

Safety Data Sheets The Driver of Many Other Environmental, Health, and Safety Programs



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Hazard Communication – Safety Data Sheets

- First adopted on November 25, 1983 (48 FR 53280)
- Scope expanded on August 24, 1987, to include (52 FR 31852):
 - *All Industries and their Employees*
 - *Potentially Exposed to Hazardous Chemicals*
- Revised the standard in March 2012 to align with GHS 3rd Ed
- Proposed updating the rule on February 16, 2021
- Released the final rule in the Spring of 2023
- Align with elements from the 7th revised edition of the GHS



Hazard Communication – Safety Data Sheets

- All Safety Data Sheets must contain 16 Sections as of 2012
- Sections 1 through 8 contain:
 - *General Information*
- Sections 9 through 11 and 16 contain:
 - *Technical & Scientific Information*
- Sections 12 through 15 contain:
 - *Ecological, Transportation, and Regulatory Information*
- Sections 1 through 10, 14 and 16
 - *Hazard Communication Initial & Refresher Training*
- Sections 13 & 14
 - *HAZWOPER and RCRA Initial & Refresher Training*



Section 1 – Product & Company Identification

- Always best to have the Product's Number or Code
 - *Easier to find if you call them for a copy*
- Manufacturer's Phone Number
 - *Generic number and not someone who can answer SDS questions*
 - *Ask to speak to the department that manages their SDSs*
- 24-Hour Emergency Phone Numbers
 - *Don't normally get you someone who can help during an emergency*
- CHEMTREC Number
 - *Available 24/7 to offer immediate assistance for HAZMAT incidents*
 - <https://www.chemtrec.com/sites/default/files/documents/Emergency%20Flow%20Chart.pdf>

Section 2 – Hazards Identification

- GHS Classification Codes
 - 29 Classes – 17 Physical; 10 Health & 2 Environmental Hazards
 - Use Numbers (1-4) and Letters (A-G)
 - Consult the UN Purple Book for classification criteria
 - Reverse of our NFPA 704 numbers
- Signal Words & Pictograms
- Hazard Statements (H Codes):
 - *What Could Happen*
- Precautionary Statements (P Codes):
 - *Four Types – Prevention, Response, Storage, and Disposal*
 - *How to prevent the hazards from happening*

<https://pubchem.ncbi.nlm.nih.gov/ghs/>

- National Capital Poison Control - <https://www.poison.org/>



Section 3 – Composition / Ingredients

- Listing of what's in it!
- Remember to look at the % weight for mixtures
 - *Important when calculating TIER 2 weights*
- You need to know how much of it is hazardous
 - *All, Some, or Very Little*
- Trade Secret or Proprietary Notation
 - *What if you need to know what it is?*
 - *Contact the supplier and see if they have a policy to divulge*
 - *For example, signing an N.D.A*
 - *Examples why you need to know, injury/illness case or hazard analysis*



Section 4 – First – Aid Measures

- Four parts of the body
- Eyes:
 - *Flush time?*
 - *Contact Lens – Do you have a policy?*
- Skin:
 - *Remove clothing – Privacy and Dignity Issues*
 - *Privacy Curtains on Emergency Shower Stations?*
 - *Towels and Spare Clothes?*
- Inhalation:
 - *Was oxygen administered?*
 - *Precautionary or Medical Treatment? [<https://www.osha.gov/recordkeeping>]*
- Ingestion:
 - *Induce or do not induce vomiting?*



Section 5 – Fire – Fighting Measures

- Suitable Extinguishing Media
 - *Class C for Electrical Fire*
 - *Class D for Metal Dust*
- Hazards arising from the chemical
 - *What happens to it when it burns*
- Hazardous Combustion Products
 - *Does it give off toxic gases or vapors?*
- PPE & Precautions for Firefighters
 - *Do you have an in-house fire brigade?*
 - *Special concerns your local fire dept needs to know*



Section 6 – Accidental Release Measurement

- Personal Precautions
 - *Do you have the correct PPE to respond?*
- Environmental Precautions
 - *What not to do with the spilled material*
- Methods for Clean-Up
 - *What clean-up materials to use and not to use*
 - *For example, organic materials on flammable liquids*
 - *Do you have enough on hand for a small to medium size spill?*
 - *How to properly store the spilled material for disposal*
- Do you have a contract with a 3rd party clean-up company?
 - *If not, they'll get to you when they can – low priority*



Pop Quiz Everyone...

TRUE or FALSE – Your local fire department or state environmental protection organization can provide clean-up services to you after they have stopped the hazardous material from spilling out of its primary or secondary containment?

FALSE – First responders are only obligated to stop the spill. They **DO NOT** perform clean-up duties beyond their own decontamination procedures. Clean-up duty is done by either plant personnel or a 3rd party contractor.

Section 7 – Handling & Storage

- Safe Handling Advice
 - *How should you open it, i.e., inside a fume hood*
- Storage Conditions
 - *Bung or Lid Status*
 - *Cold or Room Temperature*
 - *Ventilation Requirements*
- Incompatible Materials
 - *What it shouldn't mix with or touch*
 - *For example, anhydrous ammonia and brass or copper*
- Shelf Life or Expiration Date
 - *Do not exceed – try to use before so you don't have to lab pack it*
- OSHA LOI on Small Propane Gas Cylinders
 - <https://www.osha.gov/laws-regs/standardinterpretations/1999-04-19>

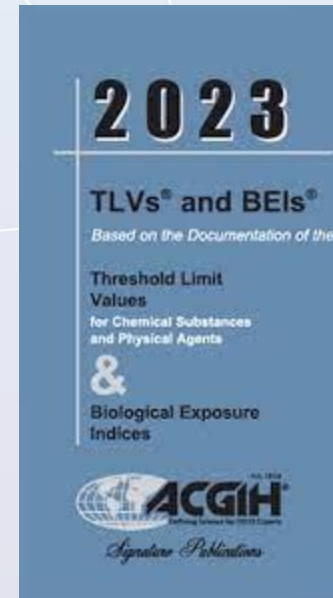


1910.106(d)(3) & (e)(2)



Section 8 – Exposure Control & PPE

- Occupational Exposure Limits:
 - OSHA PEL; ACGIH TLV and NIOSH REL
 - I.M.P.O. - Be conservative and go with the lowest number
- Engineering Controls:
 - Do you have them, and do they work?
 - Face velocity checks?
 - Are they on a P.M. schedule?
- **Personal** Protective Equipment:
 - Remember what the first P in PPE stands for...
 - Why don't workers wear the required PPE?
 - Poor fit and quality
 - Collaborate with vendors and workers
 - Involve them in the process so they help pick out what is to be worn



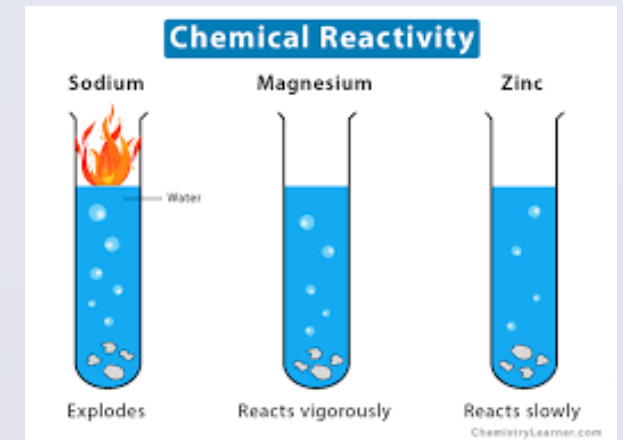
Section 9 – Physical & Chemical Properties

- Another Important Section
 - *Provides so many other critical variables that drive other sections*
- For example:
 - *State of Matter*
 - *Color and Odor*
 - *pH*
 - *Boiling & Flash Point*
 - *Evaporation Rate*
 - *LFL / UFL*
 - *Vapor Pressure and Density*
 - *Viscosity*
- Critical information for first-aid, storage, and spill response



Section 10 – Stability & Reactivity

- Reactivity:
 - *Is it reactive under normal conditions of use?*
- Chemical Stability:
 - *Is it stable under normal conditions of use?*
- Possibility of Hazardous Reactions:
 - *What happens when the reaction starts*
 - *For example, the release of different poisonous gases*
- Conditions to Avoid
 - *What not to do like avoiding high heat or direct sunlight*
- Incompatible Materials
- Hazardous Decomposition Products:
 - Again, poisonous gases like CO, CO₂, etc.



Section 11 – Toxicological Information

- **Likely** Routes of Exposure:
 - *Four Types*
- Symptoms of Exposure:
 - *Immediate or acute effects*
- Delayed or Chronic Effects:
 - *Take more time maybe years before effects are apparent*
- Component Acute Toxicity Information
 - *Oral & Dermal LD50*
 - *Inhalation LC50*
- Carcinogenic?
 - ACGIH, IARC, and NTP standards



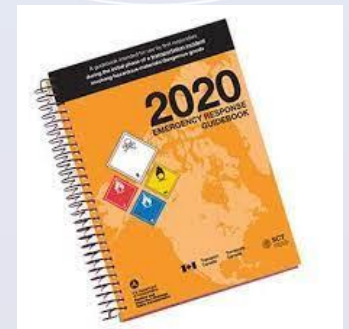
Section 13 – Disposal Considerations

- Again, normally another non helpful generic statement:
 - *Dispose of according to all local and federal regulations*
 - *Contact your local EPA Regional or State Environmental Organization for guidance*
- It may say to take special precautions or not, such as:
 - *Triple rinse the container*
 - *Recycle if possible*
 - *What about the rinse water?*
- Hazardous Waste Classifications
 - *Listed Waste - Based on Process?*
 - *Characteristic Waste – 1 of 4 Types?*
- If you don't know or aren't sure, ask for help!



Section 14 – Transportation Information

- Dept. of Transportation Information:
 - *Emergency Response Guide*
- Helpful to your Shipping and Receiving Dept.
- Bulk Chemical and UHW Manifest Information:
 - *UN Number*
 - *Proper Shipping Name*
 - *Hazard Class*
 - *Packing Group*
- All useful information when planning spill response operations
 - *Required training for all levels of emergency responders under HAZWOPER*

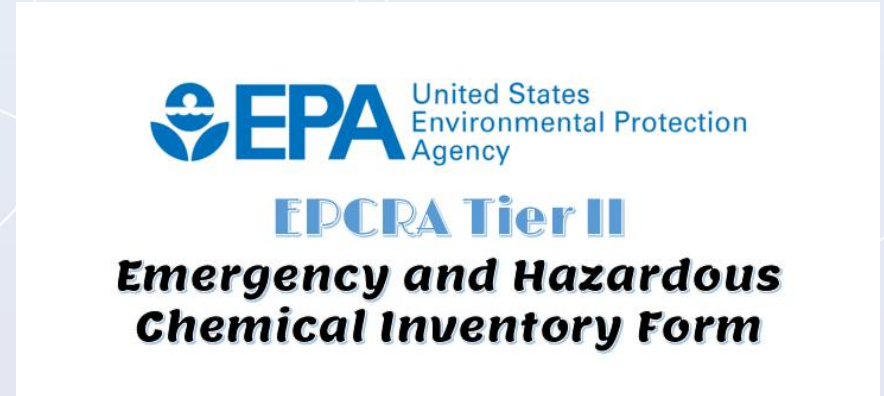


Section 15 – Regulatory Information

- Let's you know if any ingredients fall under either:
 - *Title III of the Superfund Amendments and Reauthorization Act (SARA)*
 - *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*
 - *Emergency Planning & Community Right to Know Act (EPCRA)*
- SARA Sections:
 - *302 – Extremely Hazardous Substance (40 CFR 355 Appen A & B) **Example***
 - *304 – Emergency Notification – Report releases of EHS/CERCLA > RQs (40 CFR 355 Subpart C)*
 - *311 - 312 – Community RTK Req – Submitting an SDS to LEPC/Fire Dept depending on stored weight*
 - *313 – Toxic Release Inventory – Form R – Manufactured or Otherwise Used above TQs (40 CFR 372)*

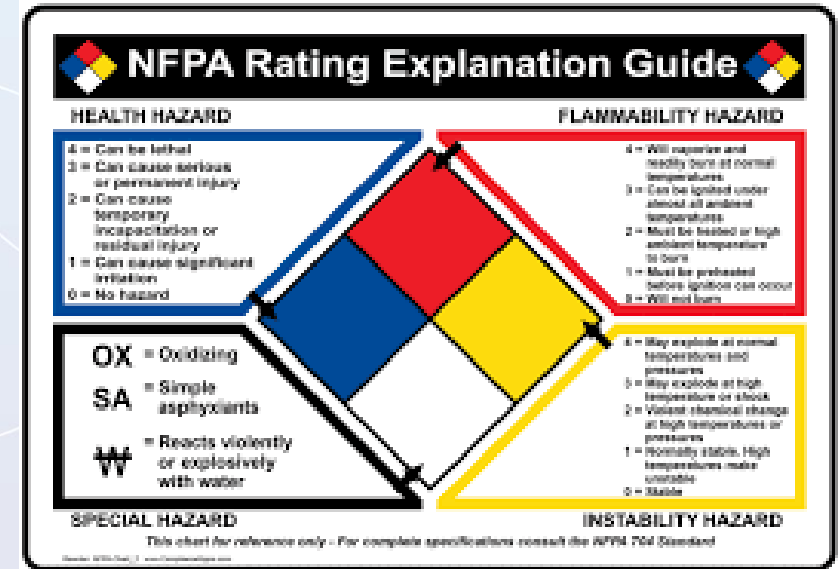
Section 15 – Regulatory Information

- TIER 2 Form
 - *Due annually to LEPC and/or Fire Dept by March 1*
- What you need to properly complete
 - *Accurate chemical inventory*
 - *Densities of bulk liquids to convert to pounds*
 - *How much was purchased that reporting year*
 - *Current facility floor plan and storage locations*
- EPA List of Lists is a great resource -
<https://www.epa.gov/epcra/consolidated-list-lists>



Section 16 – Other Information

- Finally at the end!
- Provides Administrative Information:
 - *Revision Date*
 - *Superseding Date*
 - *Reason for Revision*
- If an SDS is greater than FIVE years old
 - *Check the vendor's website for an updated copy*
- It may also provide NFPA 704 rating information
 - *Inform first responders of product hazards*



Buffalo Wild Wings Incident

- Thursday night November 7, 2019 @ 5:30 PM
- General Manager of the Burlington, MA Buffalo Wild Wings mixed two chemicals to clean the kitchen floor:
 - *Scale Kleen – Acid Based Cleaner*
 - *Super 8 – Chlorine Bleach Based Product*
 - *Chemicals reacted and off-gassed*
- General Manager tried to squeegee the liquid mixture outside
- One worker died and 13 injured (11 workers and 2 patrons)
 - *Breathing difficulties and burning eyes*
 - *All were released from the hospital the next morning*
- So why did this happen?

Buffalo Wild Wings Incident

- Well, let's use what we just covered and see what it tells us...
- Super 8 Information:

2. HAZARDS IDENTIFICATION

GHS Hazard Classification

Signal Word: DANGER
Acute Toxicity: Category 4
Skin Corrosion: Category 1
Eye Irritation: Category 1



HAZARD STATEMENTS

H302: Harmful if swallowed
H312: Harmful in contact with skin
H314: Causes severe skin burns and eye damage

PRECAUTIONARY STATEMENTS

P264: Wash hands thoroughly after handling
P270: Do not eat, drink or smoke when using this product
P280: Wear eye protection and protective gloves

3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENT	CAS NO.	% COMPOSITION
Sodium Hypochlorite	7681-52-9	8.0 – 10.0

10. STABILITY AND REACTIVITY

Stability: This product is stable but degrades quickly
Hazardous Polymerization: Will not occur
Incompatibility: Strong acids, nitrogen and oxidizers
Hazardous Decomposition Products: Oxides of chlorine

Buffalo Wild Wings Incident

- Scale Kleen Information:

2. HAZARDS IDENTIFICATION

OSHA Hazard Classification

Signal Word: **DANGER**

Acute Toxicity: Category 4 (oral)

Acute Toxicity: Category 4 (dermal)

Skin Corrosion: Category 1

Eye Irritation: Category 1



HAZARD STATEMENTS

H302: Harmful if swallowed

H312: Harmful in contact with skin

H314: Causes severe skin burns and eye damage

PRECAUTIONARY STATEMENTS

P264: Wash hands thoroughly after handling

P270: Do not eat, drink or smoke when using this product

P280: Wear eye protection and protective gloves
P301/312: If swallowed, call a poison center/doctor if you feel unwell.

P330: Rinse mouth.

P302/P352: If on skin, wash with plenty soap and water.

P362/P364: Take off contaminated clothing and wash it before reuse.

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CAS NO.	% COMPOSITION
Water	7732-18-5	40.0 – 45.0
Phosphoric Acid	7664-38-2	22.0 – 28.0
Nitric Acid	7697-37-2	18.0 – 23.0
Poloxalene	9003-11-6	<1.0
Urea	57-13-6	<1.0
Dye	25956-17-6	<1.0

10. STABILITY AND REACTIVITY

Stability:

Stable under normal conditions

Hazardous Polymerization:

Will not occur

Incompatibility:

Sodium hypochlorite, strong alkalis and soft metals

Hazardous Decomposition Products:

None reasonably foreseeable

The GM died because he was overcome by the poisonous gas given off when these two incompatible chemicals met

Program Overview

- Please audit your Hazard Communication Program and ensure that:
 - *Accurate Chemical Inventory*
 - *New Chemical Approval Process*
 - *Safety Data Sheets for all chemicals*
 - *Contractor Requirements*
 - *Initial and Refresher Training Requirements*
- Hazard Communication (General Industry) was the #2 Most Frequently Cited OSHA Standard in 2022
- As you can see, this standard drives several other EHS programs
- So, consider an SDS like a Swiss Army Knife and use all the information it provides to build strong and compliant EHS programs



Questions, Comments, Concerns...



Thank You for Your Time and Attention, Please Enjoy the Rest of the Conference