University of Nebraska Lincoln

CHEMICAL CONTAINER LABELING GUIDELINES

Revised September 2002

UNL EnviroNmental Health and Safety · (402) 472-4925 · http://ehs.unl.edu

A. APPLICABILITY

Chemical container labeling guidelines apply to all university units and to all non-exempt chemical containers. Although an attempt has been made to include all commonly encountered labeling scenarios, it is expected that some individuals will have situations that do not fit into the defined categories. In these situations, it is recommended that the unit contact Environmental Health and Safety to evaluate the situation and develop a site-specific labeling scheme that meets the intent of the guidelines without creating an unnecessary burden on the unit.

The following items are exempt from these labeling guidelines:

1. Consumer products to the extent that such chemicals are used in a manner consistent with normal consumer usage and are labeled as follows:

    a. Permanent containers are identified by the original manufacturers label, and;
    b. Durable containers are labeled with the name of the product and the name of the manufacturer.

2. Food, food additives, and color additives when intended for incorporation into food products; and drugs and cosmetics when labeled in accordance with the Food, Drug, and Cosmetic Act.

3. Samples and specimens that are received in the lab for normal testing when the exact composition of the materials is unknown, the likely hazards have been identified, and personnel have been trained to protect themselves against such hazards.

1. Pesticides when labeled in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act.

2. Practically non-toxic and relatively harmless chemicals to the extent that such chemicals are labeled with the name(s) of the chemical constituent(s) or a properly cross-referenced acronym.

B. DEFINITIONS

1. **Durable Chemical Containers:** The following three conditions describe "durable" chemical containers:

    a) Containers that hold chemicals which will not be consumed or disposed of by the end of a single work session (generally considered to be the end of the day), or;
    b) Chemical containers that will be used by more than one person, or;
    c) Chemical containers that are not under the immediate physical control of the person placing the chemical in the container.

2. **Transient Chemical Containers:** Containers that hold chemicals which will be consumed or disposed of within the course of one work session, and remain under the physical control of the person placing the chemical in the container.

3. **Permanent Chemical Containers:** Chemical containers as received from the manufacturer, and chemical containers transported to another work area for use by someone other than the person placing the chemical in the container.

4. **Chemical Name(s):** All chemicals within a given solution must be identified, regardless of concentration. There are two acceptable mechanisms to properly identify a chemical:

    a) By fully written proper names (IUPAC or CAS or the name as it appears on the Material Safety Data Sheet) of all components in a given mixture, or;
    b) By a commonly recognized shorthand name or acronym if the shorthand name is cross-referenced to a readily accessible chemical inventory located in the work area that identifies all chemical components in the mixture by fully written proper chemical names.

5. **Chemical Concentration(s):** The concentration of all chemicals in a given solution must be recorded on the label. Any conventional method of recording concentration is acceptable (e.g., weight/weight, weight/volume, percent, molarity, or normality).

6. **Hazard Warning(s):** Hazard warning information must include both the physical and health hazards associated with a chemical. There are three acceptable mechanisms for communicating hazard warning information:
    a) Use of the National Fire Protection Agency (NFPA) four diamond hazard warning system
    b) Use of appropriate hazard warning words
    c) Use of standard warning symbols

7. **Physical Hazards:** Physical hazards indicate a chemical's potential flammability, reactivity, or explosivity. See attachment 1 for acceptable hazard warning words and respective symbols.

8. **Health Hazard:** A chemical presents a health hazard if there is valid evidence that acute or chronic health effects may occur in exposed employees. See attachment 2 for acceptable hazard warning words and symbols.

9. **Practically Non-toxic and Relatively Harmless Chemicals:** The following parameters define this group of chemicals:
    a) Chemicals with an oral LD_{50} of greater than 5.0 g/Kg, and;
    b) Chemicals with an inhalation LD_{50} of greater than 20 mg/Kg, and;
    c) Chemicals that produce only slight skin irritation after 72 hours of exposure, or slight eye irritation, and;
    d) Chemicals which do not present a physical hazard or a health hazard other than being classified as an irritant.

C. LABELING REQUIREMENTS BY CONTAINER TYPE

1. **Permanent Containers:**
   a) Incoming chemical containers that are received from a manufacturer must be checked to ensure that the labels on those containers are not removed or defaced. If a chemical label is missing or otherwise unreadable, the shipment must be rejected, or a new label obtained from the chemical manufacturer. Additionally, as chemicals are accepted into the work place, the container must be marked with the date of receipt.
   b) Chemicals transferred from one work area to another for use by someone other than the individual placing the chemical in the container, or; chemicals that are synthesized and transported off campus. All such containers must be labeled with the following information:

      i) Chemical name(s) and concentration(s)
      ii) Physical and health hazard warnings
      iii) Target organ information
      iv) Name and address of the chemical manufacturer, importer, or other responsible party

2. **Durable Containers:**
   a. Mandatory information that must occur on all non-exempt durable containers includes:

      i. Chemical name(s), or properly referenced shorthand name or acronym
      ii. Chemical concentration(s)
      iii. Date of preparation
      iv. Initials or name of the person preparing the mixture
      v. Hazard information, including physical and health hazards

   b. Additional recommended information that may be included on durable containers includes:
      i. Method or procedure reference
      ii. Storage location
      iii. Recordkeeping reference
      iv. Target organ information

3. **Transient Containers:** Such containers need not be labeled with any particular information as long as the container remains transient in nature. However, once the container becomes durable in nature (i.e., it remains in the work area for longer than one work shift, or leaves the physical control of the individual placing the chemical in the container), the labeling must conform to the requirements for durable containers.
NOTE: A one-page summary of these requirements occurs at the end of this document. This summary may be posted in the lab for easy reference.

D. PLACARDING AND LABELING OF SMALL CONTAINERS STORED AS A GROUP

Of special consideration are small chemical containers that are not easily labeled due to size. These containers can be labeled in one of the following manners.

1) If such containers are stored as a group in a common apparatus (i.e., a box or rack), then the group as a whole may be labeled with a single label on the storage apparatus. In this case, it is assumed that the label is applicable to all containers within the same storage apparatus.
2) If the small containers are stored in one common area with other containers of the same chemical type, and the same physical and/or health hazards, then the entire area may be labeled by means of one placard. The placard is assumed to be applicable to all containers within the storage area; therefore the boundaries of the storage area must be clearly marked. If a chemical is removed from this area and handled in a non-transient manner, then the labeling must conform to the labeling requirements for durable containers.

E. PLACARDING OF WORK AREAS

Each work area must contain at least one wall chart or similar sign that serves as a "key" to the labeling system used in that particular area. The wall chart or sign must give all the information necessary to understand the information conveyed by the symbols or warning words used in the labeling scheme. For example, in a work area that uses the NFPA system, the wall chart must describes the meaning of each color coded section of the diamond and the meaning of each numerical rating.

F. ACCEPTABLE LABELING MEDIA

Each laboratory or work area is at liberty to use any labeling media that they so desire, so long as the requirements of these labeling guidelines are met. Regardless of the labeling scheme chosen, the label must be legible and resistant to smearing and fading. Extraneous markings and labeling must be obliterated before a chemical container is reused. Acceptable labeling media includes:

1) Blank labeling tape with hand written wording in permanent marker
2) Pre-printed labels and placards prepared by each individual work area or laboratory
3) Pre-printed standard labels available from any number of vendors

ATTACHMENT 1

Physical Hazard

Warning Words and Symbols

Any standardized warning symbols, such as those used by the Department of Transportation, may be used to comply with the Container Labeling Guidelines. Appropriate warning words are listed below:

FLAMMABLE
COMPRESSED GAS
ORGANIC PEROXIDE
PYROPHORIC
EXPLOSIVE
OXIDIZER
WATER REACTIVE

ATTACHMENT 2

Health Hazard

Warning Words and Symbols

Any standardized warning symbols, such as those used by the Department of Transportation, may be used to comply with the Container Labeling Guidelines. Appropriate warning words are listed below:

BIOHAZARD OR INFECTIOUS
CARCINOGEN
CORROSIVE
IRRITANT
POISON OR TOXIC
SENSITIZER
RADIOACTIVE

UNL CHEMICAL LABELING REQUIREMENTS
Permanent Containers (Purchased Products)

- Chemical Name
- Physical Hazards (Pyrophoric, Organic Peroxide, Flammable, Oxidizer, Reactive, Water Reactive, Explosive)
- Health Hazards (Biohazard, Corrosive, Poison, Toxic, Radioactive, Carcinogen, Irritant, Sensitizer)
- Target Organs
- Manufacturer Name & Address
- Date of Receipt

Durable Containers (in use > one work session)

- Chemical Name/Concentration
- Date of Preparation, Initials of Preparer
- Physical Hazards
- Health Hazards
- Non-mandatory:
    - Method or Procedure Reference
    - Storage Location
    - Recordkeeping Reference
    - Target Organ Information

Transient Containers (in use < one work session)

- No Required Labeling