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for the precautionary labeling of hazardous industrial chemicals



american national standards institute, inc.
1430 broadway, new york, new york 10018

NOTICE
American National Standard for the Precautionary Labeling
of Hazardous Industrial Chemicals
Z129.1-1976

ANSI has been advised that under certain circumstances the administration of salt water to induce vomiting may be dangerous. Therefore, all references in Z129.1-1976 to the use of salt water as an emetic are now deleted. These deletions apply to Table 1 and to the texts of the illustrative labels given in Sections A2 and A3 of the Appendix.

September 1976

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15 December 1977
Superseding MCA L-1
Notice 1 of 15 Aug 1971

ACCEPTANCE NOTICE

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**American National Standard
for the Precautionary Labeling of
Hazardous Industrial Chemicals**

Sponsor

Manufacturing Chemists Association, Inc

Approved January 15, 1976

American National Standards Institute, Inc

American National Standard

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Foreword

(This Foreword is not a part of American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals, Z129.1-1976.)

This American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals, Z129.1-1976, has been developed by a committee, national in scope, functioning under the procedures of the American National Standards Institute.

The Labels and Precautionary Information (LAPI) Committee of the Manufacturing Chemists Association (MCA) was established in 1944. This committee produced the first published guide to precautionary labeling for hazardous chemicals (Manual L-1) in 1946, and there have been six revisions. This manual has served as a voluntary standard.

The need for an official standard for the precautionary labeling of hazardous chemicals used in industrial occupations has been recognized and is filled by American National Standard Z129.1-1976.

Suggestions for improvement of this standard will be welcome. They should be sent to the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

The following organizations recognized as having an interest in the standardization of precautionary labeling of hazardous industrial chemicals were contacted prior to the approval of this standard. Inclusion in this list does not necessarily imply that the organization concurred with the submittal of the proposed standard to ANSI.

American Chemical Society
American Conference of Governmental Industrial Hygienists
American Federation of Labor & Congress of Industrial Organizations
American Industrial Hygiene Association
American Institute of Chemical Engineers
American Insurance Association
American Iron and Steel Institute
American Mutual Insurance Alliance
American Occupational Medical Association
American Petroleum Institute
American Society for Testing and Materials
American Society of Agricultural Engineers
American Society of Safety Engineers
Associated General Contractors of America
Can Manufacturers Institute
Chemical Specialties Manufacturers Association
Compressed Gas Association
Electric Light and Power Group
Factory Insurance Association
Factory Mutual System
Food and Drug Administration
General Services Administration
International Association of Governmental Labor Officials
International Chemical Workers Union
National Fire Protection Association
National Institute for Occupational Safety and Health
National Paint and Coatings Association
National Safety Council
Oil, Chemical, and Atomic Workers International Union
Society of Toxicology
Synthetic Organic Chemical Manufacturers Association
Tag and Label Manufacturers Institute
Underwriters Laboratories
U.S. Coast Guard
U.S. Consumer Product Safety Commission
U.S. Department of Commerce
U.S. Department of Defense
U.S. Department of Labor
U.S. Department of Transportation
U.S. Public Health Service

The Labels and Precautionary Information Committee of the Manufacturing Chemists Association had the following members while this standard was being developed:

R. C. Andrews (Diamond Shamrock Corporation)	D. G. MacKellar (FMC Corporation)
G. S. Batchelor (Virginia Chemicals, Inc)	T. R. Madden (Reichhold Chemicals, Inc)
S. W. Beckstead (Kerr-McGee Chemical Corporation)	C. J. O'Connor (Stauffer Chemical Company)
H. A. Birnbaum (3M Company)	L. N. Ortkiese (Amoco Chemicals Corporation)
C. P. Brush (Koppers Company, Inc)	R. R. Philpitt (Olin Corporation)
L. W. Burnette (GAF Corporation)	R. E. Rutherford (Gulf Oil Corporation)
E. K. Daniels (Mobil Chemical Company)	J. T. Seawell (Manufacturing Chemists Association)
C. U. Denehl (Union Carbide Corporation)	W. L. Schleyer (Philadelphia Quartz Company)
R. H. Dewey (Commercial Solvents Corporation)	C. B. Shaffer (American Cyanamid Company)
E. M. Dixon (Celanese Corporation)	A. W. Sheldon (M&T Chemicals, Inc)
J. W. Hammond (Exxon Chemical Company)	G. R. Sido (Monsanto Company)
E. L. Hobson (Shell Chemical Company)	P. Sonneborn (Fisher Scientific)
R. L. Ingham (Mallinckrodt, Inc)	C. J. Stroemple (PPG Industries, Inc)
R. Jelus (MC&B Manufacturing Chemists Company)	J. R. Taylor (Allied Chemical Company)
W. H. Jones (Eastman Kodak Company)	R. G. Troup (J. T. Baker Chemical Company)
M. B. Lore (E. I. du Pont de Nemours and Company)	J. V. Urenovitch (Air Products and Chemicals, Inc)
H. H. McIntyre (Dow Chemical Company)	A. G. Wheeler (ICI United States, Inc)
J. S. Mackay (U.S. Steel Corporation)	

The Subcommittee of the MCA Labels and Precautionary Information Committee, which was responsible for the development of this standard, had the following members:

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L. W. Burnette (GAF Corporation)	A. W. Sheldon (M&T Chemicals, Inc)
W. H. Jones (Eastman Kodak Company)	A. T. Talcott (Dow Chemical Company)
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American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals

Introduction

The development of new chemicals and the introduction of chemical processes into ever widening fields have accentuated a need to furnish information for the guidance of every person who, in his occupation, uses, handles, or stores hazardous industrial chemicals.

The dissemination of this information shall include appropriate precautionary statements expressed as simply and briefly as possible on labels affixed to containers of hazardous chemicals. The wording on precautionary labels cannot be expected to cover the complete information on the properties of a material or the complete details of its proper handling under all conditions. Such information may be found in the producers' technical bulletins or in other literature.

Precautionary labeling shall be used only when and to the extent necessary. The language shall be practical — not based alone upon the inherent properties of a product, but directed toward the avoidance of hazards resulting from such occupational use, handling, and storage as may be reasonably foreseeable. Many products present no hazard in normal handling and storage. For these products, no precautionary statements are required on the label.

1. Scope

This standard applies to the precautionary labeling of hazardous chemicals, as defined herein, used under industrial occupational conditions. It does not apply to compressed gases.

2. Glossary of Terms

The following terms are used throughout this standard. The definitions given apply specifically to the use of these terms in arriving at appropriate precautionary statements for the labels of the immediate containers of hazardous industrial chemicals. In this respect, these terms serve only as a guide for the application of the principles of labeling set forth in this standard.

adequate ventilation. A condition falling within either of the following categories:

(1) Ventilation to reduce levels of air contaminant below that which causes personal injury or illness.

(2) Ventilation sufficient to prevent accumulation of significant quantities of vapor-air mixtures in concentration over one-fourth of the lower flammable limit.

antidote. Specific therapeutic measures that may or may not require the services of a physician.

combustible liquid. Any liquid having a flash point at or above 100°F (37.8°C) but less than 200°F (93.3°C), except any liquid mixture having one or more components with a flash point at or above the upper limit which make up 99% or more of the total volume of the mixture. (For test method, see *flash point*.)

compressed gas. Any gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C) or, regardless of the pressure at 70°F (21.1°C), having an absolute pressure exceeding 104 psi at 130°F (54.4°C); or any flammable liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by American National Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method), Z11.44-1973 (ASTM D 323-72).

corrosive chemical. A chemical that in contact with living tissue causes destruction of the tissue by chemical action. This term shall not refer to action on inanimate surfaces.

dangerously reactive chemical. A chemical that is able to undergo a violent self-accelerating exothermic chemical reaction with common materials, or by itself.

dust. Solid particles generated by handling, crushing, grinding, rapid impact, detonation, or decrepitation of organic or inorganic materials such as rock, ore, metal, coal, wood, grain, etc. Dusts can be dispersed in air but settle under the influence of gravity.

extremely flammable liquid. See *flammable chemical*.

first aid. General measures that can be taken by the victim or other persons, using materials generally avail-

able. First aid is aimed principally at terminating the exposure.

flammable chemical. A substance falling within any of the following categories:

flammable liquid. Any liquid having a flash point below 100°F (37.8°C), except any liquid mixture having one or more components with a flash point at or above the upper limit which make up 99% or more of the total volume of the mixture. (For test method, see *flash point*.)

extremely flammable liquid¹

flammable gas. A gas with either of the following properties: (1) at atmospheric temperature and pressure forms a flammable mixture with air when present at a concentration of 13% or less (by volume), or that forms a range of flammable mixtures with air wider than 12% regardless of the lower limit; or (2) projects a flame more than 18 inches beyond the ignition source with valve opened fully, or the flame flashes back and burns at the valve with any degree of valve opening, when tested in the Association of American Railroads' Bureau of Explosives' flame projection apparatus.

flammable solid. A solid, other than an explosive, that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or that can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

flash point. The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(1) Tagliabue Closed Tester (see American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1971 (ASTM D 56-70 (1975))) — for liquids with a viscosity of less than 45 Saybolt Seconds Universal (SSU) at 100°F (37.8°C), or that do not contain suspended solids, or that do not have a tendency to form a surface film under test.

(2) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1974 (ASTM D 93-73, IP 34/71)) — for liquids with a viscosity of 45 SSU or over at 100°F (37.8°C), or that contain suspended solids, or that have a tendency to form a surface film under test.

¹ Some states and other regulatory agencies require that products with flash points below 20°F (-6.7°C) be labeled as "EXTREMELY FLAMMABLE."

(3) For mixtures, if the result of the test by either method is above 100°F (37.8°C), evaporate a fresh sample to 90% of the original volume and retest. The lower of the two values shall be taken as the flash point.

fume. 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.

gas. A normally formless fluid that 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.

hazardous chemical. A chemical or mixture of chemicals that is toxic, highly toxic, irritant, corrosive, a strong oxidizer, a strong sensitizer, combustible, flammable, extremely flammable, dangerously reactive, or pressure-generating, or which otherwise may cause substantial personal injury or substantial illness during or as a direct result of any customary or reasonable foreseeable handling or use.

highly toxic chemical (poison). A substance falling within any of the following categories:

(1) A chemical that has a median lethal dose (LD₅₀) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(2) A chemical that has a median lethal dose (LD₅₀) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours or less with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.

(3) A chemical that has a median lethal concentration (LC₅₀) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for 1 hour or less to albino rats weighing between 200 and 300 grams each, *provided* such concentration is likely to be encountered by man when the chemical is used in any reasonably foreseeable manner.

(4) If available data on human experience indicate results different from those obtained on animals, the human data shall take precedence.

irritant. A chemical, not a corrosive, which on immediate, prolonged, or repeated contact with normal living tissue will induce a local inflammatory reaction.

median lethal dose or concentration. The dose (LD₅₀) or concentration (LC₅₀) for a given period of time of a substance that is most likely to kill one-half of a group of animals within 14 days.

mist. 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, or atomizing.

mixture. A physical commingling of two or more chemicals not involving a chemical reaction.

poison. See *highly toxic chemical*.

pressure-generating chemical. A chemical falling within any of the following categories:

(1) A chemical that must be protected from spontaneous polymerization by the addition of an inhibitor, or by refrigeration or other thermal control.

(2) A chemical that may decompose to release gas in its container.

(3) A chemical that comprises the contents of a self-pressurized container.

pyroforic chemical. A chemical that will ignite spontaneously in dry or moist air at a temperature of 130°F (54.4°C) or below.

strong oxidizer. A chemical that promotes oxidation readily and on contact with combustible material may cause fire.

strong sensitizer. A chemical that available data on human experience show to be capable of inducing an allergic reaction in a substantial number of persons who come into contact with it.

toxic chemical. A chemical falling within any of the following categories:

(1) A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(2) A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram but not more than 1000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours or less with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.

(3) A chemical that has a median lethal concentration (LC_{50}) in air of more than 200 parts per million but not more than 2000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for 1 hour or less to albino rats weighing between 200 and 300 grams each, *provided* such concentration is likely to be encountered by man when the chemical is used in any reasonably foreseeable manner.

(4) If available data on human experience indicate

results different from those obtained on animals, the human data shall take precedence.

vapor. The gaseous form of a chemical that is normally in the solid or liquid state. A vapor diffuses.

3. General Requirements

3.1 The precautionary label for any hazardous chemical or mixture of chemicals shall be based upon the hazards it possesses (including those contributed by impurities), and not upon the hazards of the substances from which it is formed, nor upon hazards derived from analogies based upon chemical structure.

3.2 The following subject matter shall be considered for inclusion on precautionary labels: Identity of product or hazardous component(s), Signal Word, Statement of Hazards, Precautionary Measures, Instructions in Case of Contact or Exposure, Antidotes, Notes to Physicians, Instructions in Case of Fire and Spill or Leak, and Instructions for Container Handling and Storage.

3.3 Identification of the product or its hazardous component(s) shall be adequate to permit selection of proper action in case of exposure. Identification shall not be limited to a nondescriptive code designation or trade name. If the product is a mixture, those compounds which contribute substantially to the hazard(s) shall be identified.

3.4 The Signal Word shall indicate the relative degree of severity of a hazard in the diminishing order of DANGER!, WARNING!, and CAUTION! When a product has more than one hazard, only the Signal Word corresponding to the class of greatest hazard shall be used.

3.5 Inclusion of the word POISON and the skull and crossbones shall be limited to highly toxic chemicals. When used, this legend shall not replace the Signal Word.

3.6 The Statement of Hazards shall give notice of the hazard or hazards (such as EXTREMELY FLAMMABLE and HARMFUL IF ABSORBED THROUGH SKIN) that are present in connection with the customary or reasonably foreseeable handling or use of the product. With products possessing more than one such hazard, an appropriate statement for each significant hazard shall be included. In general, the most serious hazard shall be placed first.

3.7 The Precautionary Measures (such as "Keep away from heat, sparks, and open flame" and "Avoid breath-

Table 1
Selection of Label Text

PRECAUTIONARY LABEL TEXT			
CLASS OF HAZARD	SIGNAL WORD	STATEMENTS OF HAZARD	INSTRUCTIONS IN CASE OF CONTACT OR EXPOSURE
Highly Toxic	DANGER!	MAY BE FATAL IF SWALLOWED	POISON ☠ Call a Physician FIRST AID: If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.
	WARNING!	HARMFUL IF SWALLOWED	FIRST AID: If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Call a physician. Never give anything by mouth to an unconscious person.
Toxic	DANGER!	MAY BE FATAL IF ABSORBED THROUGH SKIN	POISON ☠ Call a Physician FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)
	WARNING!	HARMFUL IF ABSORBED THROUGH SKIN	FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before re-use. (Discard contaminated shoes.)
Highly Toxic	DANGER!	MAY BE FATAL IF INHALED	POISON ☠ Call a Physician FIRST AID: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.
	WARNING!	HARMFUL IF INHALED	FIRST AID: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.
Toxic	WARNING!	MAY CAUSE ALLERGIC RESPIRATORY REACTION	Avoid breathing (dust, vapor, mist, gas). Keep container closed. Use with adequate ventilation.
	CAUTION!	(VAPOR) (GAS) REDUCES OXYGEN AVAILABLE FOR BREATHING	Avoid breathing (dust, vapor, mist, gas). Keep container closed. Use with adequate ventilation. Do not enter storage areas unless adequately ventilated.

(Continued on next page)

Table 1 - Continued

PRECAUTIONARY LABEL TEXT				
CLASS OF HAZARD	SIGNAL WORD	STATEMENTS OF HAZARD	PRECAUTIONARY MEASURES	INSTRUCTIONS IN CASE OF CONTACT OR EXPOSURE
Corrosive, Eye and Skin	DANGER!	CAUSES (SEVERE) EYE BURNS	Do not get in eyes. Avoid breathing (dust, vapor, mist, gas). Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.	FIRST AID: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
	DANGER!	CAUSES (SEVERE) BURNS	Do not get in eyes, on skin, on clothing. Avoid breathing (dust, vapor, mist, gas). Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.	FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before re-use. (Discard contaminated shoes.)
	WARNING!	CAUSES EYE IRRITATION	Avoid contact with eyes. Wash thoroughly after handling.	FIRST AID: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
	WARNING!	CAUSES IRRITATION	Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.	FIRST AID: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. (Wash clothing before re-use.)
Strong Sensitizer, Skin	WARNING!	MAY CAUSE ALLERGIC SKIN REACTION	Avoid prolonged or repeated contact with skin. Wash thoroughly after handling.	FIRST AID: In case of contact, immediately wash skin with soap and plenty of water.
Extremely Flammable Liquid	DANGER!	EXTREMELY FLAMMABLE	Keep away from heat, sparks, and open flame. Keep container closed. Use with adequate ventilation.	
Flammable Liquid	WARNING!	FLAMMABLE	Keep away from heat, sparks, and open flame. Keep container closed. Use with adequate ventilation.	
Flammable Solid	WARNING!	FLAMMABLE	Keep away from heat, sparks, and open flame.	
Combustible Liquid	CAUTION!	COMBUSTIBLE	Keep away from heat and open flame.	
Pyrophoric Chemical	DANGER!	EXTREMELY FLAMMABLE CATCHES FIRE IF EXPOSED TO AIR	Keep away from heat, sparks, and open flame. Keep container closed.	
Strong Oxidizer	DANGER!	STRONG OXIDIZER CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE	Keep from contact with clothing and other combustible materials. Do not store near combustible materials. Store in tightly closed container.	Remove and wash contaminated clothing promptly.

(See Table 2 for selection of appropriate fire-extinguishing statement.)

ing dust") shall supplement the Statement of Hazards by setting forth briefly measures to be taken to avoid injury from the hazard or hazards.

3.8 Instructions in Case of Contact or Exposure shall be included where the results of contact or exposure are severe and immediate treatment is desirable, and where simple remedial measures may be taken safely before medical assistance is available. They shall be limited to recognized procedures based on simple methods and commonly available materials. Simple remedial measures (such as washing or removal of clothing) shall be included where they will serve to avoid serious injury following contact or exposure.

3.9 Instructions in Case of Fire and Spill or Leak shall be included to provide persons who handle containers during shipment and storage with appropriate instructions for confining and extinguishing fires and for cleaning up spills or leaks. They shall be as simple and brief as possible and advise the use of suitable material for control.

3.10 Instructions for Container Handling and Storage shall be included to provide additional information for those chemicals requiring special or unusual handling and storage procedures.

3.11 Antidotes that may be administered by a lay person shall be included on the label under the designation "Antidote." Antidotes that must be administered by a physician as well as other useful therapeutic measures, other than purely supportive treatment, shall be included on the label under the designation "Note to Physicians."

4. Selection of Precautionary Label Text

4.1 General. Select applicable precautionary statements from Table 1. This table classifies chemicals on the basis of the hazardous properties that are most frequently encountered. Opposite each class of hazard are given a Signal Word, Statements of Hazard, Precautionary Measures, and, in most cases, Instructions in Case of Contact or Exposure and additional markings.

When the texts for different classes of hazard are combined, it may be necessary to eliminate some redundancies that occur in the Precautionary Measures or First Aid statement. Some Statements of Hazard and Precautionary Measures in Table 1 contain words in parentheses. These words represent choices that are to be made according to the facts in a particular situation.

Precautionary labeling detailed in Table 1 is directed primarily to the avoidance of injury from single, accidental exposures to a chemical. Some chemicals, however, produce delayed cumulative or chronic (long-

Table 2
Fire Action

TYPE OF PRODUCT	FIRE EXTINGUISHING STATEMENTS
For water-soluble or dilutable liquids	In case of fire, use water (flood with water), dry chemical, CO ₂ , or "alcohol" foam.
For water-immiscible liquid	In case of fire, use water spray, foam, dry chemical, or CO ₂ .
For solids such as oxidizing agents where water is appropriate and not dangerous	In case of fire, soak (flood) with water.
For solids or liquids where water may cause dangerous reaction	In case of fire, do not use water. Use dry (sand) (earth) (salt) (soda ash) (lime).*
For flammable gases	In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area.

*Substitute or add appropriate words in parentheses.

term) effects. When a knowledge of such effects exists, a statement of the hazard(s) together with suitable instructions for the avoidance of such effect(s) shall be included with the other label information from Table 1.

There are hazards other than those dealt with in Table 1 such as those presented by compounds which may be explosive, carcinogenic, teratogenic, mutagenic, or which present other recognized safety or health hazards. It is beyond the scope of Table 1 to cover all possible label needs. However, the general format provided allows for the preparation of appropriate label statements. Each hazardous substance must be considered individually in the light of its own characteristics and customary or reasonably foreseeable handling or use. In such cases, suitable statements should be developed to fit the situation. Additional useful statements may be found in 4.2 through 4.8 and Tables 2 and 3.

4.2 Fire Action. See 3.9 and Table 2.

4.3 Spill or Leak Action. See 3.9 and Table 3.

4.4 Instructions for Container Handling and Storage. Applicable instructions (see 3.10) may be selected from 4.4.1 through 4.4.6.

4.4.1 Metal Drums (for Liquids and Semiliquids)

Keep closure up to prevent leakage.

Keep drum out of sun and away from heat.

Relieve internal pressure when received and at least weekly thereafter by slowly loosening plug. Retighten immediately.

Drums should be grounded when being emptied.

Table 3
Spill or Leak Action

TYPE OF CHEMICAL	SPILL OR LEAK STATEMENTS
For most liquids	Flush spill (area) with water (spray).
For liquids where water may cause dangerous reaction or otherwise create further hazard (such as in sewer)	In case of spill, do not use water. Soak up with sand or earth.
For materials which generate vapor or fumes with water	In case of spill, flush away with water applied quickly to entire spill. [Neutralize (washings) (spill area) with soda ash or lime.]
For most solids (when appropriate, add instructions for disposal of swept-up material)	In case of spill, sweep (scoop) up and remove. Flush spill area with water.*

*Substitute or add appropriate words in parentheses.

Do not drop or slide across sharp projection.
Never use pressure to empty; drum is not a pressure vessel.
Keep lights, fire, and sparks away from drums.
Drum must not be washed out or used for other purposes.
Replace plug after each withdrawal and return with empty drum.
Do not expose drum to direct sunlight for long periods of time.

4.4.2 Glass Carboys

Before moving carboy be sure closure is securely fastened.
Avoid rough handling or dropping.
Loosen closure carefully.
Keep carboy out of sun and away from heat.
Never use pressure to empty; carboy is not a pressure vessel.
Completely drain carboy before returning.

4.4.3 Wooden Barrels (for Liquids and Semiliquids)

Keep barrel out of sun and away from heat.
Store with bilge bung up.
Never use pressure to empty.
Drain completely.

Keep barrel moist — shrinkage may cause leaks.

4.4.4 Plastic Containers with and without Overpacks (for Liquids and Semiliquids)

Keep closure up to prevent leakage.
Keep container out of sun and away from heat.
Do not drop or slide across sharp projections.
Never use pressure to empty; container is not a pressure vessel.
Keep lights, fire, and sparks away from container.

Container must not be washed out or used for other purposes.
Replace closure after each withdrawal.
Thoroughly drain containers and tighten closure before returning.
Do not use container as dilution or mixing vessel.
Remove closure carefully to relieve possible internal pressure.

4.4.5 Fiber Drums

Protect from direct contact with water or excessive moisture.

Do not drop onto, or slide across, sharp objects.
Do not store on side.

Avoid creasing or impacting of side walls.

4.4.6 Shipping Sacks

Protect from direct contact with water or excessive moisture.

Only those bags marked "May be used for open storage" should be so used. Never store on ground.

Keep out of sun and away from heat.

Do not drop or slide across sharp projections.

In case of puncture, use overslip bag and securely close.

4.5 Antidote Statements. While it is generally true that specific antidotes are known for very few chemicals and many of these can be administered only by a physician, there are some measures which may be used by laymen with benefit (see 3.11). Specific examples are given in 4.5.1 through 4.5.5. Others may be developed by the user of this standard for appropriate application to other chemicals.

4.5.1 For acid corrosive substances that are not toxic or highly toxic by ingestion: *Antidote.* If swallowed, do NOT induce vomiting. Give large quantities of water. Give at least 1 ounce of milk of magnesia or aluminum hydroxide gel in an equal amount of water. If these are not available, the whites of two or three eggs may be used. Never give anything by mouth to an unconscious person. Call a physician.

4.5.2 For alkaline corrosive substances that are not toxic or highly toxic by ingestion: *Antidote.* If swallowed, do NOT induce vomiting. Give large quantities of water. Give at least 1 ounce of vinegar in an equal amount of water. Never give anything by mouth to an unconscious person. Call a physician.

4.5.3 For cyanides and cyanide-like substances: *Antidote.* Always have on hand a cyanide first-aid kit. Break an amyl nitrite pearl in a cloth and hold lightly under nose for 15 seconds. Repeat five times at about 15-second intervals. Call a physician.

4.5.4 For soluble barium salts: *Antidote.* If swallowed, induce vomiting and then give 1 tablespoon of epsom salt in a glass of water. Never give anything by mouth to an unconscious person. Call a physician.

4.5.5 For cholinesterase-inhibiting compounds that are highly toxic: *Antidote.* Atropine is an antidote. Consult your physician about obtaining a supply of 1/100-grain (0.6-milligram) tablets for emergency use. If symptoms include blurred vision, stomach cramps, or tightness in chest, don't wait for a physician but take two tablets at once. Do not take atropine unless symptoms of poisoning have occurred. Anyone who has been sick enough to have taken atropine must be seen by a physician as soon as possible.

4.6 Notes to Physicians. Physicians may not always be familiar with specific antidotes for given chemicals or with specific practices found useful by experts in the management of some poisonings.

It may, in certain cases, be desirable to acquaint the physician with an antidote or with a specific form of medical management through a Note to Physicians on the label (see 3.11). Specific examples are given in 4.6.1 through 4.6.4. The user of this standard may wish to discuss with his medical consultant the need for or appropriateness of a Note to Physicians in the labeling of his products. The Note to Physicians should be prepared by physicians.

4.6.1 For soluble arsenic compounds: *Note to Physicians.* If swallowed, give gastric lavage followed by saline cathartic. Force fluids. In all cases, give dimercaprol (BAL) in recommended dosages.

4.6.2 For cholinesterase-inhibiting compounds that are highly toxic: *Note to Physicians.* Warning symptoms include weakness, headache, tightness of chest, blurred vision, nonreactive pinpoint pupils, salivation, sweating, nausea, vomiting, diarrhea, and abdominal cramps. Give atropine intramuscularly or intravenously, depending on severity of poisoning, 2 to 4 milligrams (three to six tablets, 1/100 grain each) every 15 minutes until fully atropinized as shown by dilated pupils, dry flushed skin, and tachycardia. Twenty to thirty milligrams, or more, may be required during the first 24 hours. Never give opiates or phenothiazine tranquilizers. Clear chest by postural drainage. Artificial respiration or oxygen administration may be necessary. Observe patient continuously for at least 48 hours. Allow no further exposure to any cholinesterase inhibitor until cholinesterase regeneration has taken place as determined by blood tests.

4.6.3 For cyanides and cyanide-like substances: *Note to Physicians.* If patient has not responded to amyl nitrite, inject intravenously 10 milliliters of a 3% solution of sodium nitrite at a rate not greater than 2.5 to 5.0 milliliters per minute. Follow directly with 50 milliliters of a 25% solution of sodium thiosulfate at the same rate by the same route. Keep patient under observation. If signs of poisoning persist or reappear,

repeat nitrite and thiosulfate injections 1 hour later in one-half the original doses.

4.6.4 For methemoglobin-inducing compounds: *Note to Physicians.* Absorption of this product into the body leads to the formation of methemoglobin which, in sufficient concentration, causes cyanosis. Since reversion of methemoglobin to hemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need be treated only by supportive measures such as bed rest and oxygen inhalation. Thorough cleansing of the entire contaminated area of the body, including scalp and nails, is of utmost importance. If cyanosis is severe, intravenous injection of methylene blue, 1 milligram per kilogram of body weight, may be of value.

4.7 Other Useful Statements of Hazard

4.7.1 Inhalation
 INHALATION MAY BE FATAL OR CAUSE
 DELAYED LUNG INJURY
 HARMFUL IF INHALED AND MAY CAUSE
 DELAYED LUNG INJURY
 HIGHLY VOLATILE
 VAPOR EXTREMELY IRRITATING
 EXTREMELY IRRITATING GAS AND LIQUID
 UNDER PRESSURE
 GAS EXTREMELY IRRITATING
 LUNG INJURY AND BURNS MAY BE DELAYED
 REPEATED INHALATION OR SKIN CONTACT
 MAY, WITHOUT SYMPTOMS, INCREASE
 SUSCEPTIBILITY

4.7.2 Contact
 RAPIDLY ABSORBED THROUGH SKIN
 CAUSES SEVERE BURNS WHICH MAY NOT BE
 IMMEDIATELY PAINFUL OR VISIBLE
 MAY CAUSE RASH OR EXTERNAL ULCERS
 MAY CAUSE BURNS OR EXTERNAL ULCERS
 LIQUID OR VAPOR CAUSES BURNS WHICH MAY
 BE DELAYED
 CAUSES SEVERE BURNS — EFFECTS ON EYES
 MAY BE DELAYED
 MAY CAUSE EYE INJURY — EFFECTS MAY BE
 DELAYED

4.7.3 Reactive
4.7.3.1 Liberates Gas
 SPILLAGE MAY CAUSE FIRE OR LIBERATE
 DANGEROUS GAS
 CONTACT WITH WATER OR MOIST AIR
 LIBERATES IRRITATING GAS
 CONTACT WITH ACID LIBERATES POISONOUS
 GAS
 CONTACT WITH WATER OR ACID SLOWLY
 LIBERATES POISONOUS AND FLAMMABLE
 HYDROGEN SULFIDE GAS

LIBERATES HEAVY GAS WHICH MAY CAUSE SUFFOCATION

LIBERATES POISONOUS GAS

4.7.3.2 Fire Hazard

CONTACT WITH WATER MAY CAUSE FLASH FIRE MAY IGNITE IF ALLOWED TO BECOME DAMP HEAT, SHOCK, OR CONTACT WITH OTHER MATERIALS MAY CAUSE FIRE OR EXPLOSIVE DECOMPOSITION

CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE OR EXPLOSION, ESPECIALLY IF HEATED REACTS VIOLENTLY WITH WATER, LIBERATING AND IGNITING HYDROGEN

POWERFUL OXIDIZER

4.7.3.3 Explosive

MAY FORM EXPLOSIVE PEROXIDES FORMS SHOCK-SENSITIVE MIXTURES WITH CERTAIN OTHER MATERIALS MAY EXPLODE IF WATER CONTENT IS 10% OR BELOW

4.7.3.4 Pressure Hazard

CONTAMINATION MAY RESULT IN DANGEROUS PRESSURE

LIQUID AND GAS UNDER PRESSURE

EXTREMELY HAZARDOUS LIQUID AND VAPOR UNDER PRESSURE

4.7.4 Miscellaneous

MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED

CANNOT BE MADE NONPOISONOUS REPEATED ABSORPTION MAY RESULT IN BLADDER TUMORS

EXTREMELY COLD (109°F BELOW ZERO) (-78°C)

NOTE: In some cases the total hazard of a product, while justifying one or more precautionary measures or other instructions, may be of such order as to require no statement of hazard.

4.8 Other Useful Precautionary Measures

4.8.1 Eyes and Skin

Ordinary rubber protective clothing, including gloves, will not prevent skin absorption.

Wear goggles; neoprene, butyl rubber, or vinyl gloves; neoprene shoes or boots; and clean protective outer clothing.

Wear goggles; neoprene, butyl rubber, or vinyl gloves.

Wear goggles or face shield and fire-retardant clothing when handling.

Wear goggles or face shield, rubber gloves, and protective clothing when handling.

Wear heavy rubber gloves and goggles or face shield.

Do not wear ordinary rubber protective clothing, including gloves and boots.

Wear goggles and DRY gloves when handling.

Liquid penetrates leather shoes causing delayed burns.

Use fresh clothing daily. Take hot shower after work using plenty of soap.

Call a physician at once in case of burns, especially to eyes, nose, and throat or if patient is unconscious.

Flush eyes for at least 30 minutes.

In case of contact, immediately remove from skin with dry cloth followed by flushing with plenty of water for at least 15 minutes; get medical attention. Remove contaminated clothing and wash before reuse.

Skin: Remove SODIUM and flush affected area with water.

Avoid prolonged or repeated contact with skin.

4.8.2 Inhalation

Avoid breathing dust or solution spray.

Avoid breathing dust or spray mist.

Avoid prolonged or repeated breathing of vapor.

Avoid exposure to vapor.

Avoid breathing dust or vapor.

Do not enter places where used or stored until adequately ventilated.

Use only with adequate ventilation and in closed systems.

Always wear a self-contained breathing apparatus or full-face air-line respirator when using this chemical.

Have available emergency self-contained breathing apparatus or full-face air-line respirator when using this chemical.

Have available emergency gas masks approved by U.S. Bureau of Mines for bromine service.

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

In case of inhalation or suspicion of inhalation, move patient at once to fresh air and call a physician. Keep patient absolutely quiet and start oxygen inhalation through suitable equipment.

4.8.3 Ingestion

Do not take internally.

Do not taste.

4.8.4 Fire

In case of fire, smother with soda ash, dry sand, or carbon dioxide. Dispose of by flushing away with a large volume of water under adequate ventilation.

In case of fire, stop flow of gas. Use dry chemical or carbon dioxide when necessary to gain access to valve.

In case of fire, smother with dry sand, dry ground limestone, or dry powder type agents specially designed for metal powder fires. Do not use carbon tetrachloride, CO₂ extinguishers, or water.

4.8.5 Reactive

4.8.5.1 Fire Hazard

Keep away from contact with oxidizing materials.

Keep from contact with clothing and other combustible materials to avoid fire.

Drying of this product on clothing or combustible materials may cause fire.

Spills on clothing or combustible materials will cause fire.

Contents packed under water and will ignite if water is removed.

Avoid friction or rough handling because of fire hazard.

Keep wet in storage — dry powder may ignite by friction, static electricity, or heat.

Prevent contamination with readily oxidizable materials and polymerization accelerators.

Do not add water to contents while in a container because of violent reaction and possible flash fire.

Clothing and vegetation contaminated with chlorate or its solutions are **DANGEROUSLY FLAMMABLE**.

Remove clothing and wash thoroughly with water.

Keep persons and animals off treated areas.

Keep away from fire.

4.8.5.2 Explosive

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.

Do not add to hot materials; do not grind or subject to frictional heat or shock — explosive decomposition may result.

Do not allow to evaporate to near dryness. Addition of water or appropriate reducing agents will lessen peroxide formation.

Note: Suck-back into cylinder may cause explosion.

Under no circumstances should the cylinder entry tube be inserted in a liquid or gas without a vacuum break or other protective apparatus in the line to prevent suck-back.

Fire or high temperatures may cause explosive decomposition if confined.

4.8.5.3 Pressure Hazard

Avoid contamination from any source, including metals, dust, and organic materials. Such contamination may cause rapid decomposition, generation of large quantities of oxygen gas, and high pressures.

Loosen closure cautiously before opening.

4.8.5.4 Handling and Storage

Glacial Acetic Acid freezes at 62°F (17°C) forming hard lumps which may break carboy when moved.

Store in area maintained above 62°F (17°C). If frozen, thaw by carefully moving carboy to warm place.

Keep dry and handle only in suitable equipment to prevent metallic contamination. Consult manufacturer.

Keep container tightly closed; flush container clean before discarding.

Keep drum in upright position. Do not roll drum on side.

Keep away from heat.

Keep away from acids and heat.

Keep away from acids. Store in a dry place.

Never return unused HYDROGEN PEROXIDE to container. Dilute with plenty of water and discard.

4.8.5.4.1 Handling

Use only dry, clean utensils in handling.

While making solutions, add slowly to surface to avoid violent spattering.

Do not attempt to loosen or remove material from container with any tool.

Put nothing else in this container.

When empty, rinse thoroughly with clean water before discarding. [Do not use this statement on returnable drums.]

Handle under inert gas atmosphere in DRY equipment.

Keep from freezing.

Open container carefully and only in dry oxygen-free or inert atmosphere.

Do not heat cylinders.

When empty, drain thoroughly. REPLACE BUNGS SECURELY. [Use this statement only on returnable drums.]

Dispose of sodium by burning carefully in an open fire.

Avoid spillage and contact with moisture or combustibles.

Do not use air pressure to transfer.

4.8.5.4.2 Storage

Keep from contact with oxidizing materials, highly oxygenated or halogenated solvents, organic compounds containing reducible functional groups, or aqueous ammonia.

Solidifies at about 54°F (12°C) and may break container. Store in moderately warm place.

Keep from any possible contact with water.

Do not allow water to get into container because of violent reaction.

Keep container tightly closed and away from water or acids.

Do not put in stoppered or closed container.

Store in original vented container.

Store in cool place.

Keep container tightly closed.

Store separately from, and avoid contact with, dehydrating agents and other materials.

Store in cool dry place.

Store in a cool place in original container and protect from direct sunlight.

Keep container closed to prevent drying out.

4.8.6 Spillage

Sweep up spillage. Do not flush to sewer which may contain acid.

Treat spillage with strong calcium hypochlorite solution and flush to sewer.

In case of spillage, keep wet and remove carefully.
Clean up spillage immediately.

In case of spillage, flush with plenty of water and remove contaminated articles.

Flush area with water spray.

Spillage may cause fire. Do not get on floor. Sweep up and remove immediately.

4.8.7 Miscellaneous

POISON with skull and crossbones vignette.

DO NOT HANDLE OR USE UNTIL SAFETY

PRECAUTIONS IN MCA² CHEMICAL SAFETY

DATA SHEET SD-_____ HAVE BEEN READ AND UNDERSTOOD.

DO NOT HANDLE OR USE UNTIL SAFETY PRECAUTIONS RECOMMENDED BY THE MANUFACTURER HAVE BEEN READ AND UNDERSTOOD.

MCA² CHEMICAL SAFETY DATA SHEET SD-_____ AVAILABLE.

² Manufacturing Chemists Association, 1825 Connecticut Avenue, NW, Washington, D.C. 20009.

Appendix

(This Appendix is not a part of American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals, Z129.1-1976, but is included for information purposes only.)

Illustrative Use of Precautionary Label Texts

A1. General

This appendix is included to illustrate the arrangements of the various elements of precautionary label texts, and sets forth suggested labels for those chemicals that present the specific hazard or hazards listed above each text. (See also Tables 1 through 3 and Section 4.)

A2. Labels for Chemicals with Single Hazards

HAZARD: Highly Toxic by Ingestion
DANGER! MAY BE FATAL IF SWALLOWED Wash thoroughly after handling.
 POISON  Call a Physician
FIRST AID: If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.

HAZARD: Highly Toxic by Inhalation
DANGER! MAY BE FATAL IF INHALED Do not breathe (dust, mist, vapor, gas).* Keep container closed. Use only with adequate ventilation.
 POISON  Call a Physician
FIRST AID: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

*Select applicable word or words in parentheses.

HAZARD:
Highly Toxic by Absorption

DANGER! MAY BE FATAL IF ABSORBED THROUGH SKIN

Do not get in eyes, on skin, on clothing.
Wash thoroughly after handling.

 **POISON** 
Call a Physician

FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

HAZARD:
Toxic by Ingestion

WARNING! HARMFUL IF SWALLOWED

Wash thoroughly after handling.

FIRST AID: If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Call a physician. Never give anything by mouth to an unconscious person.

HAZARD:
Toxic by Inhalation

WARNING! HARMFUL IF INHALED

Avoid breathing (dust, mist, vapor, gas).
Keep container closed.
Use with adequate ventilation.

FIRST AID: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

*Select applicable word or words in parentheses.

HAZARD:
Toxic by Absorption

WARNING! HARMFUL IF ABSORBED THROUGH SKIN

Avoid contact with eyes, skin, and clothing.
Wash thoroughly after handling.

FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before re-use. (Discard contaminated shoes.)

HAZARD:
Corrosive, Eye

DANGER! CAUSES (SEVERE) EYE BURNS

Do not get in eyes.
Avoid breathing (dust, vapor, mist, gas).
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

FIRST AID: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

*Select applicable word or words in parentheses.

HAZARD:
Corrosive, Eye and Skin

DANGER! CAUSES (SEVERE) BURNS

Do not get in eyes, on skin, on clothing.
Avoid breathing (dust, vapor, mist, gas).
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before re-use. (Discard contaminated shoes.)

*Select applicable word or words in parentheses.

HAZARD:
Irritant Eyes

WARNING! CAUSES EYE IRRITATION

Avoid contact with eyes.
Wash thoroughly after handling.

FIRST AID: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

HAZARD:
Irritant Eyes and Skin

WARNING! CAUSES IRRITATION

Avoid contact with eyes, skin, and clothing.
Wash thoroughly after handling.

FIRST AID: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. (Wash clothing before re-use.)

HAZARD:
Strong Sensitizer Skin

WARNING! MAY CAUSE ALLERGIC SKIN REACTION

Avoid prolonged or repeated contact with skin.
Wash thoroughly after handling.

FIRST AID: In case of contact, immediately wash skin with soap and plenty of water.

HAZARD:
Strong Sensitizer Lungs

WARNING! MAY CAUSE ALLERGIC RESPIRATORY REACTION

Avoid breathing (dust, mist, vapor, gas).
Keep container closed.
Use with adequate ventilation.

*Select applicable word or words in parentheses.

HAZARD:
Physiologically Inert Vapor or Gas *

CAUTION! (VAPOR) (GAS) REDUCES OXYGEN AVAILABLE FOR BREATHING *

Keep container closed.
Use with adequate ventilation.
Do not enter storage areas unless adequately ventilated.

*Select applicable word or words in parentheses.

HAZARD:
Extremely Flammable Liquid

DANGER! EXTREMELY FLAMMABLE

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

NOTE: See Table 2 for selection of appropriate fire-extinguishing statement.

HAZARD:
Flammable Liquid

WARNING! FLAMMABLE

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

NOTE: See Table 2 for selection of appropriate fire-extinguishing statement.

HAZARD:
Flammable Solid

WARNING! FLAMMABLE

Keep away from heat, sparks, and open flame.

NOTE: See Table 2 for selection of appropriate fire-extinguishing statement.

HAZARD:
Combustible Liquid

CAUTION! COMBUSTIBLE

Keep away from heat and open flame.

NOTE: See Table 2 for selection of appropriate fire-extinguishing statement.

HAZARD:
Pyroforic Chemical

DANGER! EXTREMELY FLAMMABLE
CATCHES FIRE IF EXPOSED TO AIR

Keep away from heat, sparks, and open flame.
Keep container closed.

NOTE: See Table 2 for selection of appropriate fire-extinguishing statement.

HAZARD:
Strong Oxidizer

DANGER! STRONG OXIDIZER
CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE

Keep from contact with clothing and other combustible materials.
Do not store near combustible materials.
Store in tightly closed container.
Remove and wash contaminated clothing promptly.

NOTE: See Table 2 for selection of appropriate fire-extinguishing statement.

A3. Labels for Chemicals with Multiple Hazards

HAZARDS: Highly Toxic by Ingestion Highly Toxic by Inhalation DANGER! MAY BE FATAL IF SWALLOWED OR INHALED Do not breathe (dust, vapor, mist, gas). Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.  POISON  Call a Physician FIRST AID: If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

*Select applicable word or words in parentheses.

HAZARDS: Highly Toxic by Ingestion Highly Toxic by Absorption DANGER! MAY BE FATAL IF SWALLOWED OR ABSORBED THROUGH SKIN Do not get in eyes, on skin, on clothing. Wash thoroughly after handling.  POISON  Call a Physician FIRST AID: If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)
--

HAZARDS:
 Highly Toxic by Ingestion
 Toxic by Inhalation

**DANGER! MAY BE FATAL IF SWALLOWED
 HARMFUL IF INHALED**

Avoid breathing (dust, vapor, mist, gas).
 Keep container closed.
 Use with adequate ventilation.
 Wash thoroughly after handling.

 **POISON** 

Call a Physician

FIRST AID: If **swallowed**, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.
 If **inhaled**, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

*Select applicable word or words in parentheses.

HAZARDS:
 Highly Toxic by Ingestion
 Toxic by Absorption

**DANGER! MAY BE FATAL IF SWALLOWED
 HARMFUL IF ABSORBED THROUGH SKIN**

Avoid contact with eyes, skin, and clothing.
 Wash thoroughly after handling.

 **POISON** 

Call a Physician

FIRST AID: If **swallowed**, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.
 In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

HAZARDS:

Highly Toxic by Inhalation

Highly Toxic by Absorption

DANGER! MAY BE FATAL IF INHALED OR ABSORBED THROUGH SKIN

Do not breathe (dust, vapor, mist, gas).*

Do not get in eyes, on skin, on clothing.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**POISON****Call a Physician****FIRST AID:** If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

*Select applicable word or words in parentheses.

HAZARDS:

Highly Toxic by Inhalation

Toxic by Ingestion

**DANGER! MAY BE FATAL IF INHALED
HARMFUL IF SWALLOWED**

Do not breathe (dust, vapor, mist, gas).*

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**POISON****Call a Physician****FIRST AID:** If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.

*Select applicable word or words in parentheses.

HAZARDS:
 Highly Toxic by Inhalation
 Toxic by Absorption

**DANGER! MAY BE FATAL IF INHALED
 HARMFUL IF ABSORBED THROUGH SKIN**

Do not breathe (dust, vapor, mist, gas).
 Avoid contact with eyes, skin, and clothing.
 Keep container closed.
 Use only with adequate ventilation.
 Wash thoroughly after handling.

 **POISON** 
 Call a Physician

FIRST AID: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

*Select applicable word or words in parentheses.

HAZARDS:
 Highly Toxic by Absorption
 Toxic by Ingestion

**DANGER! MAY BE FATAL IF ABSORBED THROUGH SKIN
 HARMFUL IF SWALLOWED**

Do not get in eyes, on skin, on clothing.
 Wash thoroughly after handling.

 **POISON** 
 Call a Physician

FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.

HAZARDS: Highly Toxic by Absorption Toxic by Inhalation DANGER! MAY BE FATAL IF ABSORBED THROUGH SKIN HARMFUL IF INHALED Do not get in eyes, on skin, on clothing. Avoid breathing (dust, vapor, mist, gas). Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.  POISON  Call a Physician FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.) If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.
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*Select applicable word or words in parentheses.

HAZARDS: Toxic by Ingestion Toxic by Inhalation WARNING! HARMFUL IF SWALLOWED OR INHALED Avoid breathing (dust, vapor, mist, gas). Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. FIRST AID: If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Call a physician. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.
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*Select applicable word or words in parentheses.

HAZARDS:

Toxic by Ingestion

Toxic by Absorption

WARNING! HARMFUL IF SWALLOWED OR ABSORBED THROUGH SKIN

Avoid contact with eyes, skin, and clothing.
Wash thoroughly after handling.

FIRST AID: If **swallowed**, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Call a physician. Never give anything by mouth to an unconscious person.

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before re-use. (Discard contaminated shoes.)

HAZARDS:

Toxic by Inhalation

Toxic by Absorption

WARNING! HARMFUL IF INHALED OR ABSORBED THROUGH SKIN

Avoid breathing (dust, vapor, mist, gas).
Avoid contact with eyes, skin, and clothing.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

FIRST AID: If **inhaled**, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before re-use. (Discard contaminated shoes.)

*Select applicable word or words in parentheses.

HAZARDS:

Strong Sensitizer, Skin

Strong Sensitizer, Lungs

WARNING! MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION

Avoid breathing (dust, vapor, mist, gas).*

Avoid prolonged or repeated contact with skin.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

FIRST AID: In case of contact, immediately wash skin with soap and plenty of water.

*Select applicable word or words in parentheses.

HAZARDS:

Highly Toxic by Ingestion

Highly Toxic by Inhalation

Highly Toxic by Absorption

DANGER! MAY BE FATAL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN

Do not breathe (dust, vapor, mist, gas).*

Do not get in eyes, on skin, on clothing.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**POISON****Call a Physician****FIRST AID:** If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.

If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

*Select applicable word or words in parentheses.



HAZARDOUS
 Highly Toxic by Ingestion
 Highly Toxic by Inhalation
 Toxic by Absorption

DANGER! MAY BE FATAL IF SWALLOWED OR INHALED
HARMFUL IF ABSORBED THROUGH SKIN

Do not breathe (dust, vapor, mist, gas).*
 Avoid contact with eyes, skin, and clothing.
 Keep container closed.
 Use only with adequate ventilation.
 Wash thoroughly after handling.



POISON



Call a Physician

FIRST AID: If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.
If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.
In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

*Select applicable word or words in parentheses.



HAZARDOUS
 Highly Toxic by Ingestion
 Highly Toxic by Inhalation
 Toxic by Absorption

DANGER! MAY BE FATAL IF SWALLOWED OR ABSORBED THROUGH SKIN
HARMFUL IF INHALED

Do not get in eyes, on skin, on clothing.
 Avoid breathing (dust, vapor, mist, gas).*
 Keep container closed.
 Use with adequate ventilation.
 Wash thoroughly after handling.



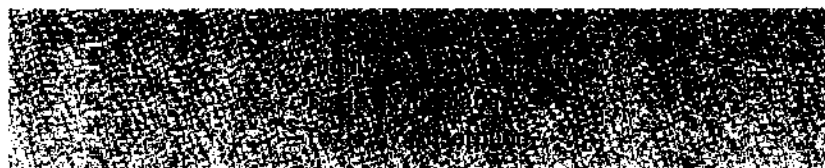
POISON



Call a Physician

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DANGER! MAY BE FATAL IF SWALLOWED
HARMFUL IF INHALED OR ABSORBED THROUGH SKIN

Avoid breathing (dust, vapor, mist, gas).
 Avoid contact with eyes, skin, and clothing.
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 Wash thoroughly after handling.

 **POISON** 
 Call a Physician

FIRST AID: If **swallowed**, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.
 If **inhaled**, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.
 In **case of contact**, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

*Select applicable word or words in parentheses.

HAZARDS:

Highly Toxic by Inhalation
 Highly Toxic by Absorption
 Toxic by Ingestion

DANGER! MAY BE FATAL IF INHALED OR ABSORBED THROUGH SKIN
HARMFUL IF SWALLOWED

Do not breathe (dust, vapor, mist, gas).
 Do not get in eyes, on skin, on clothing.
 Keep container closed.
 Use only with adequate ventilation.
 Wash thoroughly after handling.

 **POISON** 
 Call a Physician

FIRST AID: If **inhaled**, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.
 In **case of contact**, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)
 If **swallowed**, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.

*Select applicable word or words in parentheses.

HAZARDS:

Highly Toxic by inhalation

Toxic by Ingestion

Toxic by Absorption

**DANGER! MAY BE FATAL IF INHALED
HARMFUL IF SWALLOWED OR ABSORBED THROUGH SKIN**

Do not breathe (dust, vapor, mist, gas).*

Avoid contact with eyes, skin, and clothing.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.



POISON



Call a Physician

FIRST AID: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

If swallowed, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink. Repeat until vomit is clear. Never give anything by mouth to an unconscious person.

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before re-use. (Discard contaminated shoes.)

*Select applicable word or words in parentheses.

HAZARDS:

Highly Toxic by Absorption

Toxic by Ingestion

Toxic by Inhalation

**DANGER! MAY BE FATAL IF ABSORBED THROUGH SKIN
HARMFUL IF SWALLOWED OR INHALED**

Do not get in eyes, on skin, on clothing.

Avoid breathing (dust, vapor, mist, gas).*

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.



POISON



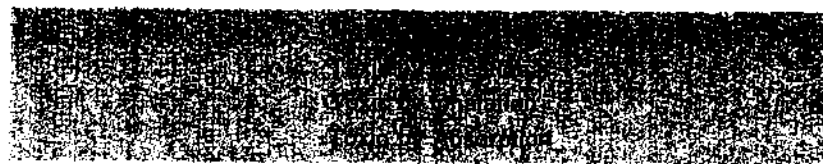
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WARNING! HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN

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governments.

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