

# **Palm Beach State College**

*Florida's First Public Community College*



## **CHEMICAL HYGIENE PLAN**

**2014**

# **CHEMICAL HYGIENE PLAN**

## **PALM BEACH STATE COLLEGE**

This Chemical Hygiene plan (CHP) has been developed to satisfy the requirements of Title 29, Code of Federal Regulations, Part 1910, paragraphs 1450 and 1200, abbreviated 29 CFR 1910.1450 and 29 CFR 1910.1200, respectively.

The intent of the CHP is to:

- Inform laboratory employees (including student workers) of the potential health and safety hazards present in their workplace and the precautions and preventive measures that have been established by this organization to protect employees from a workplace illness or injury in accordance with the requirements.
- Protect employees from the health hazards associated with hazardous chemical in the laboratory.
- Keep exposures below the Permissible Exposure Limits (PELs) associated with the specific chemicals used in the laboratory.

The CHP will be available to all employees upon request for review. Copies of the Plan will be located in each laboratory and online at the Safety & Risk Management web site.

This CHP will be reviewed and its effectiveness evaluated at least annually by the Safety & Risk Manager in consultation with the Chemical Hygiene Officer (CHO) for each Palm Beach State College campus, or laboratory personnel designated by the campus CHO, and updated as necessary. Per 29 CFR 1910.1450, "Chemical Hygiene Officer" means an employee who is designated by the employer, and who is qualified by training or experience, to provide technical guidance in the development and implementation of the provisions of the Chemical Hygiene Plan. The CHO for each Palm Beach State College campus is as follows:

- Lake Worth Campus – Science Department Specialists for Biology and Chemistry
- Palm Beach Gardens Campus – Science Department Specialists for Biology and Chemistry
- Boca Raton Campus – Science Department Specialists for Biology and Chemistry

The responsibilities of the CHO are detailed in section X below.

### **I. HAZARD IDENTIFICATION AND COMMUNICATION**

- A. A complete inventory of all laboratory chemicals shall be maintained in the laboratory at all times. This inventory shall be updated annually by the Science Department Specialist and the inventory list made available for employee or student review upon request. The list should also be updated within 30 days of receiving a new chemical or discontinuing use of an existing one.
- B. As required by OSHA's Hazard Communication Standard (29 CFR 1910.1200), a Safety Data Sheet (SDS) for each chemical used in the laboratory shall be readily

accessible during each workshift to laboratory employees when they are in their work areas. They are also immediately accessible for employee review online at the Safety & Risk Management web site. The Science Department Specialist is responsible for 1) inventorying the chemicals used in the department; 2) maintaining a listing of those chemicals; 3) obtaining and maintaining a SDS for each chemical on the chemical inventory list; 4) providing a copy of the SDS for any new addition to the Safety & Risk Manager; and 5) informing the Safety & Risk Manager whenever use of an existing chemical is discontinued so that its associated SDS can be properly archived. The Safety & Risk Manager shall add each the SDS for each new chemical to the online database and for archiving the SDS for any chemical whose use is discontinued.

- C. All chemical containers shall be labeled with the full chemical or trade name of the contents. The manufacturer's label will provide personnel with specific information regarding the physical and health hazards of the substance and must not be removed or defaced. Directions found on the label shall be followed. All substances transferred from an original container to a secondary container shall be labeled with either an extra copy of the original manufacturer's label or with a label marked with the contents and the appropriate hazard warning. The Science Department Specialist is responsible for the proper labeling of all containers in the laboratory and for ensuring that labels are not removed or defaced.

## II. STANDARD OPERATING PROCEDURES

Appendix A shows example laboratory safety rules that illustrate the Standard Operating Procedures for the College's science department programs involving the handling and storage of hazardous chemicals (e.g., Biology, Anatomy & Physiology, Microbiology and Chemistry). These rules are consistent with the laboratory safety recommendations contained in *Prudent Practices in the Laboratory* (National Research Council, National Academy Press, Washington, D.C., 2011) and shall be followed by all College faculty, staff and students.

All faculty members are responsible for ensuring that their students are following these safety rules, including the wearing of appropriate personal protective equipment (PPE) at all times in the laboratory, as well as the general requirements listed below. Faculty members must set a proper example for their students by wearing appropriate PPE when in the laboratory.

In addition to these example laboratory safety rules, the following general requirements are mandatory at all times:

- Routes of emergency egress shall be clearly indicated and unobstructed, and exit signs shall be visible from any location within the laboratory.
- All fire extinguishers shall remain functional and accessible.
- Know where the emergency eyewash station and safety shower are located in each laboratory and how to use them.
- Access to the laboratory shall be restricted to authorized personnel only.
- Working in the lab alone is prohibited.

- When handling liquids/reagents or performing/observing dissections, personnel must wear safety goggles and disposable latex or nitrile gloves. There may be other occasions when the instructor asks the students to wear goggles and gloves.
- Personnel must wear closed-toe shoes and clothing that does not have exposed skin (i.e., no shorts or short skirts; long skirts are allowed) at all times. Long hair must be tied back at all times.
- Avoid all skin exposures to chemicals.
- Do not taste or directly smell a chemical.
- “Horseplay” is not allowed in the laboratories.
- Smoking, food, and beverages are prohibited in the laboratory at all times.
- Good housekeeping procedures shall be conducted daily.
- Counter tops and work benches shall be maintained clean, neat and orderly.
- If an incidental spill occurs, clean it up immediately.
- If a major chemical spill or leak occurs, the College’s Chemical Spill Response Plan will be followed (see section X below).
- Safety Data Sheets (SDSs) received shall be submitted to the CHO and a copy maintained in each laboratory such that they are readily accessible during each workshift to laboratory employees when they are in their work areas. Alternatively, employees may use the College’s online SDS system to retrieve a copy of the appropriate SDS. For online access, go to the College home page and click on the Safety link under Administration at the bottom of the page. Click on the Safety Data Sheets (or Material Safety Data Sheets) link on the left-hand side of the Safety and Risk Management web page. Enter your user name and password if requested. Click on the Safety Data Sheets (or Material Safety Data Sheets) link to be taken to the MSDSonline search page. Use one or a combination of the search fields shown, typically Product Name or Manufacturer. Alternatively, from the Faculty & Staff web page, click on the Safety Data Sheets (or Material Safety Data Sheets) link under the Health and Safety heading. Enter your user name and password if requested. Click on the Data Sheets (or Material Safety Data Sheets) link to be taken to the MSDSonline search page. Use one or a combination of the search fields shown, typically Product Name or Manufacturer.
- No manufacturer's label shall be removed or defaced from the original container.
- Identifying labels shall be utilized on all successive containers.
- Laboratories shall not ship containers of hazardous chemicals.
- Breakable containers shall be transported within a compatible, unbreakable, secondary container.
- Equipment which is damaged or malfunctioning shall not be used, particularly chipped glassware.
- Cabinet doors will remain closed and latched when not open to place or access materials.
- Electrical equipment shall be maintained in good condition.
- Compressed gas cylinders shall be secured in an upright position.
- Pipetting by mouth suction is strictly **prohibited**.
- Procedures which are new or unfamiliar shall be referred to the CHO for approval.

- Laboratory procedures that present a serious chemical hazard and acutely hazardous chemicals will require the approval the CHO before their implementation or use.
- Continuous inventory records shall be maintained on all chemicals.
- Excess chemicals shall not be purchased.
- Chemical stock shall be rotated so that the shelf-life is not exceeded.
- Incompatible chemicals shall be segregated from each other.
- Chemical disposal shall be in accordance with all applicable laws and regulations.
- Flammable liquids shall be stored in a flammable storage cabinet.
- Laboratory hoods shall be utilized for all substances with a PEL of 50 parts per million (ppm) or less, or unknown exposure limits or carcinogens.
- Laboratory hoods shall maintain a capture velocity of 100 linear feet per minute at the face of the hood.
- Hood usage and incompatible chemicals shall be segregated.
- Hoods shall **not** be utilized for storage purposes.
- The CHO shall determine the adequacy of all laboratory hoods.
- All personnel shall wash their hands prior to entering and leaving the laboratory.
- Respirators shall be provided to employees as necessary and, used, inspected, maintained and stored in accordance with the Palm Beach State College Respiratory Protection Program.
- Inspections shall be conducted by the CHO at least monthly and documented in accordance with the Palm Beach State College Safety Self-Inspection Program. See Appendix B, Safety Self-Inspection Checklist, Science Laboratory / Classroom Area.

### **III. CONTROL MEASURES TO REDUCE EMPLOYEE EXPOSURE TO HAZARDOUS CHEMICALS**

- A. The control measures to reduce employee and student exposure to hazardous chemicals in the laboratory include engineering controls, administrative controls and PPE. Engineering controls involve some structural change to the work environment or work process to remove the hazard or to place a physical barrier between the person and the hazard. They are the preferred control measure to minimize or eliminate potential hazards in all laboratories. Examples of engineering controls may include fume hoods, biological safety cabinets, glove boxes, shields, increased ventilation, point source vapor collection, etc. Administrative controls refer to a set of procedures that reduce or eliminate exposure of individuals to a hazard by adherence to a specific process or set of instructions. Documentation should emphasize all the steps to be taken and the controls to be used in carrying out the task safely. Examples of administrative controls in the laboratory include Standard Operating Procedures. Personal protective equipment (PPE) is worn by laboratory personnel as a barrier between themselves and the hazard. Examples of PPE include gloves, safety glasses, lab coats and, under special conditions, respirators.
- B. The following operations must be performed in Laboratory Fume Hoods:
- Handling of volatile or organic reagents

- Handling of strong acids and bases
  - Handling of extremely hazardous substances
  - Experiments whose reaction product(s) is volatile
- C. The following operations should be performed in Biological Safety Cabinets:
- Preparation of biological samples/materials for coursework
- D. Where their usage is necessary, respirators shall be provided by the department or organization responsible for the laboratory or instructional program and used in accordance with the Palm Beach State College Respiratory Protection Program. This program is available for employee review at the Safety & Risk Management web site.
- E. Appropriate personnel protective apparel and equipment (PPE) compatible with the necessary degree of protection for the substances handled will be obtained and maintained by each department or organization responsible for the laboratory, provided to laboratory employees, including students as appropriate, and used in accordance with the OSHA PPE standard found at 29 CFR 1910.132. Students may be required to furnish their own PPE as directed. The Science Department Specialist will advise employees on the proper use of gloves, gowns, eye protection, etc. Students will be so advised by the department faculty responsible for the course or program using the laboratory.
- F. Employees and students will be instructed on the location and proper use of eye wash stations and safety showers. The Science Department Specialist is responsible for providing this instruction to employees. Students will be instructed by the department faculty responsible for the course or program using the laboratory, with the assistance of the Science Department Specialist as necessary.

#### **IV. MAINTENANCE OF PROTECTIVE EQUIPMENT**

- A. Fume hoods will be inspected every 12 months by a contractor, retained by the Facilities Department and qualified to perform such inspections, using appropriate test methods. The minimum capture velocity for fume hoods shall be 100 linear feet per minute at the face of the hood. Reports of hood inspections will be available for employee review at the Safety & Risk Management office.
- B. Biological safety cabinets will be inspected and/or repaired and filters replaced as necessary by a contractor retained by the Science Department Specialist. Records of inspections and maintenance will be maintained by the Science Department Specialist.
- C. Safety showers and emergency eyewash stations will be inspected monthly and tested for operability by the Science Department Specialist. Any repairs will be made under a Facilities work order submitted by the Science Department Specialist. Records of

inspections and maintenance will be maintained by the Science Department Specialist.

## **V. EMPLOYEE INFORMATION AND TRAINING**

A. All employees covered by this CHP will be provided with information and training to ensure that they are apprised of the hazards of chemicals present in their work area. This training will be given at the time of initial assignment and prior to new assignments involving different exposure situations.

B. Refresher training will be given as necessary.

C. Employees will be informed of:

1. The contents of 29 CFR 1910.1450 and its appendices. A copy of the standard will be available to employees for review online at [www.osha.gov](http://www.osha.gov).
2. The availability and location of the written CHP in each laboratory. A copy of the CHP is also accessible online at the Safety & Risk Management web site.
3. The PELs for the substances regulated by OSHA or the Threshold Limit Values (TLVs) established by ACGIH for other hazardous chemicals where there is no applicable OSHA standard.
4. Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.
5. The requirements of the Hazard Communication Standard, including the provisions of paragraph (h), and the locations of the inventory list of hazardous chemicals used in the laboratory and their associated SDSs.
6. Location and availability of known reference material on the hazards, safe handling, storage, and disposal of hazardous chemicals found in the laboratory including, but not limited to, SDSs received from chemical suppliers.

D. Employee training will include:

1. The physical and health hazards of chemicals in the laboratory.
2. The methods and observations that may be used to detect the presence or release of a hazardous chemical. These may include monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.
3. The measures employees can take to protect themselves from these hazards.
4. Requirements for PPE.
5. Details of the hazard communication program, including an explanation of the labeling system employed in the laboratory and the SDS, and how employees can obtain and use the appropriate hazard information.

6. Emergency procedures (see section X below).
7. Standard Operating Procedures.
8. Applicable details of the College's CHP.

The training will be conducted by the Science Department Specialist. The training sessions will primarily consist of video, lecture, hands-on exercises, etc.

- E. Documentation of training shall be maintained by the CHO.

## **VI. PRIOR APPROVAL FOR SPECIFIC LABORATORY OPERATIONS**

Laboratory procedures that present a serious chemical hazard will require prior approval by the CHO before work can begin. These procedures include work with acutely hazardous chemicals, such as benzene or cyanide. Course instructors proposing to use other acutely hazardous chemicals must obtain prior approval by the CHO before they can be used.

## **VII. EXPOSURE INCIDENTS – MEDICAL CONSULTATION AND EXAMINATION**

- A. The use by Palm Beach State College laboratories of substances having a medical monitoring and surveillance requirement is extremely limited and would occur only under a fume hood to ensure maximum safety for employees and students.
- B. Whenever an event takes place in the work area, such as a spill, leak, explosion or other occurrence resulting in the likelihood of a hazardous exposure, the affected employee or student shall be provided an opportunity for a medical consultation. This consultation will be for the purpose of determining the need for a medical examination and any subsequent treatment and medical monitoring.
- C. In the event that a laboratory employee or student is known or suspected to have been exposed to a toxic chemical, personal decontamination shall be done immediately following such exposure using the decontamination procedure for the chemical as described in its SDS.
- D. A licensed health care professional, e.g., a physician providing Workers' Compensation services for the Human Resources Department or a physician at a "walk in" urgent care clinic, shall provide medical consultation/examination/treatment/monitoring to all exposed employees. Any consultation, examination or follow-up will be provided to employees at no cost to them, without loss of pay and at a reasonable time and place. Students may obtain medical consultation/examination/treatment/monitoring from a physician of their own choosing and submit claims in accordance with their Student Accident (Education/Training) Insurance Program provisions.

E. In addition to exposure incidents, medical attention, including follow-up examinations that the examining physician deems is necessary, will be provided under the following circumstances:

- Whenever an employee or student develops signs and symptoms associated with a hazardous chemical to which they may have been exposed, the employee or student shall be provided an opportunity to receive appropriate medical consultation/examination/treatment/monitoring. These signs may include:
  - Accidental breakage of a hazardous chemical container.
  - A skin rash or irritation resulting from contact with a chemical.
  - Caustic splash to eyes, face or body.
  - Symptoms such as nausea, dizziness and others.
- The employee or student report shall all accidents/injuries to the CHO. The CHO will contact Security so that an Accident-Incident Report can be completed. The CHO will advise the employee to report to the Human Resources Department to arrange for medical consultation/examination/treatment/monitoring under the College's Workers' Compensation Program. Students may obtain medical consultation/examination/treatment/monitoring from a physician of their own choosing under the College's Student Accident (Education/Training) Insurance Program.
- Exposure monitoring may be requested by the CHO through the Safety & Risk Manager. Where exposure monitoring reveals an exposure level routinely above the OSHA action level (or in the absence of an action level, exposure above the OSHA PEL) for OSHA-regulated substances for which there are medical monitoring and medical surveillance requirements, medical surveillance shall be established for that employee or student.

F. The CHO will provide the following information to the physician:

1. Identity of the hazardous chemical to which the employee or student may have been exposed.
2. A description of the conditions of the exposure including exposure date if available.
3. A description of signs and symptoms of exposure that the employee or student is experiencing (if any).

G. The physician's written opinion for consultation/examination/treatment/monitoring shall be returned to the Human Resources Department for retention in the employee's personnel file and should include:

1. Recommendations for future medical follow-up.
2. Results of examination and associated tests.

3. Any medical condition, revealed in the course of the examination, which may place the employee or student at increased risk as the result of exposure to hazardous chemicals in the workplace.
  4. A statement that the physician has informed the employee about the results of the consultation or medical examination and any medical conditions requiring additional examination or treatment.
- H. The medical results returned by the physician shall not include specific findings and diagnoses that are unrelated to the occupational exposure or exposure event.

## **VIII. RESPONSIBILITIES UNDER THE CHP**

A. The Chemical Hygiene Officer (CHO) for each of the Palm Beach State College campuses is as follows:

- Lake Worth Campus – Science Department Specialist
- Palm Beach Gardens Campus – Science Department Specialist
- Boca Raton Campus – Science Department Specialist

B. Each campus' CHO (Science Department Specialist) will be responsible for:

1. Updating the chemical inventory as new chemicals are added and existing chemicals are discontinued and informing the Safety & Risk Manager of such changes.
2. Obtaining the SDS for each new chemical, or when revised for existing chemicals, and providing them to the Safety & Risk Manager.
3. Providing training to laboratory employees and student workers.
4. Ensuring that laboratory employees and student workers follow Standard Operating Procedures.
5. Ensuring that laboratory employees and student workers utilize safety equipment and engineering controls.
6. Ensuring that laboratory employees and student workers utilize PPE.
7. Conducting monthly inspections of the laboratories and maintaining documentation of such inspections as per the Palm Beach State College Safety Self-Inspection Program. See Appendix B, Safety Self-Inspection Checklist, Science Laboratory / Classroom Area.
8. Assisting in the development of procedures for new or particularly hazardous operations and implementing appropriate chemical hygiene policies and practices.
9. Conducting accident investigations and implementing corrective actions.
10. Maintaining training records.
11. Conducting, together with the Safety & Risk Manager, a review and evaluation of the effectiveness of the CHP at least annually and updating it as necessary.

C. Laboratory employees and student workers, or the CHO (Science Department Specialist) in the absence of personnel in these positions, are responsible for:

1. Following all Standard Operating Procedures.
2. Refraining from operations without proper instruction and/or authorization.
3. Seeking out and requesting information if uncertain about a particular operation or procedure.
4. Wearing appropriate PPE.
5. Developing good personal chemical hygiene habits.
6. Maintaining a chemical inventory for their department and updating it as necessary for new additions or discontinuation of chemical use.
7. Obtaining and maintaining the necessary SDSs, including proper filing of the SDSs and maintaining a copy in each laboratory.
8. Labeling of chemical containers.
9. Providing daily upkeep of the laboratories.
10. Conducting routine inspections of eyewash stations and safety showers as part of the preventative maintenance program.
11. Maintaining appropriate spill control materials in areas where acids, caustics and solvents are routinely used or stored.
12. Collecting and documenting materials used in the laboratory that require special disposal methods. Disposal information may be obtained from the SDSs, as well as known reference material on the safe handling, storage and disposal of hazardous chemicals.
13. Ensuring that hazardous waste is properly collected and accumulated in appropriate containers that are properly labeled until they can be removed by a licensed hazardous waste transporter for disposal in licensed hazardous waste disposal facility.
14. Arranging for hazardous waste disposal.
15. Reporting accidents and near-misses immediately, even minor injuries or exposures.

D. The faculty members of the department maintaining the laboratory are responsible for instructing their students in proper laboratory protocols and standard operating procedures. They must also require that students use appropriate PPE when in the laboratory and set a proper example for their students by wearing appropriate PPE themselves.

## **IX. RECORDKEEPING**

A. The CHO (Science Department Specialist) shall be responsible for maintaining training records for 3 years from the date of the training.

B. The Human Resources Department shall be responsible for maintaining the following records in the employee's personnel file:

- Monitoring records for 30 years from the monitoring date.

- Medical surveillance records for the duration of employment plus 30 years.

**X. EMERGENCY RESPONSE**

In the event of a spill or release of a hazardous chemical in the laboratory, the College's Chemical Spill Response Plan shall be followed (see Appendix C).

## APPENDIX A



### Example Laboratory Safety Rules Verification Form

Course Name

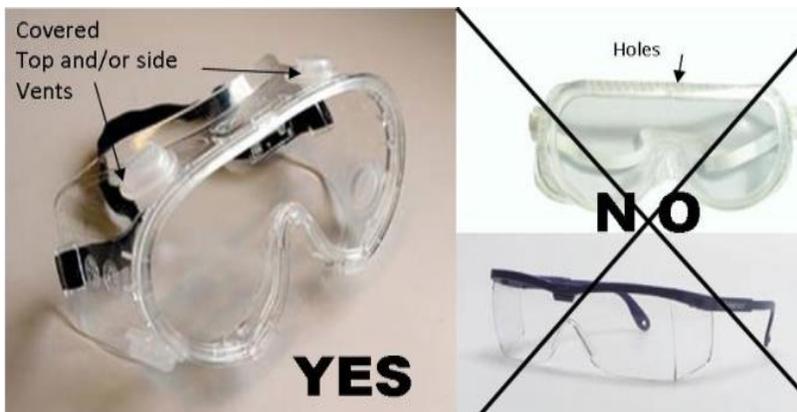
Professors, please have the students read and sign the document attached. After being signed please put this entire packet in the instructor's desk - look for an envelope with your name. It is recommended that you keep a copy of the signed form.

## Course Laboratory Safety Rules

1. Think about what you are doing at all times! The laboratory is a place for serious work and not a place to play. Think about your own safety and that of others working around you.
2. No eating, drinking, smoking or chewing gum is allowed in the laboratory. Do not store food in the refrigerator that is used to store chemicals. Never taste a chemical.
3. Proper attire is mandatory. Everyone must wear a lab coat (coats should be washed with bleach at home separate from other laundry), closed-toe shoes, and clothing that does not have exposed skin (i.e. no shorts or skirts; long skirts are permissible) at all times. Long hair must be tied back at all times. When handling liquids/reagents or performing/observing dissections students must wear safety goggles and disposable latex or nitrile gloves. There may be other occasions when the instructor asks the students to wear goggles and gloves.  
**Note:** Students in specific courses may be required to provide their own coats, gloves and safety goggles (see picture of acceptable goggle below) and bring them to all lab activities.
4. Wash your hands before putting on your gloves and after taking them off.
5. Never throw solid materials into the sinks; use the proper waste containers for paper and glass. Preserved biological specimens should be disposed of in a biohazard container. Gloves may be disposed of in regular garbage containers. (See table of waste containers and hazardous materials below.)
6. Do not return excess chemicals to stock containers, as this may contaminate the stock material. Ask the instructor for guidance in terms of disposing the excess chemicals.
7. Clean up spilled materials immediately using liberal quantities of water. Mop and buckets are available for cleaning spills off the floor. For table spills, use paper towels or small rags which are available throughout the lab. Ask the instructor for assistance if needed.
8. Keep your working surface areas clean at all times. Use paper towel and available cleaning products for cleaning the work station as needed.
9. Keep your lab manual at your desk. All other materials should be stored in designated areas.
10. Before leaving the laboratory, make sure the water is completely shut off. Return all special equipment to the designated place (e.g., microscopes, slides, etc.).
11. Familiarize yourself with the location of the shower, eye wash station, fire extinguishers and exits.
12. Report any accident to your instructor at once. The instructor will then call the Security Office (561-xxx-xxxx) or 911 depending on the severity of the incident. If the instructor calls 911, he/she will need to call Security immediately after.
13. Never perform any unauthorized experiments.

14. Learn how to properly use all equipment (microscopes, etc.). Never use the oil immersion lens (100X) unless the instructor advises you to. Before putting the microscopes away, always remove slides from microscopes and place the lowest objective into position (4X).
15. Always check sinks for debris; please push in chairs; leave the lab in desirable condition for the class that comes in after you.

#### Acceptable Safety Goggles



#### Type of Waste and Type of Container

Type of Waste (Type of Container)	Picture	Notes:	Petri Dishes Tube Culture	Broken Glassware	Gram Stain Slides	Non-Hazardous Slides & Preserved Slides	Dissected Preserved Specimens	Disposable Latex & Nitrile Gloves	Scalpel Blades, Pins & Needles	Reactive, Flammable & Poisonous Chemicals
Bio Hazardous Waste (Small Bags- red or bright orange, Large Bins, Boxes)		Tubes must be tightly capped. Liquids must be disposed of in a tightly capped container, then placed in the bio hazardous waste container.	X		X		X	X (When contaminated with biological agent)		
Sharps (Small Desktop Bin)						X			X	
Chemical Hazardous Waste (Labeled Bottles)		Chemical waste must be poured into appropriately labeled bottles. (Labeling is based on lab activity and/or reactivity.)								X
Glass (Cardboard Glass-Only Containers)		Remove any biological or chemical agents first.		X						
Non-Hazardous Waste (General Garbage and Recycle Bins)		Recycle uncontaminated materials in the proper recycle bin.						X (When NOT contaminated with biological agent)		

I fully understand and agree to follow the Lab Safety Rules for (Name of Course).

Name of Instructor: \_\_\_\_\_ Semester: \_\_\_\_\_

Lab Day: \_\_\_\_\_ Lab Hours: \_\_\_\_\_

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## APPENDIX C

### **Palm Beach State College**

*Florida's First Public Community College*



## **CHEMICAL SPILL RESPONSE PLAN**

# **PALM BEACH STATE COLLEGE CHEMICAL SPILL RESPONSE PLAN**

## **1. Introduction**

Despite the best efforts of faculty and students to work carefully in the academic or photographic laboratory, accidents resulting in the release of chemicals or hazardous waste will occur. Likewise, the potential for spills in Hazardous Waste Accumulation Areas maintained by the Facilities Department also exists. NOTE: Throughout this Plan, the term “chemical” shall also refer to hazardous waste. For this reason, it is essential that all personnel working in such areas or others where chemicals are used or stored know the appropriate procedures for responding to a chemical spill, and the College shall ensure that such personnel receive training in these procedures.

## **2. Chemical Spill Categories**

Chemical spills will fall into two categories, minor and major, which are characterized by the following:

- **Minor Chemical Spill**
  - Chemical is known.
  - Does not pose an immediate or potential significant risk to safety or health, i.e., no fire, explosion or chemical exposure hazard.
  - Does not have the potential to become an emergency.
  - Can be absorbed, neutralized or otherwise controlled and cleaned up by personnel in the immediate area or by Facilities personnel.
  
- **Major Chemical Spill**
  - Chemical is unknown.
  - Chemical is highly toxic or reactive.
  - Poses an immediate significant risk to health.
  - Involves a fire hazard outside a fume hood or an explosion risk.
  - Involves injury to personnel in the vicinity.
  - Response and cleanup of are beyond the expertise and ability of personnel in the immediate area or Facilities personnel, and the equipment and materials for adequately containing and cleaning up the spill are not available.

## **3. Spill Control/Containment and Clean-up Materials/Supplies**

Every laboratory that uses chemicals must have access to a spill control kit appropriate to the chemicals used with at least enough containment and cleanup materials to handle a 1 gallon spill of liquid or 1 kg of dry chemical (or the largest container in the laboratory). Although the contents of most spill kits are common items that may be found throughout the lab, they must be consolidated into a kit for quick access in the event of an emergency. In addition, each laboratory, especially those with floor drains should stock spill socks, pillows, pads and/or

enough bulk absorbent to contain the spilled material away from the drain. Spill kits must be located strategically near work areas so that they are easily accessible in an emergency.

The following is a list of recommended items for a chemical spill kit:

Personal Protective Equipment (PPE) if not already being worn (should be in a separate sealed container):

- Safety goggles.
- Protective gloves (e.g., neoprene, latex, nitrile).
- Long-sleeved lab coat and corrosives apron.
- Plastic vinyl booties.
- Dust mask

Absorbents/Neutralizers:

- Spill socks, pillows or pads in sufficient quantity to contain a spill and keep it away from any floor drains.
- Universal spill absorbent – a 1:1:1 mixture of unscented kitty litter, sodium bicarbonate and sand. This all-purpose absorbent is good for most chemical spills including solvents, acids and bases. Other commercially available absorbents, e.g., vermiculite, may also be used.
- Solvent absorbent – inert absorbent such as vermiculite, clay or sand.
- Acid spill neutralizer – sodium bicarbonate, sodium carbonate or calcium carbonate.
- Alkali (base) spill neutralizer – sodium bisulfate.

Clean-Up Materials:

- Broom, plastic dust pan and scoop.
- Plastic bags (30 Gallon, 3 mil thickness) for contaminated PPE.
- One plastic bucket (5 gallon polyethylene) with lid for spill and absorbent residues.

Other:

- Aspirator bulb and mercury decontaminating powder, if mercury is used in the lab.
- pH paper.
- Tongs.

Commercial spill kits can also be purchased through most vendors that sell chemicals or safety supplies. Spill kits must be checked periodically and replenished after each use.

#### **4. Minor Chemical Spill Response Procedures**

Trained laboratory/Facilities personnel are responsible for the following:

- Alert people in the immediate area of spill and evacuate them as necessary.
- Isolate the area by closing doors, etc. as necessary.
- If spilled material is flammable, remove or turn off ignition and heat sources and unplug nearby electrical equipment.

- Establish exhaust ventilation, if possible, by turning on fume hoods; avoid breathing vapors from the spill.
- Locate the spill kit.
- Put on personal protective equipment (PPE), including safety goggles, suitable gloves and long-sleeved lab coat.
- Confine and contain the spill by applying spill socks/pillows/pads or other appropriate absorbent material, first around the outside of the spill, encircling the spilled material, then absorb to the center of the spill.
- Use appropriate materials to neutralize inorganic acid and base spills.
- For solid/dry chemical spills, cover the spill with a slightly damp paper towel to avoid creating a cloud of dust and push the material into a dustpan or other collection receptacle using the towel.
- Sweep material, used absorbents/neutralizing agents, etc. into a plastic dust pan and place into a plastic bucket or bag.
- Wet mop the spill area. Be sure to decontaminate the broom, dustpan, etc. with soap and water.
- Place all contaminated PPE into plastic bag.
- Store waste in designated area until waste pick-up is scheduled.
- Contact Facilities Manager to obtain cleanup assistance from Facilities personnel if necessary.
- Notify Security after you have cleaned up the spill so that the incident can be documented.
- Notify Safety & Risk Manager.

See Appendix A for additional information on cleaning up specific chemicals.

## **5. Major Chemical Spill Response Procedures**

Laboratory personnel are responsible for the following:

- Attend to any injured or contaminated persons and remove them from exposure.
- Alert people in the immediate area to evacuate.
- Call 911 for potential or actual fire or risk of explosion or if injuries are involved. Provide as much of the following information as is known.
  - Name and address of the facility.
  - Time and type of incident (e.g., spill, fire).
  - Name and quantity of the chemical(s) involved.
  - Location of the incident on campus.
  - Nature and extent of any injuries or damage incurred, if any.
  - Control measures taken.
  - Your name and phone number (or where you will be located) and how you can be identified.
  - Possible hazards to human health, or the environment, outside the facility.
- Use eyewash or safety showers in other areas as needed to rinse spilled chemicals off people.
- If spill material is flammable, turn off ignition and heat sources if that can be done safely.

- If danger is believed sufficient – activate the nearest fire alarm (**unless there is a chance of explosion from the chemical spill**) and evacuate the building. If there is a possibility of explosion by activating the fire alarm, evacuate the building manually by alerting others by voice.
- Close doors to affected area.
- Notify Security.
- Meet responders.

Security will coordinate with or notify the following:

- Appropriate emergency response personnel (e.g., local Fire Department, Palm Beach County Fire and Rescue).
- The Facilities Manager, who will obtain assistance from an outside spill response and clean-up contractor(s) retained by the College, if necessary. See Appendix B for a listing of outside contractors.
- Safety & Risk Manager, who will act in the absence of the Facilities Manager to obtain assistance from outside contractors, if necessary. The Safety & Risk Manager will also perform any required notifications to outside agencies, e.g., the U.S. Coast Guard National Response Center at (800) 424-8802 and the State Warning Point at (800) 320-0519, including submitting any required follow-up report of the incident.

## APPENDIX A

### QUICK REFERENCE FOR CHEMICAL SPILL CLEAN-UPS

The table below provides a synopsis of type of chemicals that may be spilled and the recommended clean-up materials and procedure for them. As always, the Safety Data Sheet for the particular chemical is the preferable reference. If you choose to purchase pre-packaged, commercially available spill kits, the clean-up procedures shown in the table below would be modified to reflect specifics; e.g., Acid Spills: Use container "A" from spill supplies in accordance with directions on the package.

Chemical Spilled	Clean-Up Procedures
Acids, organic	Apply sodium bicarbonate. Absorb with spill pillow or vermiculite.
Acids, inorganic	Apply sodium bicarbonate/calcium oxide or sodium carbonate/calcium oxide. Absorb with spill pillow or vermiculite.
Aldehydes	Absorb with spill pillow or vermiculite.
Aliphatic Amines	Apply sodium bisulfite. Absorb with spill pillow or vermiculite.
Aromatic Amines	Absorb with spill pillow or vermiculite. Avoid skin contact or inhalation.
Aromatic Halogenated Amines	Absorb with spill pillow or vermiculite. Avoid skin contact or inhalation.
Azides	Absorb with spill pillow or vermiculite. Neutralize with 10% ceric ammonium nitrate solution.
Bases (Caustic Alkalis)	Neutralize with acid, citric acid or commercial chemical neutralizers. Absorb with spill pillow or vermiculite.
Chlorohydrins	Absorb with spill pillow or vermiculite. Avoid skin contact or inhalation.
Cyanides	Cover solids with damp paper towel and push onto dust pan or use a HEPA filter vacuum to collect the solids. Absorb liquids with spill pillow or vermiculite.
Halides, organic or inorganic	Apply sodium bicarbonate. Absorb with spill pillow or vermiculite.
Halogenated Hydrocarbons	Absorb with spill pillow or vermiculite.
Hydrazine	Avoid organic matter. Apply "slaked lime." Absorb with spill pillow or vermiculite.
Inorganic Salt Solutions	Apply soda ash. Absorb with spill pillow or vermiculite.
Mercaptans/Organic Sulfides	Neutralize with calcium hypochlorite solution. Absorb with spill pillow or vermiculite.
Nitriles	Sweep up solids. Absorb liquids with spill pillow or vermiculite.
Nitro Compounds/ Organic Nitriles	Absorb with spill pillow or vermiculite. Avoid skin contact or inhalation.
Oxidizing Agents	Apply sodium bisulfite. Absorb with spill pillow or vermiculite.
Peroxides	Absorb with spill pillow or vermiculite.

Phosphates, Organic and Related	Absorb with spill pillow or vermiculite.
Reducing Substances	Apply soda ash or sodium bicarbonate. Absorb with spill pillow or vermiculite.
Waste Acid Liquids (D002)	Apply sodium bicarbonate. Absorb with spill pillow or vermiculite.
Waste Basic/Caustic Liquids (D002)	Neutralize with acid, citric acid or commercial chemical neutralizers. Absorb with spill pillow or vermiculite.
Waste Fixer (D011)	Absorb with spill pillow or vermiculite.
Waste Flammable Liquids (D001)	Absorb with spill pillow or vermiculite.
Waste Flammable Solids (D001)	Sweep up solids. Absorb liquids with spill pillow or vermiculite.

## **APPENDIX B**

### **OUTSIDE CONTRACTORS**

#### **Hazardous Waste Transportation and Disposal**

Contact Purchasing at (561) 868-3462 to obtain a quote from a hazardous waste transportation and disposal company on the College's vendor list.

#### **Chemical/Hazardous Waste – Major Spill Response**

The probability of occurrence of a major spill requiring the services of an outside spill response contractor is believed to be extremely low (there is no credible scenario under which a major spill of chemicals or hazardous waste would occur, considering the chemicals used at the College and the quantities that would be present on the campus at any one time). Nonetheless, prudence dictates that the campus must be prepared for such a contingency by retaining an outside spill response contractor in the event of a chemical or hazardous waste spill possibly involving the following:

- Chemical is unknown.
- Chemical is highly toxic or reactive.
- Poses an immediate significant risk to health.
- Involves a fire hazard outside a fume hood or an explosion risk.
- Response and cleanup of are beyond the expertise and ability of personnel in the immediate area or Facilities personnel, and the equipment and materials for adequately containing and cleaning up the spill are not available.

The determination that the services of the outside spill response contractor are necessary will be made by either the Palm Beach Gardens campus Facilities Manager or the College's Safety & Risk Manager.

Potential service providers are currently under review and will be listed following the completion of appropriate procurement protocols.