CRMC-Motley1000-Subj-004162

WARNING LABELS

A Guide for the Preparation of Warning Labels for Hazardous Chemicals

MANUAL L-1

Fourth Revision—1956

Manufacturing Chemists Association

PRICE ONE DOLLAR

Published by
MANUFACTURING CHEMISTS' ASSOCIATION, INC.
1625 EYE STREET, NORTHWEST, WASHINGTON 6, D. C.

Published by AsbestosClaims.Law
asbestosclaims.law/library/24132/1

Gift
Publisher
Copy
SEP 10 1957

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ADOPTED 1945
REVISED 1946
SECOND REVISION.... 1949
THIRD REVISION..... 1953
FOURTH REVISION... 1956

The information, recommendations and illustrative labels contained in this Manual have been compiled from sources believed to be reliable and to represent the best current opinion on the subject. No warranty, guarantee or representation is made by the Association as to the absolute correctness or sufficiency of any information, recommendation or illustrative label contained in this Manual, and Manufacturing Chemists' Association, Inc. assumes no responsibility in connection therewith; nor can it be assumed that all warnings and precautionary measures are contained in this Manual, or that other or additional measures may not be required under particular or exceptional conditions or circumstances.

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WARNING LABELS

A Guide for the Preparation of Warning Labels for Hazardous Chemicals

Introduction

THE DEVELOPMENT of new chemical products and the introduction of chemical processes into ever-widening fields have accentuated the need for furnishing appropriate information in those cases where there are hazards requiring special precautions. Precautionary information should, so far as practicable, reach every person using, handling, or storing chemicals. The most practical means for the seller to disseminate this information appears to be by warning labels affixed to containers of hazardous chemicals, bearing appropriate precautionary statements expressed as simply and briefly as circumstances permit. Such labels, however, cannot take the place of the education of employees regarding chemical hazards and the use of safety clothing and equipment which are and must remain the direct responsibility of employers; nor can the wording on these labels be expected to cover complete information as to the properties of the chemicals nor the complete details for handling chemicals under all conditions. Such information may be found in producers' technical bulletins or in the Manufacturing Chemists' Association's Chemical Safety Data Sheets.

Many chemicals present no hazards in normal handling and storage and for these products no precautionary statements are necessary on the label.

To achieve uniform and more adequate labeling of hazardous chemical products, the Labels and Precautionary Information (LAPI) Committee of the Manufacturing Chemists' Association, Inc., has prepared this Manual for the benefit and guidance of its members. Part I sets forth principles for the preparation of warning labels. Part II contains suggested warning labels for specific chemicals illustrative of the application of these principles. Part III contains suggested warning labels showing the application of the principles of Part I to a group of chemical products used in the pesticide "economic poisons" field.

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The Surgeon General of the United States Public Health Service has discontinued the labeling agreements entered into some years ago with the manufacturers of a few specific chemicals. This was done because today adequate precautionary labels are in very general use by chemical manufacturers. The United States Public Health Service has approved the principles of precautionary labeling developed by the Manufacturing Chemists' Association, Inc., and will continue its interest in this field in cooperation with the Association. It is felt that cooperation on the present broad basis will best serve the purpose intended when the earlier more specific agreements were made.

Individual statutes, regulations or ordinances may require that particular information be included in a label or that a specific label be affixed to a container, but for the most part these labels follow LAPI principles. In each case, the requirements of these laws should be studied. *The warning labels suggested in this Manual should be used in addition to, or in combination with, any label required by law.**

*Federal statutes and regulations affecting the labeling of chemical materials include *Federal Caustic Poison Act* and regulations; *Federal Insecticide, Fungicide, and Rodenticide Act* and regulations; *Federal Food, Drug and Cosmetic Act* and regulations; *Interstate Commerce Commission Regulations for Transportation of Explosives and Other Dangerous Articles* and others. Copies are obtainable at nominal cost from the Superintendent of Documents, Washington, D. C., or directly from the agencies that administer the laws.

State and local governments frequently regulate labeling through statutes, ordinances, and regulations affecting industrial chemicals; poisons; insecticides, fungicides, rodenticides, and herbicides; foods, drugs, and cosmetics; agricultural and horticultural materials; the practice of pharmacy; and other subjects. Copies are usually obtainable from state or local Departments of Health, Agriculture, Pharmacy, or other regulatory agencies.

Terms as Used in this Manual

DUST[2]—Solid particles generated by handling, crushing, grinding, rapid impact, detonation and decrepitation of organic or inorganic materials such as rock, ore, metal, coal, wood, grain, etc. Dusts do not tend to flocculate except under electrostatic forces. They do not diffuse in air but settle under the influence of gravity.

FUME[2]—Solid particles generated by condensation from the gaseous state, generally after volatilization from molten metals, etc., and often accompanied by a chemical reaction such as oxidation. Fumes flocculate and sometimes coalesce.

MIST[2]—Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state, such as by splashing, foaming and atomizing.

GAS—A normally formless fluid which occupies the space of enclosure and which can be changed to the liquid or solid state by the effect of increased pressure or decreased temperature or both. A gas diffuses.

VAPOR—The gaseous form of a substance which is normally in the solid or liquid state. A vapor diffuses.

FLAMMABLE LIQUID[1]—Any liquid which gives off flammable vapors (as determined by flash point from Tagliabue's open-cup tester, as used for test of burning oils) at or below a temperature of 80°F.

EXTREMELY FLAMMABLE LIQUID—Any liquid which gives off flammable vapors (as determined by flash point from Tagliabue's open-cup tester, as used for test of burning oils) at or below a temperature of 20°F.

CORROSIVE (Physiological)—An agent which in contact with living tissue will cause more or less severe destruction of tissue by chemical action. As used in warning labeling, the term "corrosive" refers to action on living tissue and should not be confused with action on inanimate surfaces such as metals, glass or wood.

IRRITANT (Physiological)—An agent which in contact with living tissue will induce either immediately or after prolonged or repeated contact a more or less severe local tissue reaction not leading directly to destruction of tissue.

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...roblems will be encountered that present hazards varying in kind or degree from those listed. Appropriate statements of hazards, precautionary measures and instructions in case of contact or exposure should be prepared on the basis of the properties of the product, following the pattern and general phraseology of the following table. Parenthesized words in the table express variations in kind or degree and are to be used where applicable. SEE EXAMPLE PAGE 14.

NOTE: POISON, with skull and crossbones, should be included if the product meets any of the criteria for "poison" set forth on page 8 or is required by law. If POISON is used add first aid statement as required.

Class of Hazard	Statements of Hazard IMPORTANT: Select applicable statement(s). Selection(s) to be based on actual hazards of use and degree of hazard. In some instances where caution is indicated, the statement of hazard is omitted and adequate information provided in statement of precautionary measures.	Precautionary Measures IMPORTANT: Select applicable statement(s) only. Selection(s) to be based on actual hazards of use and degree of hazard. In some instances the omission of precautionary statement may be justified where the measure to be followed is obvious from the statement of hazard.	Instructions in case of Contact or Exposure IMPORTANT: Select applicable statement(s) only. Selection(s) to be based on necessity for prompt action in order to avoid serious effects.
...Flashing at 150°F. or Below (flash points are determined by the Tagliabue Cup Method)	Extremely Flammable Flammable (Combustible)*	...away from heat (sparks) and open flame. ...container closed (and away from heat). ...with adequate ventilation.	
...ng Agents	Strong Oxidant Contact with Combustible (Other) Material May Cause Fire	...ve separately (away) from and avoid contact with ...combustible (other) materials. ...id contamination of clothing as it becomes dangerously flammable when dry. ...ep container closed (and away from heat). ...id contact with skin and eyes.	In case of contact, immediately flush skin or eyes with plenty of water for (at least) 15 minutes; for eyes, get medical attention. (Wash clothing thoroughly at once.) Sweep up spillage at once. Flush or absorb spillage with
...Giving Vapors Rapidly Toxic or ...Irritating on Exposure for a Short ...to Low Concentrations	Vapor (Extremely) Hazardous (Irritating) Hazardous Liquid and Vapor (Gas under Pressure) Vapor Poisonous if Inhaled Vapor May Be Fatal if Inhaled [See NOTE opposite page]	...not breathe vapor. ...not get in eyes, on skin, on clothing ...e only with adequate ventilation. Keep container closed (and away from heat). ...e air line respirator or self-contained oxygen respirator available for emergency.	In case of contact, immediately flush skin or eyes with plenty of water for (at least) 15 minutes; for eyes, get medical attention. Remove and wash clothing before re-use. [See NOTE above]
...Giving Vapors Hazardous from Pro...r Repeated Exposures or Exposure to ...centrations	Vapor Harmful Causes Irritation of Eyes, Nose, and Throat	...e only with adequate ventilation. ...id (prolonged or repeated) breathing (of) vapor. ...void contact with skin, eyes, and clothing. Keep container closed (and away from heat).	If spilled on clothing, remove and wash before re-use. In case of exposure to high concentrations, remove to fresh air.
...Vapors Physiologically Inert	Gas (Vapor) Reduces Oxygen Available for Breathing Releases Heavy Gas (Vapor) which May Cause Suffocation	...e with adequate ventilation. Keep container closed. ...not enter storage areas unless adequately ventilated.	If affected by exposure, remove to fresh air. If breathing has stopped, apply artificial respiration
...n Dust Form Hazardous from ...or Contact	Hazardous (Harmful) Dust Harmful if Inhaled Causes Irritation of Skin, Eyes, Nose, and Throat	...not breathe dust. ...void breathing dust. Wash thoroughly before eating or smoking. ...void contact with skin, eyes, and clothing.	In case of contact, (immediately) flush skin ...with plenty of water for (at least) 15 minu... eyes, get medical attention. (Remove and wa... clothing before re-use.)
...ls - Corrosive	Causes Severe Burns Causes Burns May Cause Burns	Do not get in eyes, on skin, on clothing. Avoid contact with skin, eyes, and clothing. Avoid exposure to (concentrated) vapor.	In case of contact, immediately flush skin or eyes with plenty of water for (at least) 15 minutes; (for eyes), get medical attention. (Remove and wash clothing before re-use.)
...ausing Skin Irritation after Pro...repeated Contact	Causes Skin Irritation May Cause Skin Irritation.	Avoid (prolonged or repeated) contact with skin. Wash thoroughly before eating or smoking. Avoid exposure to (concentrated) vapor.	In case of contact, flush with (plenty of) water; (for eyes, get medical attention.)
...xic through Skin Absorption	(Extremely) Hazardous (Harmful) Solid (Liquid) (Rapidly) Absorbed through Skin [See NOTE opposite page]	Do not get in eyes, on skin, on clothing. Avoid contact with skin, eyes, and clothing.	In case of contact, immediately (remove all contaminated clothing and) flush skin or eyes with plenty of water for (at least) 15 minutes; (for eyes), get medical attention. Wash clothing before re-use. [See NOTE above]
...xic if Swallowed	Poisonous if Swallowed May be Fatal if Swallowed Harmful if Swallowed [See NOTE opposite page]	Wash thoroughly before eating or smoking. Wash thoroughly after handling. ...not breathe dust (vapor).	[See NOTE above]

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1956

The Following Label Changes Have Been Made In The 4th Editio

PART II

LABELS ADDED

Aluminum Chloride, Anhydrous
Arsenic Trioxide
Dimethylamine, Anhydrous
Hydrogen Peroxide (Over 52%)
Phenylenediamine (Meta
Phthalic Anhydride
Propylene
Trimethylamine, Anhydrous

LABELS REVISED

Acetic Anhydride
Barium Nitrate
Benzene
Carbon Tetrachloride
Chromic Acid
Dichloroethyl Ether
Diethylenetriamine
Ethylenediamine
Hydrofluoric Acid Anhydrous
Mercuric Chloride
Lead Acetate
Methanol
Morpholine
Perchloric Acid
Sodium Chlorate
Sodium Hydroxide
Sodium Sulfide
Vinyl Chloride

LABELS DELETED

Arsenic Trichloride
Calcium Cyanide

PART III

LABELS ADDED

Antimony Potassium Tartrate
Aramite
Captan
Chloranil
Chloro-IPC
p-Chlorophenyl p-Chlorobenzenesulfonate
Copper Compounds
Dalapon
Dichlone
Dichlorodiphenyl Dichloroethane
Dinitro-ortho-Cresol
Endrin
Ethyl Mercury Acetate
Glyodin
Heptachlor
Hypochlorites
IPC
Malathion
MCP
Methyl Mercury Dicyandiamide
Methyl Parathion
Phenyl Mercury Acetate
Potassium Cyanate
Sodium Trichloroacetate
Thallium Sulfate
Warfarin
Zinc Phosphide

LABELS REVISED

Aldrin
Antu
Barium Fluosilicate
Calcium Arsenate
Calcium Cyanide
Carbon Tetrachloride
Chlordane
Cresol
Cyanides, Inorganic
Dichlorodiphenyl Trichloroethane
Dichloroethyl Ether
Dieldrin
Ethyl Mercury Chloride
Ethyl Mercury Phosphate
Ethyl Mercury para-Toluene Sulfonanilide
Hydroxymercurichlorophenol
Hydroxymercuricresol
Hydroxymercurinitrophenol
Lead Arsenate
Magnesium Arsenate
Nabam
Paris Green
Phenyl Mercury Oleate
Sodium Chlorate
Strychnine
Zinc Arsenite

LABELS DELETED

London Purple

PART II

Illustrative Warning Labels for Industrial Chemicals

The warning labels in this section have been prepared to demonstrate the practical application of the principles in Part I to a number of chemical products intended for industrial use. The user should familiarize himself with Part I before adapting any of the label statements contained in Part II to his products. The chemicals were selected to illustrate labeling for the major types of hazards commonly encountered. Consequently the listing covers only a relatively few of the hazardous chemicals for which warning labels are necessary. In many cases these labels are applicable to other products some of which are listed with appropriate cross references.

The labeling of radio-active materials, the increasing use of which presents a number of special hazards, is a complex problem beyond the scope of this Manual. In designing labels for these materials, it is suggested that reference be made to Handbook No. 42 published by the U. S. Department of Commerce, National Bureau of Standards, entitled "Safe Handling of Radioactive Isotopes."

The labels are based on the properties of the named chemicals; the presence of other substances, including impurities, may alter these properties and necessitate additional or different precautionary information.

General information regarding the handling and storage of containers is not included on these labels. This subject is discussed under the heading; "Container Handling and Storage," page 20.

First aid treatment is given for a few products only. Such information may be desirable on other products. Where "clothing" is mentioned in first aid instructions, it should be understood to mean *all* articles of clothing, including shoes, garters, and other accessories. Shoes are specifically named in some instructions, because of special hazards arising from absorption of the chemical by leather.

The notation, "MCA Chemical Safety Data Sheet available," appearing with certain labels in this section refers to Data Sheets published by the Manufacturing Chemists' Association, Inc. These publications contain detailed information on the chemical, physical, and toxicological properties of the product, as well as information on shipping con-

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ACETONE

DANGER! EXTREMELY FLAMMABLE

Keep away from heat, sparks, and open flame.
Keep container closed.
Use with adequate ventilation.
Avoid prolonged or repeated contact with skin.

ACETYL CHLORIDE

DANGER! FLAMMABLE
CAUSES SEVERE BURNS

Keep away from heat and open flame.
Keep container closed.
Do not get in eyes, on skin, on clothing.
Avoid exposure to concentrated vapor.
In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

Do not allow water to get into container.

ACRYLONITRILE

DANGER! VAPOR HAZARDOUS
FLAMMABLE

Do not breathe vapor.
Do not get in eyes, on skin, on clothing.
Use only with adequate ventilation.
Keep away from heat and open flame.
Keep container closed.



First Aid—Antidote

(Use same first aid treatment as recommended for CYANIDES, INORGANIC)

MCA Chemical Safety Data Sheet available

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ALUMINUM CHLORIDE, ANHYDROUS

WARNING! CAUSES BURNS
CONTACT WITH WATER OR MOIST AIR
LIBERATES HYDROCHLORIC ACID GAS

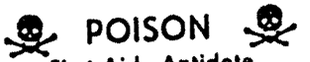
Avoid contact with eyes, skin or clothing.
Keep container tightly closed.
Loosen cover cautiously before opening.
In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

MCA Chemical Safety Data Sheet available

ALLYL ALCOHOL

DANGER! EXTREMELY HAZARDOUS LIQUID AND VAPOR
RAPIDLY ABSORBED THROUGH SKIN
FLAMMABLE

Do not get in eyes, on skin, on clothing.
Do not breathe vapor.
Do not take internally.
Keep away from heat and open flame.
Keep container closed.
In case of contact, immediately remove all contaminated clothing and flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention. Wash clothing before re-use.



First Aid—Antidote

ALLYL CHLORIDE

DANGER! VAPOR HARMFUL
FLAMMABLE

Do not get in eyes, on skin, on clothing.
Do not breathe vapor.
Keep away from heat and open flame.
Keep container closed.

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ortho-ANISIDINE

WARNING! HAZARDOUS LIQUID AND VAPOR
ABSORBED THROUGH SKIN

Avoid contact with skin, eyes, and clothing.
Avoid breathing vapor.
Use only with adequate ventilation.
In case of contact, flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention. Remove and wash clothing before re-use.

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para-ANISIDINE

WARNING! HAZARDOUS SOLID
ABSORBED THROUGH SKIN

Avoid contact with skin, eyes, and clothing.
Avoid breathing dust.
Use only with adequate ventilation.
In case of contact, flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention. Remove and wash clothing before re-use.

ANTIMONY TRICHLORIDE

DANGER! CAUSES SEVERE BURNS
VAPOR HAZARDOUS

Do not get in eyes, on skin, on clothing.
Do not breathe vapor.
Keep container closed.
In case of contact, immediately remove all contaminated clothing and flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention. Wash clothing before re-use.

ARSENIC TRIOXIDE

DANGER! MAY BE FATAL IF SWALLOWED

Avoid breathing dust or spray mist.
Avoid contact with skin, eyes and clothing.
Wash thoroughly after handling.

POISON
First Aid—Antidote

MCA Chemical Safety Data Sheet available

BARIUM CHLORIDE

WARNING! MAY BE FATAL IF SWALLOWED

Avoid inhalation of dust.

BARIUM NITRATE

WARNING! CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE
MAY BE FATAL IF SWALLOWED

Keep container closed and away from heat.
Store separately from and avoid contact with other materials.
Avoid contact with skin and eyes.
Sweep up and carefully remove spilled material.

BENZENE (BENZOL)

DANGER! EXTREMELY FLAMMABLE
VAPOR HARMFUL

Keep away from heat, sparks, and open flame.
Keep container closed.
Use only with adequate ventilation.
Avoid prolonged or repeated breathing of vapor.
Avoid prolonged or repeated contact with skin.

POISON
First Aid—Antidote

MCA Chemical Safety Data Sheet available

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BENZIDINE

WARNING! HAZARDOUS SOLID AND VAPOR
RAPIDLY ABSORBED THROUGH SKIN
REPEATED ABSORPTION MAY RESULT IN BLADDER TUMORS

Avoid breathing dust or vapor.
Avoid contact with skin and eyes.
In case of contact, immediately wash skin with soap and plenty of water; flush eyes with plenty of water for at least 15 minutes and get medical attention.
Wear fresh clothing daily. Take hot shower after work using plenty of soap.

BENZOYL CHLORIDE

WARNING! CAUSES BURNS
VAPOR IRRITATING

Avoid contact with skin and eyes.
Avoid breathing vapor.
In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

BENZYL CHLORIDE

WARNING! CAUSES BURNS

Avoid contact with skin, eyes, and clothing.
Avoid breathing vapor.
In case of contact, immediately wash skin with soap and plenty of water; flush eyes with water for at least 15 minutes and get medical attention.

*The following additional statements are suggested for unstabilized benzyl chloride:
CONTAMINATION MAY RESULT IN DANGEROUS PRESSURE.
Keep dry and handle only in suitable equipment to prevent metallic contamination. Consult manufacturer.

*Addition to "Container Handling and Storage," p. 20.

BROMINE

DANGER! CAUSES SEVERE BURNS
VAPOR HAZARDOUS

Do not get in eyes, on skin, on clothing.
Do not breathe vapor.
Wear goggles, neoprene rubber gloves, and rubber protective clothing when handling.
In case of contact, immediately remove all contaminated clothing, including shoes, and flush skin with plenty of water for at least 15 minutes. Flush eyes for at least 30 minutes. Get medical attention in all cases. Wash clothing before re-use.
If inhaled, remove patient to fresh air, keep him warm and quiet until physician arrives.

MCA Chemical Safety Data Sheet available

BUTADIENE

DANGER! EXTREMELY FLAMMABLE
MAY FORM EXPLOSIVE PEROXIDES ON EXPOSURE TO AIR

Keep away from heat, sparks, and open flame.
Keep container closed.
Use with adequate ventilation.

MCA Chemical Safety Data Sheet available

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n-BUTYL ACETATE—*Same label as* iso-AMYL ACETATE

BUTYL ALCOHOL (normal or secondary)
Same label as iso-AMYL ACETATE

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tert-BUTYL ALCOHOL—*Same label as* ETHYL ACETATE

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n-BUTYLAMINE

WARNING! FLAMMABLE
MAY CAUSE SKIN IRRITATION

Keep away from heat and open flame.
Keep container closed.
Use with adequate ventilation.
Avoid exposure to vapor.
Avoid contact with skin and eyes.
In case of contact, flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

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para-tert-BUTYLCATECHOL

WARNING! CAUSES SKIN IRRITATION
CAUSES BURNS WHEN MOIST

Do not get in eyes, on skin, on clothing.
In case of contact, immediately wash skin with soap and plenty of water; flush eyes with water for at least 15 minutes and get medical attention.

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n-BUTYL CHLORIDE

DANGER! EXTREMELY FLAMMABLE

Keep away from heat, sparks, and open flame.
Keep container closed.
Use with adequate ventilation.
Avoid prolonged breathing of vapor.
Avoid prolonged or repeated contact with skin.

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n-BUTYL ETHER

CAUTION! TENDS TO FORM EXPLOSIVE PEROXIDES
ESPECIALLY WHEN ANHYDROUS

Keep away from heat and open flame.
Use with adequate ventilation.
Avoid prolonged breathing of vapor.
Avoid prolonged or repeated contact with skin.
Do not allow to evaporate to near dryness. Addition of water or appropriate reducing agents will lessen peroxide formation.

BUTYRALDEHYDE—*Same label as* ETHYL ACETATE

CARBON DIOXIDE, SOLID ("DRY ICE")

WARNING! EXTREMELY COLD (109° F. below zero)
CAUSES SEVERE BURNS
LIBERATES HEAVY GAS WHICH MAY CAUSE SUFFOCATION

Do not get on skin or hands.
Do not taste.
Do not put in stoppered or closed containers.
Do not enter places where used or stored until adequately ventilated.

CARBON DISULFIDE

DANGER! EXTREMELY FLAMMABLE
VAPOR HARMFUL
HIGHLY VOLATILE

Keep away from fire, sparks, or heated surfaces.
Store in cool place and keep container closed.
Use only with adequate ventilation.
Avoid breathing vapor.
Avoid contact with skin and eyes.

POISON
First Aid—Antidote

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HYDROGEN PEROXIDE, HIGH STRENGTH (over 52%)

DANGER! POWERFUL OXIDANT
CAUSES SEVERE BURNS

Do not get in eyes, on skin, on clothing. Wear goggles, rubber gloves, protective outer clothing, and heavy rubber shoes.

Keep from contact with combustible materials. Spills on clothing or combustible materials will cause fire. Flush spillage with water.

Keep from contamination from any source, including metals, dust, and organic materials. Such contamination can cause rapid decomposition, generation of high pressures or formation of explosive mixtures.

In case of contact, immediately remove all contaminated clothing and flush skin and eyes with plenty of water for at least 15 minutes. GET MEDICAL ATTENTION. Wash clothing promptly and thoroughly.

***HANDLING INSTRUCTIONS**

Do Not Open Unless You Have Been Properly Instructed.

Store in original closed container.

Store container in a cool, clean place.

Keep drum in upright position.

Do not roll drum on side.

Wash leakage with water.

Put nothing else in this container.

When Empty Drain And Flush Container Thoroughly With Clean Water . . . Replace Bungs Securely.

MCA Chemical Safety Data Sheet available

*Addition to "Container Handling and Storage," p. 20.

HYDROGEN SULFIDE

DANGER! POISON LIQUID AND GAS UNDER PRESSURE
FLAMMABLE

BEFORE USING, READ M.C.A. CHEMICAL SAFETY DATA SHEET SD-36

Do not breathe gas.

Keep away from heat and open flame—may form explosive mixture with air.

NOTE: This gas deadens the sense of smell.
Do not depend on odor to detect presence of gas.

POISON

First Aid—Antidote

Carry patient to fresh air.

If patient has stopped breathing, apply artificial respiration immediately.

Keep patient warm.

Call physician.

MCA Chemical Safety Data Sheet available

LEAD ACETATE

WARNING! HARMFUL DUST

Avoid breathing dust.

Wash thoroughly before eating or smoking.

Keep away from feed or food products.

LEAD MONOXIDE (LITHARGE)

Same label as **LEAD ACETATE**

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METHYL iso-PROPYL KETONE

Same label as ETHYL ACETATE

METHYLENE CHLORIDE

CAUTION!

Use with adequate ventilation.
Avoid prolonged or repeated breathing of vapor.
Avoid prolonged or repeated contact with skin.
Do not take internally.

MIXED ACID (SULFURIC and NITRIC)

DANGER! CAUSES SEVERE BURNS
VAPOR EXTREMELY HAZARDOUS
MAY CAUSE NITROUS GAS POISONING
SPILLAGE MAY CAUSE FIRE OR LIBERATE DANGEROUS GAS

Do not breathe vapor.
Do not get in eyes, on skin, on clothing.
In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

MONO-COMPOUNDS

See alternative chemical name, e.g.
CHLOROPHENOL *for* MONOCHLOROPHENOL

MORPHOLINE

WARNING! MAY CAUSE EYE BURNS AND SKIN IRRITATION
ABSORBED THROUGH SKIN

Do not get in eyes.
Avoid contact with skin or clothing.
Keep away from heat and open flame.
In case of contact, immediately flush with plenty of water for at least fifteen minutes; for eyes, get medical attention. Remove contaminated clothing and wash before re-use.

MURIATIC ACID—*See* HYDROCHLORIC ACID

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alpha-NAPHTHYLAMINE (*containing* beta-NAPHTHYLAMINE)

Same label as beta-NAPHTHYLAMINE

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beta-NAPHTHYLAMINE

WARNING! HARMFUL DUST AND VAPOR
REPEATED ABSORPTION MAY RESULT IN BLADDER TUMORS

Use only with adequate ventilation.
Avoid breathing dust or vapor.
Avoid contact with skin.
Wear fresh clothing daily. Take hot shower after work using plenty of soap.

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CHEMICAL SAFETY DATA SHEETS

(AS OF JANUARY 1956)

Acetaldehyde SD-13
Acetic Acid SD-41
Acetic Anhydride SD-15
Acetylene SD-7
Acrylonitrile SD-31
Ammonium Dichromate SD-45
Anhydrous Ammonia (Revised) SD-8
Aniline SD-17
Aqua Ammonia SD-13
Benzene (Second Revision) SD-2
Betanaphthylamine SD-32
Bromine SD-49
Butadiene (Revised) SD-35
Calcium Carbide SD-23
Carbon Disulfide SD-12
Carbon Tetrachloride SD-3
Caustic Potash SD-10
Caustic Soda SD-9
Chlorosulfonic Acid SD-33
Chromic Acid SD-14
Cresol SD-18
Dimethyl Sulfate SD-19
Ethyl Acetate SD-51
Ethyl Chloride SD-30
Ethyl Ether SD-29
Ethylene Dichloride SD-18
Ethylene Oxide SD-38
Formaldehyde (Revised) SD-1
Hydrochloric Acid SD-39
Hydrofluoric Acid SD-25
Hydrogen Peroxide (Revised) SD-53
Hydrogen Sulfide SD-46
Methanol SD-22
Methylamines SD-37
Methyl Bromide SD-35
Methyl Chloride SD-40
Naphthalene SD-58
Nitric Acid SD-5
Nitrobenzene SD-21
Ortho-Dichlorobenzene SD-54
Paraformaldehyde SD-6
Perchloroethylene SD-24
Perchloric Acid Solution, Preliminary SD-11
Phenol SD-4
Phosphoric Anhydride SD-28
Phosphorus, Elemental SD-16
Phosphorus Oxychloride SD-26
Phosphorus Trichloride SD-27
Propylene SD-59
Sodium Chlorate (Revised) SD-42
Sodium Cyanide SD-30
Sodium, Metallic SD-47
Sodium and Potassium Dichromates SD-16
Styrene Monomer (Revised) SD-37
Sulfur Dioxide SD-32
Sulfuric Acid (Revised) SD-20
Tetrachloroethane SD-34
Trichloroethylene SD-14
Vinyl Chloride SD-56

PART III

Illustrative Warning Labels for Pesticides

This section contains suggested warning labels for a group of hazardous chemicals commonly used as or in the formulation of insecticides, fungicides, rodenticides, and herbicides. The term "pesticides" is used in this manual to indicate these products but the term "economic poisons" is synonomous. Wording is based on the principles set forth in Part I. Careful study should be given to Part I and the special considerations discussed below before any suggested wording is used for a pesticide. These labels have been selected for illustrative purposes only and the listings do not purport to cover all pesticides for which precautionary labeling is necessary. Omission of a label for any particular product should not be interpreted to mean that such product requires no warning label.

The principles in Part I apply primarily to the labeling of hazardous chemicals intended for industrial consumption, some of which are also used as, or for processing into forms of pesticides intended for home, farm, or other ultimate consumer use. Labels for such packages of pesticides require consideration of additional factors since they will be handled, stored, and used differently from those intended for industrial consumption. Also, pesticide labels should include warnings not only of hazards to man, but to domestic animals, useful invertebrates, and desirable vegetation. The usual legally-required ingredient statement may make unnecessary a separate showing of chemical indentification of hazardous components on labels using code or nondescriptive names.

A producer or distributor of a pesticide should be familiar with all pertinent laws, regulations and interpretations affecting these products including those of the federal government, states, territories, and other political subdivisions; and with any applicable statutes, ordinances, or regulations affecting labeling in general. ***Statements suggested in Part III should be used in addition to or in combination with any other wording required by law.***

Each suggested warning label in this section applies to a commercial chemical or, where indicated, to a definite concentration range of a chemical. Many pesticides are marketed in a variety of formulations containing different concentrations or combinations of their ingredients. Formulations of two or more constituents may have properties that

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vary in kind or degree from those of the constituents. *In all cases, the warning statements should be based on the properties of the finished formulation.*

It has not been practical to propose statements for all special packages, extraordinary uses or other unusual circumstances surrounding individual products. Each statement is designed for the normal and customary use of a particular product when packaged for sale as a pesticide. *Each labeler of a pesticide should recognize that his product must be treated individually, in the light of its own characteristics, including, among others, concentration and grade, package sizes and types, channels of distribution, normal storage and transportation conditions, intended consumers, and intended uses.*

The label statements in Part III are confined mainly to measures necessary to prevent injury to man and domestic animals arising out of the ordinary handling, storage or use of a product. Additional warnings may be indicated by the particular form or manner in which a product is sold or the circumstances surrounding its use. There also may be other hazards to man or animals which can arise only from specific uses for which directions are given in the labeling. Frequently a pesticide may also be hazardous to useful invertebrates or useful vegetation, or by reason of residues on edible vegetation. The omission of reference to any of these hazards from any statement in Part III does not imply that they may be disregarded. As a rule such warnings are properly incorporated in directions for use. By way of illustration, notes directed to the foregoing appear in connection with some of the illustrative labels. *Even though they may be separated from the principal warnings they should, nevertheless, be prominently displayed.*

Examples:

Do not apply within.....days of harvest.

Avoid use during flowering and pollination periods.

Do not consume or market fruits or vegetables until residue is removed.

Do not use this powder on drainboards, shelves or other places where contact with food is likely.

Do not allow spray to come in contact with garden plants.

For protection of fish and wildlife, avoid contamination of streams, lakes or ponds.

The Federal Insecticide, Fungicide, and Rodenticide Act and some state acts require the word "POISON," the skull and crossbones and an antidote on all "economic poisons" deemed "highly toxic to man." The meaning of the term "Poison" in Part I of this Manual is in general similar to the definition of "highly toxic to man" in the regulations under the federal act. The products in this section have been classified according to the "highly toxic to man" definition.

The term "Poison" has been commonly understood by the layman to mean toxic by oral intake only. The controlling criteria should consider oral intake, inhalation, and skin absorption. To clarify the use of the term, labels on packages of pesticides "highly toxic to man" should specify the modes of entry into the body by which the product is poisonous. Examples:

POISONOUS IF SWALLOWED

POISONOUS BY SKIN CONTACT

MAY BE POISONOUS IF INHALED

POISONOUS IF SWALLOWED OR BY ABSORPTION THROUGH SKIN

It is not intended that the word "POISON" should take the place of a signal word. Any one of the signal words "DANGER," "WARNING" or "CAUTION" may be applicable even when a product is poisonous. The selection of the appropriate word will depend not only on the degree of toxicity of the product, *but more particularly on the risk of injury presented under normal conditions of handling or use.* The word "POISON" (or its derivatives) should be reserved exclusively for those products coming within the definitions of the federal act as "highly toxic to man" except where it may be required by other laws or regulations. For products that are less toxic, statements like the following are preferred:

MAY BE FATAL IF SWALLOWED

HARMFUL IF INHALED OR SWALLOWED

First aid in case of contact is given for a few products only. The Federal Insecticide, Fungicide, and Rodenticide Act and some state acts require a statement of an antidote on all "economic poisons" deemed "highly toxic to man."* Such information may be desirable on other products. Where "clothing" is mentioned in first aid instructions, it should be understood to mean *all* articles of clothing, including shoes, garters, and other accessories. Shoes are specifically named in some instructions, because of special hazards arising from absorption of the chemical by leather.

An important principle of good labeling is to avoid the promiscuous use of precautionary statements since they tend to detract from the

*See footnote page 82.

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prominence and importance which should be given to the vital warnings. Common sense indicates certain fundamental precautions in the handling of nearly all household and farm supplies and a label statement cannot substitute for it. Phrases such as "Keep away from children and domestic animals." "Avoid contamination of food" and "Do not take internally" should be necessary only where the inherently high toxicity of the product, special use of the material, size of the package, likelihood of mistaken identity, or actual use experience strongly indicates their need.

*Other states while not following the federal act on the definition of "highly toxic to man" require the word "POISON" and the skull and crossbones and antidote on all substances which fall within the term "poison" as defined in their poison laws. The term "antidote" is defined in the federal act as "a practical immediate treatment in case of poisoning and includes first-aid treatment" and the regulations state that "the antidote statement shall include direction to call a physician immediately." Some state laws and regulations require, on labels, the use of special or strictly defined antidotes or prescribe special ways in which these must be shown for certain chemicals. The requirements for any given pesticide may, therefore, vary greatly and the impossibility of showing, in the illustrative labels, antidotes which might be nationally acceptable has lead to the practice of indicating only the need for an appropriate antidote statement where the "POISON-skull and crossbones" legend is used.

ACRYLONITRILE

DANGER! POISONOUS IF INHALED
FLAMMABLE

Do not breathe vapor.
Do not get in eyes, on skin, on clothing.
Keep away from heat and open flame.
Keep container closed.

POISON
(Antidote)

Note: Directions for Use should include instructions for appropriate respiratory protection.

ALDRIN

1. ALDRIN Technical and Formulations (60% and over):

WARNING! POISONOUS BY SKIN CONTACT, INHALATION OR SWALLOWING
ABSORBED THROUGH SKIN

Avoid contact with skin, eyes, and clothing.
Avoid breathing spray mist or powder.
Wash thoroughly with soap and water after handling and before eating or smoking.
Do not use indoors without adequate ventilation.
Use clean clothing daily.
In case of contact, immediately remove all contaminated clothing and flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention. Wash clothing before re-use.

POISON
(Antidote)

2. Formulations (10% to 60%):

WARNING! HAZARDOUS BY SKIN CONTACT, INHALATION OR SWALLOWING

Avoid contact with skin, eyes, and clothing.
Avoid breathing spray mist or dust.
Wash thoroughly with soap and water after handling and before eating or smoking.
Use clean clothing daily.
In case of contact, immediately remove all contaminated clothing and flush skin or eyes with plenty of water for at least 15 minutes; fo eyes, get medical attention. Wash clothing before re-use.

Note: Directions for Use should include instructions for appropriate respiratory protection and the use of clean synthetic rubber gloves during commercial or prolonged exposure in spray-mixing and loading operations. Labels should bear a statement relative to protection of persons and animals in treated and adjacent areas.

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