

HAZARD COMMUNICATION TRAINING



29 CFR 1910.1200

“The Right to Know Law”

Course Orientation and Introduction



- Course length, restroom locations
- Turn off or silence all cell phones
- Emergency Alarms
- Course Evaluation forms – review top section
- Testing Procedures
 - A test will be given at the end of this class.
 - Notes may not be used during the test.
 - A score of 85% or higher is required to pass.



Objectives

- To explain and reinforce the hazard information available to employees
- To provide a forum for sharing health and safety concerns and obtaining answers.



Why Is This Standard Important?

1. More than 30 million workers are potentially exposed to one or more chemical hazards.
2. There are an estimated 650,000 existing hazardous chemical products, and hundreds of new ones are being introduced annually. This poses a serious problem for exposed workers and their employers.
3. In 2002 it was overall the most frequently cited standard by OSHA.



What is wrong with this picture?



Buy U.S. For Oils
SHERLOCK 5-Second Leak Detector
For Oxygen and Compressed Gases
☑ TYPE I — for use above freezing.
☐ TYPE II — for use below freezing to -65° F. (-54° C.)
A colorless chemical solution developed specifically for leak-testing pipes, cylinders and tanks carrying pure oxygen.
Made to Air Force Spec. MIL-L-25267 D
COMPATIBLE with pure oxygen, high or low pressure. Contains no oil, grease or acids. Non-hazardous, Non-injurious, Non-Toxic.
REPEATEDLY TESTED and approved by government and commercial organizations including the high-pressure "bomb" test.
NO MIXING Ready for instant use. Large leaks form large bubbles. Very fine leaks form white foam. Does not have to be removed after test is complete. Dries clean. Residue is evanescent.
APPLICATION: The compound shall be applied in a thin layer from bottle lip or brush, if a mixture which generates as little foam as possible. Containers are not to be reused unless emptied. Containers shall be destroyed.
WYTON PRODUCTS CO., INC.
1.8 liter
1.8 liter

Fisherbrand
Wash Bottle
Polyethylene
53-409-22B 250ml
Fisher Scientific

What is wrong with this picture?

What is wrong with this one?

TIRE
SEALANT



Purpose Behind Standard

Employees have both a need and a right to know

- the identities and hazards of the chemicals in the workplace.
- protective measures that can be taken to minimize or eliminate risk.

Scope of Hazard Communication Standard



- Requires chemical manufacturers or importers to assess the hazards of chemicals and create Material Safety Data Sheets (MSDSs).
- Requires all employers to provide information to their employees about the hazardous chemicals used in the workplace through:
 - Hazard communication program
 - Labels and other forms of warning
 - Material safety data sheets (MSDSs)
 - Information and training.



Main Features Of Standard

- Written program
- Labels
- Material Safety Data Sheets
- List of hazardous materials
- Required training



Written Program

Employers must develop, implement, and maintain at the workplace a written comprehensive hazard communication program that includes provisions for:

- Container labeling
- Collection and availability of MSDS
- Employee training
- List of hazardous chemicals in each work area (i.e., inventory)



Access To Written Program

- TechDoc SPI 18-20-022
- Contact Industrial Hygiene
- Contact your safety representative.



Employee Responsibility

- Attend hazard communication training.
- Read and understand the MSDS and label for each hazardous material that you will handle.
- Follow protective measures specified on the MSDS for material handling and use of PPE.
- Follow all site procedures for acquisition, labeling, storage, and handling of hazardous materials.



Manager And Supervisors' Responsibilities

- Ensure that MSDSs are readily available.
- Provide supplemental MSDSs in other languages, as necessary.
- Ensure hazardous chemical containers are properly labeled.
- Ensure labels meet OSHA standards.
- Ensure employees receive general and **specific** hazard training.
- **Ensure employees receive training when any changes occur in their potential exposures.**

Manager And Supervisors' Responsibilities



- Ensure chemical inventories are updated annually.
- Provide all affected groups advanced notice when a material that may present a hazard to persons other than the user will be introduced into the workplace.
- Ensure employees are aware of hazards of non-routine tasks.
- Ensure that acquisitions of hazardous materials comply with all applicable Federal, State and Local NASA/SSC requirements.



Special SSC Conditions

The following substances are prohibited from use/purchase at SSC without a deviation/waiver approval from the NASA Environmental Office:

- Paint/Material Coatings Containing **Lead**
- Building materials containing **Asbestos**
- Any products containing **Di-isocyanates**
- Other chemicals may be disapproved on a case-by-case basis



Types Of Chemical Hazards

- Physical Hazards – Can damage or injure skin or other body parts.
- Health Hazards – May cause measurable changes in the body such as decreased pulmonary function.



Types Of Chemical Hazards

**Health Hazards are classified
as ACUTE or CHRONIC:**

- ***Acute*** effects may occur rapidly as a result of short term exposure.
- ***Chronic*** effects generally occur as a result of long term exposure.

Does this present primarily a physical or health hazard?





Answer

A. Physical Hazard

What type of health hazard would the following situation represent?

Bob goes to a party and consumes an excessive amount of alcohol. Bob becomes sick and passes out.

A. Chronic Health Effect

B. Acute Health Effect

Answer

B. Acute Health Effect

What type of health hazard would the following situation represent?

As a result of years of alcohol abuse, Bob is diagnosed with cirrhosis of the liver.

A. Chronic Health Effect

B. Acute Health Effect

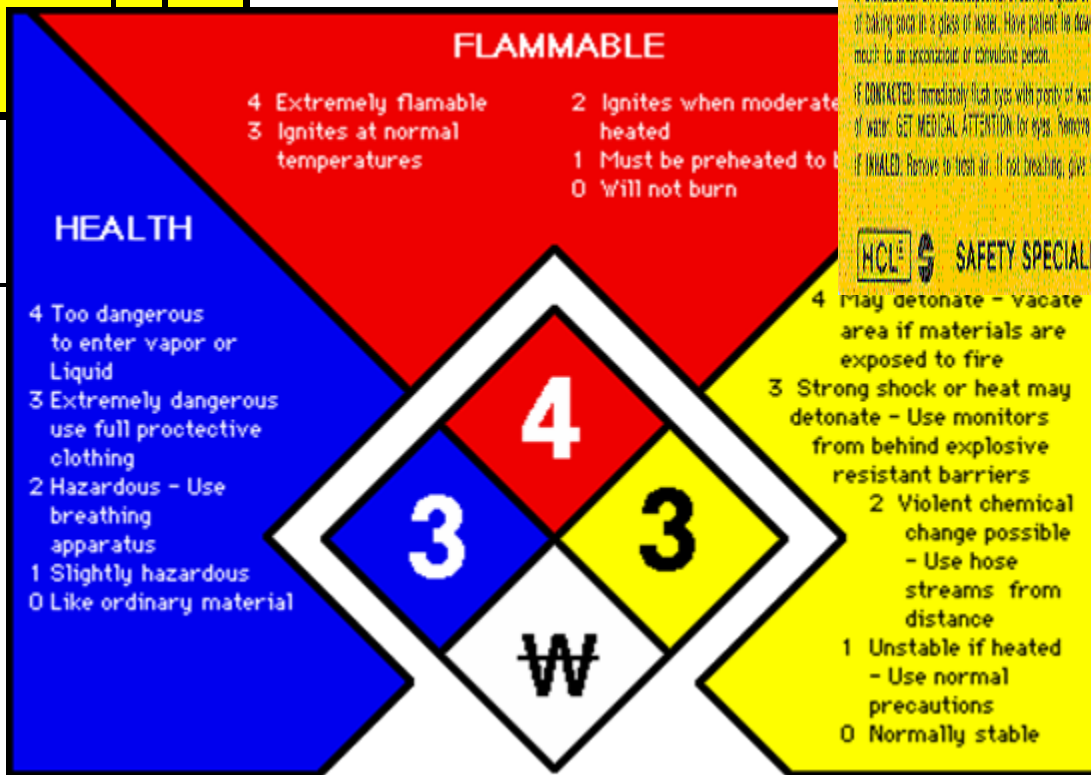
Answer

B. Chronic Health Effect

Chemical Name
CAS#
HEALTH <input type="checkbox"/>
FLAMMABILITY <input type="checkbox"/>
REACTIVITY <input type="checkbox"/>
SPECIFIC <input type="checkbox"/>

Labeling

NOTICE



METHANOL
(Methyl Alcohol)
(CAS 67-56-1)

DANGER! **POISON** **FLAMMABLE**

CANNOT BE MADE NON-POISONOUS

Acute: VAPOR HARMFUL. MAY BE FATAL IF SWALLOWED. CAUSES IRRITATION OF EYES AND RESPIRATORY TRACT. MAY ATTACK THE OPTIC NERVE IF SWALLOWED.

Chronic: CUMULATIVE POISON. MAY CAUSE BLINDNESS.

Keep away from heat, sparks, and flame. Avoid contact with eyes. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

FIRST AID:
IMMEDIATELY CALL POISON CONTROL CENTER OR HOSPITAL EMERGENCY ROOM

IF SWALLOWED: Give a tablespoonful of salt in a glass of warm water and repeat until vomit flows a clear. Give two tablespoonful of baking soda in a glass of water. Have patient lie down and keep warm. Cover eyes to exclude light. Never give anything by mouth to an unconscious or convulsive person.

IF CONTACTED: Immediately flush eyes with plenty of water for at least 15 minutes. Immediately wash skin with soap and plenty of water. GET MEDICAL ATTENTION for eyes. Remove contaminated clothing.

IF INHALED: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation.

HCL **SAFETY SPECIALISTS, INC.** 530-52-386



Labeling

- Each workplace container of hazardous materials must be labeled, tagged, or marked to identify the material and to provide appropriate warnings.
- Alternative methods such as signs, placards, process sheets, and operating procedures are acceptable for individual stationary process containers.
- Laboratories may follow labeling requirements defined in 29 CFR 1910.1450 OSHA Laboratory Standard.



No Label



Appropriate Labeling

There are 3 main components of a proper chemical container label:

1. Identity of the Hazardous Chemical
2. Appropriate Hazard Warnings
3. Name and Address of Chemical Manufacturer, Importer, or Other Responsible Party



Appropriate Labeling

There are 2 main components of a proper transfer container label:

1. Identity of the Hazardous Chemical
2. Appropriate Hazard Warnings
3. Name and Address of Chemical Manufacturer, Importer, or Other Responsible Party

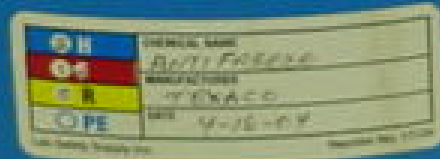
Is this OK?

ANTI-FRAG

R6



Proper Labeling of Container





Missing Label



Any Problems?



Chemical Containers

Chemicals should not be placed in containers that are not specifically designed for chemical storage.



Pipe Labeling

Although OSHA exempts pipes from the Hazard Communication Standard's labeling requirements, SSC pipes must be labeled in accordance with Stennis Standard SSTD-8070-0124-IDCODES.



General Requirement for Labels

- Must identify product
- Product identity must be the same as, or cross-referenced to, the MSDS
- Must contain hazard warnings
- Transfer containers must be labeled if the product is transferred from primary container
- Containers of hazardous waste must also be labeled hazardous waste



General Requirement for Labels

- Labels must be legible
- Labels shall not be removed or defaced
- Containers received with defaced or missing labels must be rejected unless the container can be immediately labeled with appropriate information.

Label Not Legible





Incomplete Labeling

30 1:12 PM



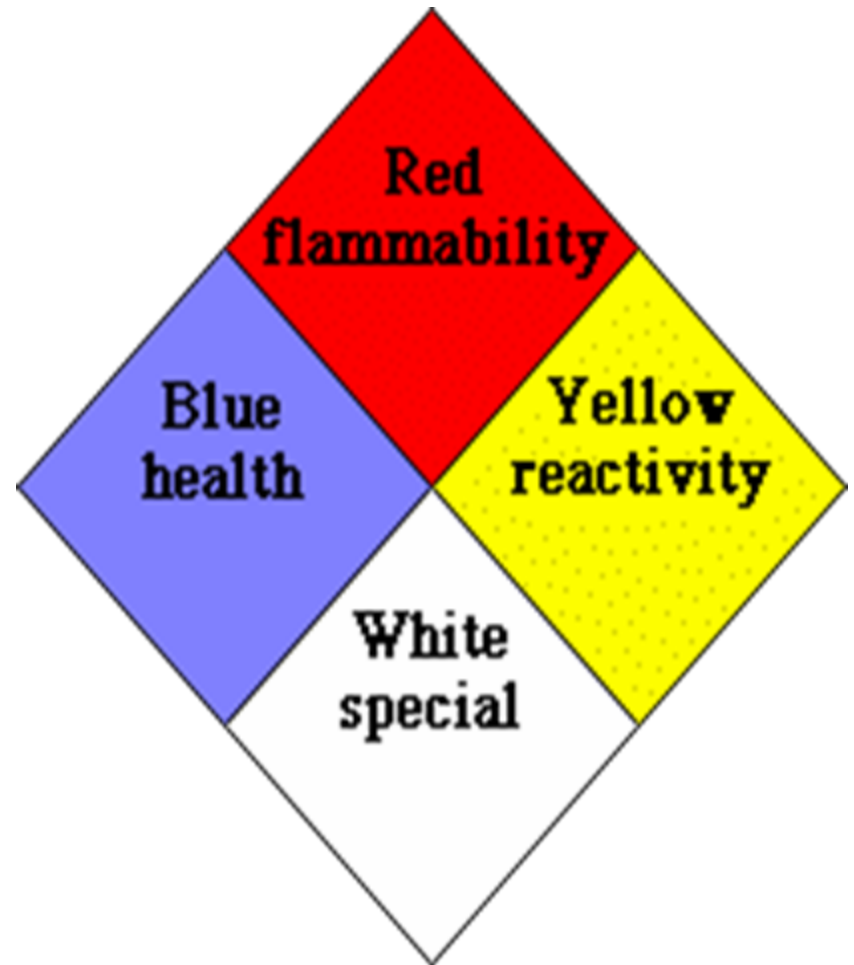
Adequate Label

30

1:11 PM

NFPA Labeling System

- Red Diamond – **Flammability**
- Blue Diamond – **Health**
- Yellow Diamond – **Reactivity**
- White Diamond – **Special Information**





Degree of Hazard

- 4 – Extremely
- 3 - Serious
- 2 – Moderate
- 1 – Slight
- 0 – Minimal

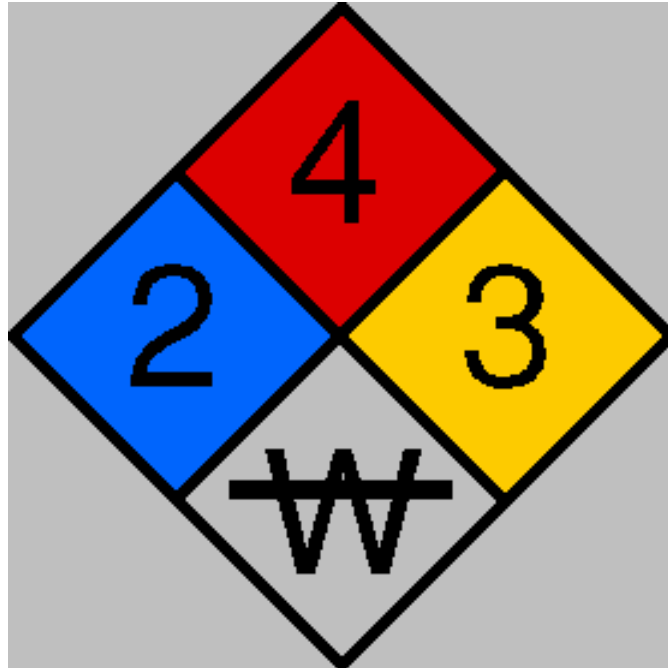


Special Information

- OXY - Oxidizer
- ACID - Acid
- ALK- Alkali
- COR - Corrosive
- W – Do not mix with water
- RAD – Radiation Hazard

How Flammable is this Chemical?

- 0. Minimally
- 1. Slight
- 2. Moderate
- 3. Seriously
- 4. Extremely



ANSWER

4. *Extremely*



Sections of an MSDS

- Section I Chemical Identification
- Section II: Hazardous Ingredients
- Section III: Physical/Chemical Characteristics
- Section IV: Fire and Explosion Hazard Data
- Section V: Health Hazard Data
- Section VI: Reactivity Data
- Section VII: Spill Or Leak Procedures
- Section VIII: Safe Handling and Use/ Control Measures
- Section IX: Special Precautions

Section I: Chemical Identification

MATERIAL SAFETY DATA SHEET



Date-Issued: 09/27/2004

MSDS Ref. No: 1620 N&I-A

Date-Revised: 12/01/2004

Revision No: 1

Ecoline Blue Shower Cleaner/Degreaser

1. PRODUCT AND COMPANY IDENTIFICATION

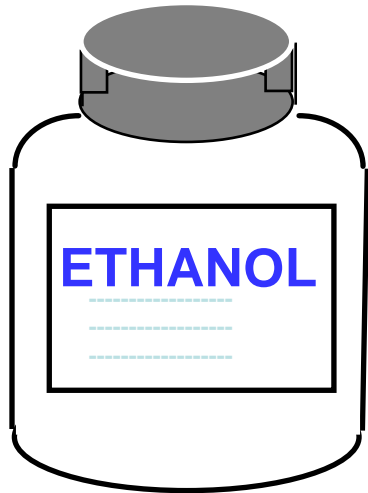
PRODUCT NAME: Ecoline Blue Shower Cleaner/Degreaser

PRODUCT DESCRIPTION: Cleaner/Degreaser

PRODUCT CODE: 1620/EUR/CAN-10S

Container Label & MSDS

Name on Label = Name on MSDS



Material Safety Data Sheet

ETHANOL

DU000538

PRODUCT INFORMATION

Material Identification

NEN MSDS Number	: 238
CAS Number	: 64-17-5
Molecular Weight	: 46.07
CAS Name	: Ethanol

Trade names and Synonyms

ETHANOL
ETHYL ALCOHOL

Section II: Hazardous Ingredients/Identity Information

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>Wt.%</u>	<u>CAS#</u>	<u>EINECS#</u>
2-Propanol	8 - 12	67-63-0	200-661-0
Ethanol	17 - 25	64-17-5	200-578-6
n-Propyl acetate	1 - 3	109-60-4	2036861
n-Heptane	50 - 75	142-82-5	
Methanol	1 - 3	67-56-1	200-659-6
Carbon dioxide	1 - 4	124-38-9	



Trade Secrets

- Product ingredients must be presented on the MSDS unless the ingredients are trade secrets (i.e., proprietary information).
- If the ingredients are a trade secret, only the hazards will be listed.

Section III: Physical/Chemical Characteristics

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Characteristic odor.

APPEARANCE: Clear, Colorless liquid

pH: Not Applicable

PERCENT VOLATILE: 100 at 20°C (68°F)

VAPOR PRESSURE: 73.2 mmHg@20C (VOC Composite Vapor Pressure)

BOILING POINT: Not Determined

FREEZING POINT: Not Applicable

MELTING POINT: Not Applicable

EVAPORATION RATE: >1 (TCE=1)

DENSITY: 0.713g/mL at 25°C

VISCOSITY: Not Applicable

MOLECULAR WEIGHT: 76.31

(VOC): 691.6 g/L (non-exempt VOC)

Section IV: Fire and Explosion Hazard Data

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: (22°F)TAG CC

FLAMMABLE LIMITS: 1.1 (Heptane) to 6.7 (Heptane)

EXTINGUISHING MEDIA: Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.

HAZARDOUS COMBUSTION PRODUCTS: Smoke, fumes and oxides of carbon.

FIRE FIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

FIRE FIGHTING EQUIPMENT: As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

Section V: Health Hazard Data

POTENTIAL HEALTH EFFECTS

EYES: Avoid contact with eyes; may cause redness, irritation and conjunctivitis.

SKIN: Prolonged or repeated skin contact may cause irritation.

INGESTION: This material may be harmful or fatal if swallowed.

INHALATION: Prolonged or excessive inhalation may cause respiratory tract irritation.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

EYES: Liquid splashed in the eye may cause redness, irritation and conjunctivitis.

SKIN: Prolonged or exposure may cause skin irritation.

INGESTION: Swallowing of this material may result in nausea, vomiting and weakness followed by central nervous system depression.

INHALATION: High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis and loss of consciousness).

ACUTE TOXICITY: Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result.

REPRODUCTIVE TOXICITY

TERATOGENIC EFFECTS: Contains Methanol which has been established as a teratogen by inhalation. See Sec.11 for details.

TARGET ORGAN STATEMENT: Prolonged or repeated overexposure may cause central nervous system, kidney, liver, and lung damage.

Section VI: Reactivity Data

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Stable. However, may decompose if heated.

STABILITY: Stable.

POLYMERIZATION: Will not occur.

INCOMPATIBLE MATERIALS: Incompatible with alkali or alkaline earth metals - powdered Al, Zn, Be, etc.

Section VII: Spill or Leak Procedures

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Contain spill with dike to prevent entry into sewers.

LARGE SPILL: Clean up spills immediately, observing precautions in Protective Equipment section.

GENERAL PROCEDURES: Dike area to contain spill. Take precautions as necessary to prevent contamination of ground and surface waters. Recover spilled material on adsorbent, such as sawdust or vermiculite, and sweep into closed containers for disposal. After all visible traces, including vapors, have been removed thoroughly wet vacuum the area. Do not flush to sewer. If area of spill is porous, remove as much contaminated earth, gravel, etc. as necessary and place in closed containers for disposal.

SPECIAL PROTECTIVE EQUIPMENT: Only personnel equipped with proper respiratory and skin/eye protection should be permitted in area. See Section 8 for details.

Section VIII – Safe Handling and Use/ Control Measures

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles.

SKIN: The glove(s) listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection. Viton, Solvex, Butyl, Buna, Neoprene. Butyl Rubber Solvex

RESPIRATORY: NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

WORK HYGIENIC PRACTICES: Wash hands before eating and wash before reuse.

Section IX: Special Precautions

OTHER USE PRECAUTIONS: Emergency shower and eyewash facility should be in close proximity.



Locations of MSDSs

- SSC Intranet Portal Homepage under Applications On-line, Material Safety Data Sheets (not "Archived")
- MSDSs are also available through the Tech Doc System
- Contact Your Safety Representative

Welcome

Welcome to the SSC Intranet Portal. Please login to take advantage of customizable features.

- [Comments](#)
- [SSC Public Web Site](#)
- [SSC Intranet Search](#)

[Inside NASA](#)
[NASA.gov](#)

[NASA Web Privacy Policy](#)

[Notification of Persistent Tracking Technology](#)

User's Login

Username

Password

Remember me

Login

New Users Register Here. As a registered user you have some advantages such as the ability to choose which menu blocks you wish to view and minimize.

Account Main Menu

- [Home](#)
- [My Account](#)
- [Administration](#)
- [Logout](#)

SSC Update

[SSC Community Bulletin Board](#)

[For more information](#) [Final SSME Test-Firing on A-1 Phot](#)

[Orbiter Weekly Newsletter](#)

[Site Status](#)

[SSC Emergency Operations Center](#)

[SSC Event Calendar](#)
[\(Submit a New Event\)](#)

[Pulsation Test Calendar](#)

[SSC Cafeteria Menus](#)

[Space Shuttle / Space Station Status](#)

[SSC Site Map](#)

[Daily Ozone Forecast](#)

[SSC Weather](#)

[National Hurricane Center](#)



Safety, the NASA Family, Excellence, and Integrity

Safety, Security, & Health

SSC Safety Policy - Everyone working together creates our safe environment.

- ◆ [SSC Security Office](#)
- ◆ [Security Visitor Request](#)
- ◆ [SSC Site Status](#)
- ◆ [Office of Safety and Mission Assurance](#)
- ◆ [Safety Management Review](#)
- ◆ [SSC Safety Advisories](#)
- ◆ [NASA Safety Reporting System \(NSRS\)](#)
- ◆ [Occupational Health Services \(Medical Clinic, EAP, & Wellness Center\)](#)
- ◆ [Striving to Achieve Real Safety \(STARS\)](#)
- ◆ [Report A Close Call](#)

Programs & Initiatives

- ◆ [Rocket Propulsion Test Program Office](#)
- ◆ [Integrated Enterprise Management Program](#)
- ◆ [NASA Shared Services Center](#)
- ◆ [Safety Program](#)
- ◆ [Environmental Management System](#)
- ◆ [Environmental Assurance Program](#)
- ◆ [SSC Section 508 Information](#)
- ◆ [NASA SSC Language Assistance Plan \(LAP\)](#)
- ◆ [SSC Webmasters](#)
- ◆ [NASA Full Cost Initiative](#)
- ◆ [SSC Export Control Program](#)
- ◆ [SSC Scientific and Technical Information \(STI\)](#)
- ◆ [Facility Manager Program](#)
- ◆ [IT Security](#)
- ◆ [SSC Ombuds Program](#)

People

- ◆ [SSC & NSSC X,500 Employee Directory](#)
- ◆ [SSC Telephone Query](#)
- ◆ [SSC Telephone Book](#)
- ◆ [Directory Services Employee Information Maintenance \(DSEIM\)](#)

Applications On-Line

Center Applications

- ◆ [Access Request System](#)
- ◆ [SATERN \(replaced SOLAR\)](#)
- ◆ [Service Request System \(SWRs\)](#)
- ◆ [MR Processing](#)
- ◆ [Directory Services Employee Information Maintenance \(DSEIM\)](#)
- ◆ [Stennis Work Request Cost Tracking](#)
- ◆ [SSC Cost Data Warehouse \(CDW\)](#)
- ◆ [Materials Safety Data Sheet \(MSDS\)](#)
- ◆ [Materials Safety Data Sheet \(MSDS\) Archive](#)
- ◆ [Stennis Document Numbering System \(SDNS\)](#)
- ◆ [ODIN Seat Ordering \(OWEB\)](#)

Done



Emergency Procedures

- In case of hazardous material spill, 911 must be called immediately.
- Fire Department should not be contacted directly. 911 system should be utilized for all emergencies
- If using cell phone, 228-688-3636.



Methods Of Controlling Physical And Health Hazards

- Product Substitution
- Engineering Controls
- Safe Work Practices
- Personal Protective Equipment
- Training and Communication
- Environmental Monitoring
- Personal Monitoring



Engineering Controls

Well-designed work areas minimize exposure to materials which are hazardous.



Safe Work Practices

Following procedures; Using correct personal protective equipment, ventilation systems, etc.

Personal Protective Equipment (PPE)

- Different PPE may be required for different chemicals. Anytime there is a question, refer to the MSDS or ask your supervisor.
- Ensure that all required PPE is worn while using chemicals





Methods of Detecting Chemicals

- Industrial Hygiene Monitoring
- Monitor yourself and others. Be on the lookout for any physical symptoms which would indicate that you or your coworkers have been overexposed to any hazardous chemical. Symptoms, such as skin rashes, dizziness, eye or throat irritations or strong odors, should be reported to your supervisor.



United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Harmonized provisions for classification of chemicals for their health, physical, and environmental effects, as well as for labels on containers and material safety data sheets.



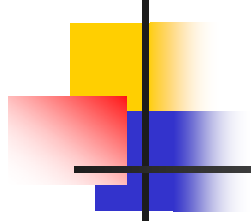
GHS

Globally, the GHS will:

- Enhance the protection of human health and the environment by providing an internationally comprehensible system,
- Provide a recognized framework to develop regulations for those countries without existing systems,
- Facilitate international trade in chemicals whose hazards have been identified on an international basis,
- Reduce the need for testing and evaluation against multiple classification systems.

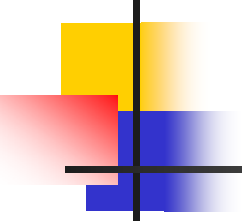
Benefits to **workers** include:

- Improved safety through consistent and simplified communications on hazards and practices to follow for safe handling and use,
- Greater awareness of hazards, resulting in safer use of chemicals in the workplace and in the home.



Questions?

Test Procedures

- 
-
- Please remove all materials from the table
 - Don't hesitate to ask questions
 - Use PENCIL ONLY
 - Blacken in the box to identify the correct answer



Material Safety Data Sheets and Employee Training on Chemicals

What is required at
Stennis Space Center



Hazard Communication Program

- OSHA and NASA require that you have a written and working Haz Com Program for your employees—No Exceptions
 - Written to OSHA 29 CFR 1910.
 - Understood by Foreman and Employees
 - Copy at your work site= Pick up truck, work office, with your Safety and Health Program
 - Copy of the Material Safety Data Sheets for



MSDS

- Submit a list of chemicals/products you are going to use on the job at SSC to Contracts
- **DO NOT substitute any chemicals unless you submit a MSDS to Contracts!!**
 - **Why?**
 - The chemical may not be approved for use at SSC.— May be toxic or unable to be disposed of legally
 - The chemical has to be used safely—for all individuals



Problems with Chemical use over the past year

- **Isocyanates in foaming compounds—**
 - Sensitizing agent (the second bee sting)

Highly toxic solvents —less than 10 parts per million = liver toxic, nerve toxic

Free Silica in dry mix = Lung Disease

Lead in the paint pigment



Process Reviews at SSC

- All the chemicals on the work sheet submitted are reviewed by Environmental Experts and Industrial Hygiene (Health-Chemist and Biologist)
- If there is a question on the chemical the construction manager in charge is notified and changes are suggested.



Safety and Health Changes?

- If possible an available substitute will be asked for.—Less Toxic; Less Irritating
- If the product