

QUEENSBOROUGH COMMUNITY COLLEGE

HAZARD COMMUNICATION/RIGHT TO KNOW

Do it Yourself Refresher Training

I. What is Hazard Communication (“Right to Know”)?

- Chemical Hazard Communication is a law intended to ensure that employers and employees are aware of potential chemical hazards in their workplace
- The basic goal of a chemical hazard communication program is to be sure employers and employees know about the work hazards and how to protect themselves; this should help to reduce the incidence of chemical-related illness and injuries

II. What chemicals are considered hazardous?

- If the product is labeled with the words such as: “**Danger, Caution, Flammable, Warning, Corrosive, Irritant, and Toxic**”
- If it is listed in **OSHA29CFR1910, Subpart Z, “Toxic and Hazardous Substances List”**
- Listed in **ACGIH TLV Booklet**



III. What are the program requirements for Right to Know?

- Material Safety Data Sheets (MSDS)
- Labels and Warnings
- Employee information and Training
- Written hazard communication program



IV. What is a Material Safety Data Sheet? (“MSDS”)

- A document that provides important health and safety information for the products or chemicals we use
- Manufacturers, importers, distributors and suppliers are required to provide employers with MSDS’s upon shipment
- Employers must relay this information to their employees by ensuring MSDS are readily available



SECTION I. IDENTIFICATION OF PRODUCT	
CHEMICAL NAME Acetic Acid, Glacial	FORMULA CH ₃ COOH
SYNONYM OR CROSS REFERENCE Hexane carboxylic acid; Ethanoic Acid	CAS NO. 64-19-7
SECTION II. HAZARDOUS INGREDIENTS	
MATERIAL	NATURE OF HAZARD
SECTION III. PHYSICAL DATA	
BOILING POINT 240°C	MELTING POINT Freezing point: 61.1°C
VAPOR PRESSURE @ 20°C: 11.7mm	SPECIFIC GRAVITY 1.05
WATER SOLUBILITY (g/100 ml) 1:07	PERCENT VOLATILE BY VOLUME (V) 100
WATER SOLUBILITY Soluble	EVAPORATION RATE (Relative to Diethyl Ether) 1.1
APPEARANCE Clear, colorless liquid with strong pungent odor of vinegar.	
SECTION IV. FIRE AND EXPLOSION HAZARD DATA	
FLASH POINT (Method used) 10°C (Closed Cup)	FLAMMABLE LIMITS Lower 3.5% Upper 11.5%
FIRE EXTINGUISHING ALCOHOL, WATER, AFFF, dry chemical or carbon dioxide	
SPECIAL FIRE-FIGHTING PROCEDURES	
UNUSUAL FIRE AND EXPLOSION HAZARD Gives off flammable vapor when fire flash point.	
SECTION V. HEALTH HAZARD	
THRESHOLD LIMIT VALUE 10 ppm 10 mg/m ³ (as an 8-hr TWA)	
HEALTH HAZARDS CORROSIVE: Causes severe burns. POISON: May be fatal if swallowed. Irritant if inhaled. FIRST-AID PROCEDURES: CALL A PHYSICIAN. If swallowed, DO NOT INDUCE VOMITING. Give 1-2 tsp water, MILK or SLICED OF BREAD. Give whites of eggs beaten with water. If inhaled, Remove to fresh air. In case of contact, IMMEDIATELY flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before rewear.	

V. What information does an MSDS provide? Note: Shown is an MSDS for a material called “WD-40” (a lubricant). The contents may be different for each material but the format is similar.

1 - Chemical Product and Company Identification ←

Manufacturer: WD-40 Company
Address: 1061 Cudahy Place (92110)
P.O. Box 80607
San Diego, California, USA
92138 -0607
Telephone: 1-800-448-9340
Emergency only: 1-888-324-7596 (PROZAR)
Information: 1-888-324-7596
Chemical Name: Organic Mixture
Trade Name: WD-40 Aerosol
Product Use: Cleaner, Lubricant, Penetrant
MSDS Date Of Preparation: 5/16/07

Identification of the Chemical, Including Name, Manufacturer's Name and Address, Emergency Phone Numbers, Date MSDS prepared

2 – Hazards Identification ←

Emergency Overview:

DANGER! Harmful or fatal if swallowed. Flammable aerosol. Contents under pressure. Avoid eye contact. Use with adequate ventilation. Keep away from heat, sparks and all other sources of ignition.

Symptoms of Overexposure:

Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.

Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.

Eye Contact: Contact may be mildly irritating to eyes. May cause redness and tearing.

Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. The liquid contents are an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis.

Chronic Effects: None expected.

Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory conditions may be aggravated by exposure.

Suspected Cancer Agent:

Yes No X

3 - Composition/Information on Ingredients ←

Ingredient CAS # Weight Percent

Aliphatic Hydrocarbon 64742-47-8
64742-48-9
64742-88-7
45-50
Petroleum Base Oil 64742-65-0 15-25
LVP Aliphatic Hydrocarbon 64742-47-8 12-18
Carbon Dioxide 124-38-9 2-3
Non-Hazardous Ingredients Mixture <10

Chemical information and ingredients of the chemical, incl. CAS numbers; for proprietary ingredients, a special registry code may be shown

4 – First Aid Measures ←

What to do in case of emergency

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.

Eye Contact: Flush thoroughly with water. Get medical attention if irritation persists.

Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.

5 – Fire Fighting Measures ←

What to do in case of fire or explosion

Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.

Special Fire Fighting Procedures: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

Unusual Fire and Explosion Hazards: Contents under pressure. Aerosol containers may burst under fire conditions. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

6 – Accidental Release Measures ←

What to do in case of a spill or release

Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area. Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7---Handling and Storage ←

Safe handling and storage procedures

Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use with adequate ventilation. Keep away from heat, sparks, hot surfaces and open flames. Wash thoroughly with soap and water after handling. Do not puncture or incinerate containers. Keep can away from electrical current or battery terminals. Electrical arcing can cause burn-through (puncture) which may result in flash fire, causing serious injury. Keep out of the reach of children.

Storage: Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol.

8 – Exposure Controls/Personal Protection ← Chemical Occupational Exposure Limits

Regulatory exposure limits on the chemical;
Recommended personal protective equipment

Aliphatic Hydrocarbon

100 ppm TWA (ACGIH)

1200 mg/m³ TWA (manufacturer recommended)

Petroleum Base Oil 5 mg/m³ TWA (OSHA/ACGIH)

LVP Aliphatic Hydrocarbon 1200 mg/m³ TWA (manufacturer recommended)

Carbon Dioxide 5000 ppm TWA (OSHA/ACGIH), 30,000 ppm STEL (ACGIH)

Non-Hazardous Ingredients None Established

The Following Controls are Recommended for Normal Consumer Use of this Product:

Engineering Controls: Use in a well-ventilated area.

Personal Protection:

Eye Protection: Avoid eye contact. Safety glasses or goggles recommended.

Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.

Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended

Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:

Eye Protection: Safety goggles recommended where eye contact is possible.

Skin Protection: Wear chemical resistant gloves.

Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be

based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.

Work/Hygiene Practices: Wash with soap and water after handling.

Physical and chemical properties of the chemical including flammable limits (important in determining the flammability of a chemical)

9 – Physical and Chemical Properties ←

Boiling Point: 323 °F (minimum) Specific Gravity: 0.817 @ 72 °F

Solubility in Water: Insoluble pH: Not Applicable

Vapor Pressure: 110 PSI @ 70 °F Vapor Density: Greater than 1

Percent Volatile: 74% VOC: 412 grams/liter (49.5%)

Coefficient of Water/Oil Distribution: Not Determined Appearance/Odor Light amber liquid/mild odor

Flash Point: 131 °F (concentrate) Tag Closed Cup

Flammable Limits: (Solvent Portion)

10 – Stability and Reactivity ←

Important information about the chemical:
Is it explosive? Will it polymerize violently?

Stability: Stable

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.

Incompatibilities: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide

11 – Toxicological Information ←

How poisonous is this chemical?

The oral toxicity of this product is estimated to be greater than 5,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard. None of the components of this product is listed as a carcinogen or suspected carcinogen or is considered a reproductive hazard.

12 – Ecological Information ←

Environmental information about the chemical

No data is currently available.

13 - Disposal Considerations ←

Procedures for waste disposal

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Dispose in accordance with federal, state, and local regulations.

Information on shipping the chemical (may be a hazardous material)

14 – Transportation Information ←

DOT Surface Shipping Description: Consumer Commodity, ORM-D

IMDG Shipping Description: Aerosols, 2, UN1950

15 – Regulatory Information ←

Other environmental and regulatory information about the chemical

U.S. Federal Regulations:

CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA TITLE III:

Hazard Category For Section 311/312: Acute Health, Fire Hazard, Sudden Release of Pressure

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Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None

Section 302 Extremely Hazardous Substances (TPQ): None

EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory

Canadian Environmental Protection Act: All of the ingredients are listed on the Canadian Domestic Substances List or exempt from notification

Canadian WHMIS Classification: Class B-5 (Flammable Aerosol)

This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

VI. Where must MSDS's be located?

- Employee must have access MSDS's upon receipt (on any shift)
- In a central location (break room, administrative office)
- Environmental Health and Safety Office (Administration Bldg. Room A119)

VII. What are the labeling requirements for Hazard Communication?

- Containers should be labeled, tagged or marked with the name of the material and the appropriate hazard warning
- Labels should be legible and prominently displayed
- Information on labeling can be obtained from the product's MSDS
- If a chemical is transferred to a different container, that container should be labeled as well

VIII. What are the two main types of labels?

- NFPA Diamond: (National Fire Protection Assoc)

NFPA is a color coded hazard labeling system:

- Blue is for health hazard
- Red is for fire hazard
- Yellow is for reactivity hazard
- White is for specific hazard assoc. with the chemical

The degree of hazard is on a number system from 0-4, with 0=no hazard, 4 being the greatest hazard

NFPA 704 System

Health Hazard

4 Deadly
3 Extremely Dangerous
2 Hazardous
1 Slightly Hazardous
0 Normal

Fire Hazard

Flash Points
4 Below 73 F
3 Below 100F
2 Above 100 F not exceeding 200 F
1 Above 200 F
0 Will not Burn

Specific Hazard

ACID = acid
ALK = Alkali
COR = Corrosive
W = use no water

Reactivity

4 May detonate
3 Shock & heat may Detonate
2 Violent Chemical Change
1 Unstable, if heated

4-Severe, 3-Serious, 2, dangerous
1-Minor, 0-none/negligible

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- HMIS (Hazardous Materials Identification System)

Similar to the NFPA system, uses a number and color coded hazard warning system. For health and flammability, it uses a number from 0-4 to rate the hazard, with 0 being the least hazardous and 4 being the greatest hazard. Physical hazard is similar to reactivity hazard in the NFPA System (above), with 4 being a material that will explode or detonate readily and 0 being a material that is stable.

Major difference between the HMIS and the NFPA is the white "Personal Protection" system in the HMIS. It utilizes the following codes:

- A** Safety Glasses
- B** Safety Glasses and Gloves
- C** Safety Glasses, Gloves and Protective Apron
- D** Faceshield, Gloves and Protective Apron
- E** Safety Glasses, Gloves and Dust Respirator
- F** Safety Glasses, Gloves, Protective Apron and Dust Respirator
- G** Safety Glasses, Gloves and Vapor Respirator
- H** Splash Goggles, Gloves, Protective Apron and Vapor Respirator
- I** Safety Glasses, Gloves, Dust Respirator and Vapor Respirator
- J** Splash Goggles, Gloves, Protective Apron, Dust Respirator and Vapor Respirator
- K** Airline Mask or Hood, Gloves, Full Suit and Boots

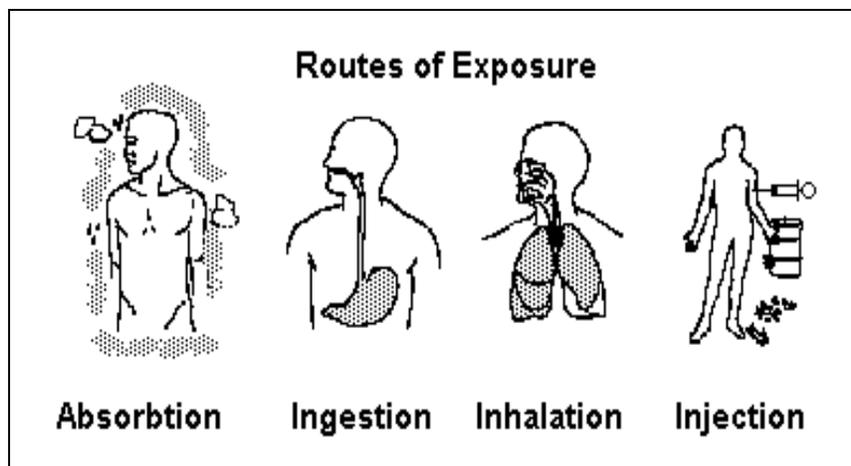


IX. What are some important chemical terms?

- **Hazard:** the *possibility* the exposure to a chemical will cause injury or harm
- **Toxicity:** the *capacity* of a *substance* to produce an unwanted effect when that substance has reached the concentration.
- **Dose:** *combination* of the concentration of the substance and length of time of exposure to it.

X. How do chemicals enter our bodies?

- *absorption*-enter the body through the skin (ex., splashing a chemical on the skin)
- *ingestion*-enter the body through swallowing (ex., not washing your hand before eating)
- *inhalation*-enter the body through breathing (ex., smoking)
- *injection*-enter the body through a break in the skin (ex., getting stuck with a needle)

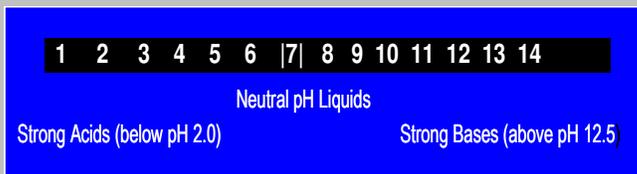


XI. What are some different chemical categories?

- **Flammables:** ex., kerosene, gasoline, oil-based paints, aerosols, solvents; can cause fire and explosions at the right concentration
- **Corrosives:** ex., acids, bleach, ammonia, drain cleaners; can cause chemical burns on skin



In order for a chemical to be corrosive, it has to be either an acid or a base (alkaline). This is determined based on the pH of a chemical, with acids being on the low end (0-4), and bases on the high end (10-14). Water is considered neutral and has a pH of 7.



- **Compressed gases:** ex., oxygen, acetylene, helium, hydrogen; can cause severe injury due to pressure, as well as fire and explosion.

Note: cylinders need to be chained and secured correctly with the valve caps in place when not in use. They also need to be stored correctly (ex., oxygen and acetylene need to be stored separately from each other). Can you see what's wrong in this picture?

- **Toxics:** ex., pesticides, asbestos, formaldehyde, methylene chloride, lead
 - can cause serious damage to an organ or system of the body such as liver
 - exposure is typically through inhalation
 - often can be in the form of harmful vapor and gases



- some can take years of exposure to see effects (ex., smoking)
- ingestion can occur through poor hygiene and smoking; washing up prior to eating can eliminate exposure through this route

A lot of your typical lab chemicals are toxic.



- **Irritants, Dusts and Fumes:** ex. coal tar, glass fibers, Portland cement:
 - irritants affect lungs, skin and eyes
 - use of personal protective equipment can eliminate exposure
 - long term exposure to dusts can cause lung and nose damage
 - PPE should be worn during sanding, grinding and mixing
 - fumes are generated during welding

XII. What are some good chemical safety rules?

- buy only what you need, do not overstock
- store by chemical classification
- do not keep chemicals by alphabetical order-ex., ammonia and acetic acid don't mix well
- do not keep corrosive chemicals on a high shelf where it may fall and splash someone
- limit the amount of flammable chemicals stored in the labs, (FDNY regulations)

XIII. What are some ways to reduce exposure to chemicals?

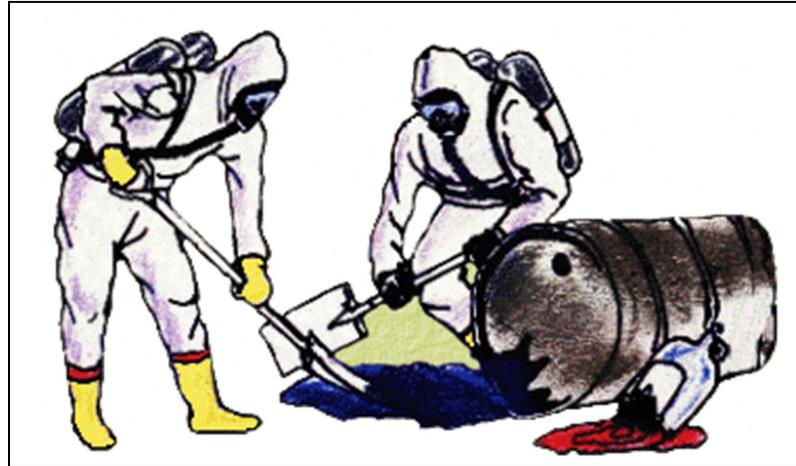
- **Substitution**-replacing a hazardous product with a less hazardous one (best method)
- **Ventilation**-utilizing ventilation to reduce exposure (ex., fume hoods)
- **Personal hygiene**-washing your hands and face after handling chemicals
- **Good housekeeping**-keeping your work area neat to reduce the chance of spills
- **Personal protective equipment**-should be considered last resort; includes such things as gloves, protective suits, safety eyewear and respirators

XIV. What are some symptoms of chemical exposure?

- redness, swelling, itching, pain, dizziness, nausea, difficulty breathing
- note: can be symptoms of other things as well (bad food?)

XV. What do you do in case of an emergency (spill or injury)?

- *immediately* stop what you are doing and secure your experiments(if you are in a lab); close any open containers and shut off open sources of flame
- *leave* the immediate area and find a phone in a safe location
- *call* the emergency numbers for Queensborough (see below)
- *warn* others and do not let bystanders enter affected area
- *be available* for emergency response personnel and Public Safety; they will need information from you
- if the building is evacuated (general alarm), *report* to your designated assembly area—this location should be posted near the exits and stairwells; do NOT leave the campus
- *do not* attempt to put out the fire, provide medical attention or clean up the spill unless you are trained; custodial services are *not* trained to clean up chemical spills



XVI. What are the emergency numbers for Queensborough Community College?

- **Environmental Health and Safety 281-5148**
- **Health Services 631-6375**
- **Public Safety 631-6320/6384**

HAZARD COMMUNICATION DO IT YOURSELF TRAINING

Review Quiz

1. Hazard Communication is *NOT* intended to:

- a.) ensure that employers and employees are aware of potential chemical hazards in the workplace
- b.) inform employers and employees about the work hazards
- c.) save employers money when buying chemicals
- d.) teach employees what to do in case of a chemical spill

2. What is an “MSDS”?

- a.) Material Safety Data Sheet
- b.) Material Specification and Design Sheet
- c.) Material Shipping and Documentation Sheet
- d.) My Shirt Don't Stink

3. What information is *NOT* provided in the MSDS?

- a.) Identification of the Chemical
- b.) Hazardous Ingredients
- c.) Price of the chemical
- d.) Precautions for Safe Handling

4. Where should MSDS's be located? (circle ALL that apply)

- a.) Along with the packing list of the chemical
- b.) In a central location (break room, administrative offices)
- c.) Environmental Health and Safety Office

5. In the NFPA Label System, what does the **RED mean?**

- a.) Health
- b.) Reactivity
- c.) Special Hazards
- d.) Fire

6. Which one is NOT a route of exposure (how a chemical enters the body)?

- a.) excretion
- b.) ingestion
- c.) inhalation
- d.) absorption

7. Which one is an example of a FLAMMABLE chemical?

- a.) bleach
- b.) gasoline
- c.) asbestos
- d.) ammonia

8. When handling and storing chemicals, one should:

- a.) alphabetize chemicals for easier reference
- b.) buy large amounts of chemicals when they go on sale
- c.) keep chemicals as high up on the shelf to “keep them out of the way”
- d.) store chemicals based on chemical classification

9. In case of a fire or spill, you should:

- a.) attempt to put out the fire
- b.) call the emergency number for the facility from a safe area
- c.) clean up the spill
- d.) get the custodians to clean up your mess

10. What is the number for Environmental Health and Safety at Queensborough?

- a.) 631-6262
- b.) 281 5148
- c.) 911
- d.) 718-507-TIXX

PLEASE SIGN BELOW, DETACH THIS PAGE AND SEND TO THE EHS OFFICE ADMINISTRATION BUILDING ROOM 119. THANK YOU.

“I have read the material in this document and understand its contents”

Name

Signature

Department

Date