

SDSs For A Safer Working Environment!

SAFE SCIENCE: Be Protected!

By Dr. Ken Roy

Director of Environmental Health & Safety

Glastonbury Public Schools

Glastonbury, CT, USA;

Chief Science Safety Compliance Adviser,

Author and Columnist

National Science Teachers Association (NSTA);

Safety Compliance Officer

National Science Education Leadership

Association (NSELA)

Email Address: Royk@glastonburyus.org

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Roy on TWITTER @drroysafersci

SCIENCE LABS IN SCHOOLS CAN BE UNSAFE PLACES for school employees and students. When working with hazardous chemicals, teachers need to determine the potential level of hazard exposure by first doing the following: hazards analysis, risks assessment and safety action.

In the case of chemical use, the hazards analysis would help the teacher first determine what hazard issues there may be. Once hazards are determined, they need to be assessed as to the level of potential harm. In both cases, Safety Data Sheets can be of help.

Safety Data Sheets (SDSs) are specific chemical documents that provide information about the hazards of a product and what safety precautions need to be taken. SDSs are usually written by the

manufacturer or supplier of the product.

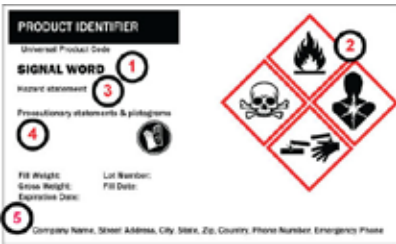


SDS's information is critical to both the hazards analysis and the risks assessment. This again helps to take the appropriate safety action relative to engineering controls and personal protective equipment. The target is to make for a safer employee work site relative to chemical hazards through better chemical management.

What In The SDS?

The Globally Harmonized System of Classification and Labeling of Chemicals or GHS specifies 16 sections and content for hazardous chemicals as follows:



Safety Data Sheets SDSs For A Safer Working Environment!

SDS Section and Heading	Specific Information Elements
<p>1 Identification</p> 	<ul style="list-style-type: none"> • Product identifier (e.g. Product name) • Other means of identification (e.g. product family, synonyms, etc.) • Recommended use • Restrictions on use • Supplier identifier+ <ul style="list-style-type: none"> o Name, full address and phone number(s) • Emergency telephone number and any restrictions on the use of that number, if applicable
<p>2 Hazard identification</p> 	<ul style="list-style-type: none"> • Hazard classification (class, category) of substance or mixture or a description of the identified hazard for Physical or Health Hazards Not Otherwise Classified • Label elements: <ul style="list-style-type: none"> o Symbol (image) or the name of the symbol (e.g., flame, skull and crossbones) o Signal word o Hazard statement(s) o Precautionary statement(s) • Other hazards which do not result in classification (e.g., molten metal hazard)
<p>3 Composition/Information on ingredients</p> 	<ul style="list-style-type: none"> • When a hazardous product is a material or substance: <ul style="list-style-type: none"> o Chemical name o Common name and synonyms o Chemical Abstract Service (CAS) registry number and any unique identifiers o Chemical name of impurities, stabilizing solvents and/or additives* • For each material or substance in a mixture that is classified in a health hazard class**: o Chemical name o Common name and synonyms

- o CAS registry number and any unique identifiers
- o Concentration

NOTE: Confidential business information rules can apply

4 First-aid measures



- First-aid measures by route of exposure:
 - o Inhalation
 - o Skin contact
 - o Eye contact
 - o Ingestion
- Most important symptoms and effects (acute or delayed)
- Immediate medical attention and special treatment, if necessary

5 Fire-fighting measures



- Suitable extinguishing media
- Unsuitable extinguishing media
- Specific hazards arising from the hazardous product (e.g., hazardous combustion products)
- Special protective equipment and precautions for fire-fighters

6 Accidental release measure:



- Personal precautions, protective equipment and emergency procedures
- Methods and materials for containment and cleaning up

7 Handling and storage



- Precautions for safe handling
- Conditions for safe storage (including incompatible materials)

8 Exposure controls / Personal protection



- Control parameters, including occupational exposure guidelines or biological exposure limits and the source of those values
- Appropriate engineering controls
- Individual protection measures (e.g. personal protective equipment)

9 Physical and chemical properties



- Appearance (physical state, color, etc.)
- Odor
- Odor threshold
- pH
- Melting point/Freezing point
- Initial boiling point/boiling range
- Flash point
- Evaporation rate
- Flammability (solid; gas)
- Lower flammable/explosive limit
- Upper flammable/explosive limit
- Vapor pressure
- Vapor density
- Relative density
- Solubility
- Partition coefficient - n-octanol/water
- Auto-ignition temperature

- Decomposition temperature
- Viscosity

10 Stability and reactivity



- Reactivity
- Chemical stability
- Possibility of hazardous reactions
- Conditions to avoid (e.g., static discharge, shock, or vibration)
- Incompatible materials
- Hazardous decomposition products

11 Toxicological information



Concise but complete description of the various toxic health effects and the data used to identify those effects, including:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)
- Symptoms related to the physical, chemical and toxicological characteristics
- Delayed and immediate effects, and chronic effects from short-term and long-term exposure
- Numerical measures of toxicity

12 Ecological information***



- Ecotoxicity
- Persistence and degradability
- Bioaccumulative potential
- Mobility in soil
- Other adverse effects

13 Disposal considerations

Information on safe handling for disposal and methods of disposal, including any contaminated packaging

14 Transport information



- UN number
- UN proper shipping name
- Transport hazard class(es)
- Packing group
- Environmental hazards
- Transport in bulk, if applicable
- Special precautions

15 Regulatory information

Safety, health and environmental regulations specific to the product

16 Other information

Date of the latest revision of the SDS

OSHA's website on GHS <http://www.osha.gov/dsg/hazcom/global.html>

*: For the class on explosives (i.e. Class 1 for transport), " " is to be replaced by the indication of the compatibility group or to be left blank if explosive is the subsidiary risk. For more details see Chapter 5.2, Model Regulations, UN Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1/Rev.17).

** : The symbol, the number and the border line may be shown in black instead of white.

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BOTTOM-LINE! SDSs For A Safer Working Environment!

Science teachers need to be aware of and complete hazards analysis, risks assessment and safety actions prior to doing any lab activity or demonstration. A major component of this process is the Safety Data Sheet. Never work with hazardous chemicals without consulting the the SDS first!

INTERNET RESOURCE:

Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (Rev.5) (2013):

http://www.unece.org/trans/danger/publi/ghs/ghs_rev05/05files_e.html

OSH Answers Fact Sheet: http://www.ccohs.ca/oshanswers/chemicals/whmis_ghs/sds.html

