Safety Training

School of Biological Sciences Fall 2015



Hazard Communication Standard

The Right to Know...And the Right to Understand! We are required by OSHA to ensure that all employees (in our case faculty, staff and students) be familiar and aware of hazards in the workplace



Chemical Hygiene Plan

 Available in all teaching labs and are available in all research labs—check with your PI. Please read this document!

Central Location of Safety Information (SDS) and Electronic Database of Chemicals

- Collectively available for the prep room and teaching labs through MSDS Online
- Available in each research lab –check with your PI

System of Chemical Hazard Identification

 We have adopted the Hazardous Materials Identification System (HMIS) and the National Fire Protection Association (NFPA) NFPA 704 system

Standard Operating Procedures—for Lab Processes Involving Hazards

 Available in research labs when applicable check with your PI

Chemical Hygiene Plan (CHP)

Note: Direct responsibility for implementation of the CHP belongs to the School Director and the Safety Committee but the responsibility for working safety lies with faculty, students and others doing the work

EMERGENCY CONTACTS

ous Emergency

School Director	
	970.351.2510
	970.351.2921
School Chemical Hygiene Officer (CHO)	
Dr. Mark Thomas	970.351.2329
Chemical Stockroom Mr. Frank Skufca, Lab Manager	
Environmental Health and Safety	
Mr. Glenn Adams, Director	970.351.1149
	(800)222.1222
Radiation Safety Officer	
Dr. Cynthia Galovich	973.351.2079
Campus Police (non-emergency)	970.351.2245

Safety Committee

Chair:

Mark Thomas

Members

Judy Leatherman Ann Hawkinson Frank Skufca Patrick Burns

Chemical Hygiene Plan (CHP)

What type of information is in the CHP?

- General Lab Safety
- Requirements for Instrument Training
- Personal Protective Equipment
- Laboratory Biosafety
- Chemical Classification, Storage and Compatibility
- Safety Data Sheets
- Chemical and Biological Waste
- Decontamination
- Spill Response
- Accident Reporting
- Record Keeping
- Training
- Standard Operating Procedures
- Emergency Response Plan

To use School equipment you need to receive prior training—details in the CHP

Available online:

Biology Forms and Instructions page (at the bottom)

http://www.unco.edu/biology/pdf/Chemical%20Hygiene %20Program%20Biology%20VersionOne%200715.pdf



Safety Data Sheets

SDS

The following 16 sections are now found on safety data sheets:

- 1. Identification of the chemical and of the supplier
- 2. Hazards identification
- 3. Composition/information on ingredients
- 4. First aid measures
- 5. Firefighting measures
- Accidental release measures
- 7. Handling and storage
- 8. Exposure controls/personal protection.
- 9. Physical and chemical properties
- 10. Stability and reactivity
- 11. Toxicological
- 12. Ecological information (non mandatory)
- 13. Disposal considerations (non mandatory)
- 14. Transport information (non mandatory)
- 15. Regulatory information (non mandatory)
- 16. Other

Material Safety Data Sheets are now simply called Safety Data Sheets and they have a new format



Remember— SDS sheets are located on MSDS Online for all teaching labs and for the prep room. Check with the PI for SDS location in research labs



Safety Data Sheets (Example)

CORPORATION		-			DATA SHEET OC Styrene Rubber	Cement			d: FEB 2010 : OCT 2009	
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JOFF LICH.				MUNICIPA		oth Main Street, C	arson, CA 9	0248-3127		
						79, Garden a. CA				
					Tel. 1-310-					
EMERGENCY: Transportation			7.3887 CHEM	TREC (Inte	ernational) Medical: 1	el 800.451.8346	, 760.602.8	703 3E Com	npany (Internatio	nal)
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	NO									
	Category 2B	_		_						
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	Hazard State	ments				Precautional				
1225: Highly flammable liquid and					P210: Keep away from heat/			No smoking		
4319: Causes serious eye initatio 4332: Harmful if inhaled	on				P261: Avoid breathing dustit P280: Wear protective glove			alfana nestroii	ion	
1335: May cause respiratory irrita	ation				P304+P340: IF INHALED: R					or breathin
4336: May cause drowsiness or d					P403+P233: Store in a well v					
UH019: May form explosive perc					P501: Dispose of contents/c	ontainer in accordar	ce with local n	egulation		
SECTION 3 - COMP	OSITION/INF						Harris To			
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Indicates this chemical is second to the control of	ubject to the regical department of the regi	that are listed on triting requirements. The second of the	the TSCA invi- ments of Section and shoes. V gl is stopped, or or 2 glasses and shoes. V gl is stopped, or or 2 glasses and ream. and shoes. V gl is stopped, or or 2 glasses and ream. and contact hydrogen ohle seathing appara assumes assumes assumes assumes assumes assumes assumes yes, skin and or eye in riquids contact (110°F) and a assible materials contact con	entory of a on 313 of the or 15 minute of	chemical substances main the Emergency Planning a lote and seek medical ad- hierocyphy with soap and last respiration. It breathin mik to dilute. Do not inc to, foam, Halon, water fog. smoke Hace positive pressure air ame. no-proof exhaust ventilatio ction 8): with product from entering art material. Transfer to a term direct sunlight. to, ammonia, inorganic acids and solvert comenting ESSONAL PROTEC GSHAPEL OSHASTE! 200 ppm exposure limbs. species sheld, safety by rubber gloves should be iet cream should provide at bronds.	intained by the US and Community R ice immediately, ice immediately, ice immediately, ice immediately, is difficult, give funce vemiting. S Health Flammability Flacetivity Flacetivity Flacetivity flammability Flacetivity flame masks. In equipment or v sewers, drains, c closable steel ve and equate ventil is, chlorinated co flamature. ETION Li glasses (spectace used for frequera dequate protect dror windows to r ine and to logic and to logic and to logic and and to logic and and cone and to logic and l	EPA, or are girth-to-Know develops, a coxygen. See a coxygen a cox	exempt for a seek medical seek	6 (40CFR372). all advice, advice, advice, advice, ediately, ediat	les.

SECTION 9 - PHYS Appearance:	M	lky, medium syrupy	fauid				
Odor:		etone	- dily-ry		Odor Threshold:	5.4 ppm (MEK)	
pH:		lot Applicable			5401 111123110141	and believe description	
Meltino/Freezing Poir		6°C (187°F) Based o	n first melting oper	anchert: MEK	Boiling Range:	80°C (176°F)	
Boiling Point:		0°C (176°F) Based o			Evaporation Rate:	> 1.0 (BUAC = 1)	
Flash Point:		B°C (16°F) TCC base		portoral man	Flammability:	Category 2	
Specific Gravity:		0.880 @23°C (73°F)			Flammability Limits:	LEL: 1.4% based on MEK	
Solubility:		Solvent portion soluble in water. Resin		norting separates out	Fidential Services	UEL: 11.4% based on MEK	
Partition Coefficient				porton asparates onli	Vapor Pressure:	78 mm Hg @ 20°C (68°F) MEK	
Auto-ignition Temper					Vapor Density:	>2 (Air = 1)	
Decomposition Temp			OH MILIT		Other Data: Viscosity:	Medium bodied	
VOC Content:			ore ed as directed, per SCACMD Rule 1168, Test Metho				
SECTION 10 - STAI							
Stability:		Stable					
Hazardous decomposition produ							
Conditions to avoid:				arks, open flame and other		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Incompatible Material	is:			d bases, amines, ammonia			
SECTION 11 - TOX				700000, 0110100, 011110011			
Likely Routes of Exposure		halation, Eye and Sk		A	MINISTER STATE OF STA		
Acute symptoms and effe							
Inhalation:	Severe overexo	osure may result in r	nausea, dizziness	headache. Can cause dre	wsiness, imitation of eyes a	nd nasal passages.	
						mmation on contact with the liquid.	
					nay occur with prolonged co		
		sea, vomiting, diarrhe			nay ocean man promongo e co	-1001	
Chronic (long-term) effect		one known to human		ggranne ad-			
Toxicity:	ia: 14	LDss	45	i.Cso			
Methyl Ethyl Ketone (MEK)		ral: 2737 mg/kg (rail),	Dormal: 8480 mg		8 hrs. 23,500 mg/m ³ (rat)		
Reproductive Effects	Teratoge		Autagenicity			d Consideration beautiful	
Not Established	Not Estab		ot Established	Embryotoxicity Not Established	Sensitization to Product Not Established	t Synergistic Products Not Established	
			OI COMOTO PO	TWO COLDENSIES	1901 Geravial lev	1 NOI COMMINES	
SECTION 12 - ECO		NECHMATION					
Ecotoxicity:							
	None Known						
	In normal use, e	emission of volatile or	rganic compounds	s (VOC's) to the air takes pt	ace, typically at a rate of ≤ 4	90 g/l.	
Degradability:	In normal use, e Biodegradable		rganic compounds	s (VOC's) to the air takes pl	ace, typically at a rate of <u>≼</u> 4	90 g/l.	
Degradability:	In normal use, e		rganic compounds	s (VOC's) to the air takes pl	ace, typically at a rate of <u>≤</u> 4	90 g/l.	
Degradability: Bioaccumulation:	In normal use, o Biodegradable Minimal to none	t.		s (VOC's) to the air takes pl	ace, typically at a rate of <u>≤</u> 4	190 g/l.	
Degradability: Bioaccumulation: SECTION 13 - WAS	In normal use, o Biodegradable Minimal to none TE DISPOS	AL CONSIDERA		s (VOC's) to the air takes pl	ace, typically at a rate of <u>≤</u> 4	90 g1.	
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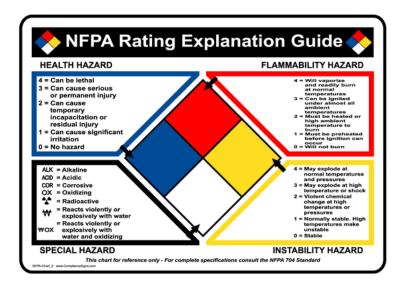
This product is intended for use by skilled includuals at their own risk. The information contained herein is based on data considered accurate based on current state of knowledge and experience. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof.

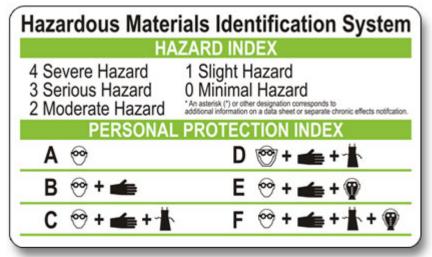
Hazard Identification: HMIS and NFPA

We are using the NFPA rating on the door of labs and the HMIS classification system to label secondary containers.

System of Chemical Hazard Identification

- Chemicals that are in secondary containers (i.e. not the original container from the manufacturer) need to be labeled according to the Hazardous Materials Identification System (HMIS).
 - This system uses blue for Health, red for Flammability, and yellow for chemical reactivity and a rating system for each category from 0 = minimal to 4 = extreme.
 - Personal protective equipment (PPE) is specified by a code.
 - For mixtures please consult SDS forms for each component and list the highest hazard rating and all PPE





When is HMIS Secondary Labeling Required?

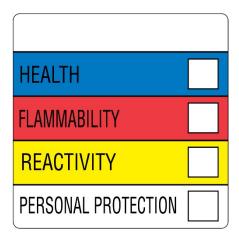
Secondary labeling is required all containers that will be used longer than a standard working day.

Requirements:

- Name of the chemical in English
- Common names and/or abbreviations
- Concentration of components
- Solvent for solutions
- Date created
- Initials of the creator

Caveats to labeling:

- You can label a rack if all tubes within the rack contain the same solution
- You can use an abbreviation if that abbreviation is posted clearly within the lab environment





Make note of the classification system to determine risk

For Example:



Methyl Ethyl Ketone (MEK)

GHS SAFETY DATA SHEET

WELD-ON® 763™ Low VOC Styrene Rubber Cement

Date Revised: FEB 2010 Supersedes: OCT 2009

SECTION I - PRODUCT AND COMPANY IDENTIFICATION

WELD-ON® 763™ Low VOC Styrene Rubber Cement PRODUCT NAME:

PRODUCT USE: Low VOC Styrene Rubber Cement

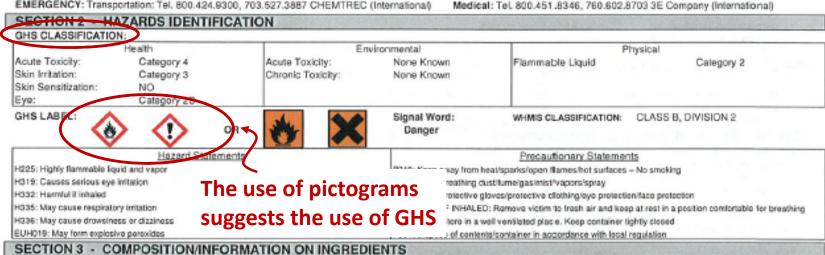
SUPPLIER: MANUFACTURER: IPS Corporation

17109 South Main Street, Carson, CA 90248-3127

P.O. Box 379, Garden a. CA 90247-0379

Tel. 1-310-898-3300

EMERGENCY: Transportation: Tel. 800.424,9300, 703,527,3887 CHEMTREC (International) Medical: Tel. 800.451.8346, 760.602.8703 3E Company (International)



REACH CONCENTRATION Pre-registration Number % by Weight 78-93-3 201-159-0 05-2116297728-24-0000 54 - 71

GHS Pictograms

You will see these on shipping containers and some chemicals as well as on newer SDS sheets

Flame Over Circle -Oxidizers

Flame



Skull & Crossbones



- Acute Toxicity (fatal or toxic)

Exploding Bomb



- ExplosivesSelf-Reactives
- Organic Peroxides

Corrosive



- Skin Irritation
- Eye Damage Corrosive to Metals
- Health Hazard



- Carcinogen
- Mutagenicity
- Reproductive Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

Gas Cylinder



- Gases Under Pressure

Exclamation Mark



- Irritant (skin & eye)
- Skin Sensitizer
- Acute Toxicity
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone

Environmental



Aquatic Toxicity
 (Not Required Under HCS)

This Will Typically Be Seen As A DOT Label.

Heard about the GHS system of hazard classification?

Eventually we will be changing systems to

GHS—but for now we are required by the

Greeley Fire Department to use the NFPA

signage on the door to all labs

GHS—Globally Harmonized System

HMIS | NFPA **NEW GHS** Minimal Severe 0 Same Hazard Hazard Slight Serious numbering 1 Hazard Hazard system inside Moderate Moderate 2 Hazard Hazard the labs as on Serious Slight 3 4 the door! Hazard Hazard Severe Minimal 4 Hazard Hazard

hazard levels are the opposite of the HMIS/NFPA system

Note that the HMIS system is in alignment with the NFPA system so we have decided to continue the HMIS system in the labs

First Aid

What to do when exposed to common

Consult the SDS for hazard information

If appropriate:

chemicals:

- Eyes: Flush with water for minimum of 15 minutes
- Skin: Flush with water for minimum of 15 minutes
- Inhalation: Move to fresh air
- Ingestion: Get emergency medical assistance

Seek medical attention immediately or after first aid intervention if appropriate

Complete an accident report



Details in the chemical hygiene plan

Know the location of the nearest eye wash and shower to your work area





Chemical Spills

Spill Response

Specific procedures to respond to minor and major spills are outlined in the Chemical Hygiene Plan

Generally:

- Contain the spill if possible
- Call for assistance
 - The Lab PI (contact information in the lab) or the lab instructor
 - Chief Hygiene Officer
 - Dr. Thomas 970 351 2329
 - Lab Manager
 - Frank Skufca 970 351 2469
 - The campus police
 - non emergency 970 351 2245
 - Emergency 911
- Secure site and evacuate area as needed

SPILL RESPONSE

Spill kits are available as outlined below:

Spill Kit	
Locations	For use in:
1650	1691, 1681, 1671, 1660, 1640
1621	1611, 1631, 1641
1360	1330, 1331, 1380, Herbarium, Museum
2360	2320, 2385, 2335, 2380
2551	2615, 2621, 2640, 2545, 2551
Head house	Greenhouse, 0402

Emergencies

For campus wide emergencies the UNC Police Center will activate the emergency alert system

Specific procedures to respond to different types of emergencies are outlined in the Chemical Hygiene Plan

Severe Weather

- Do not leave the building
- Move to an interior hallway on the first floor of Ross (the 1500 hallway)
 - Close the doors at both ends of the hallway and all faculty office doors
- Avoid windows and do not use elevators except to assist people with disabilities
- Crouch down and cover your head

Fire Evacuation

- Never assume that it is a false alarm
- Evacuate quickly and orderly by way of the nearest exit
- The meeting place for Biology is on the north side of parking lot E (to the north of Ross Hall)

Please read and become familiar with the Emergency Response Plan as outlined in the Chemical Hygiene Plan

To complete training, you now need to take the quiz associated with this information

Please remember that until you complete the quiz you are not permitted to work in a faculty research lab or be a teaching assistant (grad or undergrad) in a biology laboratory.

You can access the quiz here:

THANK YOU!

Questions or Comments contact: Dr. Susan Keenan Susan.Keenan@unco.edu Fall 2015

