

CHEMICAL HYGIENE PLAN FOR LABORATORIES



2800 UNIVERSITY BOULEVARD NORTH JACKSONVILLE,
FL 32211

Prepared:
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Prepared By: Catherine J. Eichner
Senior Project Scientist

Jennifer D. Shea, P.E. Senior Project
Manager

HRP Associates, Inc.

8875 Hidden River Parkway, Suite 300
Tampa, FL 33637
(813) 975-7178 / (888) 477-1877 (813) 975-7170 fax
www.hrpassociates.com

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Lee Ann Clements, Gabriela Block, and Heather McCarthy

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Lee Ann Clements, Adam Campbell, and Heather McCarthy

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TERMS AND DEFINITIONS

Action Level

A concentration designated in 29 CFR 1910, Subpart Z for a specific substance. This value is calculated as an eight (8) hour, time-weighted average and initiates certain required activities (e.g., exposure monitoring and medical surveillance).

Acute Toxicity

The toxic effect of a substance that has a rapid onset, sharp or severe effects, and pronounced symptoms; this effect is not chronic.

American Conference of Governmental Industrial Hygienists (ACGIH)

An independent professional organization that prepares an annual list of recommended exposure guidelines for hazardous chemicals in the occupation setting. See “threshold limit value”.

Chemical Emergency

An incident involving chemicals becomes an emergency whenever there is injury of personnel, an unplanned release to the environment, an explosion, or an unplanned or uncontrolled fire.

Chemical Hygiene Plan

A written program developed and implemented by the employer that sets forth procedures, equipment, personal protective equipment, and work practices to (1) protect individuals from the health hazards caused by hazardous chemicals used in a particular workplace, and (2) meet the requirements of paragraph (e) of 29 CFR 1910.1450.

Chronic Toxicity

The toxic effect of a substance that develops gradually, lasts for a long time, and may have a delayed onset after exposure; this effect is not acute.

Combustible Liquid

Any liquid having a flash point at or above 100°F (37.8°C) but below 200°F (93.3°C), except for mixtures having components with flash points of 200°F (93.3°C) or higher, the total volume of which makes up 99% or more of the total of the mixture.

Compressed Gas

1. A gas or mixture of gases in a container that has an absolute pressure exceeding 40 psi at 70°F (21.1°C).
2. A gas or mixture of gases in a container that has an absolute pressure exceeding 104 psi at 130°F (54.4°C) regardless of the pressure at 70°F (21.1°C).
3. A liquid having a vapor pressure that exceeds 40 psi at 100°F (37.8°C), as determined by ASTM D-323-72.

Designated Area

An area that may be used for work with “select carcinogens,” reproductive toxins, or substances that have a high degree of acute toxicity. A designated area may be an entire laboratory, an area of a laboratory, or a device (e.g., a laboratory hood).

Designated Carcinogen

A carcinogen that meets the criteria for OSHA “select carcinogen” or falls into Category 1 or 2 of the ACGIH’s list of carcinogens.

Explosive

A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Flammable Chemical

A chemical that falls into one of the following categories:

1. *Aerosol, Flammable* – an aerosol that, when tested by the method described in 18 CFR 1500.45, yields a flammable projection that exceeds eighteen (18) inches at the full valve opening or a flashback (a flame extending back to the valve) at any degree of the valve opening.
2. *Gas, Flammable* – (a) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13% or less by volume. (b) A gas that, at ambient temperatures and pressure, forms a range of flammable mixtures with air that is more than 12% of volume regardless of the lower limit.
3. *Liquid, Flammable* – Any liquid having a flash point below 100°F (37.8°C), except for mixtures having components with flash points of 100°F (37.8°C) or higher, the total of which makes up 99% or more of the total volume of the mixture.
4. *Solid, Flammable* – A solid, other than a blasting agent or explosive (as defined by 29CFR 1910.109[a]), that may cause fire through friction, absorption change, or retained heat from manufacturing or processing, or that can be ignited readily and when ignited burns vigorously and persistently thereby creating a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than 0.1 inches per second along its major axis.

Hazardous Chemical

A chemical for which there is statistically significant evidence (based on at least one study conducted in accordance with established scientific principles) that acute or chronic health effects may occur if individuals are exposed. The term “health hazard” includes chemicals that are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on the hematopoietic systems, or agents that damage the lungs, skin, eyes, or mucous membranes.

High Acute Toxicity

Substances with the following effects (from 29 CFR 1910.1200):

1. Median LD50 of 50 mg/kg orally in albino rats, total dosage 200-300g.
2. Median LD50 of 200 mg/kg by continuous contact for twenty-four (24) hours with the bare skin of albino rabbits weighing between two (2) and three (3) kg.

3. Median LC50 in air of 200 ppm (or mg/L) continuous inhalation for one (1) hour.

Laboratory

A facility where the “laboratory scale use of hazardous chemicals” occurs or a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.

Laboratory Scale

Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. “Laboratory scale” excludes those workplaces whose function is to produce commercial quantities of materials.

Laboratory Use of Hazardous Chemicals

The handling or use of such chemicals where all of the following conditions are met:

1. Chemical manipulations are carried out on a laboratory scale.
2. Multiple procedures or chemicals are used.
3. The procedures involved are neither part of a production process, nor in any way simulate one.
4. “Protective laboratory practices and equipment” are available and are commonly used to minimize the potential for exposure to hazardous chemicals.

LC50

“Lethal concentration, 50% is the statistical calculation of the airborne level of a substance that, if inhaled, is fatal to 50% of the test organisms. This concentration is usually expressed in units of mass over volume (e.g., mg/m³) or in parts per million (ppm). Species and exposure conditions must be specified.

LD50

“Lethal dose, 50%” is that statistical calculation of the amount of a substance that is fatal to 50% of the test organisms. This value is usually expressed in units of mass per body weight of the tested species (e.g., mg/kg). Exposure route, species, and duration of exposure conditions must be specified.

Organic Peroxide

An organic compound that contains the bivalent –O-O– structure. Such a compound may be considered as a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical.

Oxidizer

A chemical, other than a blasting agent or explosive (as defined in 29 CFR 1910.109[a]), that initiates or promotes combustion in other materials, thereby causing fire of itself or through the release of oxygen or other gases.

Particularly Hazardous Substances

For the purpose of this supplement, these include OSHA “select carcinogens,” reproductive toxins, and substances with a high degree of acute toxicity.

Permissible Exposure Level (PEL)

The OSHA exposure limits for hazardous chemicals in the workplace. These limits are contained in 29 CFR 1910, Subpart Z.

Physical Hazard

A chemical for which there is scientifically valid evidence that it is combustible liquid, a compressed gas, an explosive, a flammable, organic peroxide, an oxidizer, a pyrophoric, an unstable (reactive), or a water reactive.

Protective Laboratory Practices and Equipment

Laboratory procedures, practices, and equipment accepted by laboratory health and safety experts as effective, or those that employees/students can show to be effective in minimizing the potential for exposure to hazardous chemicals.

Reproductive Toxins

Chemicals that affect reproductive capabilities, including chromosomal damage (mutations) and effects on fetuses (teratogenesis).

Select Carcinogen

Any substance that is:

1. Regulated by OSHA as a carcinogen.
2. Listed under the category “known to be carcinogens” in the National Toxicology Program’s (NTP’s) *Annual Report on Carcinogens*.
3. Listed under Group 1 (carcinogenic to humans) by the *International Agency for Research on Cancer (IARC) Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man*.
4. Listed in either Group 2A or 2B by IARC or under the category “reasonably anticipated to be carcinogens” by NTP. Such a substance causes statistically significant tumor incidence in experimental animals based on any of the following criteria:
 - a. After oral dosages of less than fifty (50) mg/kg of body weight per day.
 - b. After inhalation of six (6) – seven (7) hours per day, five (5) days per week, for a significant part of a lifetime of levels less than ten (10) mg/m³.
 - c. After repeated skin application of less than 300 mg/kg of body weight per week.

Threshold Limit Value (TLV)

Airborne concentrations of substances to which it is believed that nearly all laboratory workers may be repeatedly exposed, day after day, without adverse health effects.

Unstable (Reactive)





A chemical that, in its pure state or as produced and transported, will vigorously polymerize, decompose, condense, or become self-reactive under conditions of shock, pressure, or temperature.

Water Reactive

A chemical that reacts with water to release a gas that is flammable or a health hazard.

COMPLIANCE INSPECTION PLAN REVIEW PAGE

In accordance with the Occupational Safety and Health Administration (“OSHA”) Regulation “Occupational Exposure to Hazardous Chemicals” codified as 29 CFR1910.1450 (e)(4), a review and evaluation of this Chemical Hygiene Plan (“CHP”) is conducted at least annually to ensure the effectiveness of the plan. As a result of this review and evaluation, the college will amend the CHP within one (1) month of the review to include more effective procedures and controls if the plan proves to be ineffective in: (1) protecting students, faculty, and staff from health hazards associated with hazardous chemicals in the laboratory, and (2) keeping exposures below the regulatory limits specified in 29 CFR 1910, Subpart Z.

Review Date	Plan Update Required (yes/no)	Brief Description of Required Revisions (if necessary)	Signature Certifying to Statement Below	Date of Amendment (if necessary)
7/2012	yes	Copy of marked up version available for inspection.		
10/2012	yes	Final revisions made		
6/5/2013	no			
8/26/2014	yes	Minor revisions including personnel changes		
10/23/2015	Yes	Minor revisions including personnel changes		

Certification Statement:

“I have completed a review and evaluation of the CHP for Jacksonville University and will/will not amend the Plan as a result.”

CHEMICAL HYGIENE PLAN LOCATIONS

Per OSHA Regulation 29 CFR 1910.1450 (e)(2), this CHP, shall be readily available to employees/students, faculty, and staff of Jacksonville University (“JU”) as well as to the regulatory agencies Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designated representative upon request.

Additional documentation and references made available at the campus include:

- The current edition of JU’s “Disaster Preparedness and Response Plan”;
- A copy of the “Occupational Exposure to Hazardous Chemical” standard. (Also referred to as the OSHA Laboratory Standard.);
- The chemical inventories for the laboratories at JU;
- Copies of Safety Data Sheets (“SDS”) for chemicals used in laboratories at JU; and
- Additional reference materials relating to laboratory safety and the use of hazardous materials.

In order to ensure that the plan is readily available, copies of the plan will be maintained in the following locations.

1. Biology Laboratory Manager’s Office, Room #21, Nelms Science Building
2. Chemical Hygiene Officer’s Office, Room #132, Merritt-Penticoff Science Building
3. Chemistry Department Office, Room #S1, Swisher Science Building
4. Marine Science Research Institute (MSRI), Common Equipment Room #235
5. Physical Plant Director’s Office, Physical Plant
6. Campus Security’s Dispatch Center, Campus Security & Purchasing Department
7. University Website, www.ju.edu/CampusSecurity/Pages/Environmental-Health-and-Safety.aspx

In case of an emergency when the Chemical Hygiene Officer (“CHO”) is not immediately available, contact JU Campus Security (904-256-7911) to gain access to the documentation and references in:

Merritt-Penticoff Science Building, Room 132

In all other cases, viewing of the documentation and references must be arranged through:

Dr. Lee Ann J. Clements, Chair, Division of Science and Mathematics,
Chemical Hygiene Officer

Email: lclemen@ju.edu

Office: Merritt-Penticoff Science Building, Room 132; MSRI Room 260

Telephone: 904-256-7302

As revisions to the CHP are made, each copy stored at the above locations will be updated.

1.0 INTRODUCTION

Jacksonville University (“JU”) has developed this Chemical Hygiene Plan (“CHP”) to meet the following objectives:

- Educate and protect students, faculty and staff from health concerns associated with the use of hazardous laboratory chemicals.
- Assure that chemical exposures are not in excess of the permissible exposure limit adopted by OSHA.
- Protect university students, faculty, staff, student workers, visitors and property against potentially dangerous accidents associated with the handling, storage and disposal of hazardous chemicals.

The CHP follows the general format and content of the Model CHP provided by the Laboratory Safety Institute and modified as appropriate to reflect the current practices at JU.

This CHP also satisfies the requirements of the U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1910.1450 as modified, *Occupational Exposures to Hazardous Chemicals in Laboratories* and commonly referred to as the “Laboratory Standard.” Although some of the policies and practices described in this CHP may not be part of the OSHA Laboratory Standard, they have been deemed by JU as appropriate for maintaining a safe environment for students, faculty and staff.

Background

Before 1990, OSHA’s approach to controlling occupational exposure to hazardous chemicals was to develop lists of permissible exposure limits (PELs), substance-specific standards, and the health hazard communication standard (29 CFR 1910.1200 and 29 CFR 1910.1200 Appendices A, B, C, D, and E). These regulations address industrial applications where workers typically received prolonged exposure to large quantities of a few chemicals. The OSHA Laboratory Standard (enacted in 1991 and subsequently modified as deemed necessary) applies to all employees engaged in the use of hazardous chemicals in laboratory workplaces where short-term exposure to varying amounts of such chemicals may be encountered. This standard emphasizes worker training and safe work practices.

Applicability

The OSHA Laboratory Standard only applies to laboratory workplaces where chemicals are used in a non-routine, non-production manner by workers with at least some education and training in science. Examples of where this standard applies at JU are biology, chemistry, and physics laboratories. *Not* covered by this standard include photo laboratories that do not change chemical processes, electronics laboratories, machine shops, craft shops, and pilot plant operations that are or simulate a production operation in which chemicals will not change.

When chemicals are used in other JU facilities, such as classrooms or conference areas, individuals will use protective practices and equipment appropriate for the hazard posed by the chemicals. At a minimum, individuals will wear safety glasses or goggles. At no time will an individual’s exposure to such chemicals exceed the permissible exposure limits specified in 29

CFR Part 1910, Subpart Z.

Laboratory use of hazardous chemicals is defined as the handling or use of hazardous chemicals in which all of the following criteria are met:

1. Procedures using chemicals are carried out on a laboratory scale (e.g., using containers for reactions, transfers, and other handling of chemicals that are easily manipulated by one person).
2. Multiple chemical procedures or chemicals are used.
3. The operations involved are neither part of a production process nor simulate one.
4. Protective laboratory practices and equipment are available and are commonly used to minimize the potential for employee exposure to hazardous chemicals.

When the operations in a particular laboratory meet all of the above criteria, that laboratory must comply with the requirements of this CHP. Operations in laboratories involved in the use of hazardous chemicals that do not meet the criteria previously outlined shall comply with JU's Disaster Preparedness and Response Plan, including all other applicable OSHA regulations.

JU's laboratories also generate chemical wastes that may pose environmental, as well as human hazards. These wastes are considered hazardous and are regulated by Federal EPA, state, and local laws and regulations. The most important of these laws and regulations that apply to JU's laboratories are:

- U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration 29 CFR Parts 1910, 1915, and 1926. Hazard Communication, as modified to conform to the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS).
- The Federal Resource Conservation and Recovery Act (RCRA - Title 40 of the Code of Federal Regulations (40 CFR) Parts 260-272).
- The Florida Department of Environmental Protection Hazardous Waste Rule (Chapter 62-730 in the Florida Administrative Code ("FAC")).
- Florida Rules and Regulations relating to the use of the public sewers that applies to certain wastes (saline and sugar solutions only) that can be poured down sink drains and into the public sewer system.

JU has developed a separate Hazardous Waste Management Plan ("HWMP") to ensure compliance with these rules and regulations. The HWMP is available from the Physical Plant Director.

2.0 GENERAL PRINCIPLES

The following principles and elements have been adapted for JU from the American Chemical Society Model CHP.

1. The CHP provides specific laboratory practices and Standard Operating Procedures (“SOPs”) to minimize the exposure of faculty, students and staff to hazardous substances. Following the practices and SOPs specified in the CHP will minimize health and safety risks.
2. It is prudent to minimize all chemical exposures because most laboratory chemicals present hazards of one type or another. Control measures to be implemented include engineering controls, the use of personal protective equipment, and hygiene practices. Employees and students will follow general precautions for handling all laboratory chemicals. Specific guidelines for some chemicals that are known to be extremely hazardous, such as those found in the appropriate SDS, will also be followed.
3. The permissible exposure limit (“PEL”) and threshold limit value (“TLV”) of a typical chemical used in the laboratory are available on the SDS for that chemical. Employee and student exposure to hazardous chemicals should not exceed these limits, and by following the procedures and guidelines within this CHP, exposure will be kept below these limits identified by the American Conference of Governmental Industrial Hygienists (“ACGIH”).
4. The best way to prevent exposure to airborne substances is to prevent their escape into the laboratory by using hoods, ventilation devices, and other protective equipment. These devices must be kept in good working order to provide employees with a safe working area with specific measures taken to ensure proper and adequate performance of such equipment.
5. The purchaser of a chemical should ensure that the corresponding SDS is available or accompanies the chemical. Any entity on campus that receives a SDS in the mail will ensure that the correct party receives it. All SDS should be accessible to employees at all times, and employees should be trained to read and use the information provided on the SDS.
6. Provisions have been established for employees/students to receive appropriate safety information and required training, as well as medical examinations if necessary.
7. The personnel responsible for implementing the CHP, including assignment of a Chemical Hygiene Officer (“CHO”), has been designated. Under the direction of the CHO, the Laboratory Technicians support the implementation of the CHP.
8. Provisions have been established for additional protection for employees/students who work with “particularly hazardous substances.” These include select carcinogens, reproductive toxins, and substances that have a high degree of acute toxicity.

3.0

FACULTY, STAFF AND STUDENT RESPONSIBILITIES

Everyone who teaches, studies or works in JU laboratories is responsible for being aware, understanding and following the CHP. The most visible person responsible for the CHP is the CHO. A description of this position and others who share in conveying to the CHO the authority to take the steps necessary to ensure that the CHP is protective are discussed below.

3.1 Provost/Chief Academic Officer & Chief Financial Officer

JU's Provost/Chief Academic Officer and Chief Financial Officer have the ultimate responsibility for chemical hygiene at JU and provide, along with other officers and administrators, support for efforts to improve chemical safety and health. The Provost/Chief Academic Officer and Chief Financial Officer supervise and authorize the CHO to take steps necessary to carry out the objectives of the CHP including the following:

1. Approving the CHP for laboratories at JU.
2. Monitoring the implementation of the CHP at all applicable levels of administration with JU.
3. Reviewing and adopting any proposed changes to the CHP.
4. Obtaining any required licensing, permits, or approval from local, state, and federal agencies to purchase, store, use, synthesize, administer, and/or dispose of any hazardous material, prescribed medication, or controlled substance.

3.2 Chemical Hygiene Officer

JU appoints a CHO for the Departments of Biology and Marine Science, Physics, and Chemistry. The CHO coordinates all health and safety activities and has the authority to shut down or suspend activities that do not conform to the CHP's practices. Located within Appendix A is the memorandum of designation for the CHO for the institution. Duties include, but are not limited to:

1. Determining which part of JU operations is governed by the OSHA Laboratory Standard, and ensuring that such operations comply with the CHP.
2. Working with the appropriate personnel to evaluate, implement, and update the CHP on a routine basis. Oversee the Environmental Health & Safety ("EH&S") activities within the Division of Science and Mathematics.
3. Providing technical expertise and administrative support to the faculty and staff and direct inquiries to appropriate resources.
4. Ensuring that extremely hazardous substances ("EHSs") are appropriately labeled, handled, stored, and managed and that specific standard operating procedures are developed and maintained with instructions for all personnel in the safe use, cleanup and disposal of these substances.

6. Coordinating the operation, acquisition, and maintenance of fume hoods, emergency safety showers, eyewashes, and fire extinguishers where chemicals are handled.
7. Investigating all reports of laboratory incidents, chemical spills, and near- misses to prevent repeat occurrences.
8. Acting as a liaison between laboratory operations and the Senior Vice President for Academic Affairs and Vice President for Financial Affairs offices. Bring unresolved and potentially serious health and safety problems to the Senior Vice President for Academic Affairs and Vice President for Financial Affairs' attention.
9. Maintaining records and making them available to employees and administrative personnel.
11. Maintaining a collection of references on laboratory safety and hazardous materials.
12. Coordinating and monitoring the procurement, use, and disposal of laboratory chemicals;
13. Developing an appropriate implementation program for chemical hygiene, including procedures for complying with each element of the CHP, such as training, information exchange, and record keeping.
14. Training of all laboratory employees and other personnel who may come into contact with hazardous chemicals.
15. Coordinating waste pickups with those responsible for waste disposal on campus.
16. Familiarizing oneself with the JU Hazardous Waste Management Plan, maintained under separate cover.

3.3 Laboratory Technicians

1. The Laboratory Technicians ("Lab Managers") for the Department of Chemistry and the Department of Biology & Marine Science are directly involved with the implementation of the CHP. The Laboratory Technicians report directly to the Chair of the Division of Science and Mathematics.
2. Working with the appropriate personnel to evaluate, implement, and update the CHP annually.
3. Conducting, or designating the conducting of, semiannual inspections of laboratories and storage areas and provide a written report and recommendations for follow-up activities, as needed, to the CHO. (Inspection Form provided in Appendix B).
4. Reporting all laboratory incidents, chemical spills, and near- misses to the CHO. Develop, institute, and document remedial actions to prevent such incidences in the future.

5. Completing or designating the task of completing, an annual computerized inventory of all chemicals in storage rooms. (See Appendix C), and identifying expired and unusable chemicals stored for disposal.
6. Maintaining a collection of current SDS for all chemicals and mixtures of shipped chemicals in the appropriate laboratories and a second complete set of SDSs in the Office of the Division of Science and Mathematics.

3.4. Faculty and Staff

Faculty and staff, who have the responsibility of EH&S of a laboratory during the instruction of students at JU, participate in the implementation of this CHP and overall safe laboratory practice by:

1. Informing and training students and workers on chemical and operational procedure safety as it applies to activities in their areas.
2. Providing students with a copy of the JU Laboratory Safety Guidelines and request completion and return of the signed Signature Page at the start of each semester or at the commencement of employment. (See Appendix J)
3. Understanding planned experimental activities and the hazardous chemicals involved, including special personal protective equipment that may be required for those activities.
4. Implementing and enforcing rules and standards concerning health and safety for laboratory, classroom and support facilities.
5. Ensuring student and laboratory worker compliance with the CHP.
6. Being aware of hazardous properties of chemicals stored and used in the area, and if possible evaluating and limiting an experiment's potential for environmental emissions;
7. Before each lesson, teaching students about hazardous substances used in the laboratory experiment and ensuring that each student is aware of potential dangers (i.e., identifying safety concerns and developing safety procedures for each experiment).
8. Before beginning employment of students or other workers, teaching them about hazardous substances used in the laboratory and ensuring each worker is aware of potential dangers.
9. Ensuring that proper protective equipment is available and is in working order, and that individuals in the laboratory have been trained in the proper use of such equipment.
10. Ensuring that all containers of hazardous waste are properly labeled and stored according to the JU Hazardous Waste Management Plan.

11. Ensuring that all chemical labels are not defaced or removed.
12. Notifying the CHO and making an incident report immediately if a spill or injury occurs. (Incident Report available in Appendix D)

Requesting assistance, if needed, from the CHO.

3.4 Student and Laboratory Workers

Students and laboratory workers participate in the implementation of this CHP and overall safe laboratory practices by:

1. Indicating by signature that they have been notified of the location(s) of the CHP and understand all safety instructions and are willing to abide by them.
2. Following all health and safety standards, SOPs and rules established in the CHP as communicated by staff and faculty.
3. Reporting all hazardous conditions to the supervising faculty or staff.
4. Wearing and using prescribed personal protective equipment.
5. Reporting any illness or job-related injuries to the supervising faculty or staff. (See Appendix D. Incident Report form)
6. Requesting information and training if not sure about proper operational procedures.
7. Monitoring the workplace to identify EH&S concerns.

4.0 STANDARD OPERATING PROCEDURES

Staff and students must follow the CHP to minimize their risk since most laboratory chemicals present some form of potential hazard to human health, the environment and campus safety. Generally, textbooks, laboratory manuals, and other instructional materials designate the safety precautions needed for a particular laboratory activity. However, total reliance on such publications to provide complete and accurate information is not advisable. Employees should consult additional references, including SDS, before undertaking an unfamiliar activity.

4.1 Safety Equipment and Procedures

JU shall provide appropriate laboratory safety equipment, such as eyewash stations, emergency showers, fire blankets, fire extinguishers, first aid kits, fume hoods, gloves, respirators, chemical resistant aprons, and face shields. JU shall provide employees with their own eye protection (e.g., chemical splash goggles or safety glasses). Due to health, safety, and storage concerns, students shall be required to wear eye protection provided by JU or purchased by the student during potentially hazardous operations. Eye protection should meet the American National Standards Institute (“ANSI”) Z87.1 requirements.

Safety procedures shall be developed to satisfy parts of this CHP, and their content must be consistent with this document. In particular, the following section, entitled “Standard Work Practices,” will be the primary documentation for how laboratories shall implement the CHP.

4.2 Laboratory

General laboratory SOPs include the following:

1. Never place food or beverage in storage areas, refrigerators, glassware, or utensils that are also used for laboratory operations.
2. Do not eat, drink, smoke, chew gum, manipulate contact lenses or apply cosmetics in laboratories where chemicals or other hazardous materials are present. Contact lenses may be prohibited for some operations with volatile solvents.
3. Minimize exposure to all chemicals regardless of their familiarity.
4. Assume that unknown materials are toxic, and that a mixture is more toxic than its most toxic component.
5. Wash areas of exposed skin well before leaving the laboratory.
6. Confine long hair and loose clothing. Wear shoes in the laboratory, but do not wear sandals or flip-flops in laboratories where chemicals are being used. Individual departments and laboratories may specify more stringent requirements. Wear appropriate eye protection at all times.
7. Always wear long-sleeved and long-legged clothing or appropriate protective covering (i.e., a lab coat) that also ensures protection of the midriff area if exposure to chemical splashes or spills is possible. While performing laboratory work, never wear short-sleeved T-shirts, short skirts, or shorts if exposure to chemical spills is possible. Jewelry should not be worn that interferes with gloves, and other protective clothing or that could come into contact with electrical sources or react with chemicals. If short sleeves are worn, a laboratory coat with long sleeves must be worn to cover the exposed arms if exposure to chemical spills is possible.
8. Conduct yourself in a responsible manner at all times in the laboratory. This means that horseplay, throwing items, and pranks are prohibited. The use of cell phones is prohibited during laboratory operations, outside of laboratory emergencies.
9. No one should work alone in the laboratory or chemical storage area unless others are in the vicinity and are aware that someone is in the laboratory.
10. “Wafting” to test chemical odors should only be done with extreme caution and when only specifically directed to do so in the written experimental procedure. Also, chemicals should never be tasted.

11. Never use your mouth to draw fluid through a pipette. Always use a bulb or other device for suction.
12. Consult a physician if you might be pregnant, or have any medical condition that could render you particularly susceptible to chemical exposure.
13. Do not force glass tubing into rubber stoppers. Lubricate the glass and hold the tubing and stopper with cloth towels as the tubing is inserted into the stopper.
14. Proper Bunsen burner procedures shall be followed. Never leave a flame unattended.
15. Should a fire drill or any other evacuation occur during a laboratory activity, turn off all Bunsen burners and non-essential electrical equipment. Leave the room as directed.
16. Hot glass looks like cold glass and remains hot for a long time. Hot plates remain warm for a long time also, and many models have no visible sign that the hot plate is still hot. Determine if an object is hot by bringing your hand close to the object but do not touch the object.
17. In the event of glassware breakage, protection for the hands should be worn when picking up the broken pieces. Small pieces should be swept up with a brush and pan. Broken glass contaminated with hazardous chemicals must be treated as hazardous waste. All broken glassware should be disposed properly in marked broken glassware boxes.
18. Minimize the quantities of uncontained flammable liquids in a laboratory to that needed in one day.
19. Ensure that sources of ignition are not close or nearby when working with flammable materials.
20. Students and workers must read laboratory directions ahead of time and follow all verbal and written instructions.
21. Students and workers shall perform only authorized experiments.
22. Students and workers shall report all accidents, including spills, or injuries to the instructor or supervisor at once, no matter how trivial it may seem. The student must go to Care Spot, 1021 Cesery Blvd. [904-323-4383] for the treatment of cuts, burns, accidental ingestion of chemicals, or inhalation of fumes.
23. Students shall work in a laboratory or chemical storage area only under the direct supervision of an instructor or laboratory supervisor, unless authorized as an undergraduate researcher.
24. Students should dispose of hazardous waste and empty containers in accordance

with instructor's or supervisor's explicit directions and JU's Hazardous Waste Management Plan.

25. Students should ask for assistance from faculty or staff whenever one is unsure regarding the safe handling or disposal of chemicals and waste.
26. In the event of a chemical spill, students and workers shall report the incident immediately to the instructor or supervisor . If the chemical spilled is large, toxic, volatile, or particularly hazardous, leave the room as directed.

4.3 Housekeeping Practices

General housekeeping practices to be followed in the laboratories and stock rooms including the following:

1. Keep all work areas clean, dry and uncluttered. Bench tops should be wiped down at the end of every laboratory session.
2. Access to emergency equipment, utility controls, showers, eyewash stations, and laboratory exits should never be blocked.
3. Sinks are to be used only for disposal of water and those solutions designated by the instructor. All other wastes must be deposited in the appropriate, segregated and labeled receptacles and follow the disposal procedures outlined in the JU Hazardous Waste Management Plan.
4. Minimize the release of toxic vapors into the laboratory by using fume hoods and keeping containers closed at all times when not in use.
5. Clean up all chemical spills as soon as they occur. Chemicals and cleanup materials should be disposed of correctly.
6. Store chemicals and equipment properly. Chemicals should not be stored in aisles, on the floor, in stairwells, on desks, on laboratory tables or in functioning fume hoods.
7. Before leaving the laboratory, turn off services (gas, electricity, water) to the extent permitted by existing equipment.
8. Keep all cabinets and drawers closed when not in use to avoid catching and bumping hazards.
9. Bring only your laboratory instructions, notebooks, calculators, and writing instruments to the laboratory area.
10. Leave backpacks and other books in the classroom area or designated storage areas within the laboratory.

4.4 Chemical Procurement and Purchasing

General chemical procurement and purchasing procedures consist of the following:

1. Chemicals are initially received either by the post office or central receiving. In the case of Science and Mathematics, the chemicals are usually delivered to the Division Office or the Marine Science Research Institute, where they are stored temporarily in their original packaging until the purchaser is informed and retrieves them. In the case of the Millar-Wilson Laboratory, the chemicals are delivered to the Marine Science Research Institute. In the case of Chemistry, chemicals are first inventoried and taped in Swisher Science 4, then moved to the stockroom for storage until removed for use in laboratories.
2. All laboratory chemical purchases will be made through the Division of Science and Mathematics Office and signed by the Division Chairperson/CHO or co-CHOs to facilitate coordination of inventory and purchase approval. The CHO may disallow the purchase of a chemical. Individual departments will maintain their own chemical inventories and will be responsible for ensuring they are updated when chemicals are purchased or depleted. Additionally, the departmental chemical inventories will be updated regularly by department chairs or laboratory managers.
3. Donated chemicals should not be accepted unless prior permission is received from the appropriate department chair and CHO.
4. When purchasing chemical supplies for laboratories, a copy of all chemical purchase order requests must be sent to the CHO. The CHO will ensure that a copy of all chemical purchase order is available to the laboratory technicians so that those chemicals can be added to the departmental chemical inventories.
5. Efforts must be made to purchase chemicals in small-sized containers. The lesser unit cost for bulk purchases are outweighed by the cost of additional storage and disposal of old, unused materials.
6. Faculty and staff needing chemicals, should check the requested chemical purchases against inventory to reduce duplicate purchases and stock build-up.
7. Before an extremely hazardous chemical is ordered, such as carcinogens, reproductive hazards, and acutely toxic substances, consideration must be given to the adequacy of facilities and equipment to safely handle its type and quantity. Consideration must also be given to whether a less hazardous material may be substituted.
8. All purchase orders that include chemicals that have been purchased for the first time must include a request for the SDS to be sent along with the new chemical, or the laboratory technician will obtain a copy. A copy of the SDS will be stored in the laboratory where the chemical is to be used and a second copy will be stored in the Division of Science and Mathematics Office. The Laboratory Technicians will insure that the SDS collection is complete, and faculty, staff and students have access to them during working hours.

4.5 Chemical Inventory

Inventoried of hazardous and potential hazardous laboratory reagents is available for all laboratories on campus. The chemical inventories for each department (Chemistry, Biology and Marine Science, Millar Wilson Laboratory) include the chemical stock rooms where bulk chemicals are stored and each individual laboratory where chemicals are stored and used during the academic year. The inventories are to be updated annually. In compliance with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS; adopted by OSHA in May 2012), the inventories will be expanded to include the following information:

1. Chemical name (including any synonyms and/or concentration)
2. Chemical Abstract Service (“CAS”) registry number
3. Department, Building, Room number, Cabinet/Shelf (if appropriate)
4. Vendor Name (optional)
5. Unit size
6. Chemical type (liquid, solid or mixture); Group/Family
7. Incompatibles
8. Maximum quantity stored on campus at any time during the calendar year and average daily quantity on hand;
9. Physical condition and integrity of the container when inventoried (optional).

Chemicals whose storage limits have expired or containers or labels that are in poor condition or missing must be marked for disposal and included in the inventory until their ultimate disposal.

4.6 Chemical Receiving

General chemical receiving procedures include the following:

All incoming shipments must be inspected by the purchaser, who will ensure that proper labels are attached, containers are intact and in good condition and that SDSs are on file or included. In the event that there are problems, the purchaser will contact the vendor and rectify the problem.

If leaking containers are found, the containers must immediately be placed in an appropriate secondary container by the first recipient of the chemical who will immediately contact the purchaser.

Chemicals should arrive with expiration dates assigned. If there is no date, the purchaser will contact the vendor to obtain the information.

All areas where shipments of chemicals are received and unpacked will have appropriate personal protective equipment (“PPE”) and spill-control materials available.

Each chemical receiving area should have an appropriate fire extinguisher. There should be a safety shower and eyewash station within the area.

Labels on incoming containers shall not be removed or defaced. While there is no regulatory requirement for labeling secondary containers, prudent laboratory techniques make this a desirable practice.

4.7 Chemical Labeling, Storage and Distribution

The primary storage concerns with all chemical materials are to minimize the amounts stored, to avoid contact between incompatible chemicals, and to ensure that hazardous storage conditions (e.g., light, heat and humidity) are not present. Specific storage procedures, however, will depend on the type of storage equipment available and the chemicals in use. Chemicals and mixtures of chemicals will be labeled in accordance with the GHS (Revisions 3) adopted by OSHA on May 25, 2012. Some labeling and standard storage practices are described below.

1. Chemical Identification

- a. In accordance with the GHS (Revisions 3), labels on shipped containers will contain:
 - i. product identifier
 - ii. signal word
 - iii. hazard statement(s)
 - iv. pictogram(s)
 - v. precautionary statement(s)
 - vi. name, address, and telephone number of the chemical manufacturer, importer, or other responsible party
 - vii. Recommended use of the chemical and restrictions on use (*new since 2012)
 - viii. Emergency phone number
- b. If a chemical did not arrive at JU with GHS-compliant labeling, then the CHO and Laboratory Managers will ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with:
 - i. “Product identifier and words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical” (OSHA HCS (NPRM) May 2012).

2. All chemicals should be in tightly closed, sturdy, and appropriate containers. Periodically check the container, label integrity, and the shelf life of chemicals in storage. If deficient, these containers shall be correctly labeled before removing from storage areas.
2. If the chemical has been transferred to a secondary container, the new container should be appropriately labeled, including all of the hazard information. (See

Appendix E for Secondary Labeling Template.)

3. Do not store incompatible materials in the same cabinet. Corrosives, flammables, oxidizers, and poisons are mutually exclusive categories. When a substance has multiple hazards, preference shall be given to the most acute or reactive property. Chemicals should be stored based on the reactive nature and compatibility group of the chemical. (Refer to Chemical Compatibility Chart Appendix F.)
4. Large containers and containers with hazardous chemicals, such as acids and bases, should be on low shelves.
5. The classification system used for the storage of chemicals should be displayed in the principal storage area.
6. Do not overload storage cabinets according to the manufacturers recommended storage limits.
7. Flammable chemicals shall be stored in approved storage containers and in approved flammable chemical storage cabinets or rooms.
8. Combustible packaging material (i.e., cardboard) should not be stored inside flammable chemical storage cabinets.
9. All storage areas should be securely locked when not in use. Storage and preparation areas should be accessible only to those persons authorized to use the chemicals.
10. Glass bottles containing highly flammable liquids shall not exceed four (4) L. For larger volumes, metal or approved plastic may not exceed five (5) gallons, and safety cans shall not exceed two (2) gallons.
11. Refrigerators used to store flammable chemicals shall be labeled and shall be of explosion proof or of laboratory safe design. Household refrigerators are not to be used.
12. Do not store food in laboratory refrigerators. Label refrigerators used for chemical storage.
13. Hand-carried chemicals should be placed in an outside container or acid-carrying bucket to protect against breakage.
14. Wheeled carts used to transport chemicals should be stable and move smoothly over uneven surfaces without tipping or stopping suddenly, and should have lipped surfaces that would restrict the containers if the containers break. If lipped surface is not provided on the cart, chemicals should be placed in an outside container or acid carrying bucket to protect against breakage.
15. Purchase and store only the amount of materials needed for the near future (e.g., a semester or academic year).

16. Ventilate storage areas and individual storage cabinets as needed to limit exposure of individuals in the building.
17. Install and maintain smoke detectors in chemical storage areas.
18. Install and maintain self-closures on doors leading into chemical storage rooms.
19. Consider the technical requirements and implement extreme weather condition safety for chemical storage rooms, shelves, and cabinets.

4.8 Gas Cylinders

Compressed gases present a unique danger since individuals are exposed to both mechanical and chemical hazards. Hazards can arise from reactivity and toxicity of a gas, and asphyxiation can be caused by high concentrations of even “harmless” gases such as nitrogen. The large amount of potential energy resulting from compression of the gas makes a gas cylinder a potential rocket or fragmentation bomb. Therefore, the following procedures must be followed when handling compressed gases.

1. The contents of a gas cylinder should be clearly identified with decals, stencils, or appropriate tags in accordance with GHS (Revision 3). A cylinder lacking proper identification should not be accepted from a vendor.
2. The hazardous properties of each gas should be determined before the gas is put to use. The flammability, toxicity, chemical activity, and corrosive effects of the gas should be considered, and the user should take adequate safety precautions at all times.
3. Gas cylinders should not be dragged, rolled, or slid. A suitable handcart should be used for transporting cylinders of K & L sizes. The handcart should be equipped with a belt or chain for securing the cylinder.
4. Under no circumstances should any individual ride in a passenger elevator with a gas cylinder. The cylinder should be secured in the elevator and sent to the desired floor without any passengers. As a precaution, a sign should accompany the gas cylinder indicating that passengers should not enter the elevator.
5. If gas cylinders must be taken up or down stairs (in buildings where elevators are not available), appropriate precautions and sufficient manpower will be supplied to safely transport the cylinders.
6. Gas cylinders should only be moved from one location to another with the protective cap securely in place.
7. Both full and empty cylinders should only be stored where they may be securely restrained by straps, chains, or a suitable stand.
8. The protective valve cap should be kept on a cylinder at all times, except when the cylinder is connected to dispensing equipment.

9. Cylinders should be protected from abuses such as exposure to damp ground, direct sunlight, extreme temperature changes, precipitation, direct flames, electrical currents, corrosives, and physical damage.
10. Gas cylinders should only be used with the appropriate dispensing equipment. Do not force connections or use homemade adapters. Standards for design, installation, and maintenance of dispensing equipment are determined by ANSI.
11. The size of the individual gas cylinders and the total number of cylinders present in a laboratory should be limited to the amount needed for immediate use (e.g., a semester or academic year).
12. A cylinder should be considered empty when there is still a slight positive pressure.
13. An empty cylinder should be returned to the supplier as soon as possible after having been emptied or when it is no longer needed.
14. Cylinders should not be exposed to temperatures above 50 °C.
15. Store flammable gases separately from oxidizer gases.
16. Compressed gas cylinders will be transported by the supplier.

4.9 Waste Disposal

JU shall ensure that the disposal of laboratory chemicals is in compliance with the procedures outlined in the JU Hazardous Waste Management Plan available from the CHO. To protect the environment, safety, and health of individuals at JU and in the surrounding community, hazardous waste must be disposed of properly. Therefore, all laboratory personnel who generate or handle hazardous, radioactive, or mixed waste should be adequately trained. The following disposal requirements must be enforced.

1. Do not pour hazardous or radioactive chemicals down a sanitary sewer.
2. Place wastes in properly designated containers for disposal. All hazardous waste must be removed from laboratories regularly by a licensed hazardous waste disposal service.
3. Before leaving the laboratory, ensure that chemicals and wastes generated are properly labeled, prepared for disposal, and/or assigned to the CHO or Laboratory Technician who understands how to manage such materials.

4.10 Chemical Spills

Call JU Campus Security (904-256-7911) if the following occurs:

- An accident or spill involving hazardous materials results in a serious injury.

- Hazardous material is released into the sewer system.
 - The severity of an incident is unclear.
1. If the chemical involved in the spill is judged to present an immediate hazard, evacuation is to be absolute, and the area should be isolated until a HAZMAT team arrives. These actions should be taken when the following situations occur.
 - If hazardous vapors are present, the area should be isolated. Only persons trained in the use of respirators may enter the area. This will frequently mean waiting for the arrival of a HAZMAT team.
 - Hazardous material cannot be neutralized or contained safely by the personnel on hand.
 - A fire is involved with any chemical spill or accident.
 - Individuals are unfamiliar with the hazards of the spilled material.
 2. If a volatile, flammable material is spilled, immediately extinguish flames, turn off all electrical apparatus, and evacuate the area. Consult the SDS for appropriate cleanup procedures. If the quantity exceeds the employee's ability or training to handle the spill, seal the area until appropriately trained personnel arrive.
 3. If there is no immediate danger (flammability, toxicity, reactivity, corrosivity) to personnel, containment should be accomplished by use of spill pillows, towels, rolls, or other devices that will keep the spill from spreading.
 4. If there is no immediate danger, cleanup procedures listed on the SDS should be followed. Appropriate personal protective equipment shall be used and waste disposal procedures followed.
 5. A spill kit must be accessible for each laboratory. The kit should include at least:
 - Spill control pillows, or
 - Inert absorbents such as vermiculite, clay, sand, or kitty litter.
 - Neutralizing agents for acid spills such as sodium carbonate and sodium hydrogen carbonate.
 - Neutralizing agents for alkali spills such as sodium hydrogen sulfate and citric acid.
 - Quantities of cleanup materials sufficient for the largest anticipated spill.
 - Large plastic scoops and other equipment such as brooms, pails, bags, and dustpans.
 - Appropriate personal protective equipment.
 6. If the spill material was a hazardous chemical, all of the materials involved in the cleanup will usually be considered to be hazardous waste and must be disposed of as such.
 7. Individuals exposed to hazardous chemicals should respond immediately.

- In the case of eye exposure, flush eyes promptly with water for fifteen (15) minutes and seek medical evaluation.
 - In the case of skin contact, flush the affected area promptly with water and remove any contaminated clothing. See medical evaluation as necessary.
 - In the case of inhalation, isolate the individual from the fumes and seek medical evaluation.
 - A copy of all appropriate SDSs should accompany anyone sent for medical evaluation because of injury and potential exposure to hazardous materials. SDSs are available in the laboratories where the chemicals are used and/or in the Office of the Division of Science and Mathematics.
8. In the event of any spill (in any quantity), an Incident Report (Appendix D) should be completed and returned to the CHO.

4.11 Emissions to the Environment

Chemical users at JU shall review all new and ongoing laboratory operations to determine if the potential exists for the emission of hazardous materials into the environment. If emissions into the environment are possible, the individual must:

1. Consult with the CHO to determine the appropriate controls needed to limit the amount of environmental emission.
2. Contact the Senior Vice President for Academic Affairs or Vice President for Financial Affairs to obtain any required licensing, permits, or approval from local, state, and federal agencies.

5.0 CONTROL MEASURES

5.1 Reduce Exposure to Hazardous Chemicals

The purpose of this section is to provide the framework for selecting control measures to minimize the risk of chemical hazards. Given the enormous variety of hazardous materials and potential operations, JU has adopted the following guidelines.

Chemical hazards are reduced through various control measures that work in unison to minimize exposure. These measures include the following (in order of preference):

1. *Chemical Substitution* – Such as using a less hazardous compound.
2. *Engineering Controls* – Such as fume hoods, designated areas, security devices, and facility design.
3. *Administrative Controls* – Such as written safety procedures, training, limited access, and medical surveillance.

4. *Personal Protective Equipment* – Such as respirators, gloves, face shields, and chemical resistant clothing.
5. *Work Practices* – Such as personal hygiene and laboratory technique.

Selection of Controls

After preparing a chemical hazard analysis, a combination of controls may be used based on:

1. The inherent toxic and physical properties of the materials and their intended use.
2. The possibility of unplanned outcomes, spills and accidents.
3. Possible exposure routes (inhalation, skin contact, eye contact, or ingestion).
4. Skills, training, and prior experience of the chemical user.

Selection of the final control measures must be made in consultation with the CHO, Department Chairs, and the Laboratory Technicians.. Consultation is especially needed for new operations and any operations involving particularly hazardous substances.

5.2 Personal Protective Equipment

The following PPE should be considered as control measures for use within the laboratories to control safety hazards.

1. It is the responsibility of JU to ensure the availability of appropriate safety and emergency equipment for employees that is compatible with the required degree of protection for the substances being handled. [Students may be required to purchase appropriate safety glasses/goggles and laboratory coats or aprons for use in classes and laboratories].
2. Where necessary, procedures should be prepared on the use of eye, skin, body protection, respirators, and/or other protective gear. Students, faculty, staff and visitors should be informed of appropriate attire when entering a laboratory and may be refused entry if they do not conform to safety policies.
3. Individuals must wear eye protection when visiting or working in areas where hazardous chemicals are handled. All eye protection devices should conform to ANSI Standard Z87.1-1989.
4. Chemical splash safety goggles should be used as the standard protective eyewear. Such goggles should fit the face surrounding the eyes snugly to protect the eyes from a variety of hazards.
5. Any experiment that involves heating or the use of chemicals or glassware shall require the use of chemical splash safety goggles. The goggles also serve to reduce dust and fumes from reaching the eye.

6. Contact lenses are not necessarily prohibited in the laboratory. If contact lenses are permitted, chemical splash goggles must be worn at all times.
7. Full-face shields protect the face and throat. They must be worn for protection when there is a greater risk of injury from flying particles and harmful chemical splashes. A full-face shield should also be worn when an operation involves a pressurized system that may explode or an evacuated system that may implode. For full protection, safety goggles must be worn with the face shield.
8. Standing shields should be used when there is a potential for explosions, implosions, or splashes, or when corrosive liquids are used. Goggles should be worn whenever using a standing shield.
9. A standing shield should be used for group protection from chemical splash and impact. The standing safety shield should be used with safety goggles or glasses and, if appropriate, with a face shield.
10. Laboratory coats or aprons worn in the laboratory should offer protection from splashes and spills, and should be easy to remove in case of an accident, and should be fire resistant.
11. When gloves are required, it should be remembered that no one kind of glove is suitable for all situations. The SDS should be consulted for information regarding the proper type of gloves to be used.
12. Gloves must be worn during transfer of chemicals from one container to another or during the transfer of chemical waste. Gloves are available in all prep rooms and in each individual laboratory. Gloves should be inspected before use to ensure that there are no holes, blisters, and cracking or other ways for the chemical to pass through the glove onto the hand and should be replaced periodically or when damaged or punctured.
13. If necessary, individuals shall be trained in the proper use of respirators and shall wear them whenever exposure by inhalation is likely to exceed OSHA or ACGIH limits.
14. Carefully inspect all protective equipment before using. Do not use defective protective equipment. The choice of protective clothing depends on the degree of protection required and shall be set by the CHO.

5.3 Hazard Identification and Labels

The following SOPs will be followed for hazard identification and labels.

1. Laboratory chemicals should be properly labeled to identify any hazards associated with them. Chemicals and mixtures of chemicals will be labeled in accordance with the GHS (Revisions 3) adopted by OSHA on May 25, 2012. Some identification and labeling practices are described below.

1. Chemical Identification

- a. In accordance with the GHS (Revisions 3), labels on shipped containers will contain:
 - a. product identifier
 - b. signal word
 - c. hazard statement(s)
 - d. pictogram(s)
 - e. precautionary statement(s)
 - f. name, address, and telephone number of the chemical manufacturer, importer, or other responsible party
 - g. Recommended use of the chemical and restrictions on use (*new since 2012)
 - h. Emergency phone number
 - b. If a chemical did not arrive at JU with GHS-compliant labeling, then the CHO and Laboratory Technicians will ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with:
 - a. "Product identifier and words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical" (OSHA HCS (NPRM) May 2012).
2. Chemicals stored in original bottles, must have the manufacturer's original label identifying potential hazards, and the date of purchase, the date opened, and the initials of the person who opened the container. This will apply to chemicals purchased after July 2008.
 3. Chemicals transferred to a secondary container, must be appropriately labeled with the chemical name, formula, concentration (if in solution), solvent (if in solution), hazard warnings, and name or initials of the person responsible for the transfer. (Appendix E)
 4. Unlabeled bottles of unknown contents should not be opened, and such materials should be disposed of as discussed in the JU Hazardous Waste Management Plan.

5.4 Signs and Posters

The following SOPs will be followed for signs and posters.

1. All laboratory employees must be alerted to hazards in an area they enter. The employer shall post a sign at the location where notices are normally posted to inform employees that they have the right to information regarding toxic substances found in the workplace.

2. Signs shall be used to indicate the location of exits, evacuation routes, safety showers, eyewash stations, fire extinguishers, fire blankets, first aid kits, fume hoods, and other safety equipment.
3. Telephone numbers of emergency personnel, facilities, supervisors, Laboratory Technicians and the CHO must be posted next to the phone in each laboratory, storeroom/stockroom, and storage area.
4. Flammable storage cabinets and refrigerators must be labeled according to local fire regulations. Emergency telephone numbers shall be posted in all laboratory areas.

5.5 Safety Data Sheets (SDS)

The following SOPs will be followed for the use and retention of SDS.

1. Each SDS received should be maintained and made readily available to laboratory employees and to students. The SDS of each chemical or mixture of chemicals is typically available in the laboratory where the chemical is used (Department of Biology and Marine Science) or the Laboratory Technician's office (Department of Chemistry). A second copy of each SDS is also filed in the Office of the Division of Science and Mathematics.
2. The SDS for each chemical usually gives guidelines to exposure limits. Typical limits are expressed as Threshold Limit Values (TLVs), permissible exposure limits (PELs), or action levels. Such limits, along with any other information about the hazardous characteristics of the chemical, should be used to set laboratory guidelines. These laboratory guidelines may be used in determining the safety precautions, control measures, and personal protective equipment that apply when working with the toxic chemical.
3. An SDS for each chemical or mixture of chemical must be maintained and made available by the CHO.

5.6 Records Retention

The following records are to be maintained by the CHO or his/her designee:

- An annual inventory of all chemicals and chemical usage
- Repairs and regular inspection and maintenance of safety equipment (including fume hoods)
- Employee training
- Incident reports
- Air monitoring data, exposure assessments, medical consultations, and medical examinations
- Waste disposal manifests and records for laboratory waste

- SDS

5.7 Exposure Monitoring

The following SOPs will be followed for exposure monitoring.

1. If there is reason to believe that the exposure level for a regulated substance has exceeded the action level or permissible exposure limit, the CHO should ensure that the employee or student exposure to that substance is measured.
2. Factors which may raise the possibility of overexposure and therefore warrant an initial measurement of employee or student exposure include:
 - The manner in which the chemical procedures or operations involving the particular substances are conducted.
 - The existence of historical monitoring data that shows elevated exposures to the particular substances for similar operations.
 - The use of a procedure that involves significant quantities or is performed over an extended period of time.
 - There is reason to believe that an exposure limit may be exceeded.
 - Signs or symptoms of exposure (e.g., skin or eye irritation, shortness of breath, nausea, or headache), which are experienced by employees or students. (Some of these symptoms are very general and can be due to many other causes including emotional stress or hysteria.)
3. If the substance in question does not have an exposure monitoring or a medical surveillance requirement, exposure monitoring and medical surveillance shall be continued until exposure levels are determined to be below the action level or 50% of the PEL. In the absence of PELs, the ACGIH TLVs should be referenced.
4. If a substance has an exposure-monitoring requirement and if there is reason to believe that exposure levels for that substance routinely exceed the action level or in the absence of the action level, the PEL, the employer shall measure the employee or student exposure to the substance.
5. If the initial monitoring (described in above) discloses employee exposure over the action level or in the absence of an action level, the PEL, JU shall immediately comply with the exposure monitoring provisions of the relevant standard for that substance.
6. JU shall, within fifteen (15) working days after the receipt of any monitoring results notify the employee or student of these results in writing either individually or by posting the results in an appropriate location that is accessible to employees.
7. The following substances are regulated by OSHA standards and require personal exposure monitoring:
 - Acrylonitrile (29 CFR 1910.1045(n); 1926.1145; 1915.1045)

- Arsenic (Inorganic) (29 CFR 1910.1018(n); 1926.1118; 1915.1018)
- Asbestos (General Industry) (29 CFR 1910.1001(l))
- Benzene (29 CFR 1910.1028(i); 1926.1128; 1915.1028)
- 1,3-Butadiene (29 CFR 1910.1051(k); 1926.1151)
- Cadmium (29 CFR 1910.1027(l); 1926.1127; 1915.1027; 1928.1027)
- Chromium(VI), Hexavalent (29 CFR 1926.1126(i); 1915.1026(i))
- Coke Oven Emissions (29 CFR 1910.1029(j)) -- Not applicable to JU.
- Compressed Air Environments (29 CFR 1926.803(b)) – Not applicable to JU.
- Cotton Dust (29 CFR 1910.1043(h)) – Not applicable to JU.
- 1,2-dibromo-3-chloropropane (29 CFR 1910.1044(m); 1926.1144; 1915.1044)
- Ethylene Oxide (29 CFR 1910.1047(i); 1926.1147)
- Formaldehyde (29 CFR 1910.1048(l); 1926.1148; 1915.1048)
- Lead (29 CFR 1910.1025(j); 1926.62)
- Methylene Chloride (29 CFR 1910.1052(j); 1926.1152)
- Methylenedianiline (29 CFR 1910.1050(m))
- Vinyl Chloride (29 CFR 1910.1017(k); 1926.1117)
- Ionizing radiation (29 CFR 1910.1096)

6.0 SAFETY/EMERGENCY FACILITIES AND EQUIPMENT

6.1 Reporting Laboratory Incidents and Unsafe Conditions

The following SOPs will be followed for reporting laboratory incidents and unsafe conditions.

1. Report all laboratory incidents, no matter how minor, to the CHO. Incident report forms are available from the CHO and in Appendix D of this plan. Unusual or unexplainable chemical reactions should be discussed with others in the department, to caution others as to the risk of the procedure. Personal reactions to chemicals that are not identified on the SDS should be reported to the EPA, with the advice of legal counsel, under the Toxic Substances Control Act (TSCA) Section 8 regulations.
2. Report any unsafe conditions by contacting the faculty/staff of the area who in return should file a written report with the CHO so that the condition may be corrected. Unsafe conditions that must be reported include:
 - Nonfunctioning hoods in the science area.
 - Unsafe storage conditions.
 - Blocked emergency exits.
 - Improperly charged or expired fire extinguishers.
 - Eyewash stations or safety showers that do not work or are uninspected.
 - Absence of personal protective equipment.

A template for reporting a safety concern is available in Appendix G.

6.2 Proper Equipment Use

The following SOPs will be followed for proper safety equipment use.

1. Use equipment only for its intended purpose.
2. Inspect equipment or laboratory apparatus for damage before use. Never use damaged equipment, such as cracked glassware or equipment with frayed electrical wiring.
3. Consult user manual prior to using equipment for the first time.
4. Airflow through fume hood should be inspected and calibrated annually.

6.3 Emergency Equipment

The following SOPs will be followed for the availability and use of emergency equipment.

1. Emergency equipment items that should be available include: eyewash station, fire extinguisher of the appropriate type, safety shower, telephone for emergencies, fire blanket, and identification signs.
2. Each laboratory should have a standard first aid kit.
3. Safety equipment will be tagged following an inspection, showing the date, inspector, and results.
4. Laboratories in which hazardous substances are being used should have spill control kits tailored to deal with the potential risk associated with the materials being used. If there is no immediate danger to employees or students, containment should be accomplished by spill pillows, towels, rolls, inert absorbents, neutralizing agents, or other devices.
5. The path to emergency equipment should remain clear at all times.

6.4 Fume Hoods

Specific measure shall be taken to ensure proper installation and adequate performance of fume hoods and other safety equipment, including alarm systems. JU has adopted guidelines from:

- “Prudent Practices in the Laboratory: Management of Chemical Hazards, Updated Version (2011),” published by the National Research Council. (Available from National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418)
- “CRC Handbook of Laboratory Safety, 5th Edition,” published in 2000 by A. Keith Furr. (Available from CRC Press, 2000 N.W. Corporate Boulevard, Boca Raton, Florida 33431.)

Consult with the CHO before making changes to existing systems and/or to obtain the criteria for unique experimental setups.

The CHO shall oversee annual performance checks on all fume hoods and safety equipment used for hazardous materials. Before working with hazardous material, however, the user should always verify that the fume hood and/or equipment is operating properly. Users noting a deficiency in a fume hood or with safety equipment should immediately notify the CHO. A fume hood or piece of equipment that is not operating as intended shall not be used for hazardous procedures. To ensure safety, fume hoods used for hazardous materials (e.g., toxic, radioactive, and /or flammable substances) must be checked before their use for adequate function to alert users to their less-than-adequate performance.

1. Florida fire code regulations require that all fume hoods be vented so that a minimum average face velocity of 100 feet per minute (fpm) across a sixteen (16) inch sash height is achieved. This minimum flow should be certified annually.
2. Hoods are to be used for the following:
 - a. When the chemical is a known or suspected carcinogen, reproductive hazard, sensitizer, or toxic chemical.
 - b. When handling large quantities of chemicals (more than 500 mL of liquid or more than thirty (30) grams of a solid)
 - c. When handling flammable and reactive substances
 - d. When mixing acid dilutions
 - e. When handling a substance that is fine and may create a dust
3. Check fume hoods before use to ensure adequate functioning. File a safety concern requesting hood maintenance if there is a problem and contact the CHO or appropriate faculty/staff immediately. Report all improperly functioning fume hoods to the CHO by way of completing a Safety Concern Reporting Form (Appendix G). Baffles should not be adjusted after adequate performance is verified.
4. Hoods should be closed and turned off when not in use. If chemicals remain in the hood after use, they should be placed in the rear of the hood and the fan left on.
5. Keep equipment and bottles in use, at least six (6) inches from the front of the hood.
6. Connect electrical equipment to outlets outside the hood when possible.
7. Wash the work platform often to maintain a clean, dry surface.
8. Do not use the hoods for a storage area. Once the laboratory has finished running, remove all bottles to their correct storage areas.
9. Hoods should be uncluttered and the air flow to the back of the hood must be unobstructed during use.

6.5 Ventilation

General laboratory ventilation should not be relied on for protection from exposure to hazardous chemicals. A rate of four (4) to twelve (12) room air exchanges per hour should be the accepted standard when local exhaust systems, such as hoods, are used as the primary method of control and will be verified by Physical Plant personnel. Exhaust from the fume hoods should be vented directly to the outside.

6.6 Flammable Storage

The following SOPs will be followed for the storage of flammable materials.

1. Chemicals with a flash point below 93.3°C (200°F) or any chemical with a SDS label indicating “Flammable” is considered a “fire hazard chemical.”
2. Fire hazard chemicals in excess of 500 mL should be stored in safety cans or in storage cabinets or rooms designed for flammable materials.
3. When transferring significant quantities of flammable liquids from one container to another, it is particularly important that they be properly grounded to prevent accidental ignition of flammable vapors and liquids from static electricity or other sources of ignition.

6.7 Electrical

The following SOPs will be followed for electrical outlets and circuits.

1. All electrical outlets should have a grounding connection accommodating a three-prong plug.
2. Ground-fault circuit interrupters are required by code to protect users from electrical shock, particularly if an electrical device is handheld during a laboratory operation or if contact with water is highly possible.

7.0 TRAINING

The primary goals of the EH&S policies of JU are to protect individuals from harm, prevent property damage, and limit environmental impact. The OSHA Laboratory Standard stipulates that individuals must be provided with specific information about the chemical hazards in their work area and trained on how to handle such chemicals. Thus, chemical users shall receive the required training that will enable them to take every reasonable precaution in the performance of their work. The training must be conducted and documented in accordance with this CHP and OSHA requirements.

Training can be accomplished through formal courses, informal instruction, and/or on-the-job training. All training, however, must be documented. The frequency for refresher training is not stipulated in the OSHA regulation. Therefore, JU encourages evaluation of the need for such training on a case-by-case basis.

7.1 Required Information

Individuals working in laboratories at JU shall be provided with the following information:

1. Employees shall be informed of the location of hazardous chemicals in the work area at the time of initial assignment, and before each new assignment that involves chemicals to which an individual may be exposed.
2. Employees shall be informed of the content of the “Laboratory Standard,” 29 CFR Part 1910. Employees shall also be informed of the location and availability of the CHP.
3. Employees shall be informed of the permissible exposure limits (PELs) or Threshold Limit Values (TLVs) for OSHA-regulated substances in the laboratory or recommended exposure limits for other hazardous chemicals in the laboratory where there is no applicable OSHA standard.
4. Employees shall be informed of the location and availability of known standard reference material on the hazards, safe handling, storage and disposal of hazardous chemicals where there is no applicable OSHA standard.
5. Employees shall be informed of the location of SDS.
6. Employees shall be informed of the location of personal protective equipment and of emergency equipment as outlined in the CHP.
7. Employees shall be informed of the signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.

7.2 Employee Training

Employees will be provided with information and training to ensure that they are apprised of the hazards of chemicals present in their work area, the proper procedures to minimize risk of exposure; and the proper response to accidents.

These orientation and training sessions will cover the following:

- Contents of the Laboratory Standard and its appendices and how JU has responded to meet its responsibilities, location and availability of the CHP, SDS, and resources on laboratory employee health and safety.
- How to read an SDS and understand the content
- Physical and health hazards of chemical classes
- Signs and symptoms of exposure
- Use of fume hoods and personal protective equipment
- Special operating procedures to be used for extremely hazardous chemicals
- How to conduct a laboratory inspection

- Protocol for dealing with permissible exposure limits and other recommended limits
- How to file Incident Reports and Safety Concern Reporting Forms.
- Methods and observations used to determine the presence or release of a hazardous chemical, such as periodic monitoring devices, continuous monitoring devices, and the visual appearance or odor of hazardous chemicals being used.
- Control measures to protect individuals from chemical hazards. These include appropriate engineering and administrative controls, personal protective equipment, work practices, fire extinguisher use and emergency procedures.
- Physical and health hazards in the work area, including flammable and reactive materials, irritants and corrosives, acute poisons, chronic organic toxins, allergens, and genetic toxins.
- Proper labeling, storage, and waste disposal practices.
- Applicable details of this CHP.

Employees should be trained on the potential chemical hazards in the employees' work areas and on appropriate sections of the CHP. This training should be provided to all employees who actually work in the laboratory as well as to other employees whose assignments may require that they enter a laboratory where exposure to hazardous chemicals might occur. The CHP for laboratory document should be signed after training (See Appendix I)

The training an employee receives should be determined by the nature of the work assignment in the laboratory.

7.3 Student Training

Students should receive the following training at a minimum.

1. Instruction in laboratory safety shall be provided to all students involved in laboratory activities.
2. The extent of student training should be based on the CHP, and the level of chemical handling and potential exposure to hazardous chemicals.
3. Safety training should include the importance and the content of the label and of SDS.
4. At the beginning of the academic year and prior to laboratory activities, class time shall be devoted to safe laboratory practices and to the student lab safety guidelines available in Appendix J.

8.0 HAZARD EVALUATION

JU prohibits employees/students from accepting used equipment, chemicals, or biological specimens donated by other universities, institutions, or private companies without prior authorization from the administration. While transfer of such items may have been a routine practice at one time, the expense, space limitations, special storage requirements, liability, and/or regulatory restrictions no longer justify this practice. Exemptions to this policy shall require the written approval of the CHO, Chair of the department receiving the donations, and the Senior Vice President for Academic Affairs or Vice President for Financial Affairs.

JU prohibits the use, possession, synthesis, or administration of prescribed medications and controlled substances in the laboratory. Exemptions to this policy will be granted only if:

1. A detailed protocol is submitted to the Senior Vice President for Academic Affairs and Vice President for Financial Affairs setting forth the nature of the proposed experiments, the qualifications of the employees/students who will engage in the experiments, the proposed quantity of each prescribed medication and/or controlled substance involved, and the measures necessary to provide for security and proper recordkeeping.
2. The Senior Vice President for Academic Affairs and Vice President for Financial Affairs and the Institutional Review Board ("IRB"), in consultation with JU General Counsel and CHO approves the detailed protocol.
3. Appropriate licensure, permits, and/or approval are secured by the Florida Department of Health ("FDOH").
4. Appropriate licensure, permits, and/or approval are secured from the Federal Food and Drug Administration ("FDA").
5. Appropriate licensure, permits, and/or approval are secured from the Drug Enforcement Administration ("DEA").

Additional hazard evaluations will be made for the following.

1. Prior approval should be obtained from the CHO whenever a new laboratory experiment or test is to be carried out if faculty/staff are uncertain about associated hazards.
2. Prior approval from the CHO before doing any procedure should be obtained where one or more of the following conditions exist if the faculty/staff are uncertain about associated hazards and appropriate protective measures:
 - Potential for a rapid rise in temperature.
 - Potential for a rapid increase in pressure.
 - Potential for a chemical explosion.
 - Potential for spontaneous combustion.
 - Potential for the emission of toxic gasses that could produce concentrations in the air that exceed toxic limits.
 - Involves the use of a highly toxic substance.

3. Approval will be initiated by use of the Laboratory Procedure Change form, available in Appendix H.
4. Chemicals should not be distributed to other persons or to other areas of the school, outside of science, without the prior approval of the CHO. Chemicals should not be transferred to another location without the simultaneous transfer of a copy of the appropriate SDS, nor should they be transferred without the person receiving the chemicals having had an appropriate training in their use, storage, and disposal.
5. Students shall only work in a laboratory or chemical storage area under the direct supervision of a professor or laboratory supervisor, unless they are a permitted undergraduate researcher or paid, trained laboratory staff.

9.0 MEDICAL CONSULTATION AND EXAMINATION

All injuries or chemical exposures in the laboratory should be reported immediately to JU Campus Security and the CHO. Medical attention following an injury or exposure to chemicals in the laboratory should be sought. Consultation, examination, and treatment by licensed physicians and nurse practitioners are available to all employees/students of JU at the Urgent Care Clinic on Cesery Blvd. In the event of a known acute exposure, referral should be prompt to ensure that appropriate decontamination and medical care are provided in a timely manner.

1. JU staff working with hazardous chemicals shall receive medical care consistent with established worker's compensation procedures under the direction of the Human Resources Director and the CHO whenever:
 - An employee develops signs and symptoms of exposure associated with chemicals he/she is using, or may be in contact with OSHA regulated substances measured above "actual" permissible exposure limits.
 - An employee is present at a chemical spill, leak, explosion, or other situation that exposes him/her to a hazardous chemical.
 - An event such as a cut, puncture, spill, leak, or explosion results in exposure to a hazardous material.
2. The college will provide the examining physician with:
 - The generic and trade names of all hazardous chemicals and chemical compounds to which the employee may have been exposed.
 - SDS and any other relevant data.
 - Conditions under which the exposure occurred.
 - Signs or symptoms of exposure experienced by the employee during, soon after, and within seventy-two (72) hours after the incident.
 - The results of the investigation of the incident, including witness interviews.
 - Any monitoring or test results.

3. The Human Resources Director, on behalf of JU and the employee, shall obtain a written opinion from the examining physician. The written opinion should include:
 - Recommendation for medical follow-up.
 - The results of all medical examinations.
 - Any medical condition the employee has that places him/her at risk as a result of future exposure to hazardous chemicals.
 - A statement confirming the employee was advised of the risks.
 - The opinion must not reveal specific findings of diagnoses unrelated to occupational exposure if such limitation is within the control of the JU.
4. Medical attention includes:
 - Medical history and examination.
 - Specific treatment as necessary.
 - Laboratory tests if required.
 - Follow-up examinations, treatments, and laboratory tests as needed.

10.0 PARTICULARLY HAZARDOUS SUBSTANCES

Special consideration shall be given to protecting employees/students from particularly hazardous chemicals. For the purposes of this CHP, these include designated carcinogens, reproductive hazards, allergens, extremely flammable substances, highly reactive, and acutely toxic materials.

When particularly hazardous substances are used in laboratories at JU, the specific control measures below shall be implemented for additional protection. The CHO shall be consulted for identification of particularly hazardous substances and for guidance on selecting controls if necessary.

1. Establish “designated areas” (see definitions). The chemical user and/or CHO shall ensure that the appropriate warning signs are posted in these areas.
2. Use containment devices (e.g., fume hoods or glove boxes) when:
 - a. Volatilizing substances.
 - b. Manipulating substances that may generate aerosols.
 - c. Using laboratory procedures that may result in an uncontrolled release of the substance.
3. Use high-efficiency particulate air (“HEPA”) filters, carbon beds, or scrubber systems with containment devices to protect effluent and vacuum lines, pumps, and the environment whenever feasible.
4. Establish procedures for the safe removal of contaminated waste. Disposal of any particularly hazardous substance is controlled by government regulations.
5. Ensure that chemical residues do not remain on the body, clothing, or equipment.

Employees/students shall follow SOPs upon completing work with particularly hazardous substances or in the event of accidental contact with such chemicals.

6. Inform employees/students of the hazards in designated areas. Be sure that those individuals who work in designated areas are authorized to do so, and that they are trained on how to handle the hazards in such areas. All training provided shall be documented.

10.1 General

General procedures for particularly hazardous substances (“PHS”) include:

1. Employees should read and understand these practices before commencing a procedure using PHSs.
2. PHSs include highly toxic chemicals, reproductive toxins, and select carcinogens.
3. The use of these substances requires prior approval of the CHO (Appendix H). Or, the CHO may exempt knowledgeable faculty/staff from this requirement. Such exemption will be documented.
4. PHSs shall be used in designated areas and in fume hoods.
5. The use of PHSs shall require removal of contaminated waste and the decontamination of contaminated areas.

10.2 Highly Toxic Chemicals

The precautions below shall be taken when working with chemicals of high-chronic toxicity. Examples of these types of substances include dimethylmercury and nickel carbonyl, benzo[a]pyrene, N-nitrosodiethylamine, and other human carcinogens or substances with high carcinogenic potency in animals. Other examples of highly toxic chemicals (acute or chronic) that were commonly used in the past are benzene, chloroform, formaldehyde, bromine, carbon disulfide, carbon tetrachloride, cyanide salts, and hydrofluoric acid.

1. When a PEL or TLV value is less than fifty (50) ppm or 100 mg/m³, conduct all transfers and work with these substances in a “controlled area” (e.g., a restricted access hood, glove box, or part of a laboratory designated for working with such substances). Ensure that all persons with access to controlled areas are aware of the substances being used and the precautions required. If none is available, no work should be performed using the chemical.
2. Protect vacuum pumps from being contaminated by scrubbers of HEPA filters; vent them into the hood.
3. Decontaminate the controlled area before normal work is resumed.
4. Remove any protective apparel and thoroughly wash hands, forearms, face, and neck before leaving a controlled area. Place the apparel in an appropriately labeled

container.

5. Use a wet mop or a vacuum cleaner with a HEPA filter if the toxic substance is a dry powder; do not dry sweep.
6. Initiate a regular medical surveillance program if large quantities of toxic substances are used.
7. Ensure that the controlled area is conspicuously marked with warning and restricted access signs and that all containers with these substances are appropriately identified and have warning labels.
8. Ensure that contingency plans, equipment, and materials are available to minimize exposures to people and property if an accident occurs.
9. Store chemicals in unbreakable, chemically resistant, secondary containers. Label the containers appropriately and store them in a ventilated, limited-access area.
10. If a PEL, TLV, or comparable value is not available, the animal or human median inhalation lethal concentration information, LC 50, should be used as a guideline. If that value is less than 200 ppm or 2000 mg/m³ when administered continuously for one (1) hour or less, then the chemical should be used in an operating fume hood, glove box, vacuum line, or other device equipped with appropriate traps. If none are available, no work should be performed using that chemical.

10.3 Reproductive Toxins

General procedures for reproductive toxins include:

1. A reproductive toxin refers to chemicals which affect reproductive capabilities including chromosomal damage (mutations) and which affect fetuses (teratogenesis).
2. A reproductive toxin is a compound that is described as such in the applicable SDS or label.
3. Reproductive toxins should be minimized in the university's teaching laboratories.
4. If such chemicals are used:
 - They should be handled only in a hood and when satisfactory performance of the hood has been confirmed.
 - Skin contact should be avoided by using gloves and wearing protective apparel.
 - Persons using such substances should always wash hands and arms immediately after working with these materials.
 - Unbreakable containers of these substances should be stored in a well-ventilated area and will be labeled properly.

5. Examples of reproductive toxins are organomercurial compounds, ethidium bromide, carbon disulfide, xylene, toluene, benzene, mercury, lead compounds, ethyl ethers, and vinyl chloride.

10.7 Allergens and Embryotoxins

The precautions below shall be taken when working with allergens and embryotoxins.

1. Review each use of these materials with the research supervisor; review continuing uses annually or whenever a procedural change is made.
2. Properly label these substances; store them in an unbreakable secondary container in an adequately ventilated area.
3. Notify supervisors of all incidents of exposure or spills; consult a qualified physician when appropriate.
4. Examples of and the requirements for these substances are as follows:
 - a. Allergens – Wear suitable gloves to prevent hand contact with allergens or substances of unknown allergenic activity (e.g., diazomethane, isocyanates, and bichromates).
 - b. Embryotoxins – If you are a woman of childbearing age, only handle these substances (e.g., organomercurials, lead compounds, and fomamide) in a hood that functions properly. Use appropriate protective apparel (especially gloves) to prevent skin contact.

11.0 MAINTENANCE AND INSPECTION PROGRAM

JU has a maintenance and inspection program to ensure that ventilation systems and emergency safety equipment are functioning properly and that laboratory working conditions meet legal and acceptable standards. The maintenance and inspection program will target facilities known to be using extremely hazardous chemicals including known potential carcinogens, highly acutely toxic, reproductive toxins, allergens, and others.

11.1 Maintenance Program

The general ventilation system in laboratories must be well maintained and the quantity and quality of airflow monitored every twelve (12) months by Physical Plant personnel to ensure that:

1. General ventilation provides fresh air four (4) to twelve (12) air changes per hour to all laboratories. All exhaust air from laboratories is vented to the outside and not circulated throughout the building. Special attention will be paid to laboratories in which fume hoods are routinely operating to ensure a proper balance of airflow.
2. All chemical storage areas receive six (6) air changes an hour, and exhausted air is not re-circulated through the facility. Centralized heating, ventilation, and cooling

systems that impact laboratories will be maintained by:

- Filters changed or cleaned.
 - Water frequently checked for proper flow and biological growth.
 - Drip pans cleaned regularly.
3. The fume hood maintenance program comprises:
- Fans checked for bearing overheating, belt drives for proper tension, fan wheels for proper freedom from accumulations and rotation.
 - Ductwork check for intact joints and no dents or holes in the system.
 - Visual inspection of the hood will be done to check for signs of corrosion or other indications of needed repairs.
 - Cleaning the surface of the hood, the sash glass, and the light unit will be cleaned.
 - Baffle adjustment conducted by Physical Plant personnel.
4. Emergency eyewash and deluge showers:
- Any needed maintenance and repair will be determined during annual facility inspections/tests.
5. Fire extinguishers:
- All fire extinguishers will be inspected and maintained by JU Campus Security on a regular basis, once a year, to ensure proper charging in case of fire. Problems should be reported to the CHO immediately.

11.2 Inspections

The inspection protocols will consist of the following:

1. The Laboratory Technicians or qualified person designated by the CHO will conduct semiannual inspections of all laboratories for unsafe conditions and practices, and test key safety equipment to ensure proper functioning (Appendix B).
2. The Laboratory Technicians or qualified person designated by the CHO will write inspection reports identifying problems needing immediate attention and those of a lesser priority. Inspection results will be discussed with the department chair and laboratory workers, indicating the follow-up needed to correct any problems.
3. The CHO will arrange for the evaluation of fume hood performance by a certified contractor or employee. Each measurement should not vary more than twenty-five percent (25%).
4. The Director of Campus Security, appropriate Laboratory Technician and appropriate Department Chair should be notified of any problem with emergency equipment. The following should be checked:

- Emergency exits
- Fire extinguishers
- Availability of spill-control emergency equipment
- Availability of SDS
- Proper and working protective equipment is in the facility
- General housekeeping conditions and systems used to communicate hazards
- Storage areas for proper segregation of chemical classes, storage facilities, and container integrity
- Waste disposal practices

As routine policy, the second inspection of the year will focus on laboratories in which improvements should have been made, either by laboratory employees or by management. Improvements and corrective actions should be documented in Appendix B. Any serious or potentially serious laboratory safety and/or health problems will be identified and a schedule of steps and a time frame for completing them will be prepared by the CHO.

12.0 EMERGENCY SERVICES CONTACT INFORMATION

Name	Phone Number Off-site
University Campus Security	904-256-7911
CHEMTREC Transportation Spill Response	800-429-9300
City of Jacksonville Fire Department Non-Emergency Emergency	904-630-0434 (M-F 8am – 4pm) 904-630-0527 (after hours) 911
City of Jacksonville Sheriff's Office Non-Emergency Emergency	904-630-0500 911
JEA	(904) 665-6000 (800) 683-5542 (M-F 7am - 9pm & Sat. 8am – noon)
National Weather Service	904-741-4370
Poison Control Center	800-222-1222
Florida Department of Environmental Protection State Warning Point Hazardous Chemical and Oil Spills	800-320-0519

JACKSONVILLE UNIVERSITY EMPLOYEES		
Title	Name	Phone Number
Chemical Hygiene Officer		
Chair, Division of Science and Mathematics	Dr. Lee Ann J. Clements	904-256-7302
Jacksonville University Safety Team		
Director of Sports Medicine	Andy Carter	904-256-7801
Laboratory Manager, Department of Biology and Marine Science	Heather McCarthy	904-256-7323
Laboratory Technician, Department of Chemistry	Adam Campbell	904-256-7330
Chair, Department of Chemistry	Dr. Joe Cradlebaugh	904-256-7329
Director of Campus Security	Kevin Bennett	904-256-7581
Chair, Division of Visual Arts	Prof. Dana Chapman-Tupa	904-256-7682
Chair, Division of Science and Mathematics	Dr. Lee Ann J. Clements	904-256-7302
Director, Millar-Wilson Laboratory	Dr. Lucinda Sonnenberg	904-256-7332
Director of Physical Plant	Keri Schultheis	904-256-7671
Division of Science & Mathematics		
Chair	Dr. Lee Ann J. Clements	904-256-7302
Department of Biology and Marine Science (co-chairs)	Dr. Daniel McCarthy Dr. Anthony Ouellette	904-256-7369 904-256-7299
Chemistry (chair)	Dr. Joe Cradlebaugh	904-256-7329
Physics (chair)	Dr. Brian Lane	904-256-7326
Office Associate	Judy San Socie	904-256-7300
Office Associate	Rachael Woods	904-256-7301
College of Fine Arts		
Dean	Henry Rinne (Vickie Jones assistant)	904-256-7345
Chair, Division of Visual Arts	Prof. Dana Chapman-Tupa	904-256-7682
Office Associate	Cheryl Peters	904-256-7374

APPENDIX A

DESIGNATION OF CHEMICAL HYGIENE OFFICER
(signed copy available in files)

Jacksonville University

Memorandum

TO: Dr. Lee Ann J. Clements, Division of Science and Mathematics Chair

FROM: Dr. Wenying Xu, Provost and Chief Academic Officer

DATE: August 26, 2014

SUBJECT: Designation of Chemical Hygiene Officer

In accordance with the requirements set forth in 29 CFR 910.1450, you are hereby designated as the Chemical Hygiene Officer for Jacksonville University. As such you are responsible for the implementation of the Chemical Hygiene Plan and its annual review.

Heather McCarthy (Laboratory Manager) and Adam Campbell (Laboratory Technician) for the Department of Biology and Marine Science and Chemistry Department respectively shall serve as the alternate co-Chemical Hygiene Officers.

APPENDIX B

**SEMI-ANNUAL INSPECTION AND HAZARD
ASSESSMENT OF LABORATORIES AND CHEMICAL
STORAGE AREAS**

Jacksonville University Chemical Hygiene Inspection Checklist

Date of Inspection: _____ Conducted by: _____

Location (room number & building): _____

Laboratory Supervisor: _____

Phone Number: _____

1.0 GENERAL WORK PRACTICES

- | | | |
|--|-----|--|
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 1.1 | Eating, drinking, smoking, etc. prohibited. Hallway outside the laboratory is free of evidence of eating and drinking. |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 1.2 | Mouth pipetting prohibited |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 1.3 | Food, drink not stored in laboratory, refrigerators, freezers, etc. |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 1.4 | Hands washed when work completed |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 1.5 | Radioactive, carcinogenic, biohazard, volatile or other particularly hazardous substances handled in laboratory hoods |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 1.6 | Open flames, sparks kept away from flammables |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 1.7 | Contact phone nos. for laboratory supervisor and safety officer current |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 1.8 | No open-toe shoes, short-sleeved shirts, or shorts worn. |

2.0 HOUSEKEEPING

- | | | |
|--|-----|--|
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 2.1 | General appearance of laboratory is neat and orderly |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 2.2 | Aisles and exits free from obstruction |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 2.3 | Work surfaces protected from obstruction |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 2.4 | Spills Absent |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 2.5 | Electrical cords and wires in good condition |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 2.6 | Tools and equipment in good repair |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 2.7 | Defective glassware absent |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 2.8 | Combustible materials not stored near flammables |

3.0 SINKS

- | | | |
|--|-----|---|
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 3.1 | Are the sinks free of chemical bottles? |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 3.2 | Are the sinks free of debris? |

4.0 HAZARD COMMUNICATION

- | | | |
|--|-----|--|
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 4.1 | Primary and secondary chemical containers labeled appropriately |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 4.2 | Signs on storage areas (e.g., refrigerators) and laboratory room doors |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 4.3 | SDS complete and available |
| <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA | 4.4 | Chemical Hygiene Plan available |

- ☐ Yes ☐ No ☐ NA 4.5 The front door to all laboratories should have signs indicating the type of hazards present in the laboratory. Write down all information:

5.0 CHEMICAL STORAGE

- ☐ Yes ☐ No ☐ NA 5.1 Incompatible chemicals segregated
- ☐ Yes ☐ No ☐ NA 5.2 Current inventory of chemicals available and recent (within one (1) year)
- ☐ Yes ☐ No ☐ NA 5.3 Hazardous chemicals not stored above 6' on open shelves
- ☐ Yes ☐ No ☐ NA 5.4 Bulk quantities of flammable liquids stored in approved safety cans, cabinets
- ☐ Yes ☐ No ☐ NA 5.5 Safety carriers available for bottles
- ☐ Yes ☐ No ☐ NA 5.6 Expired or out-of-use chemicals absent
- ☐ Yes ☐ No ☐ NA 5.7 Excessive quantities of chemicals not stored on benches

6.0 COMPRESSED GAS CYLINDERS AND VACUUM PUMPS

- ☐ Yes ☐ No ☐ NA 6.1 Chained, secured
- ☐ Yes ☐ No ☐ NA 6.2 Inspected for condition, pressure retention
- ☐ Yes ☐ No ☐ NA 6.3 Gas lines, piping, manifolds, etc. labeled with identity of contents. Gas ports labeled.
- ☐ Yes ☐ No ☐ NA 6.4 Protective caps in place except when cylinders are in use
- ☐ Yes ☐ No ☐ NA 6.5 Vacuum pumps appropriately ventilated. Rotovaporators wrapped in electrical tape when possible
- ☐ Yes ☐ No ☐ NA 6.6 Vacuum pumps enclosed with fan belt guard
- ☐ Yes ☐ No ☐ NA 6.7 Flammable gas lines equipped with flashback arrestors

7.0 WASTE DISPOSAL

- ☐ Yes ☐ No ☐ NA 7.1 Hazardous wastes not disposed in general sewer system (sink) or in general trash
- ☐ Yes ☐ No ☐ NA 7.2 Waste containers closed except when adding or removing waste
- ☐ Yes ☐ No ☐ NA 7.3 Containers for hazardous wastes in good condition
- ☐ Yes ☐ No ☐ NA 7.4 Containers of hazardous waste labeled with the words hazardous waste and other descriptive words
- ☐ Yes ☐ No ☐ NA 7.5 Is there spill containment available?
- ☐ Yes ☐ No ☐ NA 7.6 Satellite accumulation areas posted and orderly?
- ☐ Yes ☐ No ☐ NA 7.7 Broken glassware in designated containers and not in general trash
- ☐ Yes ☐ No ☐ NA 7.8 Discarded sharps in designated containers and containers closed
- ☐ Yes ☐ No ☐ NA 7.9 Empty containers labeled and/or triple rinsed

8.0 LABORATORY HOODS AND VENTILATION

- ☐ Yes ☐ No ☐ NA 8.1 Hoods in sound working condition
- ☐ Yes ☐ No ☐ NA 8.2 Hoods marked with operating heights, average face velocity. Date of last check:
- ☐ Yes ☐ No ☐ NA 8.3 Gauges, monitors and alarms operating properly
- ☐ Yes ☐ No ☐ NA 8.4 Hoods not cluttered with chemicals, equipment
- ☐ Yes ☐ No ☐ NA 8.5 General ventilation adequate

9.0 SAFETY EQUIPMENT/EMERGENCY RESPONSE

- ☐ Yes ☐ No ☐ NA 9.1 Spill containment clean-up material available?
- ☐ Yes ☐ No ☐ NA 9.1a Are kits stocked with required supplies
- ☐ Yes ☐ No ☐ NA 9.2 Eye wash/safety showers in sound working condition, not blocked
- ☐ Yes ☐ No ☐ NA 9.3 Fire extinguishers:
- ☐ Yes ☐ No ☐ NA 9.3 a Type and appropriate location, not blocked, good working order
- ☐ Yes ☐ No ☐ NA 9.3 b Date of last inspection _____
- ☐ Yes ☐ No ☐ NA 9.3 c All laboratories have at least one extinguisher.
- ☐ Yes ☐ No ☐ NA 9.3 d Locate all extinguishers in the laboratory, answer the following, then date and initial the back of the tag.
- ☐ Yes ☐ No ☐ NA 9.3 e Number of extinguishers in laboratory: _____
- ☐ Yes ☐ No ☐ NA 9.3 f Most recent inspection _____
- ☐ Yes ☐ No ☐ NA 9.3 g All extinguishers labeled?
- ☐ Yes ☐ No ☐ NA 9.3 h All extinguishers have tags?
- ☐ Yes ☐ No ☐ NA 9.3 i Are any tags broken?
- ☐ Yes ☐ No ☐ NA 9.3 j Are all pins in place?
- ☐ Yes ☐ No ☐ NA 9.3 k All residue removed from nozzles?
- ☐ Yes ☐ No ☐ NA 9.3 l Are the extinguishers mounted on the wall?
- ☐ Yes ☐ No ☐ NA 9.4 First aid kit available?
- ☐ Yes ☐ No ☐ NA 9.4 a Are kits fully stocked with required supplies?
- ☐ Yes ☐ No ☐ NA 9.5 Fire blanket available as appropriate
- ☐ Yes ☐ No ☐ NA 9.6 Locations marked for all above items
- ☐ Yes ☐ No ☐ NA 9.7 All exits free and unobstructed
- ☐ Yes ☐ No ☐ NA 9.8 Emergency numbers posted

10.0 TRAINING

List names of all students and faculty working in laboratory and ensure they have been trained according to the CHP and documentation of training is available.

Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	_____	Date of training: _____
Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	_____	Date of training: _____
Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	_____	Date of training: _____
Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	_____	Date of training: _____
Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	_____	Date of training: _____
Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	_____	Date of training: _____

11.0 PERSONAL PROTECTIVE EQUIPMENT (PPE) HAZARD ASSESSMENT

☐ NONE – Hazards requiring PPE are not present or likely to be present.

SOURCE	ASSESSMENT OF HAZARD	PPE REQUIRED
<i>Use or handling of:</i> <input type="checkbox"/> Chemicals <input type="checkbox"/> Biological agents, human blood, OPIM (Other Potentially Infectious Material) <input type="checkbox"/> Radioactive materials	<i>Eye or face injury</i> <input type="checkbox"/> Impact from flying particles <input type="checkbox"/> Chemical splash in eyes <input type="checkbox"/> Facial skin chemical contact <input type="checkbox"/> Nose/mouth contact with blood/OPIM <i>Body/skin/hand contact</i> <input type="checkbox"/> Biological agents <input type="checkbox"/> Sharps <input type="checkbox"/> Radioactive materials <input type="checkbox"/> Chemicals <input type="checkbox"/> Hot/cold objects	<input type="checkbox"/> Safety glasses <input type="checkbox"/> With side shields <input type="checkbox"/> Safety/impact goggles <input type="checkbox"/> Chemical splash goggles <input type="checkbox"/> Face shield <input type="checkbox"/> Face mask for blood/OPIM only <input type="checkbox"/> Other _____ <input type="checkbox"/> Lab coat/gown <input type="checkbox"/> Apron <input type="checkbox"/> Scrubs <input type="checkbox"/> Tyvek Haz Mat Coveralls <input type="checkbox"/> Latex gloves <input type="checkbox"/> Nitrile gloves <input type="checkbox"/> Rubber gloves <input type="checkbox"/> Chemical resistant gloves <input type="checkbox"/> Other _____
<input type="checkbox"/> Operations generating airborne fiber, dust, fume, mist, or hazardous/toxic vapor	<input type="checkbox"/> Respiratory: inhalation exposure above exposure standards <input type="checkbox"/> Respiratory: inhalation exposure below exposure standards	<i>Respirator</i> <input type="checkbox"/> Approved by JU EH&S? Name: _____ received fitting and respirator training. Date: _____ <input type="checkbox"/> Nuisance (non-toxic) dust mask (not PPE) <input type="checkbox"/> Other: _____
<input type="checkbox"/> High noise levels from equipment or operation	<input type="checkbox"/> Hearing: noise exposure above exposure standards <input type="checkbox"/> Hearing: noise exposure below exposure standards	<input type="checkbox"/> Ear muffs <input type="checkbox"/> Ear plugs <input type="checkbox"/> Other _____
<i>Non-ionizing radiation sources:</i> <input type="checkbox"/> Lasers <input type="checkbox"/> Infrared <input type="checkbox"/> Welding <input type="checkbox"/> Ultraviolet	Radiation burns to: <input type="checkbox"/> Eyes <input type="checkbox"/> Body <input type="checkbox"/> Skin	<input type="checkbox"/> Shaded safety glasses <input type="checkbox"/> With side shields <input type="checkbox"/> Shaded safety goggles <input type="checkbox"/> Protective clothing (welding leathers) <input type="checkbox"/> Barriers, shields <input type="checkbox"/> Welding helmet <input type="checkbox"/> Other _____
<input type="checkbox"/> General safety: physical hazards from equipment, process, or material	<input type="checkbox"/> <i>Foot injury:</i> equipment, glassware, hazardous chemical, or heavy object that can fall or roll onto feet. <input type="checkbox"/> <i>Impact or penetration</i> to eye, face, head, body, or soles of foot. <input type="checkbox"/> Electrical contact <input type="checkbox"/> Extreme heat or cold	<input type="checkbox"/> Safety shoes <input type="checkbox"/> Closed-toe shoes with high socks <input type="checkbox"/> Other _____ <input type="checkbox"/> Safety glasses <input type="checkbox"/> With side shields <input type="checkbox"/> Safety/impact goggles <input type="checkbox"/> Face shield <input type="checkbox"/> Safety shoes <input type="checkbox"/> Hard hats <input type="checkbox"/> Coveralls <input type="checkbox"/> Cut resistant gloves <input type="checkbox"/> Thermal gloves <input type="checkbox"/> Thermal clothing <input type="checkbox"/> Barriers/shields <input type="checkbox"/> Other _____
<input type="checkbox"/> Other		

APPENDIX C

CHEMICAL INVENTORY TEMPLATE

Chemical Inventory

Room Name:	
Room Number:	
Building:	
Campus:	
Responsible Person:	
Total Maximum Daily Amount (pounds):	0.00

[illegible]

[illegible]

APPENDIX D

INCIDENT REPORT

**JACKSONVILLE UNIVERSITY
INCIDENT REPORT**

Date: _____ Time: _____ Name
of Person Involved _____ Telephone: _____ Form
Completed By: _____ Telephone: _____ Building:
Department: _____

INCIDENT

ASSISTANCE REQUIRED

(check all that apply)

TAKEN TO HOSPITAL

- ☐ Sickness
☐ Accident
☐ Injury
☐ Medical Attention
☐ Other _____

- ☐ Police
☐ Security
☐ Ambulance
☐ Nurse
☐ Other _____

(circle one): YES NO
Transported by: _____
Name of Hospital: _____
Other _____

Faculty/Staff/Students involved

Witnesses:

Description of Incident (attach additional pages as necessary)

Root Cause (attach additional pages as necessary)

Corrective Actions

Owner

Completion Date

1. _____
2. _____
3. _____
4. _____

Routing / Distribution

Copies of this Incident Report must be sent immediately to the following:

Chief Financial Officer

Appropriate Supervisor (if incident involves staff employee)
Chief Academic Officer (if incident occurred in classroom or involves faculty) Chief Student
Affairs Officer (if incident involves student(s))
Director of Human Resources (if incident is Worker's Compensation claim)

APPENDIX E

SECONDARY CONTAINER LABEL TEMPLATE

(to be used with AVERY Labels, 5160)

Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



Chemical name and concentration: _____

Name: _____ Date: _____
Signal Word: _____
Hazard Statement(s): _____

Precautionary Statement(s): _____

*Observe Circled
Pictogram(s) ONLY*



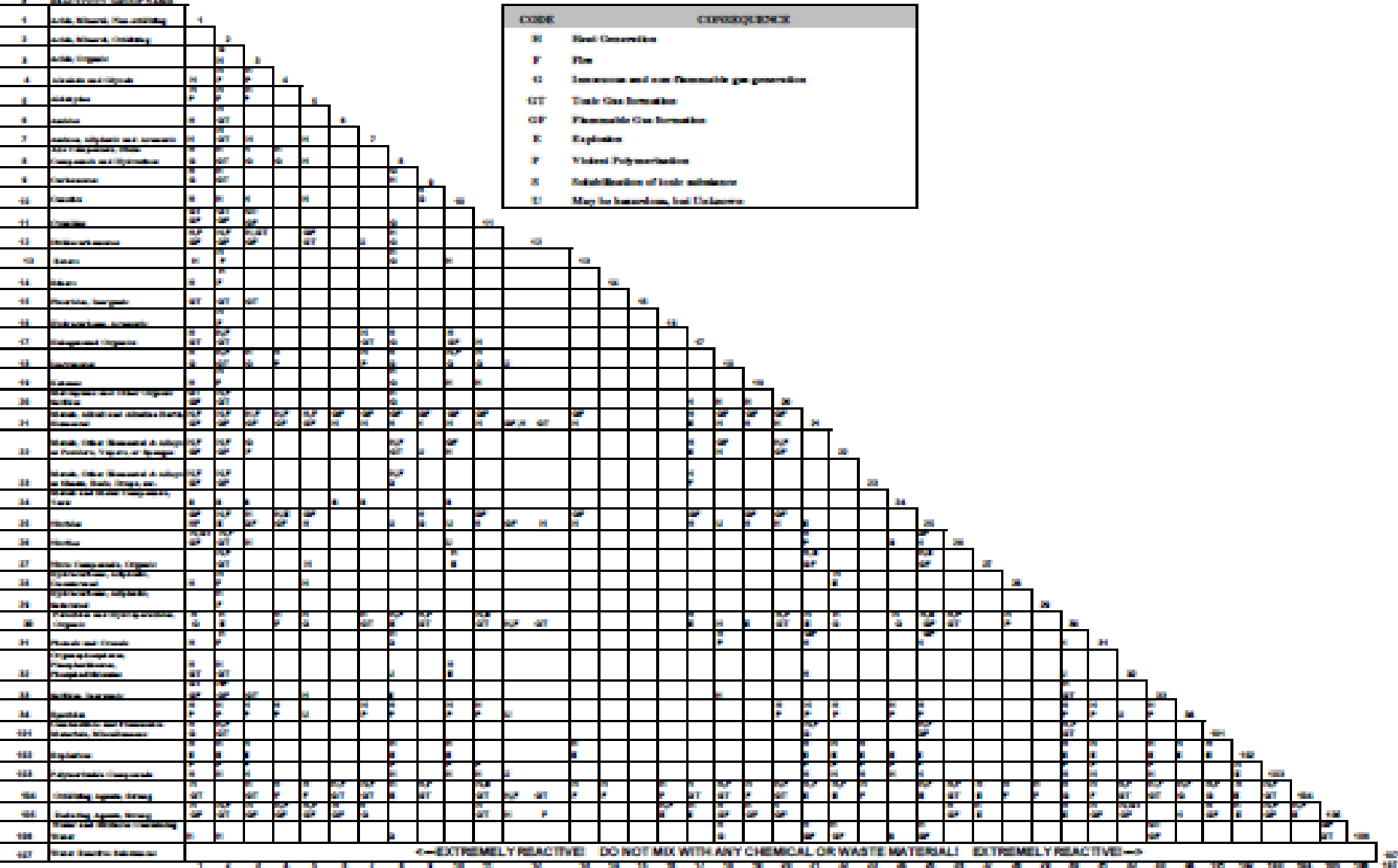
APPENDIX F

CHEMICAL COMPATIBILITY CHART

EPA's Chemical Compatibility Chart

EPA-600/3-87/074 April 1988
A METHOD FOR DETERMINING THE COMPATIBILITY OF CHEMICAL MIXTURES

Please Note: This chart is intended to be an indication of some of the hazards that may be expected in mixing chemical wastes. Because of the differing activities of the thousands of compounds that may be encountered, it is not possible to make any more definite and all inclusive. It cannot be assumed because compatibility of waste between mixtures are classified as hazardous in the chart, that in any likely reasonably waste chemical mixture, severe results in a hazard occurring. Detailed instructions were provided to assist in handling and disposal of any given waste should be obtained from the originator of the waste.



APPENDIX G

**SAFETY CONCERN
REPORTING FORM**

SAFETY CONCERN REPORTING FORM

Return completed form to Dr. Lee Ann J. Clements, Chemical Hygiene Officer, Division of Science and Mathematics, MP #132.

Name (*optional*)

Contact e-mail (*optional*)

Department of concern

Laboratory of concern

Description of safety concern

Suggested Corrective Action

SAFETY CONCERN REPORTING FORM

Return completed form to Dr. Lee Ann J. Clements, Chemical Hygiene Officer, Division of Science and Mathematics, MP #132.

Name (*optional*)

Contact e-mail (*optional*)

Department of concern

Laboratory of concern

Description of safety concern

Suggested Corrective Action

APPENDIX H

LABORATORY PROCEDURE CHANGE FORM

LABORATORY PROCEDURE CHANGE FORM
(To be used only under conditions stated in Section 10)

1. Title of Project _____

2. Project Owner Information

Project Owner _____

Department _____

Building _____ Room Number _____

Telephone _____ Fax _____

e-mail _____

3. Laboratory Information where project will be conducted:

Building _____ Room Number _____

Telephone _____

Laboratory contact person if other than owner

Name _____ Title _____

Telephone _____ email _____

4. List of individuals working on this particular project (including students)

Name	Title	Chemical Hygiene Training Date

5. Brief non-technical abstract of planned work (Use other sheets if more space is needed):

6. Indicate applicable category of this project:

- ☐ New proposal
☐ Addition or modification to existing proposal (Indicate additional project approval #)
☐ Teaching / Training

7. List below the particularly hazardous chemicals that will be used in connection with this project.

Chemical Name	Chemical Abstract Number (CAS)	Hazard Class (Carcinogen, Reactive, mutagen, etc)

**8. What is your previous work experience with the chemicals specified in Section 10?
(Use additional sheets if necessary):**

9. Are Safety Data Sheets (SDS) available to all employees working on this project?

- ☐ yes ☐ no If "no" please acquire all necessary SDS

CONTAINMENT AND SAFETY EQUIPMENT

10. Will a chemical fume hood be used? ☐ yes ☐ no

Indicate flow-rate and date the chemical fume hood was last tested: _____
(Chemical fume hoods require annual testing and certification)

11. Indicate Personal Protective Equipment (PPE) to be used:

Gloves (indicate type _____) Eye Protection (Indicate type _____)

Protective clothing (indicate type _____) Respiratory Protection * _____

Other (specify) _____

* Note: If a respirator is used, the wearer must be examined by a health care professional to determine if the user is medically fit to wear a respirator. The CHO will choose the appropriate respirator and provide fit testing for the user.

CHEMICAL WASTE DISPOSAL AND HAZARD COMMUNICATION

12. Perform a waste determination on all waste streams resulting from this project in accordance with the Jacksonville University Hazardous Waste Management Plan. Waste Streams identified:

13. Is current emergency contact information posted in the laboratory where this project is to be performed?

☐ yes ☐ no

14. Indicate the type of fire extinguishers required

☐ ABC
☐ D
☐ Not applicable

Is that type available in the laboratory? ☐ yes ☐ no

Date fire extinguishers were last inspected: _____

15. Please indicate any additional information or components pertinent to the CHO's review of this protocol:

16. I have read and am familiar with the Chemical Hygiene Plan, Material Safety Data Sheets, safety practice, containment equipment, and laboratory facilities recommended for the chemicals used in this project. I agree that all faculty, staff and students working on this project will follow these recommendations as a condition of the Safety Committee approval of this project.

Date

Project Owner

TO BE COMPLETED BY THE CHO ONLY

Date Received

Date Reviewed:

Approved Yes No

If no, explain:

If yes, assign approval #:

Date Returned to Project Owner:

CHO Name

(print)

Signature

APPENDIX I

CHP DOCUMENTATION (TRAINING/RECEIPT OF COPY)

“CHEMICAL HYGIENE PLAN (CHP) FOR LABORATORIES AT JACKSONVILLE UNIVERSITY” DOCUMENTATION

Employee:

Department:

Job Title:

Telephone Number:

E-mail Address:

“Chemical Hygiene Plan (CHP) for Laboratories at Jacksonville University”

I acknowledge that I have received a copy of the “Chemical Hygiene Plan (CHP) for Laboratories at Jacksonville University.” I will read and accept the CHP as a working document. I will support and follow the CHP in my daily work at Jacksonville University.

Signature of Employee

Date

Signature of Laboratory Manager/Chemical Hygiene Officer

Date

“Chemical Hygiene Plan (CHP) for Laboratories at Jacksonville University” Training

I acknowledge that I have received training on the “Chemical Hygiene Plan (CHP) for Laboratories at Jacksonville University.” As required by the Occupational Safety and Health Administration (OSHA) under the “Occupational Exposure to Hazardous Chemicals” standard (29 CFR 1910.1450), I have been instructed on:

- Contact information for Campus Security, the Coordinator of Safety Programs, and Laboratory Manager/Chemical Hygiene Officer, the Student & Employee Safety Teams, and individuals specified in the CHP.
- My responsibilities under the CHP.
- The location and availability of the most recent edition of the “Chemical Hygiene Plan (CHP) for Laboratories at Jacksonville University”.
- The location and availability of the “Occupational Exposure to Hazardous Chemicals” standards. (Also referred to as the OSHA Laboratory Standard.)
- The location and availability of the laboratory chemical inventory and collection of Safety Data Sheets (SDSs).
- The location and availability of additional reference materials relating to laboratory safety and the use of hazardous materials.

Signature of Employee

Date

Signature of Laboratory Manager/Chemical Hygiene Officer

Date

APPENDIX J

LABORATORY SAFETY GUIDELINES

LABORATORY SAFETY GUIDELINES

I have read and understand the below entitled, "Laboratory Safety Guidelines", and agree to abide by them.

By signing this form, I accept the consequences for not complying with the safety directions.

Date _____ Course _____ Section _____ Locker No. _____

Name _____ Signature _____

Safety:

Safety instructions:	Put a check on the ones that apply to this class
Note the position of the fire blankets and extinguishers. Be familiar with their operation.	
Determine the location of the nearest emergency shower and eye wash station.	
Determine the location of the first aid supplies.	
Wear protective goggles or safety glasses continuously while in the laboratory as required by state law. If some chemical should get in your eye, wash it with an abundant amount of water. Seek medical attention at once.	
Always wear a lab coat to laboratories where exposure to chemical splashes or spills is possible.	
Assume all the reagents are dangerous as well as corrosive to flesh and fabric and handle accordingly.	
Report all accidents to the instructor immediately.	
Use only footwear which totally encloses the foot while in the laboratory. Sandals, clogs, crocs, women's flats, and flipflops do not offer adequate protection.	
If you should spill a chemical on yourself, wash it off immediately with abundant water.	
Never taste chemicals.	
Never pipet by mouth. Use a pipet bulb.	
Experiments that produce poisonous or noxious fumes are to be carried out in the fume hood.	
To insert glass tubing and thermometers through rubber stoppers, wet the tube and stopper. Protect your hand with a towel.	
Do not eat or drink in the laboratory.	
No smoking in the laboratory.	

General Procedure:

General Procedures	Put a check on the ones that apply to this class
Only assigned work in the laboratory is permitted and only under proper supervision.	
No experiments may be performed outside of the assigned laboratory period unless explicitly authorized by the professor.	
Work individually unless otherwise directed.	
Always read the label on the bottle of every reagent before using it.	
Use only the amounts of reagent called for in the experiments.	
Discard excess chemicals-never return into reagent bottles.	
Place excess solid in the waste containers at the end of each work area, never in the sinks.	
Used mercury should be transferred to containers labeled: "Used Mercury".	
Always pour acids into water; this is especially true of concentrated sulfuric acid.	
Use distilled water only when directed, never in place of tap water.	
When using a balance, do not place chemicals directly on the balance pan. Clean up any spills from the balance immediately.	
Before leaving the laboratory each period, wash the desk top and make sure everything is in order and that the sink is clean (free of filter paper and matches).	
All apparatus (including calculators) are the property of Jacksonville University and is not to be removed from the laboratories.	

Consequences of non-compliance:

The consequences of non-compliance will be dictated by your professor and will vary for each instruction/procedure.

These are the consequences of non-compliance for some of the instructions/procedures. Mark which ones are applicable and the order.

Order of consequence to apply	Consequences (cross any if non-applicable)
	Warning (documented)
	Will not perform the laboratory practice of the day
	The student will not perform the laboratory practice of the day and will get a "0" for that lab.