

Redwood Safety Association

Using the Hazard Communication Rules to Manage Your Chemical Safety Program

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Why Chemical Safety

- ▶ Early 80s biochem. lab – no standards
- ▶ Professor had arm “blooms,” hand cracking
- ▶ University of Vermont – acrylamide gel
- ▶ Boston University – radioactive cleaning, formaldehyde, chemical “donations”
- ▶ Livingstone College – solvent shed
- ▶ Elon University – confined space puddle

To Manage Your Chemical Safety Program

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1910.1200 "HAZCOM"
1910.1450 "LAD STANDARD"

Oregon Rule Adds

- ▶ Substance Specific
- ▶ Carcinogens and Pipe Labeling
- ▶ Emergency Planning
- ▶ Eyewash
- ▶ Respiratory Hazard assessment
- ▶ Incompatible Storage PD
- ▶ **Safety Committee**
- ▶ PPE Hazard Assessment
- ▶ Performance Emphasis
- ▶ Fire Marshall



Hazard Communication: Safety Data Sheets

The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) (formerly MSDs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except now the SDSs are required to be presented in a consistent user-friendly, **16-section format**. This brief provides guidance to help workers who handle hazardous chemicals to become familiar with the format and understand the contents of the SDSs.

Section 2: Hazard(s) Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category¹).
- Signal word.
- Hazard statement(s).
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame).
- Precautionary statement(s).
- Description of any hazards not otherwise classified.
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

Substances

- Chemical name. Common name and synonyms. Chemical Abstracts Service (CAS) number and other unique identifiers. Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.

Mixtures

- Same information required for substances. The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
 - Present above their cut-off/concentration limits or
 - Present a health risk below the cut-off/concentration limits.
- The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
 - A trade secret claim is made,
 - There is batch-to-batch variation, or
 - The SDS is used for a group of substantially similar mixtures.

Chemicals where a trade secret is claimed

- A statement that the specific chemical identity and/or exact percentage

Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- Appearance (physical state, color, etc.);
- Upper/lower flammability or explosive limits;
- Odor;
- Vapor pressure;
- Odor threshold;
- Vapor density;
- pH;
- Relative density;
- Melting point/freezing point;
- Solubility(ies);
- Initial boiling point and boiling range;
- Flash point;
- Evaporation rate;
- Flammability (solid, gas);
- Partition coefficient: n-octanol/water;
- Auto-ignition temperature;
- Decomposition temperature; and
- Viscosity.

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential

Training

- ▶ **In order to ensure chemical safety in the workplace, information about the identities and hazards of the chemicals must be available and understandable to workers. OSHA's Hazard Communication Standard (HCS) requires the development and dissemination of such information:**
- ▶ Chemical manufacturers and importers are required to evaluate the hazards of the chemicals they produce or import, and prepare labels and safety data sheets to convey the hazard information to their downstream customers;
- ▶ All employers with hazardous chemicals in their workplaces must have labels and safety data sheets for their exposed workers, and train them to handle the chemicals appropriately.

Managing Your SDS Collection

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- ▶ Does the manufacturer have to make the SDS available to all?
- ▶ Can the manufacturer require you to call and request the SDS, proving you are an end user?
- ▶ Can you store SDSs electronically?
- ▶ Does there have to be an inventory?
- ▶ Do I have to update all MSDSs to SDSs?
- ▶ When can I use a generic SDS?

Labels Must Contain:

1. Name, Address and Telephone Number
2. Product Identifier
3. Signal Word
4. Hazard Statement(s)
5. Precautionary Statement(s)
6. Pictogram(s)

The gateway
to chemical
investigations

Technically, your SDS lines up with the label. The label information is found in Section 2. If a manufacturer has information about the final use (dilution, mix) they need to indicate that hazard.

Secondary Label

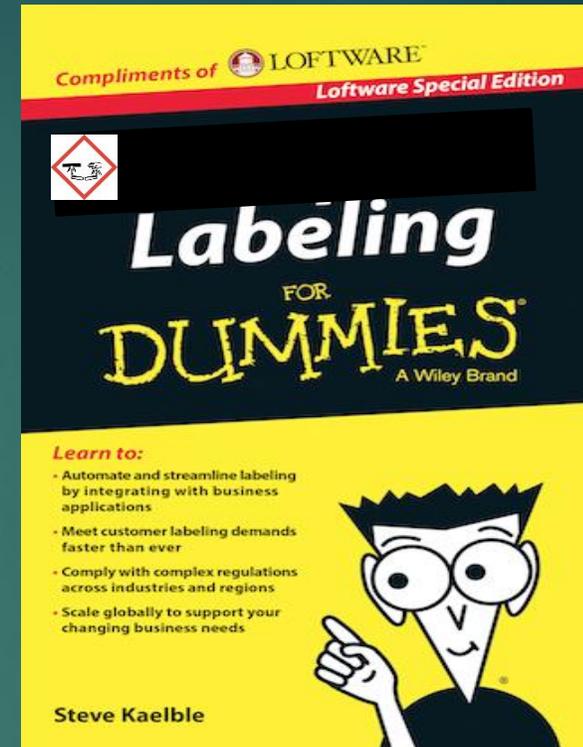
The material is not used within the work shift of the individual who makes the transfer. ■ The worker who made the transfer leaves the work area. ■ The container is moved to another work area and is no longer in the possession of the worker who filled the container.

Replacement Container Label The existing label on a container entering the workplace from a supplier must not be removed, altered or defaced. If a chemical container's original label must be replaced, the new label must contain the same information as the original. Only use labels, ink and markings that are not soluble in the liquid content of the container.

This label must contain two key pieces of information: the identity of the hazardous chemical(s) in the container (e.g., chemical name) and the hazards present. There are many ways to communicate this hazard information. Employers should select a system that will work for each location.

Replacement

Diisobutylphenoxyethoxyethyl
dimethylbenzylammonium
chloride Ethylene Glycol
Monobutyl Ether ...



Physical Hazards



Health Hazards

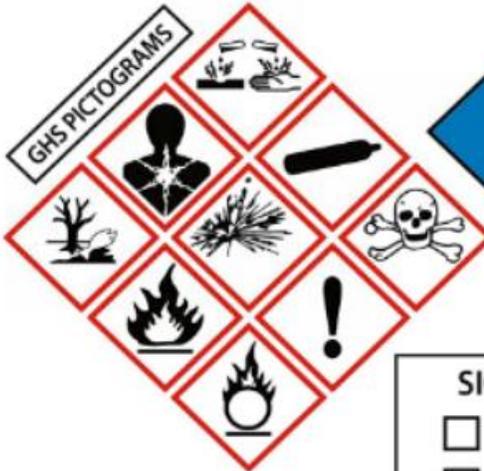


Both



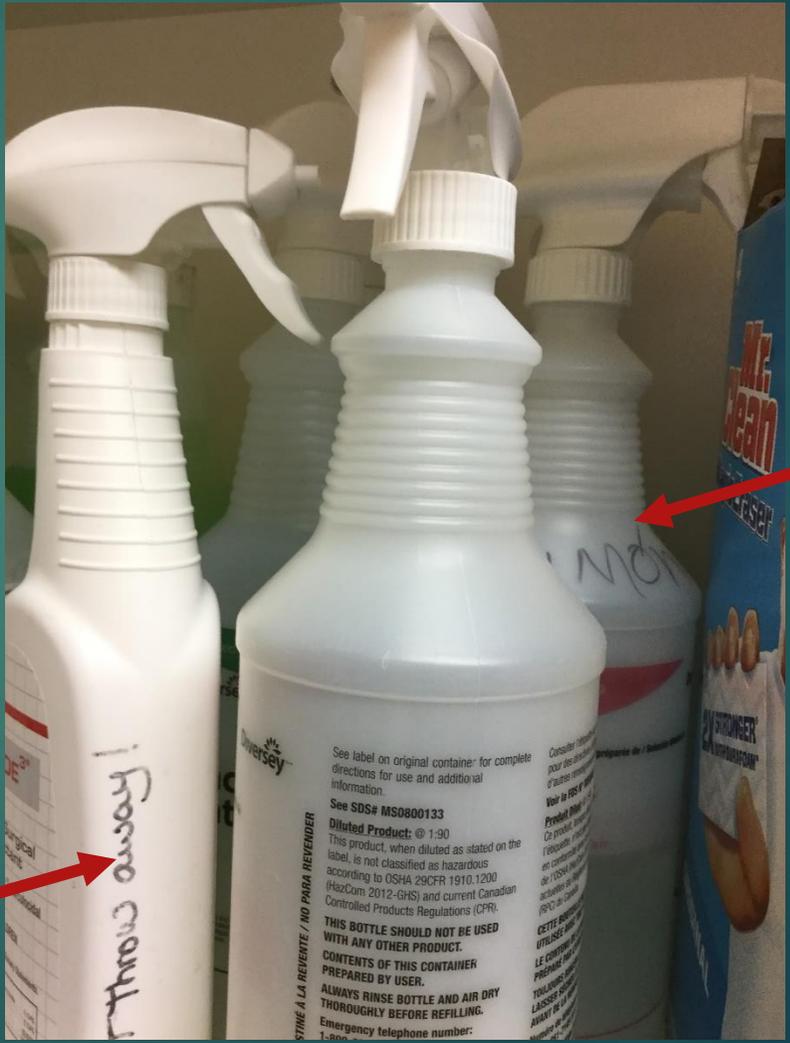
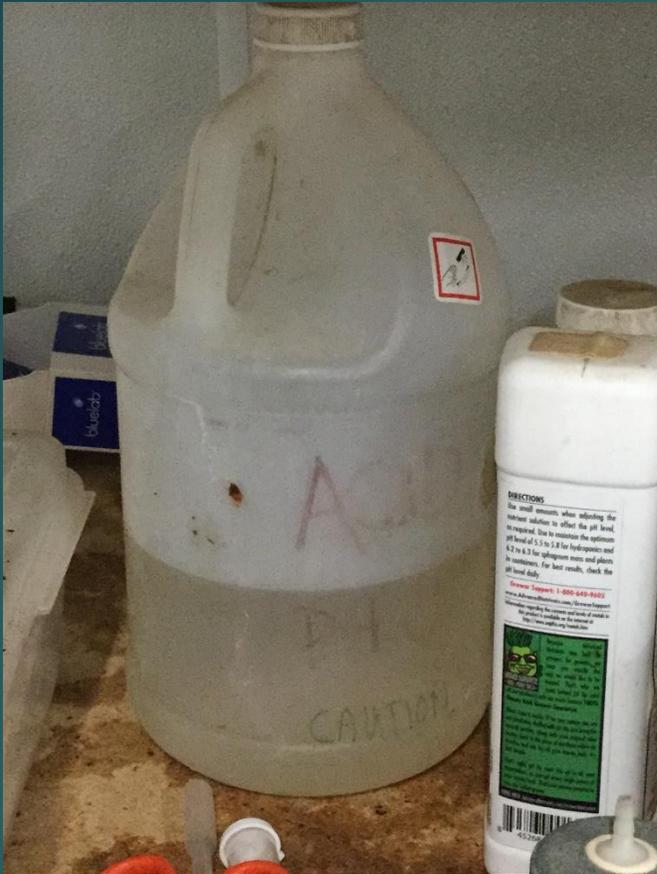
Neither



PRODUCT IDENTIFIER:	
	
HAZARD/PRECAUTIONARY INFO.	SIGNAL WORD <input type="checkbox"/> DANGER <input type="checkbox"/> WARNING
	HMIS HEALTH <input type="checkbox"/> FLAMMABILITY <input type="checkbox"/> REACTIVITY <input type="checkbox"/> PERSONAL PROTECTION <input type="checkbox"/>
GHS2264ALV	NMC

Three differently labeling systems means three different trainings and obligation that employees fully understand each...









Laboratory Acid and Base Chemical Cap Color Chart

IF YOU SEE THESE BOTTLES LOOK FOR THE CAP COLOR



DISCLAIMER – This guide is intended as a general guide. Users should exercise extreme caution handling this containers. Remember that containers may have contain different chemicals with different hazards due to reuse or misuse. Users should verify correct contents through testing or other confirmation method. Sweetser & Associates is not liable for use of this guide.

Nitric acid Sulfuric acid Perchloric acid

VERIFY IF OXIDIZER

Store
↔
Separate

Hydrochloric acid Glacial acetic acid

SEPARATE WEAK AND STRONG ACIDS

Store
↔
Separate

Ammonia (BASE)

KEEP ACIDS AWAY





Pathogens Data Sheets

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- ▶ <https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment.html>
- ▶ **SECTION 1 - INFECTIOUS AGENT**
 - NAME:** Influenza virus type A
(excluding 1918 influenza A (H1N1) strain and subtypes H5, H7 and H9).
 - SYNONYM OR CROSS REFERENCE:** *Orthomyxovirus* , grippe, and flu⁽¹⁾.
 - CHARACTERISTICS:**
- ▶ **SECTION 2 – HAZARD IDENTIFICATION**
 - PATHOGENICITY/TOXICITY**
- ▶ **9 Sections, Section 7 is the PPE information**







CAUTION	Slightly toxic either orally, dermally, or through inhalation; causes slight eye or skin irritation.
WARNING	Moderately toxic either orally, dermally, or through inhalation; causes moderate eye or skin irritation.
DANGER	Can cause severe eye damage or skin irritation.
DANGER-POISON	Highly toxic by any route of entry into the body.





Poor storage:
clutter and
tipped bottles

Unmarked
locker, and
can't read
bottles labels

HMIS on
Shelved
Bottles is
faded, no
other labels,
and this is not
the GHS
system they
use

Reactive
DANGER

$H_2O_2 + AA =$ Peroxyacetic Acid
Ultracil 11 is neutral, *buuuu* it needs caustic to work!

Na₂O

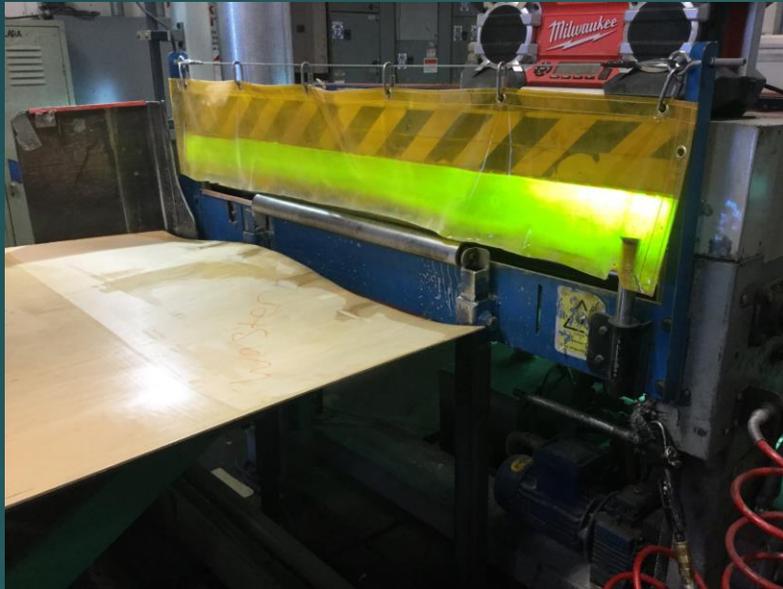
- ▶ Looks like NaOCl₂
- ▶ Bleach
- ▶ Sodium
- ▶ pH ?
- ▶ Chlorine?
- ▶ Reactive?
- ▶ Phosgene gas ?







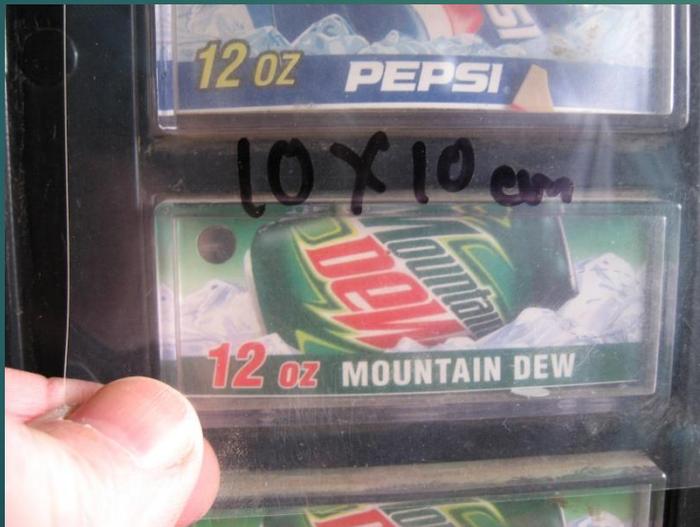
What sorts of materials have SDSs? Just chemicals?











Welding Fumes

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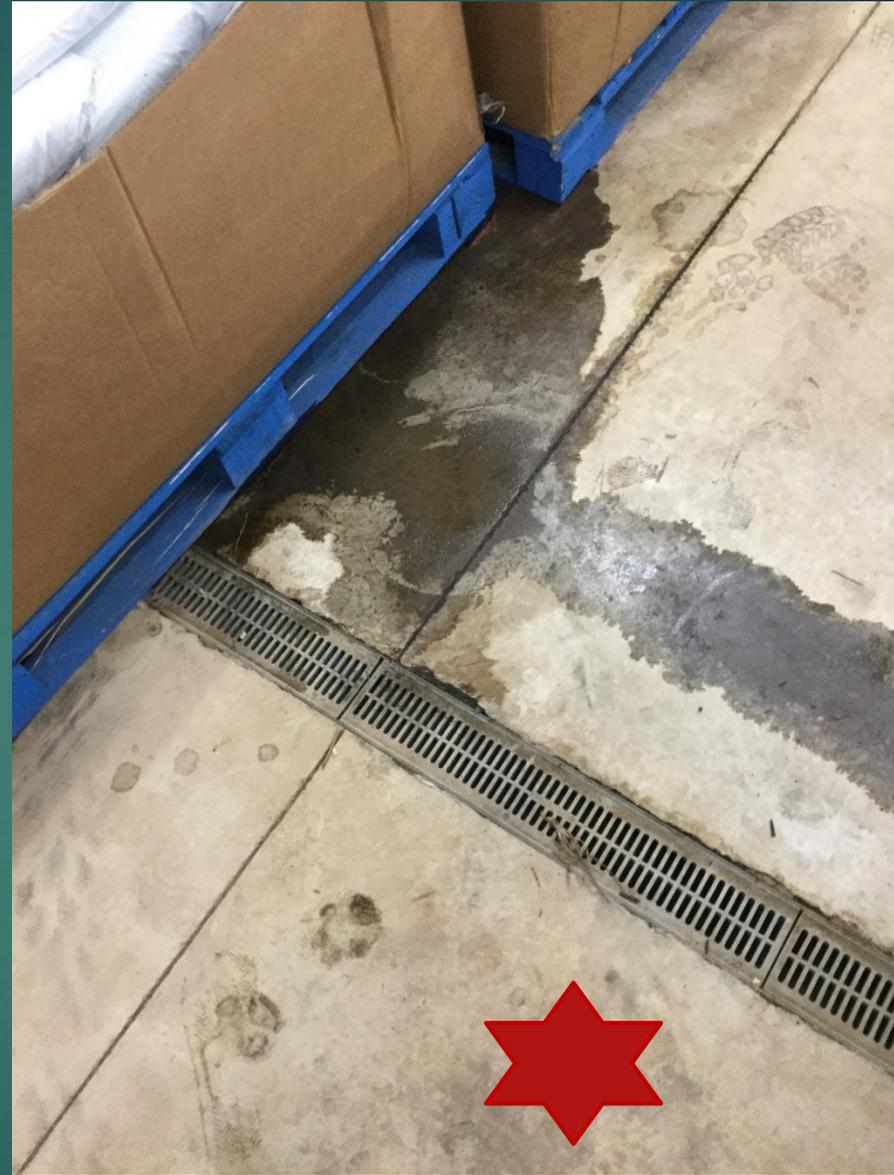
- ▶ Not vapors, not smoke, not dust
- ▶ “Particulate” (Not Otherwise Specified)
- ▶ From Consumables
- ▶ Arc-dependent (amperage, voltage)
- ▶ Oxides
- ▶ (grinding metals are particulate)
- ▶ Ozone from aluminum



HAZARDOUS INGREDIENTS				
(Note: The term "hazardous" does not necessarily imply the existence of a hazard. It refers to ingredients which must be specified on material safety data sheets according to legislation.)				
Ingredient	Percent Range %wt/wt	CAS #	LC50	LD50
Manganese	1 - 5	7439-96-5	TCLO 2.3 mg/m ³ inh, man	N.A.V.
Chromium	15 - 40	7440-47-3	N.A.V.	N.A.V.
Nickel	5 - 10	7440-02-0	N.A.V.	LDLO .5 mg/kg gpg, oral
Iron	15 - 40	7439-89-6	N.A.V.	5500 mg/kg ipr, rat
Titanium dioxide	10 - 30	13463-67-7	N.A.V.	N.A.V.
Calcium fluoride	1 - 5	7789-75-5	N.A.V.	4250 mg/kg rat, oral
Aluminum silicate	10 - 30	1302-76-7	N.A.V.	N.A.V.

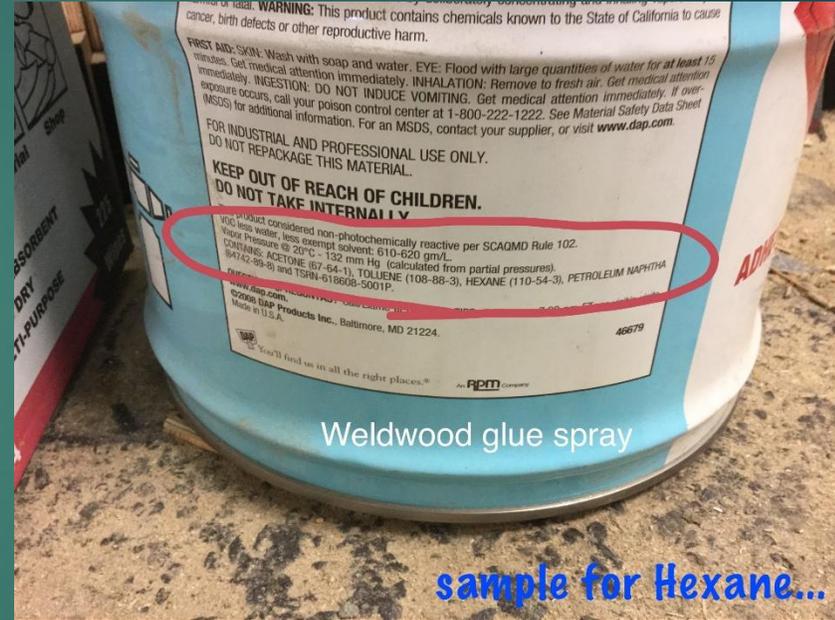
- Range
- Exposure Limit Accuracy
- Exposure varies with Weld Time, Temperature, Voltage, Distance, Bulk Material and Shielding
- Article versus solid form versus expected use
- Hazard should be identified

BTW: the Chemical Abstracts Number (CAS) can entered as a search





















Ins and Outs

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- +/- Proprietary (*you need to assess the chemical*)
- Final application
- Fact Sheets, not an SDSs
- No pictograms on the SDS
- + Reactivity in later sections
- + “Do not re-use container”
- + Female versus Male impacts
- +/- Exposure Reporting (OELs)
- Hazardous waste
- Can you make your own SDS?
- Misleading (not an acid until mixed...)
- Are the appendix physical designations = to the SDS?
- How is the client using it?
- Does the SDS acknowledge to chemical-specific rule requirements?



More Ins and Outs

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+/- Agriculture labeling is different (caution-warning-danger-RUP)

+ Full; Agriculture Label

+ Agriculture Use Box

+ Storage Location

+ Container Type

+ “Household Use” Exclusion

- “Hazardous” Chemical

- “Contains no Hazardous Chemicals”

- Does every chemical listed have an OEL?

+ What level must be reported (1%, 0.1% carcinogens)

*** Assess product substitution, variety, use, training material and choice**



Hazard Assessment

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- ▶ All personal Protective Equipment
- ▶ Exposure management (employees and public)
- ▶ Also a part of the Respiratory requirements
- ▶ Ties to your JHA
- ▶ Points to proper storage and care
- ▶ Points to emergency response

RISK ASSESSMENT

END