

# STANDARD OPERATING PROCEDURES FOR LABORATORY USE OF CHEMICALS

Note: Use of these guidelines will minimize exposure of laboratory workers to chemicals they work with. Numbers in parentheses [e.g. (82)] are page references in Prudent Practices for Handling Hazardous Chemicals in Laboratories, National Research Council - Committee on Hazardous Substances in the Laboratory, 1995. This reference is available in hardback from many vendors. It can also be accessed online page-by-page at <http://books.nap.edu/openbook.php?isbn=0309052297&page=R1#pagetop>

The following guidelines are provided for the benefit of laboratory workers and supervisors and are therefore written as information for or instructions to those individuals.

**General Safety Guidelines: You should follow these guidelines and instructions for all laboratory use of chemicals, whether or not you consider your materials to be hazardous. The concept of “dangerous chemicals” varies with individual attitudes and experience.**

**There are three important attitudes to assume while working with chemicals in the laboratory**

BE AWARE - Know the hazards before you begin your experiment.

- At minimum, read the label and become familiar with information on Material Safety Data Sheets.
- Evaluate your lab facility and its equipment. Is it sufficient for the procedure you wish to perform? Should you move to a more adequate space or consider postponing or modifying your procedure?

BE PREPARED - Answer the following questions:

- What is the worst thing that can go wrong?
- What must I do to prepare for it?
- What must I do when it happens?

BE PROTECTED -

- What practices and equipment can minimize my exposure to the hazards of my work when things are happening **normally** – when work proceeds as “expected”?
- What practices and equipment can minimize my exposure to the hazards of my work when **unexpected** things happen? What should I be doing (or not doing) and what protections shall I use (plan to use) when things go terribly wrong?

## 1.1 General Safety Guidelines

- a) **Working alone (86, 90, 230)** while using hazardous chemicals always involves risk. Work with hazardous substances or processes must be done only when there is at least one other person present who is familiar with the work being done. A small accident has the potential of becoming a catastrophe if you are alone and isolated when things go wrong.
- b) **Eye and Face Protection (82)**: You must always wear appropriate eye protection whenever anyone (even someone else) is working with hazardous materials or processes in the laboratory. Appropriate eye protection worn when working with chemicals shall meet the requirements of the current American National Standards Institute (ANSI Standard Z87.1). Appropriate protective eyewear will be marked with “Z87.1” or “Z87+” as an indication of **impact resistance**, prescription eyewear will be marked with the suffix -2 (e.g. Z87-2+); sufficient protection against **liquid splash** is provided by ANSI Z87.1 (or Z87+) rated **goggles**, not safety glasses. Goggles that are vented must be indirectly vented to provide adequate splash protection.

Note: the ANSI Z87.1 standard does allow for the wearing of contact lenses if approved chemical splash **goggles** are worn over the eyes at the same time.

- c) When working with **Flammable Materials (95)**, be certain that there are no sources of ignition near enough to cause a fire or explosion in the event of a vapor release or spill.
- d) Use **Shields (98)**, for protection whenever:
- an explosion is possible ( for example, when your work involves a potentially explosive or violently reactive material, or when your apparatus - especially if glass - is under pressure) or
  - implosion is possible (when your glass apparatus is under vacuum).
- e) Don't underestimate the risks of materials you use. The hazardous properties of each material / ingredient used in a procedure must be determined before the first time it is used. **Be aware of the chemical hazards (81)** as determined from the MSDS or other appropriate reference, and protect yourself more, rather than less. Assume a mixture to be more toxic than any of its components.
- f) Use proper **protective equipment (82-84)**, **every time** you use materials requiring it. Make sure the equipment is not damaged and that you know how to use it.
- g) Know the location and proper use of **emergency equipment (87-89)** and be familiar with emergency procedures (see “[Chemical Spill Procedures](#)” sec 3.7, “[Fire Emergency Procedures](#)” sec 3.8, and “[Medical Emergency Procedures](#)”, sec. 3.9.)
- h) Don't use equipment or machinery (especially equipment powered by 115 volt AC power) unless you know how to use it properly, and use it only for its intended purpose. Repair of non-functioning electrical laboratory apparatus, should be performed only by someone qualified to do such work. **(109-112)**.

- i) **Minimize all chemical exposures.** Avoid all skin contact with chemicals. Wear gloves appropriate for the material. Consult the manufacturer glove guide for chemical resistance, permeation and degradation data.
- j) **Chemical Containers:** Keep chemicals in tightly closed containers with readable and accurate labels.
- k) **Fume Hood Use:** Use hazardous chemicals which may produce gases, fumes, or hazardous vapors in a **fume hood (13, 198-200)**, and know how to use the hood properly. Never use highly toxic agents, carcinogens, or reproductive toxins outside the hood. The room and hood should be labeled as a “Controlled Work Area” if these chemicals are in use.
- l) Dispose of cracked or **broken glassware** immediately into an appropriate container labeled for “Broken Glass Disposal”. Lubricate glassware with an appropriate lubricant such as water or glycerol when inserting glass tubing or glass thermometers through a tight fitting hole. Protect your hands with a cloth towel or leather gloves when inserting or attaching such glassware. Grasp the glass tube or thermometer near the tight fitting hole (**not** at the opposite, distant end) and push and twist the glass into the hole gradually.
- m) **Unattended Operations (27, 128):** An experiment is “unattended” if there is no one immediately present who fully understands the operation and shutdown procedure to be used in the event of an emergency. These circumstances require special precautions:
  1. Prominently label the apparatus with your name, start date and time, intended stop date and time, how to contact you (and your faculty advisor, if applicable) in case of emergency (e.g. names and telephone numbers).
  2. Unattended operations that could result in fire or explosion should be equipped with the necessary automatic shutdown controls. Examples of circumstances which can develop during unattended operations include loss of cooling water, overheating, flooding, power interrupt, loss of inert atmosphere, etc. (Ask yourself, “What is the worst thing that can go wrong?”)
  3. Post warning signs for radioactive, chemical, biological, flammable, reactive, explosive, or other hazard(s).
  4. Use necessary shields and barriers to contain splashes, explosions, or other releases.
  5. Be aware that the need for water campus wide decreases generally late in the day or at night. Increased water pressure may occur in the few areas that are using it. Poorly attached or unclamped cooling hoses may come loose with vibration, lubricating character of the water in the hose, and/or pressure changes in the hoses. (What will your apparatus do if cooling water is lost in the middle of the night?)

## 1.2 Personal Hygiene

- Wash promptly whenever a chemical has contacted your skin.
- Avoid inhalation of chemicals; do not smell or taste chemicals, especially not for identification of an unknown material.
- Never mouth pipette anything or use mouth suction to start a siphon.
- Never bring food, cigarettes, chewing gum, beverages, or food containers into a laboratory.
- Never eat, drink, smoke, bite fingernails apply cosmetics or handle contact lenses while in laboratory.
- Always wash your hands with soap and water before leaving the laboratory and before eating, drinking, smoking, using the restroom, applying cosmetics, or handling contact lenses.
- Never store food in a refrigerator in a laboratory or in any refrigerator (inside a laboratory or not) which is used to store chemicals. Never put chemicals into a refrigerator which is used for food storage.
- Never use laboratory glassware for drinking vessel, whether inside or outside the laboratory.

## 1.3 Protective Clothing and Equipment

- a) Eye protection worn when working with chemicals shall meet the requirements of the current American National Standards Institute (ANSI Standard Z87.1). Appropriate protective eyewear will be marked with “Z87.1” or “Z87+” as an indication of impact resistance, prescription eyewear will be marked with the suffix -2 (eg Z87-2+). Sufficient protection against liquid splash is provided by ANSI Z87.1 (or Z87+), rated goggles, not safety glasses. Goggles that are vented must be indirectly vented to provide adequate splash protection.
- b) Eye protection should include a face shield when the chemical hazard warrants it. Goggles will protect your eyes but not the rest of your face and head.
- c) When working with hazardous chemicals, wear gloves made of a material that is resistant to permeation by that chemical. Such gloves are usually made of “plastic” or “rubber” (not leather).
- d) When working with hazardous chemicals (chemicals which will cause temporary or permanent skin damage on contact), wear an impervious lab coat or apron (such as a “rubberized” apron.) Examples of such chemicals are sulfuric acid and most of its solutions, and sodium hydroxide and most of its solutions (and there are many more).
- e) A lab coat or other appropriate protective garment must be worn at all times while you are working with hazardous chemicals in the laboratory. Your lab coat should be removed when you leave the laboratory at the end of your lab period or work day. If your lab coat becomes contaminated by a hazardous chemical, remove it immediately, and discard it or wash it thoroughly before using it again.

### 1.3 Protective Clothing and Equipment (continued)

- f) Protect your skin and feet with adequate clothing and footwear. Shorts or short skirts must not be worn in the laboratory without a lab coat. Open toed shoes or sandals, or shoes without firm footing (i.e. shoes with wheels on the bottom) must not be worn in the laboratory.
- g) Confine loose hair and clothing while working in a laboratory. Long, loose hair and long, flowing garments (especially sleeves) can easily be dragged over chemical apparatus or spills, and can be ignited if open flames are in use.
- h) Whenever exposure to a toxic material by inhalation is likely to exceed the Permissible Exposure Limit (as described in the MSDS or other information source), use a fume hood for work with that material. As a general rule, if the PEL for a material is less than 50 ppm, work with that material should be done in a fume hood or with the use of some other engineering control (197).
- i) Exposure to toxic air contaminants should always be controlled primarily by the use of a fume hood or other engineering control to prevent the release of vapors or fumes into the laboratory. You should use a respirator only if a hood or other engineering control is not feasible. (See [Respiratory Protection Plan](#).)

### 1.4 Housekeeping (24)

- a. Access to emergency equipment, eye washes, safety showers, fire extinguishers, circuit breakers, fire alarm pull boxes, emergency spill equipment, and exits must never be blocked by anything - not even a temporarily parked lab cart or bicycle.
- b. **Container labeling** is important to minimizing accidental contact (exposure) to hazardous materials and to prevent accidental mixing of the wrong ingredient(s). All chemical containers must be labeled with at least the identity of the contents and the hazards those contents present to users. Always use and store containers in a manner which preserves the labels in good condition, keeps labels attached to the container(s), and insures the label(s) will continue to be readable. Such containers must be stored in a dry location and out of direct sunlight whenever possible. A container **you** fill must always be labeled with all the information necessary for **someone else** to identify the contents.
- c. Keep all work areas, especially laboratory benches, clear of clutter.
- d. Keep all aisles, hallways, exits, and stairs clear of all chemicals.
- e. All chemicals should be placed in their assigned storage areas at the end of each workday.

#### 1.4 Housekeeping (continued)

- f. At the end of each workday, the contents of all unlabeled containers are to be considered hazardous waste if the contents are unknown. Containers with **known** contents should be **labeled** as you make them, to prevent them from becoming hazardous waste.
- g. Waste should be properly labeled and kept in proper containers. (See sec. 3.6 of this CHP.)
- h. Promptly clean up all spills; properly dispose of the spilled chemicals and clean up all surfaces and equipment.
- i. All working surfaces and floors should be cleaned regularly. Bench tops should be cleaned at the end of a particular operation or experiment or at the end of each workday.
- j. Extraneous material should not be stored in a fume hood because it can interfere with the air flow in the hood and jeopardize the safe operation of the hood.
- k. Chemicals should be stored in an earthquake safe manner - in closed cabinets or on shelves with adequate barriers to prevent objects (bottles) falling from the edge of the shelf.

#### 1.5 Chemical Storage

- a. **Inventory-** The inventory of chemicals kept on hand should be not more than will be consumed by the department/laboratory in two (2) years. For some chemicals, a supply lasting only one (1) year is recommended. The expiration dates which appear on labels made by chemical manufacturers should be adhered to. Many chemicals lose their usefulness over time due to program changes or degradation with age (shelf life). Economies of scale - buying large or bulk amounts - are usually more than offset by the cost of disposing of old, unwanted chemicals as hazardous waste.
  - 1. A physical inventory of chemicals on hand should be conducted at least annually
    - to identify containers which are leaking,
    - to identify containers which are damaged (corroded, cracked, or dented) and may begin leaking;
    - to identify materials which are unknown ( labels missing or illegible);
    - to identify chemicals which are no longer needed . The older the chemical is, the harder it is to find a potential alternate user.
  - 2. Chemicals in damaged or leaking containers should be re-packaged into new, sound containers and relabeled.
  - 3. Fading or damaged labels need to be re-attached or replaced before the material(s) become unknown. A list of un-wanted chemicals should be submitted to Environmental Health and Safety for pick up and possible distribution to other programs on campus.
- b. **Compatible Storage-** Chemicals should be stored according to their chemical compatibility (their ability to react with each other) rather than strictly by another organizational pattern, such as alphabetical. Chemicals which can react with each other and create a hazardous condition, such as fire or the generation of a toxic or flammable gas, should be stored apart from each other. The separation should be sufficient to prevent the accidental mixing of materials in case of catastrophic spill. A list and table of chemical compatibilities is located in the appendix to this CHP.

## 1.5 Chemical Storage (continued)

- c. **Seismic Safety-** Chemicals should be stored on shelves or in cabinets which prevent the containers from falling in the event of earthquake.
1. Cabinet doors should close and latch securely so as not to spring open during an earthquake nor be pushed open by objects moving inside.
  2. Shelves holding chemical containers should have a sturdy lip or rail at the front of each shelf which is capable of preventing the containers from being shaken off the shelves.
  3. Heavy items and containers of corrosive material (concentrated acid and alkali) should be stored on shelves near the floor.
- d. **Spill Response and Clean-up materials-** Every location where chemicals are stored should have available a supply of equipment and materials for use in the event of a chemical spill. A good rule of thumb is that the quantity of spill response material should be sufficient to handle a spill the size of two (2) of the largest container of material in storage.
1. Spill response materials should include:
    - Absorbent (granular or “pillows”). (see Section 3.7, “Chemical Spills/Releases”, in this CHP);
    - Personal protective equipment (Minimum: rubber gloves and protective eyewear);
    - scoops and/or pans for picking up granular solids; plastic is recommended;
    - plastic bags to contain contaminated absorbent ( use heavy bags, such as “trash compactor” bags, white or clear);
    - permanent marker to use for labeling the bag of contaminated clean-up material.

## 1.6 Guidelines for Chemical Waste

- a. Chemical Wastes (hazardous waste) must be kept in closed, appropriately labeled containers which are in good condition.
- b. A correct **hazardous waste label** must contain 6 pieces of information:
1. The label must bear the words "HAZARDOUS WASTE"
  2. The label must contain A DESCRIPTION OF THE WASTE:
    - i.) the **chemical name or common name** of the waste material ( EPA and Cal Poly’s Chemical Hygiene Officer is looking for recognized chemical or "material" names, not acronyms or abbreviations, and certainly **not** something like "RG-17 Waste" or "Fred's Waste" or merely the word "Waste". ),
    - ii.) a statement of the **proportions of constituents**, if a mixture- percents, parts per million, molarity, etc.. An estimate of the proportions is OK, based on knowledge of the process that made the waste.

## 1.6 Guidelines for Chemical Waste (continued)

3. The label must contain a STATEMENT OF WHAT THE HAZARD IS. This means the label must say the word(s) "TOXIC", "CORROSIVE" (Please specify acid or alkaline), "REACTIVE", "FLAMMABLE", and/or "COMBUSTIBLE" These are the ones which usually apply. There are a few additional characteristics less often encountered, such as radioactive waste.
4. The label must SAY whether the waste in the container is SOLID, LIQUID, or GAS.
5. The label must contain the START DATE for that container of waste. That is the date when the first amount of the waste is added to the empty container. It is legal to specify the date when the empty waste container is put in place, even though the first drop of waste might not go in until a few days later.
6. The label must state the NAME AND ADDRESS OF THE GENERATOR. At Cal Poly this means: "CAL POLY STATE UNIVERSITY, SAN LUIS OBISPO, CA 93407". It is necessary for Cal Poly's record keeping functions to identify which department or program generated the waste in the container(s). It is also common for questions to arise about the nature of a specific hazardous waste, and the Environmental Health and Safety (Eh&S) Office needs to know who to ask.

NOTE: Campus departments need not wait for EH&S to arrive and make and attach such labels. These labels may be commercially printed labels or hand-made labels attached with tape or anything in between, and should be prepared and attached by the person who generated the waste. There are several examples of hazardous waste labeling in the Appendix to this CHP.

- c. A frequently cited detail of hazardous waste handling concerns the containers themselves. The regulations require that hazardous waste **containers**:
  - be of sound construction and in good condition (not leaking). This means **not** using the oldest, rustiest, most beat-up container available in which to keep hazardous waste.
  - be constructed of material compatible with the waste being stored. It is **NOT** O.K. to store something in a drum which will eventually eat a hole in the drum.
  - be kept **CLOSED AT ALL TIMES** except when material is being added or removed. This means with an appropriate screw cap or bung screwed on tight enough not to leak if the container is inverted. A waste drum or bottle which is left open is a citable EPA violation.
  - be kept in a secondary containment - a tray or outer container which will prevent leaking or spilled waste material from escaping (to land or water) or from coming into contact with nearby incompatible material.



## 1.6 Guidelines for Chemical Waste (continued)

- d. **Chemical Waste (Hazardous Waste) Removal Procedure-** If your department has no location specified for the accumulation of hazardous waste, such material can be picked up by an employee of the Environmental Health and Safety Office upon sufficient notification. The procedure for having hazardous waste picked up requires the disposing department/individual do at least **one (A or B)** of the following:
- A. Place a telephone call to the Environmental Health and Safety Office (extension 6661 or 6662) and be prepared to provide the following information:
- the trade name and manufacturer (if known) of the material
  - the chemical constituents of the material (if not discernible from the trade name)
  - the size(s) of the container(s)
  - the number of containers
- or**
- B. Send to the Environmental Health and Safety Office a filled out form (“Hazardous Waste Pick-up/Disposal Request) detailing the nature and quantity of the waste. A sample of this form is included in the appendix of this CHP.

A request to pick up hazardous waste may also be made electronically by accessing the form found on the internet at <http://www.afd.calpoly.edu/ehs/hazwastepickup.asp>

NOTE: All containers of hazardous waste must be kept in closed, non-leaking containers to comply with hazardous waste management regulations and to allow for the safe transport of containers without having waste material leak into the vehicle or onto the roadway.

## 1.7 Chemical (Hazardous Material) Spills/Releases Cleanup Procedures

Notes and Precautions: The range and quantity of chemicals in the laboratory requires pre-emergency planning to respond safely to chemical spills. The cleanup of a chemical spill should be done only by workers who are familiar with the material and its hazards. Chemical spill cleanup guidance and instructions are available from the Environmental Health and Safety Office, extension 6661 or 6662. In this section, the terms “chemical “and “hazardous material” are synonymous.

**Emergency assistance, if you need it, can be reached by calling 911 on any campus telephone.**

- a. **A MINOR CHEMICAL SPILL** is a spill **or** release of hazardous material that **laboratory personnel are capable of handling safely** without the assistance of safety or emergency personnel. Usually, this is less than 1 liter, however if the material is toxic, produces a toxic or corrosive vapor, or circumstances change so that laboratory personal can no longer safely handle the situation (i.e. flammable material spill ignites). it becomes a MAJOR CHEMICAL SPILL. Responding to a MINOR SPILL:
1. Alert people in the immediate area of the spill.
  2. If the spilled material is flammable, turn off all sources of ignition which may cause the spilled material to ignite.
  3. Wear protective equipment appropriate for the spilled material and /or the location of the spill. Protective equipment includes, but is not limited to; eye/face protection, gloves (rubber and/or

leather, as appropriate) and a lab coat, apron, or other “coverall” garment, boots or other impermeable shoe covers.

4. Avoid breathing any vapors, fumes, or dust from the spilled material.
5. Confine the spill to as small an area as possible.
6. If the spill is a **liquid**:
  - i. Use appropriate absorbent material (sponge, spill pillow, spill pad or socks, disposable rags or towels, or granular absorbent) to absorb and/or pick up the spill. A list of common spill clean-up absorbents and their appropriate use follows this section.
  - ii. Begin at the outer edges of the spill area, surround the spilled material and work toward the center.
  - iii. Allow the liquid to be completely absorbed into the pick up material (absorbent).
  - iv. Absorb (and neutralize, if appropriate and safe to do) the spilled chemical with **effective** and **compatible** spill cleanup materials.
7. Spills of **solid** material can usually be picked up without the aid of an absorbent.
8. Collect the residue, used absorbent (if any), rinse water (if any), and any contaminated gloves, suits, etc. which are to be discarded.
9. Place all the spill clean-up material in a container(s) for disposal as hazardous waste. As a minimum, the container may be (temporarily) a heavy plastic bag, 4 mil thickness or more. “Trash Compactor Bags” are adequate and readily available.
10. Do not place hazardous chemicals or spill cleanup material from such a spill into the normal trash nor flush down the drain.
11. Notify the Environmental Health and Safety Office of the spill cleanup and arrange for pick-up of the used absorbent and collected residues. See also Hazardous Waste Procedures, Sec. 3.7 for Hazardous Waste Removal Procedures.

## 1.7 Chemical (Hazardous Material) Spills/Releases Cleanup Procedures (continued)

### Some Common Absorbents for Hazardous Material Spill Clean-up

~~Strikethrough~~ type is used here only to emphasize spilled chemicals not to be absorbed into the indicated absorbent.

<b>ABSORBENT MATERIAL:</b>	<b>USES:</b>	<b>LIMITATIONS:</b>
common sand or soil	Works for organic and aqueous (water born) liquids. Moderate capacity. Usually inexpensive and available in large quantities.	NOT RECOMMENDED FOR: <del>nitric, hydrochloric, sulfuric, or hydrofluoric acids.</del> Heavy material - affects disposal cost and handling in large amounts
diatomaceous earth, "Superfine", kitty litter, etc.	Works for organic (oil) and aqueous (water born) liquids. Good capacity. Moderate weight	NOT RECOMMENDED FOR: <del>hydrofluoric acid, hydrogen peroxide</del>
sawdust, sweeping compound, "Sphagsorb", etc.	Works for Oil and Organic Liquids Light Weight	NOT RECOMMENDED FOR: <del>aqueous (water born) liquids, acids, oxidizing materials</del>
paper towels, sponges	Works for SMALL SPILLS of organic (oil) or aqueous (water born) liquids. <b>Wear rubber gloves</b> when using for Hazardous Material clean-up. May require disposing of used sponge as Hazardous Waste.	NOT RECOMMENDED FOR: <del>concentrated acids (sulfuric, nitric, hydrochloric), oxidizing materials, spills containing sharps (broken glass)</del>
Spill-Specific Absorbent Pillows, Socks, Granular Material (Many types are available.)	Follow Manufacturer's Instructions.	Designed for cleaning up spills of a <u>specific</u> chemical.

- b. **A MAJOR CHEMICAL SPILL-** is spill or release of hazardous material that **cannot be safely handled by laboratory personnel**. The steps below are best carried out by more than one person and should be done as quickly and safely as possible:
1. Attend to injured or contaminated persons, if any, and remove them from exposure if you can do so safely without endangering yourself.
  2. Alert people in the laboratory to evacuate. Notify your supervisor/lab instructor immediately or as soon as safely possible. If necessary, initiate evacuation of the building (send someone door to door or pull fire alarm box).
  3. If the spilled material is flammable, turn off ignition and heat sources if you can do so safely without endangering yourself or others.
  4. From a **safe** but nearby location, call the Cal Poly emergency number 911, and tell the dispatcher who answers that you have a chemical emergency (and/or medical emergency, if any). The dispatcher will ask you for more information. Stay on the telephone until you are asked to hang up.

## 1.7 Chemical (Hazardous Material) Spills/Releases Cleanup Procedures (continued)

5. Close doors to the affected area. Until emergency help arrives, have someone stay nearby but in a safe location to warn away others who may wish to enter the area.
  6. Have a person knowledgeable of the incident and the laboratory stand by to assist by providing information to emergency personnel when they arrive.
- c. **BIOLOGICAL SPILL**- see campus [Biosafety Program](#), Appendix C.1
- d. **RADIOLOGICAL SPILL**
1. In the case of a spill of radioactive material, immediately contact Environmental Health and Safety at extension 6661 or 6662, or the Emergency dispatcher at extension 911.
  2. Then, follow the procedures for spill cleanup outlined in your protocol as described in the radioactive materials in the [Campus Radiation Safety Manual](#).
  3. Notify the Radiation Safety Officer in the Environmental Health and Safety as soon as possible at extension 6628.

## 1.8 Fire Emergency Procedure

- a. If there is a fire in your lab, immediately notify those nearby, e.g. YELL FIRE!
- b. **Immediately evacuate the room (all occupants).**
- c. Close the door(s).
- d. Pull the nearest fire alarm box on your way out of the building.
- e. If there is no fire alarm pull box in the area, call **911** from a telephone at a nearby but safe location to report the fire. The dispatcher will ask you for more information. Stay on the telephone until you are asked to hang up.
- f. If you do use a fire extinguisher, call the Environmental Health and Safety at extension 6661 or 6662, soon afterwards to report the fire, even if the extinguisher's contents were only partially expended. This will allow a replacement extinguisher to be delivered as soon as possible. The rule of thumb is: A used extinguisher is the same as an empty extinguisher."

## 1.9 Medical Emergency Procedure

- a. If someone in your area is injured or becomes ill, and it appears that **treatment or intervention by a medical professional (doctor, nurse, etc.) is required, call 911, the Cal Poly Emergency number**, and tell the dispatcher who answers that you have a medical emergency. The dispatcher will ask you for more information. Stay on the telephone until you are asked to hang up.
- b. If the injury is the result of contact with chemical(s), very hot or very cold liquid, or burning (flaming) material, **immediately flush the affected area with WATER ONLY -- faucet**,

**eyewash, or shower as necessary, depending on location and area of injury --, and keep flushing for 15 minutes.**

- c. Further medical treatment (other than any first aid given immediately) or transport to the hospital, if needed, will be arranged by the police officer who will respond and/or the ambulance personnel if an ambulance is summoned.
  
- d. Laboratories and departments which use materials or processes which have the potential to cause serious physical harm such as, the potential for involvement in incidents requiring **treatment or intervention by a medical professional**, (doctor, nurse, etc.) should maintain a basic first aid equipment and materials, (see List of Basic First Aid Equipment and Materials below).

### **List of Basic First Aid Equipment and Materials:**

At a minimum, a Lab First Aid kit should contain:

- Sterile compresses or pads (commonly called 4 x 4 's) to stop bleeding ( 10 each)
- Band-aids – 1 inch wide (10 each). 1-inch band-aids are more universal than ¾-inch size.  
INVENTORY THE FIRST AID KIT OFTEN. BANDAIDS WILL BE THE FIRST TO DISAPPEAR.
- Rubber gloves (medical latex gloves) to be worn as needed by the care giver.

Note: Burn medication, ointment, spray, etc. is not included:

BURN MEDICATION – SPRAY OR OINTMENT – IS NOT RECOMMENDED IF THE VICTIM WILL BE GETTING FURTHER TREATMENT. Medical personnel – ambulance EMT and/or ER doctors - will treat a burn patient by first removing (scrubbing off) all First Aid burn medications that have been applied by first aid givers.

**If the burn victim will be getting further medical treatment** for the burn, recommended first aid for thermal burns (and completely decontaminated chemical burns) is

- sterile gauze or 4x4 pad (or other clean fabric)
- soaked in clean, room temperature water
- applied to the burn area.
- Seek medical attention promptly.

A minor burn (heat burn) can be treated by running cold water over the burned area. The use of ice is not recommended as this can cause frostbite. Time recommended for cold applications (cold water straight from the tap) varies from 10 to 30 minutes or until the pain does not recur after the cold water is stopped.

#### **NOTE:**

Any deviation from this SOP requires approval from PI.



