Lab Safety and Best, Practices

B3 Summer Science Camp
at Olympic High School
2016

Dr. Jennifer Weller

Lab Conduct and Safety – Best Practices - 1

Personal Protection

- Put backpacks and sweaters in the front of the room, out of the way of foot traffic.
- Food and drink may never be brought into the room – there is a table outside the door, and a pen for marking your stuff.
- Wear a lab coat at all times at the bench, remove it and leave it at the bench when you are done.
- Eye protection is usually optional (we will warn you when it is not) but you are free to wear it.
- Gloves are worn for most procedures – generally change them only when you may have contaminated them.

Lab Conduct and Safety – Best Practices - 2

Other Safety Practices:

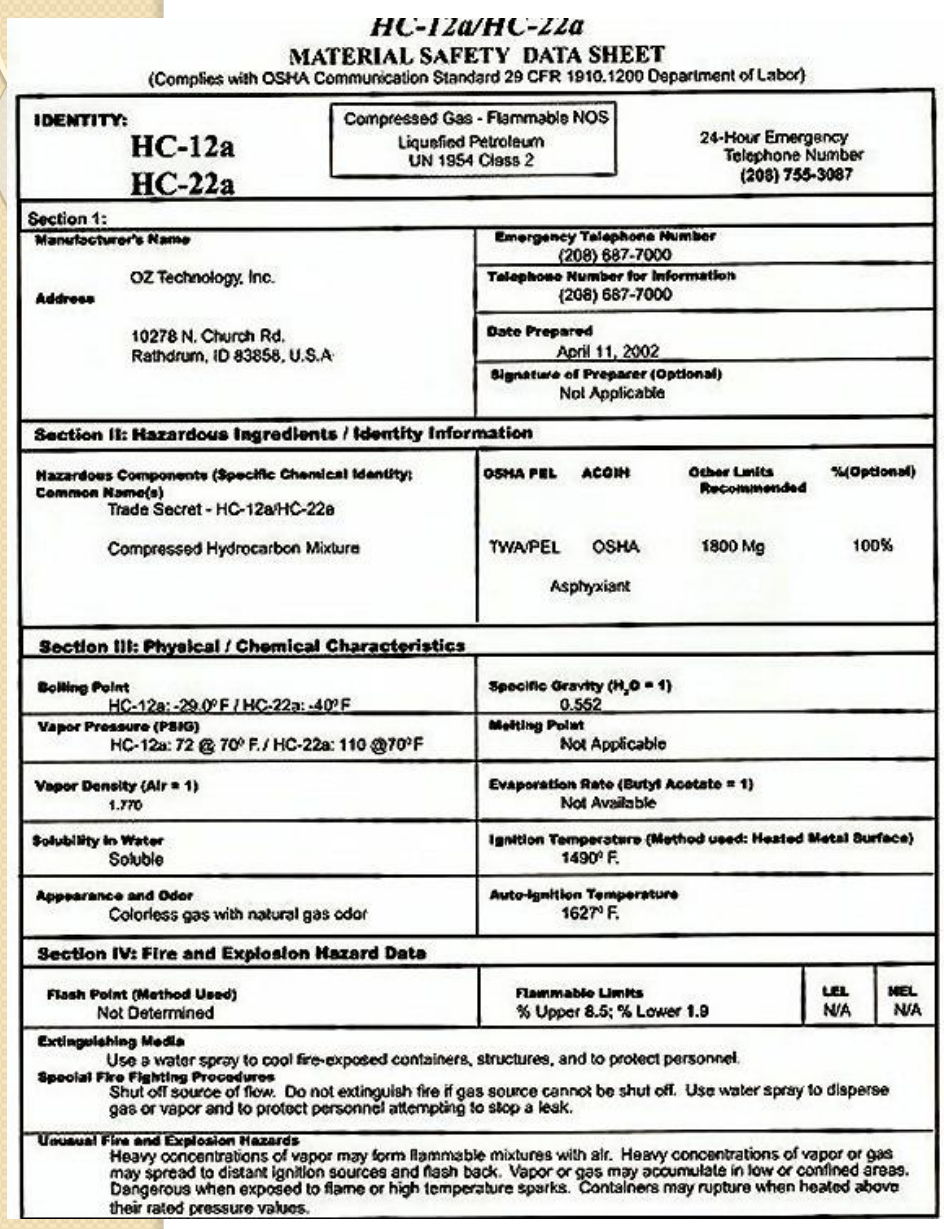
- Know where the fire extinguisher and first-aid kit are.
- Make sure you know how and where to dispose of
  - Solid waste: pipettes and micropipette tips, tubes, sharps (broken glass, razor blades and needles)
  - Residual solutions (some can go down the drain, some need to be stored in labaled glass bottles in the chemical hood, and some cannot be mixed).
- Know how to find the Material Data Safety information on the chemicals that we use (online – bookmarked)

Lab Conduct and Safety – Best Practices - 3

- It is impossible to do too much labeling. Both tubes and racks should be labeled. Decide on a system and stick to it, and *always reference it in your lab notebook*. For Example:
  - Name (J Weller) or initials (JW) or team designation (T1 – T6 or color of pipetter set)
  - Date
  - Identifier ('sample 1' might be OK, if there is only one sample that you are storing from that day).
    - Units: you should want to label a tube with any known concentration of sample:
      Solanum lycopersicum cpDNA 10ug/ul → SLcpDNA $\underline{10}\gamma/\lambda$
- No Unauthorized Experiments.

Intentionally ignoring personal or group safety or conducting unauthorized experiments or interfering with the experiments of others is grounds for failure and immediate dismissal from the class.

Material Safety Data Sheets



HC-12a/HC-22a

MATERIAL SAFETY DATA SHEET

(Complies with OSHA Communication Standard 29 CFR 1910.1200 Department of Labor)

IDENTITY:
HC-12a
HC-22a

Compressed Gas - Flammable NOS
Liquefied Petroleum
UN 1954 Class 2

24-Hour Emergency Telephone Number
(208) 755-3087

Section I:

Manufacturer's Name
OZ Technology, Inc.

Address
10278 N. Church Rd.
Rathdrum, ID 83858, U.S.A.

Emergency Telephone Number
(208) 687-7000

Telephone Number for Information
(208) 687-7000

Date Prepared
April 11, 2002

Signature of Preparer (Optional)
Not Applicable

Section II: Hazardous Ingredients / Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH	Other Limits Recommended	%(Optional)
Trade Secret - HC-12a/HC-22a Compressed Hydrocarbon Mixture	TWA/PEL Asphyxiant	OSHA	1800 Mg	100%

Section III: Physical / Chemical Characteristics

Boiling Point
HC-12a: -29.0° F / HC-22a: -40° F

Specific Gravity (H_2O = 1)
0.552

Vapor Pressure (PSIG)
HC-12a: 72 @ 70° F. / HC-22a: 110 @70° F

Melting Point
Not Applicable

Vapor Density (Air = 1)
1.770

Evaporation Rate (Butyl Acetate = 1)
Not Available

Solubility in Water
Soluble

Ignition Temperature (Method used: Heated Metal Surface)
1490° F.

Appearance and Odor
Colorless gas with natural gas odor

Auto-Ignition Temperature
1627° F.

Section IV: Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Not Determined	% Upper 8.5; % Lower 1.9	N/A	N/A

Extinguishing Media
Use a water spray to cool fire-exposed containers, structures, and to protect personnel.

Special Fire Fighting Procedures
Shut off source of flow. Do not extinguish fire if gas source cannot be shut off. Use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak.

Unusual Fire and Explosion Hazards
Heavy concentrations of vapor may form flammable mixtures with air. Heavy concentrations of vapor or gas may spread to distant ignition sources and flash back. Vapor or gas may accumulate in low or confined areas. Dangerous when exposed to flame or high temperature sparks. Containers may rupture when heated above their rated pressure values.

Section V: Reactivity Data

Stability			Conditions to Avoid
	Unstable		
	Stable	X	Heat, Strong oxidizers, Peroxides, Plastics, and Chlorine dioxide

Incompatibility (Materials to Avoid)
Strong oxidizers, Peroxides, Plastics, and Chlorine dioxide

Hazardous Decomposition or By-products
When burned in a deficiency of oxygen, CO can form

Hazardous Polymerization			Conditions to Avoid
	May occur		
	Will not Occur	X	Strong oxidizers, Peroxides, Plastics, and Chlorine dioxide

Section VI: Health Hazard Data

Route(s) of Entry	Inhalation ?	Skin ?	Ingestion ?
	Yes	Yes	Not Applicable

Health Hazards (Acute and Chronic)
Central nervous system depressant. Asphyxiant.Heavy exposure may cause anomia and irregular heart rhythm, respiratory arrest, and death.

Carcinogenicity	NIP ?	ARC Monographs ?	OSHA Regulation ?
		Presently not on any list	

Signs and Symptoms of Exposure
Difficulty in breathing, dizziness, euphoria, and irritation of nose and throat. Contact with liquefied material may cause frostbite.

Medical Conditions Generally Aggravated by Exposure
Hydrocarbons may sensitize the heart to epinephrine and other circulating catecholamines.

Emergency and First Aid Procedures
Do not give epinephrine. Immerse frostbite in cool-warm water. Inhalation: remove from place of exposure. Insure breathing . Give oxygen or CPR if needed.

Section VII: Precautions for Safe Handling and Use

Steps To Be Taken In Case Material is Released or Spilled
No flares or open flames in hazard area. Do not touch or walk through spilled materials. Use water spray to reduce vapors. Isolate and ventilate area until gas has dispersed. No special procedures are required for clean up. Avoid methods resulting in water pollution.

Waste Disposal Method
This material is not specifically listed as hazardous waste, but can be classified as hazardous waste when contaminated or if seen as ignitable under (40 CFR261).

Precautions To Be Taken in Handling and Storing
Store in tightly closed containers in cool, dry, isolated, well ventilated area away from heat and sources of ignition.

Other Precautions
Empty containers may contain flammable or combustible residue vapors. Do not cut, grind, drill, weld, or reuse containers without adequate precautions.

Section VIII: Control Measures

Respiratory Protection (Specify Type)
NIOSH Approved

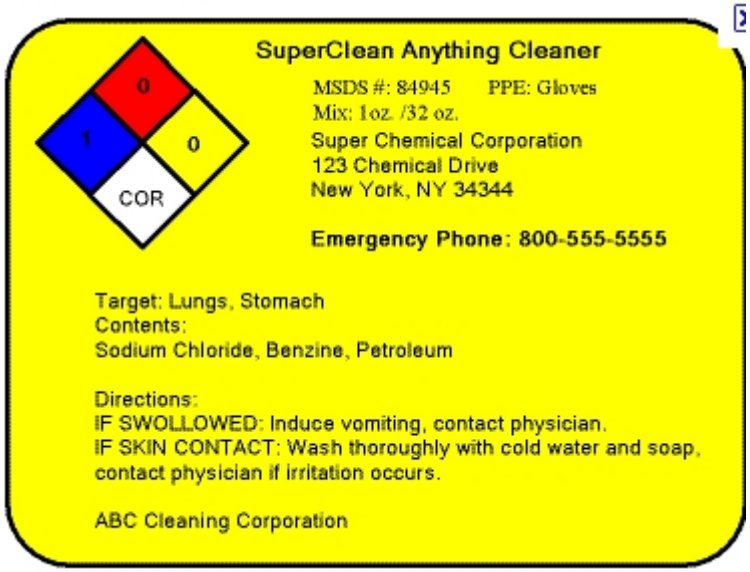
Ventilation				
	Local Exhaust	Yes	Special	None
	Mechanical (General)	None	Other	None

Protective Gloves	Eye Protection
Use if in contact with liquid material	Use proper eye protection

Other Protective Clothing or Equipment
Long sleeves and long pants

Work / Hygienic Practices
Avoid open flames or ignition sources in excess of 1490° F

MSDS Labels


SuperClean Anything Cleaner
0
1
0
COR
MSDS #: 84945 PPE: Gloves
Mix: 1oz. /32 oz.
Super Chemical Corporation
123 Chemical Drive
New York, NY 34344
Emergency Phone: 800-555-5555
Target: Lungs, Stomach
Contents:
Sodium Chloride, Benzine, Petroleum
Directions:
IF SWOLLOWED: Induce vomiting, contact physician.
IF SKIN CONTACT: Wash thoroughly with cold water and soap, contact physician if irritation occurs.
ABC Cleaning Corporation


Fire
0
Health
2
Reactivity
1
Special
ACID