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# CHEMICAL HYGIENE PLAN

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**MARCH 2024**

APPROVAL:

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DATE





## 2.1 Chemical Hygiene Officer

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chemical hypersensitivity develops contact your supervisor or the Safety Office to discuss ways to further avoid exposure.

## **3.2 Particularly Hazardous Substances**

Laboratories that use Particularly Hazardous Substance (PHS) should develop laboratory specific SOPs for these chemicals. The laboratory specific SOP should include procedures for establishing a designated area, safe storage, use and handling, waste handling and disposal, and emergency procedures.

### **3.2.1 Carcinogens**

A carcinogen is a substance or a mixture of substances which can cause cancer or tumor development. Carcinogens are chronically toxic substances; where their effects may only become evident after a long latency period and may cause no immediate harmful effects. There are many different types of carcinogens in terms of regulatory definitions. Select carcinogens are substances or agents that are regulated by OSHA as carcinogens; listed under the category "*known to be carcinogens*" or "*reasonably anticipated to be carcinogens*"; in the Annual Report of Carcinogens published by the National

equal to 50mg/kg for rats, dermal LD50 of 200 mg/kg when administered by continuous contact for 24 hours to rabbits, or median lethal concentration (LC50) of 200 ppm or 2 mg/l when administered by continuous inhalation for 1 hour to rats. Common examples include sodium cyanide, hydrofluoric acid, and carbon monoxide.

### **3.2.4 Select Agent Toxins**

Select Agent Toxins are specific toxins of biological origin which are subject to stringent regulatory requirements under 42 CFR 73. Special precautions should be taken whenever handling concentrated forms, even in small amounts. Due to the high toxicity and restricted use, MBL's requirements are





## 4.1 Elimination and Substitution

Elimination is the most effective control as it removes the hazard completely. Unfortunately, it is not plausible for most hazards in a laboratory. Most commonly this would include removing a chemical that is no longer used or eliminating a hazardous process.

Substitution is also effective at reducing the hazard, by switching the chemical or process with one that is similar. This could mean using a chemical that is less

Conduct experimental procedures at least 6 inches behind the plane of the sash.

Never put your head inside a fume hood to check on experiment.

Work with the sash as low as possible to protect your face and body.

Minimize human traffic in front of the fume hood while performing procedures inside the hood.

Minimize storing bottles, chemicals, or equipment in fume hood. Excess materials will restrict proper airflow and reduce the workspace.

dependent on the user to make sure it fits properly, is in good working condition, and is compatible with the hazards present.

#### **4.4.1 Body and Foot Protection**

While working in the laboratory, personnel should wear pants or appropriate



### **4.5.3 Fire Extinguishers**

Fire extinguishers are easily accessible in hallways and/or laboratories by all personnel at MBL. Fire extinguishers are generally mounted either near an exit or at the back of the laboratory. There should be at least one extinguisher in each laboratory. MBL provides laboratory areas with multi purpose, dry chemical (ABC) and carbon dioxide (BC) extinguishers. Before considering using a fire extinguisher, pull the nearest fire alarm, call for Fire Department dialing 9-911 and MBL Security at x7911 to report a

Location and availability of any laboratory specific SOPs for operations the employee will conduct.

## **5.1 General Laboratory Safety Training**

MBL's Safety Office shall provide general laboratory safety training and orientation to MBL policies. This training covers general laboratory safety, safe work practices, chemical safety, and emergency procedures.

The Safety Office will provide initial training to new employees either through a lecture or by online training. Similarly, the Safety Office will provide a required annual refresher training which is consistent with the information provided in the CHP by lecture or online.

## **5.2 Laboratory Specific Safety Training**

All laboratory staff shall receive training on laboratory specific operations, experiments or procedures by the Responsible Researcher or another experienced laboratory staff member. The training should address the specific chemical hazards and emergency procedures specific to the laboratory.

Responsible Researchers/Laboratory Supervisors shall provide training related to laboratory specific hazards and SOPs prior to commencing with applicable procedures.











## **6.6 Visiting Scientists at MBL**

Prior to a Visiting Scientist beginning work in a laboratory at MBL, they will complete a MBL online safety training course which includes the following topics: chemical safety, use of PPE, waste disposal,

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## 7.2 Personal Hygiene

When working in a laboratory personal hygiene is very important. Laboratory personnel should always wash their hands after handling chemicals, before leaving for lunch, and at the end of the workday. Long hair and loose clothing should be confined to prevent accidental contamination or entanglement. Laboratories should not have any food or drink stored and absolutely no consumption of food or drink is allowed. Finally, cosmetics including lotion and lip balm should not be used in the laboratory.

## 7.3 Transporting Chemicals

Chemicals may have to be transported from one laboratory to another or picked up from a stockroom. Always transport chemical containers in an appropriate secondary container to prevent the spread of a leak or spill. Do not transport incompatibles inside the same secondary container. Laboratories should use a non-metal cart that has lips on all four sides for spill prevention when transporting larger quantities of chemicals. Proper PPE including eye protection, laboratory coat, and gloves should be in possession when transporting chemicals.

## 7.4 Chemical Storage

Chemicals must be stored safely and properly to prevent accidental mixing, adverse reactions, and the spread of fire in an emergency. Proper chemical storage first involves the segregation of incompatible materials. Common incompatibles include flammables with oxidizers, acids with bases, inorganic acids with organic acids, and water reactive chemicals with aqueous solutions and alcohols. Please review the chemical Safety Data Sheet for specific incompatibilities. Incompatibles can be segregated by use of a secondary container. The secondary container should be chemically compatible and be able to hold 110% of the largest container.



## 8.2 Hazardous Waste Disposal

All laboratories shall use Satellite Accumulation Areas (SAA) for disposing of hazardous waste. SAAs are located at or near the point of generation and remain under the control of the person generating the waste. For smaller laboratories at MBL, the SAAs are located in general use laboratories.

SAAs must be posted with the sign “**Satellite Accumulation AREA**”. Hazardous waste in laboratory must be stored in the designated SAA. Containers storing hazardous waste must be in good condition to prevent leaks. Containers must be compatible with hazardous waste stored within them. Hazardous waste containers must be labeled with Hazardous Waste Labels provided by the Safety Office. The labels must include:

- a. Words “**Hazardous Waste**” (as included on MBL labels).
- b. Hazardous waste identified in words, such as Acetone or Toluene. Abbreviations or chemical formula are not allowed.
- c. Associated hazard(s) checked - Ignitable, Toxic, Corrosive, Reactive.
- d. Building, room number and name of Responsible Researcher where waste originated.
- e. The date when container became full.

Except when waste is being added, containers must be closed at all times. Once dated, the hazardous waste container must be removed from the SAA to the MAA within three business days.

SAAs must be inspected weekly by laboratory personnel to ensure containers are properly labeled and in good condition.

## 8.3 Expired, Obsolete or Unwanted Chemicals

Obsolete, expired or unwanted chemicals should not be kept in the laboratory's chemical stock area. They should be appropriately labeled with a hazardous waste label, dated and moved to the SAA for pick-up. For clean out of multiple chemicals, contact the Safety Office at x7424 for extra secondary containment bins and removal.

## 8.4 Biological Waste

Biological waste includes animal carcasses, contaminated needles, and syringes (sharps), cell culture wastes (liquid waste) and any biologically contaminated solid waste (dry waste). Biological waste must properly disposed as follows:

- Animal carcasses should be placed in appropriately sized plastic bags, tied up or zip-locked closed, labeled with Manager Name and Date and then placed in frozen storage located at Loeb room G11 or Rowe room 107.

- Dry waste shall be placed in an autoclave bag inside a bin marked with the universal biohazard symbol. Then properly treated (autoclaved) and disposed in outside dumpster (see MBL Autoclave SOP).
- Liquid waste can either be treated with a 10% bleach solution prior to drain



911. Laboratory area should be evacuated, laboratory door closed and access to laboratory restricted until individuals trained to handle hazard arrive.

### **9.1.1 Hazardous Chemical Spill on Individual**

If a hazardous chemical is spilled on an individual:

Remove clothing and/or shoes in contact with clothing.

Leave the contaminated area immediately.

Wash off chemical in emergency shower or eyewash station for 15 minutes.

Review SDS or applicable SOP for first aid guidance.

## **9.2 Minor Chemical Spill**

A minor chemical spill includes the following situations:

The chemical spill has a low to moderate hazard.

A chemical spill involves a highly hazardous material confined within the fume hood.

Spill involves a minimum exposure to a hazardous chemical which is confined to clothing.

Individual is aware of the chemicals hazards and trained to properly clean up the spill.

Available Spill Kit supplies are sufficient for cleaning up spill.

### **9.2.1 Chemical Spill on Individual**

If a chemical is spilled on an individual:

Remove clothing in contact with clothing.

As necessary, wash off chemical in emergency shower or eyewash station.

As necessary, seek assistance from

2.



The identity of the hazardous chemical(s) to which laboratory personnel may have been exposed and a copy of the SDS for the hazardous substance.

A description of the conditions under which the exposure occurred including quantitative exposure data, if available.

A description of the signs and symptoms of exposure that laboratory personnel are experiencing, if any.

### **10.3**

In the event of a medical evaluation from a physician, MBL shall obtain a written opinion from the examining physician which shall include the following:

- The results of the medical examination and any associated tests.
- Any medical condition which may be revealed during the examination which may place laboratory personnel at increased risk as a result of exposure to a hazardous chemical or use of PPE.
- A statement that the laboratory personnel has been informed by the physician of the results and any medical condition that may require further examination or treatment.
- The written opinion shall not reveal specific findings of diagnoses unrelated to occupational exposure.

### **10.4 Medical Recordkeeping**

All medical examination and consultation records, including test results and







## **8.0 Chemical Spill**

Please see the Chemical Hygiene Plan (current version) Section 10 Chemical Spills and Accidents for additional information.

## **9.0 Waste Disposal**

Please see the Chemical Hygiene Plan (current version) Section 7 Hazardous Waste Management for additional information.









### 3.0 Engineering Controls

- 3.1 At minimum, adequate general laboratory ventilation must be provided to maintain exposure below any regulatory limits.
- 3.2 Some corrosives that are also carcinogens, acute toxicants, and reproductive toxicants require the use of a chemical fume hood.
- 3.3 If Permissible Exposure Limits are anticipated to be exceeded then a chemical fume hood or other engineering controls will be required.

### 4.0 Administrative Controls

- 4.1 Containers should be in good condition and compatible with the material.
- 4.2 When diluting, add acid or base to water.
- 4.3 Wash hands thoroughly after handling corrosives.

### 5.0 Personal Protective Equipment

- 5.1 At minimum, long pants (or the equivalent) and closed toed shoes are required. The area of skin between the shoe and ankle should not be exposed.
- 5.2 ANSI approved safety glasses or goggles must be worn.
- 5.3 A properly fitting laboratory coat is required when handling corrosives.
- 5.4 Protective gloves that are appropriate for the chemical being handling must be worn.
- 5.5 When a splash potential exists, a face shield and/or chemical splash apron should be worn.
- 5.6 Additional PPE may be required if the chemical has additional hazards.

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Please see



#### **4.0 Administrative Controls**

- 4.1 A laboratory specific SOP should be written for the use of pyrophoric chemicals.
- 4.2 Laboratory specific training and documentation of training must be completed before the personnel can use pyrophoric chemicals. This may be incorporated into the SOP.
- 4.3 Pyrophoric chemicals must not be handled while working alone.
- 4.4 Containers should be in good condition.
- 4.5 Inspect any air free seal on containers with highly reactive and unstable chemicals.
- 4.6 Wash hands thoroughly after handling pyrophoric chemicals.

#### **5.0 Personal Protective Equipment**

- 5.1 At minimum, long pants (or the equivalent) and closed toed shoes are required. The area of skin between the shoe and ankle should not be exposed.
- 5.2 ANSI approved safety glasses or goggles must be worn.
- 5.3 A properly fitting laboratory

## **8.0 Chemical Spill**

Please see the Chemical Hygiene Plan (current version) section 10 Chemical Spills and Accidents for additional information.

## **9.0 Waste Disposal**

Please see the Chemical Hygiene Plan (current version) section 7 Hazardous Waste Management for additional information.



## **MARINE BIOLOGICAL LABORATORY WATER REACTIVE CHEMICALS**

### **1.0 Purpose**

This Standard Operating Procedure (SOP) establishes guidelines for appropriate handling, storage, spill response, waste disposal and first aid procedures for any research or academic laboratory at the Marine Biological Laboratory (MBL) which contain an inventory of water reactive chemicals. This SOP is not intended to be all-inclusive









Please see the Chemical Hygiene Plan (current version) section 10 Chemical Spills and Accidents for additional information.

## **9.0 Waste Disposal**

If old containers of peroxide forming compounds are discovered in the laboratory (greater than two years past the expiration date or if the date of the container is unknown), do not handle the container. If crystallization is present in or on the exterior of the container, do not handle the container. Secure location and immediately contact MBL Security at x7911 and the Safety Office at x7424.

Please see the Chemical Hygiene Plan (current version) section 7 Hazardous Waste Management for additional information.



#### **4.0 Administrative Controls**

- 4.1 Properly secure all gas cylinders.
- 4.2 Ensure that gas cylinders and regulators are in good condition.
- 4.3 Always use an appropriate regulator that is compatible with the gas being used.
- 4.4 Frequently check for leaks using a dilute detergent/soap solution.
- 4.5 Gas lines should also be compatible with the gas being used.
- 4.6 Flammable and oxidizing gases must be stored at least 20 feet apart.

#### **5.0 Personal Protective Equipment**

- 5.1 At a minimum, long pants (or the equivalent) and closed toed shoes are required. The area of skin between the shoe and ankle should not be exposed.
- 5.2 ANSI approved safety glasses or goggles must be worn when working with compressed gases.
- 5.3 A properly fitting laboratory coat is required when handling compressed gases.
- 5.4 Protective gloves that are appropriate for the chemical being handling must be worn.
- 5.5 Additional PPE may be required if the chemical has additional hazards.

#### **6.0 Handling and Storage**

- 6.1 Do not subject cylinders to temperature extremes.
- 6.2 Compressed gas cylinders must be stored with the safety cap when not in use.
- 6.3 Gas cylinders must be secured with a chain or cart.
- 6.4 Separate storage of flammable and oxidizing cylinders by at least 20 feet or with a fire resistant barrier at least five feet high and having a fire rating of at least one hour.
- 6.5 Do not secure more than four cylinders in any one row.
- 6.6 Store gas cylinders in a vertical position.
- 6.7 Only transport gas cylinders safely secured on a suitable hand truck.
- 6.8 Only transport with safe re



## **9.0 Waste Disposal**

To return a compressed gas cylinders used within a laboratory, contact Laboratory Operations (Lab Ops) and request a pick-up.

For small empty cylinders, label cylinder and place into a Satellite Accumulation Area. Please see the Chemical Hygiene Plan (current version) section 7 Hazardous Waste Management for additional information.

## MARINE BIOLOGICAL LABORATORY CRYOGENIC LIQUIDS

### 1.0 Purpose

This Standard Operating Procedure (SOP) establishes guidelines for appropriate handling, storage, spill response, waste disposal and first aid procedures for any research or academic laboratory at the Marine Biological Laboratory (MBL) which use cryogenic liquids. This SOP is not intended to be all-inclusive as many chemicals have numerous hazards. Always refer to a chemical specific Safety Data Sheet (SDS) and consult the Responsible Researcher/Laboratory Supervisor and/or the Safety Office, if you have questions.

### 2.0 Hazard Description

Cryogenic liquids can pose both physical and health hazards. Cryogenic liquids can cause frostbite and these liquids often have large volume expansion factors when they boil. As such cryogenic liquids also pose the health hazard of asphyxiation. Cryogenic liquids are typically stored in tanks also called Dewars. Common cryogenic liquids found in laboratories include liquid nitrogen and helium.

### 3.0 Engineering Controls

- 3.1 Cryogenic liquids must only be used and stored in a well ventilated area.
- 3.2 At a minimum, adequate general laboratory ventilation must be provided to maintain exposure below any regulatory

- 5.2 ANSI approved safety glasses or goggles must be worn.
- 5.3 A properly fitting laboratory coat is required when handling cryogenic liquids.
- 5.4 Cryogenic gloves should be worn when handling cryogenics.
- 5.5 Based on risk assessment a face shield may be appropriate when handling cryogenic liquids.
- 5.6 Additional PPE may be required if the chemical has additional hazards.

## **6.0 Handling and Storage**

- 6.1 Never allow any unprotected part of the body to come in contact with un-insulated pipes or equipment that contains cryogenic product.
- 6.2 Do not store cryogenic liquid containers in a horizontal position.
- 6.3 Do not store in a confined space.
- 6.4 Only transport cryogenic liquids secured and with suitable hand truck.
- 6.5 Do not drop, tip, or roll containers on their sides.
- 6.6 Only transfer cryogenic liquids into an appropriate container.
- 6.7 Consult the SDS for chemical-specific storage recommendations.

## **7.0 First Aid**

Please see the Chemical Hygiene Plan (current version) section 4.5 Laboratory Safety Equipment for additional information.

## **8.0 Chemical Spill**





- International Agency for Research on Cancer (IARC,



## **MARINE BIOLOGICAL LABORATORY TOXIC CHEMICALS**

### **1.0 Purpose**

This Standard Operating Procedure (SOP) establishes guidelines for appropriate handling, storage, spill response, waste disposal and first aid procedures for any research or academic laboratory at the Marine Biological Laboratory (MBL) which contain an inventory of toxic chemicals. This SOP is not intended to be all-inclusive as







## 5.e. Egress and Personal Protective Equipment

## **APPENDIX B**

### **CHEMICAL SPECIFIC STANDARD OPERATING PROCEDURES**

## **MARINE BIOLOGICAL LABORATORY POTASSIUM AND SODIUM CYANIDE SOP**

### **1.0 Purpose**

This Standard Operating Procedure (SOP) establishes appropriate handling, storage, spill response, waste disposal and first aid procedures for any research or academic laboratory at the Marine Biological Laboratory (MBL) which contain an inventory of Potassium Cyanide or Sodium Cyanide.

### **2.0 Hazard Description**

Sodium cyanide and potassium cyanide are highly toxic compounds when ingested, inhaled or absorbed through the skin.

### **3.0 Engineering Controls**

- 3.1 All experimental procedures involving cyanides must be conducted inside a chemical fume hood that is functioning properly and has been certified with the past 12 months.
- 3.2 Use and ABC fire extinguisher to put out a fire involving potassium or sodium cyanide. Do not use a carbon dioxide extinguisher.
- 3.3 Eyewash station must be available in lab

perchlorates, peroxides, permanganates, chlorates, nitrates, chlorine, bromine, and fluorine); amines; calcium hydroxide; caustic ammonia; sodium carbonate; iron and magnesium.

- 6.2 Store cyanides separately from all strong acids such as hydrochloric, sulfuric and nitric acids; nitrites, nitrates, water, steam, heat, chlorates, and strong bases (e.g., sodium, potassium and ammonium hydroxides).

- 8.1.1 If a small spill (less than 1 gram) of cyanide compound occurs inside a fume hood, then laboratory personnel should proceed with clean up.
  - 8.1.2 Alert other people in the immediate area of the spill.
  - 8.1.3 Wear appropriate personal protective equipment (PPE) including nitrile gloves, laboratory coat, safety glasses.
  - 8.1.4 Confine spill to small area with absorbent material if needed.
  - 8.1.5 Sweep up solid material with dustpan and broom. Clean surfaces with buffer solution (pH 10) and dilute bleach solution.
  - 8.1.6 Collect residue into a plastic ziplock bag including dustpan and broom and other contaminated material. Label the container and dispose of as hazardous waste.
- 8.2 Large Spill / Spill Outside Fume Hood
- 8.2.1 Call Safety Office at x7424 and MBL Security on x7911.
  - 8.2.2 Evacuate the spill area.
  - 8.2.3 Restrict individuals from entering area.
  - 8.2.4 Wait for the emergency personnel to arrive and provide them with information on the chemicals involved.

## 9.0



## 1.0 Purpose

This Standard Operating Procedure (SOP) establishes appropriate handling, storage, spill response, waste disposal and first aid procedures for any research or academic laboratory at the Marine Biological Laboratory (MBL) which contain an inventory of Formaldehyde, Formalin or Paraformaldehyde.

## 2.0 Hazard Description

Formaldehyde is classified by OSHA as a Particularly Hazardous Substance with the following potential health effects: an *animal carcinogen*; classified as a *known human carcinogen* by IRAC and as a probable human carcinogen by the U.S. Environmental Protection Agency; and a sensitizer that can cause allergic skin reactions and asthma-like respiratory symptoms. Formalin and paraformaldehyde solutions can release formaldehyde gas, a known carcinogen. Working with paraformaldehyde powder can expose employees to paraformaldehyde dust, which is a strong irritant/sensitizer.

### 2.1 Health Hazards

2.1.1 Formaldehyde, Formalin or Paraformaldehyde may be harmful if inhaled. The substance is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

2.1.2 These chemicals are toxic if absorbed.

4.1 Formaldehyde is a chemical listed on the Department of Homeland Security

- 6.2 Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- 6.3 Laboratory specific written SOPs are recommended for formalin, formaldehyde and paraformaldehyde.
- 6.4 Segregate formaldehyde from incompatible materials (oxidizing agents, reducing agents, strong acids or bases, alkalis, alkali metals, amines, ammonia or formaldehyde).
- 6.5 Use the smallest practical quantities for the experiment being performed.
- 6.6

- 8.1.1 Evacuate the spill area. Avoid breathing vapors.
- 8.1.2 Notify others of the formaldehyde spill and confine the spill to a small area using absorbent material from Spill Kit. Restrict others from entering contaminated area.
- 8.1.3 Wear appropriate PPE which includes double nitrile gloves, chemical splash goggles and laboratory coat.
- 8.1.4 Carefully apply spill absorbent material to absorb the spilled material.
- 8.1.5 Collect all spilled material and clean up material and place into an appropriate waste container or plastic bag. Label the bag

## MARINE BIOLOGICAL LABORATORY HYDROFLUORIC ACID SOP

### 1.0 Purpose

This Standard Operating Procedure (SOP) establishes appropriate handling, storage, spill response, waste disposal and first aid procedures for any research or academic laboratory at the Marine Biological Laboratory (MBL) which contain an inventory of Hydrofluoric Acid (HF).

### 2.0 Hazard Description

Exposure to Hydrofluoric Acid is a life-threatening emergency. Delay in first aid or medical treatment may result in serious tissue damage or even death. Hydrofluoric acid is extremely corrosive, and can cause severe burns to tissues. In addition, HF is a powerful poison, once absorbed into blood through the skin it reacts with blood calcium and may cause cardiac arrest.

### 3.0 Engineering Controls

- 3.1 All procedures involving the use of Hydrofluoric Acid must be performed in a properly functioning and certified fume hood.
- 3.2 Because of its high reactivity toward glass and moderate reactivity toward many metals, Hydrofluoric Acid must be stored in plastic containers.

### 4.0 Administrative Controls

- 4.1 Individuals may not work alone when working with concentrated Hydrofluoric Acid.
- 4.2 When working with HF, a sign must be posted at the fume hood which provides notice of a chemical hazard. **“WARNING! HAZARDOUS**
- 4.3 All laboratory procedures involving the use of Hydrofluoric Acid must be approved by the PI and the MBL Safety Officer.

- 5.2 Long pants or appropriate clothing that covers the body to the ankles and closed-toe shoes must be worn.
- 5.3 A laboratory coat and a chemical resistant apron must be worn.
- 5.4 A double layer of nitrile gloves must be worn with the outer layer changed often.

## **6.0 Handling and Storage**

- 6.1 Always keep Hydrofluoric Acid stored in a plastic container which is tightly sealed in a dry and well-ventilated place. Storage must include secondary containment.
- 6.2 Hydrofluoric Acid reacts with many materials therefore avoid contact with glass, concrete, metals, water, oxidizers, reducers, alkalis, combustibles, organics and ceramics.
- 6.3 Access to HF should be limited to only trained individuals who have read this SOP, laboratory specific SOP and the SDS.
- 6.4 Always wear required PPE when handling Hydrofluoric Acid.
- 6.5 Wash hands thoroughly with soap and water after handling Hydrofluoric Acid.

## **7.0 First Aid**

- 7.1 All labs using or storing Hydrofluoric Acid must have the following antidote kits readily available:
  - 7.1.1 Calcium Gluconate Gel (2.5%) for skin contact.
  - 7.1.2 Calcium Gluconate Sterile Solution (1%) for eye contact.
- 7.2 Understand the location of the nearest emergency safety shower and eyewash.
- 7.3 For all exposures, dial 9-911 for immediate medical attention and then call MBL Security at x7911 and Safety at x7424.
- 7.4 Inhalation
  - 7.4.1 Remove the affected person from the contaminated area to fresh air.



- 9.5 Segregate Hydrofluoric Acid waste from all other incompatible wastes.
- 9.6 Store properly labeled waste containers in the Satellite Accumulation Area (SAA).
- 9.7 Call Safety Office at x7424 for pickup of the hazardous waste.







attack aluminum, magnesium, lead and zinc metals.

- 6.8 After work with phenol is complete, wipe down work area with soap and water solution.

## **7.0 First Aid Procedures**

- 7.1 Persons administering first aid should take precautions to avoid contact with phenol. Phenol can penetrate leather on shoes or clothing.
- 7.2 Understand the location of the nearest emergency safety shower and eyewash.
- 7.3 For all exposures, dial 9-911 for immediate medical attention and then call MBL Security at x7911 and Safety at x7424.
- 7.4 Inhalation
  - 7.4.1 Remove the affected person from the contaminated area to fresh air.
- 7.5 Eye Contact
  - 7.5.1 Flush the eyes at eyewash station for at least 15 minutes.
- 7.6 Skin Contact
  - 7.6.1 Remove all contaminated clothing.
  - 7.6.2 Immediately flush affected area at emergency shower for 15 minutes.
  - 7.6.3 Avoid rubbing or wiping affected area to prevent worsening irritation.
  - 7.6.4 Apply polyethylene glycol (PEG-300 or PEG-400) to the affected area, if available.
- 7.7 Ingestion
  - 7.7.1 If swallowed, do not induce vomiting.
  - 7.7.2 Never give anything by mouth to an unconscious person.
  - 7.7.3 Rinse mouth with water.

## **8.0 Chemical Spills**

- 8.1 Small Spill (less than 1000 mL)
  - 8.1.1 Evacuate the spill area. Avoid breathing vapors.
  - 8.1.2 Notify others of the phenol spill and confine the spill to a small area using absorbent material from Spill Kit.







- 6.6 Picric acid is incompatible with oxidizers, reducing agents, inorganic salts, metals, alkaloids and albumin.
- 6.7 Store picric acid in a cool, dry, well-ventilated area, away from sources of heat.
- 6.8 Prior to handling, visually inspect bottle cap and threads of container for presence of picrate crystals. Contact Safety Office immediately at x7424 is observed.

## 7.0 First Aid Procedures

- 7.1 Understand the location of the nearest emergency safety shower and eyewash.
- 7.2 For all exposures, dial 9-911 for immediate medical attention and then call MBL Security at x7911 and Safety at x7424.
- 7.3 Inhalation
  - 7.3.1 Remove the affected person from the contaminated area to fresh air.
- 7.4 Eye Contact
  - 7.4.1 Flush the eyes at eyewash station for at least 15 minutes.
- 7.5 Skin Contact
  - 7.5.1 Remove all contaminated clothing.
  - 7.5.2 Immediately flush affected area at emergency shower for 15 minutes.
- 7.6 Ingestion
  - 7.6.1 If swallowed, do not induce vomiting.
  - 7.6.2 Never give anything by mouth to an unconscious person.
  - 7.6.3 Rinse mouth with water.

## 8.0 Chemical Spills

- 8.1 Small Spill (less than 30 mL)
  - 8.1.1 Evacuate the spill area. Avoid breathing vapors.
  - 8.1.2 Notify others of the picric acid spill and confine the spill to a small area using absorbent material from Spill Kit.
  - 8.1.3 Keep others from entering contaminated area.
  - 8.1.4 Wear appropriate PPE which includes double nitrile gloves, chemical

splash goggles and laboratory coat.

- 8.1.5 Carefully apply spill absorbent material to absorb the spilled material.
- 8.1.6 Collect all spilled material and clean up material and place into an appropriate waste container or plastic bag. Label the plastic bag or container with a Hazardous Waste label.
- 8.1.7 Wash the spill area with soap and water.
- 8.1.8 Contact Safety Office at x7424 to arrange for hazardous waste pick-up.
- 8.2 Large Spill (greater than 30 mL)
  - 8.2.1 Immediately alert all people in the vicinity and evacuate spill area.
  - 8.2.2 Close doors to the spill area.
  - 8.2.3 Call MBL Security on 7-911 and Safety at x7424.
  - 8.2.4 Keep others from entering spill area until Security or Safety arrives.
  - 8.2.5 Provide responders with information on the hazardous chemical involved.

## 9.0 Waste Disposal Procedures

- 9.1 All picric acid solutions and contaminated material must be disposed of as hazardous waste.
- 9.2 Keep hazardous waste in a closed and properly labeled container and in a secondary containment at the Satellite Accumulation Area (SAA).
- 9.3 Contact Safety Office at x7424 or [safety@mbi.edu](mailto:safety@mbi.edu) for pickup of the hazardous waste.





- 2.3.1 Sodium azide can form explosive compounds when it comes into contact with or dries on metal surfaces (metal spatulas).
- 2.3.2 Sodium azide can react with metal pipes (copper, lead, brass, or solder) in laboratory sinks, traps and drains to form highly explosive compounds (copper azide, lead azide).
- 2.3.3 Sodium azide is thermally unstable and can undergo violent decomposition if it is heated to temperatures 275 degrees Celsius.
- 2.3.4 Sodium azide rapidly hydrolyzes in water to form hydrazoic acid, a highly toxic and explosive gas.

### **3.0 Engineering Controls**

- 3.1 A properly functioning and certified chemical fume hood must be used when handling sodium azide (powder and solutions).
- 3.2 Use ABC dry chemical extinguisher to put out a fire involving sodium azide.
- 3.3 Eyewash station must be readily available in laboratories where sodium azide is stored or used.
- 3.4 Emergency safety shower must be available within 10 seconds travel time.

### **4.0 Administrative Controls**

- 4.1 Do not work alone whenever handling sodium azide powder or concentrated solutions (

- 5.4 Chemical-resistant nitrile gloves must be worn. Gloves must be inspected before use. Wearing two pairs of nitrile gloves is strongly recommended when working concentrated solutions (greater than 5%).
- 5.5 Depending on risk assessment a face shield and/or chemical splash apron may be appropriate.

## 6.0 Handling and Storage

- 6.1 Store sodium azide in a tightly closed container in a cool, well-ventilated area away from heat, air, light and moisture.
- 6.2 Clearly label all sodium azide stock solutions with warning signs:  
**"DANGER**

- 8.3.1 If a small spill (less than 1 gram) of sodium azide occurs inside a fume hood, then laboratory personnel should proceed with clean up.
  - 8.3.2 Alert other people in the immediate area of the spill.
  - 8.3.3 Wear appropriate personal protective equipment (PPE) including nitrile gloves, laboratory coat, safety glasses.
  - 8.3.4 Confine spill to small area with absorbent material if needed.
  - 8.3.5 Sweep up solid material with dustpan and broom. Clean surfaces with buffer solution (pH 10) and dilute bleach solution.
  - 8.3.6 Collect residue into a plastic ziplock bag including dustpan and broom and other contaminated material. Label the container and dispose of as hazardous waste.
- 8.4 Large Spill / Spill Outside Fume Hood
- 8.4.1 Call Safety Office at x7424 and MBL Security on x7911.
  - 8.4.2 Evacuate the spill area.
  - 8.4.3 Restrict individuals from entering area.
  - 8.4.4 Wait for the emergency personnel to arrive and provide them with information on the chemicals involved.

## 9.0 Waste Disposal Procedures

- 8.5 Sodium Azide is listed as an ACUTELY TOXIC material [P-Listed] by the Environmental Protection Agency (EPA). All items contaminated with “P-Listed” compounds must be disposed of as regulated hazardous waste.
- 8.6 Sodium azide solutions and stock materials must be collected as hazardous waste.
- 8.7 Do not discard sodium azide down the drain.
- 8.8 Collect all contaminated items (original container, weighing boats, pipette tips, adsorbent pads etc.) as hazardous waste.
- 8.9 Segregate sodium azide waste from all other lab wastes.
- 8.10 Keep sodium azide waste in a closed and properly labeled container in the Satellite Accumulation Area (SAA).
- 8.11