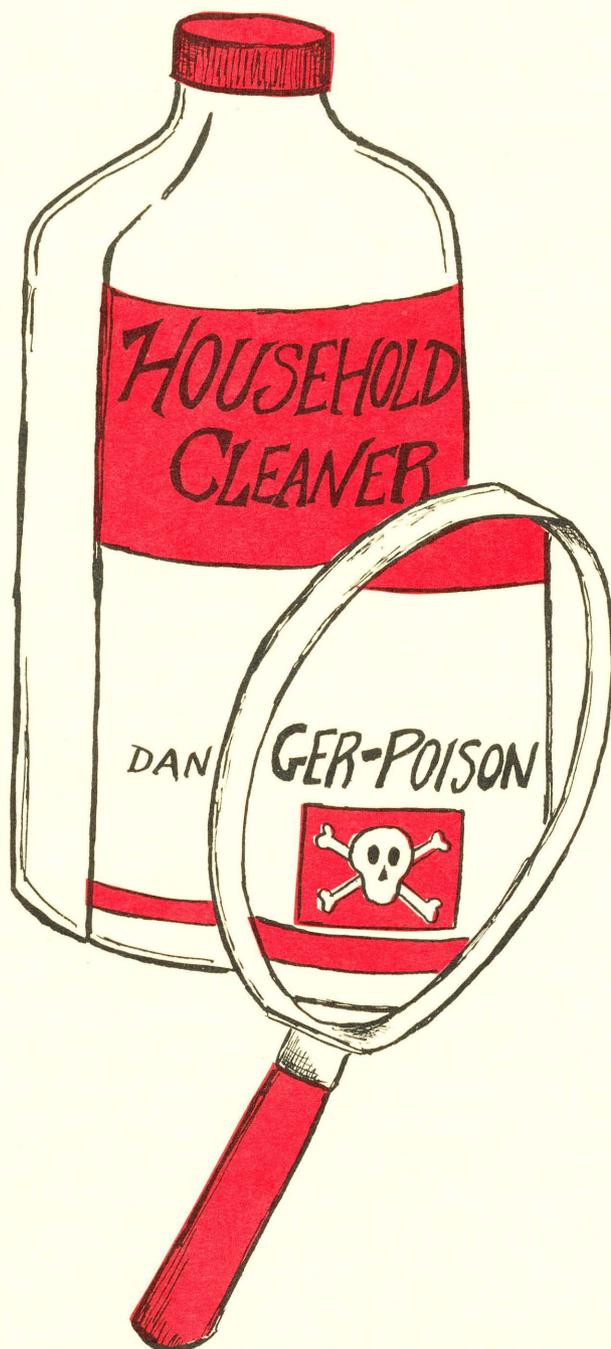
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HOW TO READ A CHEMICAL PRODUCT LABEL

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COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY



HOW TO READ A CHEMICAL PRODUCT LABEL

*Alice E. Marczewski and Michael Kamrin
Center for Environmental Toxicology
Michigan State University*

There is a wide variety of household products we use everyday for almost every imaginable purpose — from cleaning whitewall tires to killing pests on houseplants. All of these different products have one thing in common. They are made of chemicals. Either singly or in a mixture any chemical is potentially hazardous.

These hazardous products — cleaning agents, detergents, polishes, stripping compounds, pesticides and many others — are required by law to meet specific label requirements. These requirements provide you with the information you need to protect yourself, others, pets and the environment. For maximum protection, this label should be consulted before buying, using, storing or disposing of any hazardous products.

What Is A Hazardous Household Product?

A “hazardous substance” is defined in federal government regulations as one which may cause personal injury or illness during any customary or reasonable foreseeable handling or use.

Any household product containing a “hazardous substance” is what you should regard as a hazardous household product.

There are two categories of hazardous household products and two specific sets of federal regulations for their labels:

- (1) products containing pesticides which are *toxic*, regulated by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); and
- (2) products containing hazardous substances (other than pesticides), which can be *toxic, corrosive, irritant, flammable* or *radioactive*, regulated by the Federal Hazardous Substances Act (FHSA).

How Can I Tell If The Products I Buy or Use Are Hazardous?

READ THE LABEL!!!!

Everything that is on the label of a hazardous product is there for a reason.

Products containing “hazardous substances” are required by the federal laws mentioned above to bear a label of specific size and containing certain information depending on the toxicity of the product or hazard presented by the product.

The following two sets of guidelines will help you to understand product labels so that you can avoid any hazards associated with products in either of the two categories of hazardous household products.

Table 1. TOXICITY RATING SCALE FOR PESTICIDES

IF THE LABEL HAS THIS SIGNAL WORD YOU KNOW THAT THIS IS HOW TOXIC THE PRODUCT IS.

Category	Signal Word required on label	LD ₅₀ rat-oral mg/kg	Approximate amount needed to kill an average person	<i>Precautionary Statements by Toxicity Category</i>	
				Oral, inhalation or dermal toxicity	Skin and eye local effects
I highly toxic	DANGER-POISON 	LESS than 50	a few drops to one teaspoon	Fatal (poisonous) if swallowed (inhaled or absorbed through skin). Do not breathe vapor (dust or spray mist). Do not get in eyes, on skin or on clothing. (Front panel statement of practical treatment required.)	Corrosive, causes eye and skin damage (or skin irritation.) Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. (Appropriate first aid statement required.)
II moderately toxic	WARNING	50-500	1 teaspoon to one ounce	May be fatal if swallowed (inhaled or absorbed through the skin). Do not breathe vapors (dust or spray mist). Do not get in eyes, on skin or on clothing. (Appropriate first aid statements required.)	Causes eye (and skin) irritation. Do not get in eyes, on skin or on clothing. Harmful if swallowed. (Appropriate first aid statement required.)
III slightly toxic	CAUTION	over 500	over one ounce	Harmful if swallowed (inhaled or absorbed through the skin.) Avoid breathing vapors (dust or spray mist). Avoid contact with skin (eyes or clothing). (Appropriate first aid statements required.)	Avoid contact with skin, eyes or clothing. In case of contact, immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists.
IV not toxic	none required			No precautionary statement required.	No precautionary statement required.

HOW TO READ A PESTICIDE PRODUCT LABEL

The labeling of a pesticide product is much more complicated than most other chemical products. This is necessary because many pesticides are more toxic than other chemicals found around the home, so warnings, use specifications and directions must be much more complete and appropriately detailed.

The definition of a "pesticide" is a "product that will kill a living organism defined by man to be a pest." Thus, *insecticides, herbicides, rodenticides, fungicides*, etc. are made to be toxic — they are designed to kill specific undesirable living things. Therefore, some may also be hazardous to people.

You can tell the toxicity of a pesticide product by looking at the *signal word* on the label. The other important things a pesticide label is required to tell you is proper use, storage, handling and disposal of the pesticide and its container. Following all label directions will prevent injury to desirable plants and animals, prevent occurrence of chemical residues and protect the environment.

WHAT THE SIGNAL WORD TELLS YOU

In order to establish how dangerous a pesticide is and predict its toxicity to man, it is tested on experimental animals such as mice, rats, guinea pigs and dogs. One of the more commonly used measures of toxicity is the LD₅₀. The LD₅₀ is the lethal dose for 50% of the animals tested (or the amount of chemical that kills 50% of the animals to which it was given.)

Based on the LD₅₀ and other tests, the product is classified into Toxicity Categories. The Toxicity Category I, II, III or IV indicates how hazardous the chemical or product is. (Category I is the most toxic, IV the least toxic.)

The precautionary statements required on the label, as well as the signal word required on the label are different for each of these four categories. The TOXICITY RATING SCALE shown in Table 1 indicates the requirements for pesticide labels.

Figure 1 shows a fictitious pesticide product label and indicates all of the legal label requirements. Notice that it falls into Toxicity Category III according to the Toxicity Rating Scale on page 2 and has the appropriate signal word — "CAUTION", and the appropriate precautionary statements on the label.

WARNING OR CAUTION STATEMENTS

STATEMENT OF PRACTICAL TREATMENT

The label must tell you how to avoid the hazards the product poses. Within the precautionary statement or elsewhere on the label, emergency first aid measures must be stated. The label must also state what types of exposure require medical attention.

PRECAUTIONARY STATEMENTS

Hazards to humans (and domestic animals): This section will tell you in what ways the product may be poisonous. It will also tell you how to avoid poisoning, such as protective clothing or ventilation requirements. If the pesticide is highly toxic, this section must inform physicians of the proper treatment for poisoning.

Physical and chemical hazards: This section will say if the pesticide may pose any fire, explosion or chemical hazards.

Environmental hazards: If used improperly, pesticides or pesticide residues may contaminate water supplies, accumulate to dangerous levels in the environment or may harm birds, fish or wildlife. To avoid these problems the label may contain environmental precautions applying to air, water, soil or wildlife.

DIRECTIONS FOR USE

The instructions on the label must tell you how to use the product properly within its legal requirements to get the best results. The directions will tell you:

- The pests the product is registered to control.
- The crops, animals or other items the product can be used on.
- In what form the product should be applied.
- How to apply the product.
- How much to use.
- Where it should be applied.
- When it should be applied.
- How frequently it should be applied.
- How soon the crop may be used or eaten after the product is applied.

TYPE OF

A pesticide
— liquid
others. Different
handling.
contains an

STORE IN COOL DRY PLACE.
READ ENTIRE LABEL. USE IN ACCORDANCE
WITH LABEL CAUTIONS AND DIRECTIONS.

KEEP PESTICIDE IN ORIGINAL CONTAINER.
DO NOT PUT CONCENTRATE OR DILUTE INTO
FOOD OR DRINK CONTAINERS.

DIRECTIONS: Spray thoroughly on infested
plant parts. Repeat as necessary. Can be
used up to 3 days of harvest on food crops,
unless otherwise specified.

HOUSEHOLD PESTS (Roaches, Ants, Flies):
2 Tablespoonfuls per gallon water.
Spray on areas frequented by insects.
Avoid contamination of food, dishes,
utensils and water. Repeat as necessary.
Do not use in food preparation areas or in
edible product areas of food processing plants.

VEGETABLES: Broccoli, Brussel Sprouts,
Cabbage, Cauliflower, Kale, Beans, Peas,
Potatoes--(Aphids, Scales, Mites, Mealybugs):
1 Tablespoon per gallon water. Do not apply
to Beans within 1 day of harvest. Do not
apply to Broccoli and Peas within 3 days of
harvest and to Brussel Sprouts, Cabbage,
Cauliflower or Kale within 7 days of harvest.
Use up to harvest on potatoes.

CAUTION: Harmful if swallowed. Do
not breathe vapor or spray mist. Avoid
contact with skin; wash skin and hands
thoroughly after using. Avoid contamination of
Tranziapon is a cholinesterase inhibitor
and can cause symptoms similar to those
caused by other organic phosphates.
Keep children and animals away from
treated areas until the areas are dry. If
symptoms occur, CALL A PHYSICIAN IMMEDIATELY.
Note to Physicians: Emergency Information
call (123) 456-7890. ATROPINE IS

DO NOT USE, POUR, SPILL OR STORE IN
OR OPEN FLAME. Food utensils such as
spoons or Tablespoons should not be used
for food purposes after use with pesticide.
Do not reuse container.
Dispose of container when empty.

This product will kill fish. Keep away
from body of water. Do not contaminate
equipment or disposal containers. Thorough
cleaning of equipment or disposal containers
is required. APPLY THIS PRODUCT ONLY AS SPECIFIED
ON THIS LABEL.

This product is highly toxic. For more
protective information may be obtained from
your Cooperative Agricultural

NOTICE: Buyer assumes all responsibility
for safety and use not in accordance with

CHEMICO CHEMICAL COMPANY
10000 Main Street
Beverlyton, MD 54321
EPA
EPA
Made in USA

NAME AND ADDRESS OF MANUFACTURER

The name and address of the company that made or distributed the product must be on the label. This way the purchaser of the product knows who made or sold the product and can contact them, if necessary.

REGISTRATION AND ESTABLISHMENT NUMBERS

Every pesticide on the market must be registered with the federal government with the Environmental Protection Agency. The *registration number* must be on the front panel of the label and is written as "EPA Registration No. XXXX." The *establishment number*, which is a code for what factory made the chemical, must also be on every pesticide container. It usually appears under the registration number.

FORMULATION

may be available in more than one type of formulation
powders, emulsifiable concentrates, dusts and
ent types of formulations require different methods of
e label will say what type of formulation the package
how to use it properly.

act
ly
id.
r
ounds.
ated
ning
ELY.
ion--
OTAL.
EAT
as-
for
f any
by
stes.
fr
Se

y for
rections.
2222
No. 0000
111-22-3

MAKES UP TO
24 GALLONS
DILUTED
SPRAY

ZAPPO

TRANZIAPON INSECT SPRAY

KILLS INSECTS:
Aphids, Red Spider Mites,
Flies, Mealybugs, and
Scales.

Active Ingredients by wt.
Tranziapon*.....49%
Aromatic Petroleum
Derivative Solvent...34%
Inert Ingredients....17%

*3,3-Ditranstate of cis-
mercapto pontificate

**CAUTION: KEEP OUT OF REACH OF
CHILDREN. See back panel for additional cautions.**

NET CONTENTS 8 FL. OZ.

NAME OF THE PRODUCT

Brand Name

The name, brand or trademark is plainly on the front panel of the product label. The *brand name* is the name used in ads by the company that makes the product and is the most identifiable name for the product.

Common Name

All chemicals have a scientific name. Many times chemicals with a complex scientific name are also given a simpler common name. Both the scientific and common name do not vary between companies. The brand name will be different depending on which company made the chemical.

INGREDIENT STATEMENT

Every pesticide label must list what is in the product. It must show the percent that is the *active ingredient* and the percent that is *inert ingredient*. The name of the active ingredient must also be listed and can be shown either by chemical name or common and chemical name. The inert ingredients do not need to be named.

CHILD HAZARD WARNING

Every pesticide container must bear the statement "KEEP OUT OF REACH OF CHILDREN" on the front label.

NET CONTENTS

The label must show how much product is in the container. This can be expressed in ounces, liters, pounds or other units.

MISUSE STATEMENT

Chemical companies are required by law to do extensive testing on a product before it may be placed on the market. They must meet all labeling requirements and prove that labeling information is correct. *To use a pesticide product in any manner inconsistent with its labeling is a violation of federal law. You are reminded of this in the misuse statement.*

Figure 1. REPRESENTATIVE PESTICIDE PRODUCT LABEL

HOW TO READ A HOUSEHOLD CHEMICAL PRODUCT LABEL

The hazards posed by household chemical products other than pesticides include hazards other than toxicity alone. The Federal Hazardous Substances Act establishes that a hazardous substance is one which is toxic, corrosive, irritant, flammable or radioactive. All of these properties of the household chemical product determine how the product is labeled.

The labels of household products containing hazardous substances must bear at least the following information:

Signal Word

The signal word "DANGER" on substances which are extremely flammable, corrosive or highly toxic.

On those substances which are highly toxic, the additional word "POISON" must be included.

The signal word "WARNING" or "CAUTION" on all other hazardous substances.

Common and/or Chemical Name

A list of the common names of the hazardous ingredients; if a hazardous substance has no common name, the chemical name will be listed.

Both names may appear on the label, as in this case.

"Sodium Hypochlorite" is the chemical name.

"Bleach" is the common name.

Name and Address of Manufacturer, Distributor, Packer or Seller

Description of Hazard

A description of the principal hazards involved in using the product must be included on the label. In this case, the product is an "IRRITANT" to the skin, eyes and to the gastrointestinal system, if swallowed. Other words that may be used to describe the principal hazard in using other products may include "Vapor Harmful", "Flammable", "Corrosive", "Absorbed Through the Skin" and such.

Precautions

The label must have a statement of what to do to avoid the hazard.

Instructions for Safe Handling and Storage

First Aid Instructions, when Necessary or Appropriate

The Statement, "KEEP OUT OF REACH OF CHILDREN"

Common and Chemical Name

Active Ingredient: Sodium Hypochlorite 5%
Inert Ingredients: 95%

Contains No Phosphates



BLEACH

64 fl. oz. (2 quarts)

CAUTION: KEEP OUT OF REACH OF CHILDREN (See Back Panel for Other Cautions)

Signal Word

BRITE: HOUSEHOLD USES

Use BRITE to clean your bathroom and kitchen. BRITE is an excellent disinfectant and deodorizer. BRITE cleans by removing stubborn stains and eliminating odor-causing germs from surfaces all around the house.

*TOILET BOWLS---Pour in 1/4 cup of BRITE. Brush entire bowl. Let stand 10 minutes. DO NOT USE WITH TOILET BOWL CLEANERS. SEE CAUTION STATEMENT.

*KITCHEN SINKS---Cover stains with water. Pour 1/4 cup of BRITE directly into standing water. BRITE will not remove rust or pot marks.

*FLOORS, VINYL OR CERAMIC TILE---Clean with a solution of 1 cup of BRITE per gallon of sudsy water. DO NOT use on cork.

*BATHTUBS AND SHOWERS---Clean with a solution of 1 cup of BRITE per gallon of warm water.

DIRECTIONS FOR USE

For best results, use the proper amount of BRITE in your wash water. The guidelines below should provide white, bright laundry when used with your favorite detergent. However, if the laundry is extremely soiled, you may want to add slightly more BRITE.

- Large top-loading automatic 1 1/2 cups.
- Regular top-loading automatic 1 cup.
- Front-loading automatic 1/2 cup.
- Heavily soiled laundry--increase amount by 1/4 cup.
- Hand laundry--2 gallons of sudsy water 1/2 cup.

YOUR WASH NEEDS BRITE BLEACH

Washing with BRITE will remove stains, eliminate most germs, and tend to reduce diaper irritation. However, repeated use on flame-retardant sleepwear made of 100% cotton may cause loss of flame retardancy.

Write for a free BRITE "Guide to Cleaner Laundry" booklet or other information on laundry and house cleaning to the BRITE Company, P.O. Box 12345, Braselton, Wisconsin, 41415.

FOR USE ON THE FOLLOWING FABRICS:

Cotton, linen, synthetics, permanent press and all color-fast fabrics. Do not use if garment label says "Do Not Bleach." Do not use BRITE on silk, wool, mohair, leather, spandex, or non-color-fast fabrics.

CAUTION BRITE may be harmful if swallowed or may cause severe eye irritation if splashed in eyes. If swallowed, feed milk. If splashed in eyes, flood with water. Call Physician. Skin irritant; if contact with skin, wash off with water. DO NOT USE BRITE with AMMONIA or products containing ACIDS such as TOILET BOWL CLEANERS, RUST REMOVERS, or VINEGAR. To do so will release HAZARDOUS GASES. Prolonged contact with metal may cause pitting or discoloration. DO NOT USE THIS BOTTLE FOR STORAGE OF ANY OTHER LIQUID BUT BRITE.

THE BRITE COMPANY, BRASELTON, WISCONSIN, 41415 MADE IN USA EPA REG. NO. 212-11

Name and Address of Manufacturer

the statement "KEEP OUT OF REACH OF CHILDREN"

Description of Hazard

Precautions

CAUTION BRITE may be harmful if swallowed or may cause severe eye irritation if splashed in eyes. If swallowed, feed milk. If splashed in eyes, flood with water. Call Physician. Skin irritant; if contact with skin, wash off with water. DO NOT USE BRITE with AMMONIA or products containing ACIDS such as TOILET BOWL CLEANERS, RUST REMOVERS, or VINEGAR. To do so will release HAZARDOUS GASES. Prolonged contact with metal may cause pitting or discoloration. DO NOT USE THIS BOTTLE FOR STORAGE OF ANY OTHER LIQUID BUT BRITE.

First Aid Instructions

Instructions for Safe Handling and Storage

The label is your guide for safe use, storage, handling and disposal of a product. However, you may have questions that are not adequately answered on the label. For more complete information about disposal of hazardous wastes, see Center for Environmental Toxicology publication, "Household Hazardous Wastes."

For your own safety and for the protection of others and of the environment, do not hesitate to seek explanations to questions you may have about any chemical product you buy. The following sources may be able to help you:

For Information About a Specific product:

Contact the Company that makes the product. They are in business to serve you. The company's phone number is frequently on the product label.

For General Information and Referrals:

Your County Cooperative Extension Service Office
(listed under your county in the phone book)

or

Center for Environmental Toxicology
Michigan State University
East Lansing, MI 48824
(517) 353-6469

For Questions About How to Dispose of Hazardous Wastes:

Michigan Department of Natural Resources
Office of Hazardous Waste Management
(517) 373-2730

For Questions Relating to Health Problems Related to Environmental Toxicants:

Michigan Department of Public Health
Center for Environmental Health Sciences
(517) 373-8050

For Questions About Pesticides and Other Agricultural Chemicals:

Michigan Department of Agriculture
Office of Toxic Substances and Emergency Services
(517) 373-0440

In Case of Human Poisoning, Call Your Local Poison Control Center, Your Physician, or:

1-800-632-2727 (State Poison Control Center in the Lower Peninsula)
1-800-562-9781 (State Poison Control Center in the Upper Peninsula)
494-5711 (Metro Detroit) Regional Poison Control Center, Detroit
1-800-462-6642 (from area code 313) Regional Poison Control Center, Detroit
1-800-572-1655 (from all other areas in Michigan) Regional Poison Control Center, Detroit

HAZARDOUS PRODUCT INVENTORY

Name of Product	Date Purchased	Storage Location	Important Precautions
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