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Chapter 1: A Workplace Accident and Injury Reduction (AWAIR) Program

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CHAPTER I

A WORKPLACE ACCIDENT AND INJURY REDUCTION PROGRAM
(AWAIR)

I. Policy

A. The Hennepin Healthcare Research Institute (HHRI) considers the personal safety and health of the HHRI personnel to be of prime importance. To the greatest extent possible, HHRI will provide equipment, safeguards, personal protective equipment, training, and administrative measures to ensure the safety and health of laboratory personnel and all other people who enter HHRI or common building space. The HHRI will therefore:
   1. Maintain a workplace accident and injury reduction program conforming to established local, state and federal regulations.
   2. Seek to instill within all personnel proper attitudes towards injury and illness prevention.

B. HHRI laboratory personnel must accept responsibility in assuring compliance with health and safety policies. This requires cooperation in all safety and health matters not only between supervisors and staff, but also between laboratory personnel and their co-workers.

II. Goals

A. The goal of the HHRI Workplace Accident and Injury Reduction Program (AWAIR) is to eliminate work related injuries and exposures by:
   1. Continually assessing and improving engineering and work practice controls.
   2. Providing necessary information on dangers associated with hazardous chemicals, harmful physical or health agents, and other occupational hazards that HHRI personnel may encounter in the performance of their duties.
   3. Providing training for personnel to recognize and work safely with potential hazards.
   4. Assuring all areas of responsibility for safety are clearly defined.

B. Successful realization of these goals requires cooperation between multiple departments, managerial levels, and individuals within the HHRI, including administration, facilities, supervisors, and research staff.
III. Responsibilities

A. Administration

1. The HHRI Board of Directors has overall management responsibility and accountability for the HHRI AWAIR Program. HHRI administration accepts the responsibility for leadership of the program, for its effectiveness and improvement, and for providing necessary safeguards to ensure safe working conditions. The HHRI Board of Directors has given the HHRI Safety Committee the authority to review and evaluate all safety-related injuries.

2. HHRI Administration will ensure that:
   a. A workplace accident and injury reduction program is instituted and maintained at the HHRI.
   b. A mechanism is provided by which work hazards are identified, evaluated, and corrected in a timely manner.
   c. Laboratory personnel are provided with all necessary training and information relative to the safety and health hazards they may encounter in the workplace.
   d. Laboratory personnel are provided with personal protective equipment appropriate for prescribed tasks.
   e. Engineering and work practice controls are provided in order to ensure safe working conditions.
   f. Safety and health rules are properly enforced and that all laboratory personnel operate within these rules as a condition of their position.
   g. All accidents are thoroughly investigated to determine cause and that appropriate actions and follow up are implemented.
   h. The HHRI complies with all local, state, and federal regulations relating to personal safety and health.

B. Supervisors

1. Supervisors are responsible for developing proper attitudes toward safety and health in themselves and those personnel that they supervise.

2. Supervisors will:
   a. Ensure that all operations within their departments are performed with the highest regard for personal safety and health.
   b. Ensure that laboratory personnel receive necessary training and safety information when indicated.
   c. Participate in evaluating hazards within their department.
   d. Participate in all accident investigations involving their department and implement corrective actions in a timely manner.
   e. Recognize good work practices and discipline staff when HHRI safety policies and procedures are violated.

C. Laboratory Personnel

1. Laboratory personnel include all HHRI and non-HHRI personnel working within laboratory areas and/or animal facilities. This includes employees, residents, students, visitors who are participating in laboratory-related procedures, and/or unpaid volunteers.
2. Laboratory personnel will demonstrate their commitment to the HHRI AWAIR Program by:
   a. Ensuring that they comply with all HHRI safety and health policies.
   b. Attending required information and training sessions.
   c. Reporting injuries, accidents, and safety hazards as soon as possible.
   d. Making safety suggestions.
   e. Pointing out observed safety violations to staff members and supervisors. If uncomfortable with talking to staff and/or supervisors laboratory personnel may report observed safety violations to any member of the HHRI Safety Committee.

IV. Management’s Continued Participation

A. Management’s continued participation in the HHRI AWAIR Program will be demonstrated by:
   1. Annual evaluation of the safety program, which will address training, accident investigations, hazard notification, record keeping, and Safety Committee activities.
   2. Examination of accident rates and trend analyses of injuries provided by the HHRI Human Resources Department.
   3. Availability of all minutes of HHRI Safety Committee meetings to the HHRI President, Vice President of Operations, and Safety Committee members.

B. This information will enable administration to assess the quality of the HHRI AWAIR Program and determine if the program’s goals and objectives are being met.

V. Methods Used to Identify, Analyze and Control New or Existing Hazards

A. Identification, analysis, and control of hazards in the workplace are essential for an effective safety and health program.

B. The following methods will be employed by the HHRI:
   1. Safety and health policies and procedures will be reviewed on a periodic basis. New safety and health policies will be developed when indicated or when mandated by local, state, or federal regulations.
   2. Workplace hazards will be identified by principal investigators, review of accident records, first reports of injury, safety inspections, and personnel suggestions.
   3. HHRI will maintain a “Right to Know” program in accordance with the Minnesota Employee Right to Know Act.
   4. HHRI will maintain an Exposure Control Plan in accordance with OSHA Standard on Bloodborne Pathogens (29 CFR 1910.1030).
   5. HHRI will maintain a Chemical Hygiene Plan in accordance with OSHA Standard part 1910, subpart Z, section 1910.1450, occupational exposure to hazardous chemicals in the laboratory.
VI. Communication

A. All safety and health communications will be processed through the administrative structure of the HHRI and ultimately down through the substructure of the organization.

B. Horizontal and vertical dissemination of information will be managed in the following manner:

1. All laboratory personnel will receive initial safety and health training during orientation. If applicable, laboratory specific training will be performed by the designated trainer of each principal investigator.
   a. Additional training will be provided on an annual basis, or whenever changes such as modifications of tasks or procedures occur.
   b. The HHRI Safety Committee will monitor compliance with these training requirements.

2. Copies of HHRI Safety Committee meeting minutes will be available to all HHRI Safety Committee members and the HHRI President and Vice President of Operations.
   a. The HHRI Safety Committee will conduct annual safety audits of HHRI laboratories and laboratory facilities.
   b. When corrective actions are necessary, the Safety Committee will submit results of the annual safety audit to the appropriate supervisor.
   c. Supervisors will submit plans to the Safety Committee for review and documentation of corrective actions taken.

3. The Safety Committee will review information on changes in, or the adoption of, new federal, state, and local safety regulations.
   a. If a policy change is necessary, the Safety Committee will be responsible for ensuring that the changes have been made and communicated to laboratory personnel.
   b. All changes will be documented in the Safety Committee meeting minutes.

4. Suggestions and concerns from laboratory personnel will be submitted to the Safety Committee by way of the supervisors or directly to any committee member. The status of each suggestion or concern, and an outline of actions will be communicated back to the individual(s) by a designated committee member.
VII. Accident Investigation

A. All reported injuries/accidents will be investigated cooperatively. This may involve HHRI Human Resources and HCMC Facilities Services, laboratory supervisors, and/or other involved personnel. The purpose of accident investigation is to determine causation so that corrective actions may be taken to prevent recurrence.

B. When a workplace accident occurs:
   2. The supervisor will review the Injury/Incident Report Form, fill in the required information, sign it, and forward it to HHRI Human Resources.
   3. HHRI Human Resources will provide a copy of each Injury/Incident Report Form to the HHRI Safety Committee. The Safety Committee will review the incident and make appropriate suggestions/actions. A letter containing the committee’s suggestion for corrective action will be sent to the injured party and to his/her supervisor. Documentation of follow-up action will be filed with the Safety Committee meeting minutes.
   4. Accident rates and trend analysis will be generated from filed accident reports and presented to the Safety Committee for review. These reports will facilitate review of the safety and health program relative to its effectiveness.

VIII. Enforcement

A. The HHRI AWAIR Program will be enforced fairly and consistently.
B. Safety violations will be handled by a progressive disciplinary procedure:
   1. The individual will be given written notice of their safety violation from the HHRI Safety Committee asking them to observe all safety protocols.
   2. If an individual is observed repeating the same safety violation, the HHRI Safety Committee will send a letter to the individual and his/her supervisor stating that he/she has been observed violating a safety protocol for the second time. The Safety Committee may, at this time, request the individual to review safety training materials, attend safety seminars, and/or demonstrate to the committee that they are aware of proper safety protocol. The HHRI Safety Committee will also stipulate that if a third violation occurs, the individual may be temporarily suspended from working in the laboratory area. The gravity of the safety violation will determine the number of days of suspension.
   3. If the safety violation is deemed to be of a serious nature, the individual may be suspended immediately and the suspension may become permanent.
Chapter 2: Common Safety Practices of the HHRI

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   B. Elevators
   C. Break areas
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CHAPTER 2

COMMON SAFETY PRACTICES OF THE HHRI

I. General Policy

A. The Hennepin Healthcare Research Institute (HHRI) considers the personal safety and health of HHRI personnel and visitors to the Fred L. Shapiro Building (S-Building) to be of prime importance. To safeguard all individuals within HHRI spaces to the greatest extent possible, the HHRI has instituted common safety practices to be followed by all personnel working within these spaces.

B. All HHRI personnel must be aware that there are a variety of individuals and visitors who work in or use HHRI spaces. These individuals may have varying degrees of training and expertise in dealing with the conditions under which we routinely work. Personnel must take an active approach in practicing safe techniques not only for themselves but for these other individuals as well.

II. Secure Areas

A. All areas on the 2nd, 3rd, 9th, 10th, and 11th floors are considered a secure area.

B. HHRI personnel must wear their organizational photo ID badge at all times.

C. Personnel will be assigned the appropriate electronic key card to the 2nd, 3rd, 9th, 10th, and 11th floor as defined by employment responsibilities.

D. Safety in secure areas
   1. All visitors must be escorted by authorized personnel.
   2. Have visitors make contact via telephone when they arrive on campus. Be prepared to greet then at a pre-determined meeting place.
   3. Tailgating (an unauthorized person following an authorized person into a secure area) is prohibited.
   4. If someone attempts to tailgate:
      a. Challenge them in a pleasant and helpful manner by asking them who they are looking for, offering directions, directing them to the Laboratory Services Coordinator on S3.101, or calling HCMC Security at 612-873-3232.
      b. If at any time a situation feels threatening call Security immediately.
III. Common Space (3rd floor)

A. Hallways
   1. No food, drink, dishes, or other food-related items allowed.
   2. Gloves must be removed before using hallway telephones, copier, FAX machine, etc.
   3. Hazardous materials brought through hallways must be adequately covered or boxed. Liquid materials should be in approved carriers. Compressed gas tanks are to be moved using approved tank carts.
   4. Rodent cages (with or without animals) must be fitted with filter top lids or covered with a blanket.
   5. Liquid spills must be cleaned up immediately.

B. Elevators
   1. Gloves must be removed before pushing hallway call buttons or elevator car buttons. If transporting hazardous or infectious materials, the hand holding the material may remain gloved, but buttons must be pushed with an ungloved hand.
   2. The “C” elevator is the only one that will provide transportation to the 11th floor.
   3. The “C” elevator can be placed on independent service mode by use of a key. This mode is to be used ONLY when transporting animals, animal caging, or animal carcasses between the animal housing areas and other floors of the S-Building.
      a. Use key call device to request the elevator car.
      b. If non-lab personnel are in the car when it arrives do not enter with the materials, but allow the car to continue on and call it
      c. Press the desired floor, hold the button until the door is closed and the car begins moving.
   4. Elevators are for public use. Refrain from potentially sensitive discussions with colleagues while riding in the elevator; do not transport blood, dirty items, or similar materials without cleaning or covering them.

C. Break areas
   1. A break area is located on the 9th floor.
   2. Gloves, shoe covers, caps and masks must be removed before visiting any break area.
   3. For personnel working in areas where it is standard to wear a laboratory coat over street clothes, lab coats must be removed before entering any break area. It is preferable to leave all lab coats in the laboratory.
   4. For personnel working in areas where it is standard to wear surgical scrubs, a clean lab coat or gown must be donned over these work clothes while in any break area.
   5. All food is to be stored in the break area.
   6. Practice common courtesy in the break area. Clean up any messes or spills inside the microwave or refrigerators, and wipe up the sink area when finished washing dishes. Do not leave dirty dishes in the sink area.
D. Conference rooms
   1. Conference rooms are located on the 9th floor. Conference rooms are considered clean areas.
   2. Gloves, shoe covers, caps and masks must be removed before visiting any conference room.
   3. For personnel working in areas where it is standard to wear a laboratory coat over street clothes, lab coats must be removed before entering any conference room. It is preferable to leave all lab coats in the laboratory.
   4. For personnel working in areas where it is standard to wear surgical scrubs, a clean lab coat or gown must be donned over these work clothes while in any conference room.
   5. Food and drink are allowed in the conference rooms. Snack and drink items may be consumed in the S-3 elevator commons or biohazard free office areas.

E. S-3 Laboratory Services Coordinator desk area
   1. The desk area of the 3rd floor elevator lobby is considered a clean area.
   2. Gloves must be removed before using any item in the desk area.
   3. No hazardous materials are allowed in the desk area.

F. 3rd floor common equipment rooms
   1. Use sign-up sheets to reserve equipment.
   2. Do not leave vials or samples in rooms. Set a timer to act as notification when allotted time has expired.
   3. There is no long-term storage allowed in the cold room. Remove all lab-related materials when procedures in this room are completed.
   4. Liquid and ice spills must be cleaned up immediately.
   5. Contact the S-3 Laboratory Services Coordinator if dry ice supplies are running low, or if there are common equipment malfunctions or concerns.
   6. Compressed gas tanks must be labeled with name of the principal investigator. Empty tanks must also be identified.
   7. Do not leave water running in the radioactive sink disposal area for long periods of time. Follow instructions posted near the sink.
IV. Office Areas

A. Office areas are considered clean areas.
   1. Gloves, shoe covers, caps and masks must be removed before visiting any office areas.
   2. For personnel working in areas where it is standard to wear a laboratory coat over street clothes, lab coats must be removed before entering any office area. It is preferable to leave all lab coats in the laboratory.
   3. For personnel working in areas where it is standard to wear surgical scrubs, a clean lab coat or gown must be donned over these work clothes while in any office area.

B. No hazardous materials are allowed in the office areas.

C. All visitors must be escorted by authorized personnel.

V. Laboratory Areas

A. No food, drink, dishes, or other food-related items allowed in the laboratory areas. Food may be kept in lockers located on the 9th floor, or in refrigerators in the 9th floor break area. Snack and drink items may be consumed in the S-3 and S-10 elevator commons or biohazard free office areas.

B. The following common supplies will be provided for those working in these areas:
   1. Laboratory coats
   2. Sharps containers
   3. Glass disposal boxes
   4. Acid/base/mercury spill kits
   5. Waste disposal bags

C. Lab coats or scrubs are to be worn to protect street clothing while in the laboratory areas. When moving from laboratory spaces to any clean areas, such as break rooms, conference rooms or office spaces, it is preferable to leave all lab coats in the laboratory.

D. No open toe shoes are allowed in the laboratory area.

E. Laboratory hazard sheets must be posted in each laboratory area.

F. Eyewash stations are to be checked weekly for proper operation. Documentation of eyewash checks will be posted by all eyewash stations.

G. Waste cans must be non-combustible.

H. Chairs and stools with covers must be washable, no cloth covers allowed.

I. All visitors must be escorted by authorized personnel.
VI. S-10 Common Spaces

A. Common space
   1. S-10 common spaces include the animal preparation/necropsy rooms, the lab area in the surgical wing, the common equipment storage area and the autoclave/pack preparation room. The large animal scale is also considered a common space.
   2. All common spaces are to be kept clean and free from clutter, so that all may use them. Cabinets in the areas may be used for longer-term storage of materials provided there is adequate space for all users. All materials in common cabinets are to be marked with the principal investigator’s name.
   3. There is to be no long-term storage of materials on the countertops in these spaces. Materials used that day should be removed by the end of the day’s work.
   4. Common equipment such as clippers, anesthesia jars, vacuum cleaners, balances, centrifuges, autoclaves, etc. must be cleaned immediately after use, and not be left dirty for the next user. Countertop or equipment spills must be cleaned immediately, and sinks must be cleaned at the end of the day.
   5. Hair or wool from animal preparation procedures must be cleaned from the countertops, floors and sinks. This is not the responsibility of the Facilities Housekeeping staff.
   6. All items in the common refrigerators and freezers must be clearly marked with the name of the item and the investigator’s name.
   7. Report any problems with common equipment to Veterinary Services.

B. S-10 Common office
   1. Room S10.201 is designated as a clean area.
   2. Food is allowed in the office area, but items must not be brought out into the hallways.
   3. Gloves must be removed before using any item in the office.
   4. No hazardous materials are allowed in the office.

C. 10th Floor surgical wing
   1. No food, drink, dishes, or other food-related items are allowed. Smoking, gum or tobacco chewing, or applying cosmetics is also prohibited in the surgical areas.
   2. Surgical suites are either assigned to an investigator or research group, or are available as common surgical suites for use on a monthly basis. Arrangement for use of common surgical suites must be made by written request to the Veterinarian.
3. The following common supplies will be provided for those working in this area:
   a. Scrubs and cloth surgical gowns
   b. Shoe covers, disposable
   c. Surgical masks, disposable
   d. Examination gloves, standard sizes of surgeon’s gloves, disposable
   e. Face shields, disposable
   f. Surgical drapes and towels
   g. Sharps containers
   h. Waste disposal bags

D. Shoe covers must be worn while in area. When exiting the floor, remove and discard.
E. Keep doors closed during survival procedures.
F. No animals are allowed to walk on the floors in the surgical areas. Use carts to transport animals to one of the surgical prep rooms.
G. Clean up prep areas, laboratory area, scrub sinks when finished.
H. Laboratory hazard sheets must be posted.
I. Eyewash stations are to be checked weekly for proper operation. Documentation of eyewash checks will be posted by all eyewash stations.
J. Chairs and stools with covers must be washable, no cloth covers allowed.
K. All visitors must be escorted by authorized personnel.

VII. Animal Housing and Procedural Areas (10th and 11th floors)

A. No food, drink, dishes, or other food-related items allowed. Smoking, gum or tobacco chewing, or applying cosmetics is also prohibited in all animal areas.
B. The following common supplies will be provided for those working in these areas:
   1. Lab coats and scrubs
   2. Shoe covers, disposable
   3. Surgical masks, disposable
   4. Non-latex examination gloves, disposable
   5. Sharps containers
   6. Waste disposal bags

C. A clean gown and gloves are required in all rodent housing areas. Each person should wash their hands or use a commercial sanitizer before donning gloves.
D. Lab coats or scrubs are required in all other animal housing areas.
E. Rodents to be transported on the “C” elevator car must be transported in cages with filter top lids or covered with a blanket.
F. Laboratory hazard sheets must be posted.
G. Eyewash stations are to be checked weekly for proper operation. Documentation of eyewash checks will be posted by all eyewash stations.
H. Trash barrels containing used feed and bedding must have tight-fitting lids.
I. All visitors must be escorted by authorized personnel.
APPENDIX A

LATEX ALLERGY*

I. Latex Allergy

A. Latex allergy is a reaction to proteins in latex rubber.
   1. The amount of latex exposure needed to produce sensitization or an allergic reaction is unknown.
   2. Increasing the exposure to latex proteins increases the risk of developing allergic symptoms.
      a. Exposure may be experienced by physical contact to latex articles
      b. Exposure may be experienced by inhaling airborne latex particles which can be released when latex gloves are removed
   3. Latex allergies are most common in individuals who have regular exposure to latex products such as latex gloves.
   4. Approximately 50% of individuals with latex allergy have a history of another type of allergy.
   5. Individuals with a history of reactions to the following foods are at an increased risk of developing a latex allergy:
      a. Bananas
      b. Chestnuts
      c. Kiwi
      d. Avocado
      e. Tomatoes
      f. Figs, apples, melons, papayas, pitted fruits such as cherries and peaches
      g. Celery, potatoes

B. Symptoms
   1. Mild—may include but not be limited to:
      a. Itching
      b. Skin redness
      c. Hives or rash
   2. Severe—may include but not be limited to:
      a. Sneezing
      b. Runny nose
      c. Itchy, watery eyes
      d. Scratchy throat
      e. Difficulty breathing
      f. Wheezing
      g. Cough
3. Anaphylactic shock symptoms—may include but not be limited to:
   a. Difficulty breathing
   b. Wheezing
   c. Drop in blood pressure
   d. Dizziness
   e. Loss of consciousness
   f. Confusion
   g. Slurred speech
   h. Rapid or weak pulse
   i. Blueness of the skin, including lips and nail beds
   j. Diarrhea
   k. Nausea and vomiting

4. Sources of possible occupational latex exposure—may include, but not be limited to:
   a. Gloves
   b. Face masks
   c. Tourniquets
   d. Adhesive tape
   e. Bandages
   f. Rubber syringe stoppers and medication vial stoppers
   g. Bulb syringes
   h. Stethoscopes

II. Risk Reduction

A. Avoiding latex is key to preventing latex allergies.
   1. Reduce or eliminate the number of latex products you come into contact with.
   2. Avoid breathing in the powder from latex gloves worn by others.
   3. Preferably use suitable alternatives such as synthetic gloves and latex free masks.
   4. Clean areas and equipment frequently if contaminated with latex-containing dust.

B. If using latex gloves:
   1. Use powder-free gloves with reduced protein content.
   2. Do not use oil-based hand creams or lotions unless they have been shown to reduce latex-related problems and maintain glove barrier protection.
   3. Wash hands thoroughly with soap and water after removing gloves.
   4. Clean areas and equipment frequently if contaminated with latex-containing dust.
   5. Learn the signs and symptoms of latex allergy.

C. Consult with a physician if there are any suspicions of a developing latex sensitivity or allergy.
III. Emergency Care

A. For personnel experiencing signs and/or symptoms of latex allergies, the following actions should be taken:
   2. Schedule an appointment with a health professional for a full latex allergy evaluation.

B. For personnel experiencing acute signs and symptoms as described above, the following actions should be taken. (Also see Chapter 3: Emergency Preparedness Plan):
   1. Terminate contact with latex containing products at once and thoroughly cleanse affected areas. Notify your supervisor immediately. If the supervisor isn’t immediately available notify other available personnel on the floor.
      a. If the victim is ambulatory, the victim may seek treatment at any of the following facilities:
         1) The HCMC Urgent Care, 612-873-5555, is located in the HCMC Red Building, Floor 1. Hours are day/evening 8AM to 6PM, with some holiday closures.
         2) The HCMC Emergency Room, 612-873-3132, located on the first floor of the Red Building. It is open 24 hours per day, seven days per week.
         3) The individual’s private physician.
      b. If an employee is incapacitated, personnel assisting them should take the following actions:
         1) Call 911 to request an emergency medical response team.
         2) Do not attempt to move the victim unless they are in immediate danger.
         3) Begin first aid/CPR if trained in proper techniques.

*Occupational information only. References provided below for expanded review. Please contact a physician with any suspicion of latex sensitivity or allergy.

Chapter 3: Emergency Preparedness Plan

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CHAPTER 3

EMERGENCY PREPAREDNESS PLAN

I. General Policy

A. An emergency is defined as a sudden, unexpected occurrence that demands immediate action. A delay of appropriate action may endanger lives; therefore an emergency preparedness plan is necessary. For personnel working in the Shapiro Building (S-Building), knowledge of how to respond to emergencies is essential to safeguard the lives of Hennepin Healthcare Research Institute (HHRI) personnel and visitors.

B. It is equally important for personnel housed in HCMC and the Parkside Professional Center (PPC) to be aware of pertinent policies and procedures in place for these buildings.

C. In most instances, the S-Building tenants and visitors are notified of any building-wide emergencies via the overhead paging system.

D. As backup, Emergency Team Leaders have been designated to provide an efficient means to notify and account for all HHRI clinical research and laboratory research personnel, administrative personnel, and visitors present in the S-Building. Emergency Preparedness Team Leaders are:

   S2: S2.100, Anne Shaw, Yi Peng
   S2: S2.300, Jonathan Klaphake, Becky Ford
   S3: Carolyn Narikawa, Brittany Lindgren, Barbara Wicklund
   S4: Dana Knopic, Pam Giles
   S5: Lisa Berndt, Carla Erickson
   S9: Carla Erickson, Cynthia Hanson, Bonnie Crissman
   S10: Alison Jarvis, Sam Howard, Michael Lick
   S11: Alison Jarvis, Danielle Burroughs, Peter Muelken
   PP4: Berman Center, Molly Prozinski, Brenda Kirbach, Nate Tessum
   PP4: Human Resources, Karin Fisher, Nancy Oakes
   PP7: Administration, Pat Engstrand, Carey Nadeau, Doug Kenison, Megan Crosby
II. Emergency Care

A. HHRI personnel and visitors have access to several medical treatment facilities in the event that an accident or injury occurs that requires medical attention.

B. If an injury takes place at work, and the victim is ambulatory, the victim may seek treatment at any of the following facilities:
   1. The HCMC Urgent Care, 612-873-5555, is located in the HCMC Red Building, first floor. Hours are day/evening 8AM to 6PM, with some holiday closures.
   2. The HCMC Emergency Room, 612-873-3132, is located on the first floor of the Red Building. It is open 24 hours per day, seven days per week.
   3. The individual’s private physician if the nature of the injury is minor.

C. For bloodborne pathogen exposure, the individual must go to HCMC Employee Occupational Health and Wellness. The phone number is 612-873-2383 and they are located in PL.710. Walk-in hours are: Monday – Friday: 7:00AM – 4:00PM. For exposures taking place after 3:00 PM the individual should report to the HCMC Urgent Care or HCMC Emergency Department. Follow up with the HCMC Occupational Health and Wellness is REQUIRED on the next business day.

D. For any incident that occurs during the course of an individual’s normal working duties, an HHRI Employee’s Injury/Incident Report Form must be filled out and signed by the injured party [https://hhrinstitute.org/wp-content/uploads/Employee-Incident-Injury-Report-Form.pdf](https://hhrinstitute.org/wp-content/uploads/Employee-Incident-Injury-Report-Form.pdf). The injury form is then sent to the individual’s supervisor who will fill out the relevant information and forward it to HHRI Human Resources.

E. If an employee or visitor is seriously injured or incapacitated, personnel assisting them should take the following actions:
   1. Dial 911 for the Security Operations Center (SOC) in Shapiro to request an emergency medical response team.
   2. Provide the SOC the location of the emergency, your name and phone number.
   3. Do not attempt to move the victim unless they are in immediate danger.
   4. Begin first aid/CPR ONLY if trained in proper techniques.
   5. Station an individual at the location entrance to direct the response team to the correct area.
   6. Have someone at the scene to provide information as needed about the event.
III. Shapiro Building Alert Policies and Procedures

A. Fire Alert

1. All floors in Shapiro are equipped with visual and audible alarms except for the 11th floor (visual alarms only). All areas have an overhead heat activated sprinkler system. It is an employee’s responsibility to know the locations of fire extinguishers and alarms. If fire or visible smoke occurs in the immediate work area, follow the standard response plan:
   a. RESCUE: Anyone in danger
   b. ALERT: Pull the nearest fire alarm (located at each stairwell and near each exit door). Call the HCMC Security Operations Center (SOC) at 911 immediately. Provide your name, exact location, and description of what is burning.
   c. CONTAIN: Close all doors. Turn off all fans.
   d. EXTINGUISH: Only if it does not place you in danger. To use a fire extinguisher, remember P.A.S.S.
      1) Pull – the safety pin
      2) Aim – the nozzle at the base of the fire
      3) Squeeze – the handles together
      4) Sweep – the nozzle across the base of the fire

2. If the fire becomes too large, or the extinguisher is emptied without successfully extinguishing the fire, remove yourself as quickly as possible from the area.
   a. Move horizontally to an area that is clear of smoke.
   b. Avoid the use of elevators.
   c. Crouch below the smoke level while moving to an area of refuge.
   d. Follow the evacuation protocol for the area in which you are working

3. A Fire Alert warning will be an overhead page as follows:
   “ATTENTION HOSPITAL PERSONNEL, FIRE ALERT”  
   (Building, Floor, Location)  
   (Message repeated three times)

4. If an alarm sounds:
   a. Make sure all doors are closed including doors to common areas.
   b. Meet in the elevator lobby to await further instructions.
   c. It is the supervisors’ and Emergency Team Leaders’ responsibility to confirm that all personnel and visitors are accounted for.
   d. If necessary, check offices and laboratories to assure that all individuals are following the alert rules.
   e. If individuals are not following the alert rules, remind them of their responsibility to do so.
   f. If the fire is in an adjacent building, do not enter the affected building except in an emergency. Do not use the elevators in the affected building.
   g. Wait in the elevator lobby area until the “all clear” is sounded.
   h. During a fire drill, Emergency Team Leaders have the discretion to allow employees back to their workspaces if more than 10 minutes has passed without an all clear.
5. If affected by a major alert, WHEN ABLE, HHRI employees housed in Shapiro should:
   a. Call the Chair of the Safety Committee at 612-873-6341 for a personnel status update OR
   b. Call the Coordinator of the Safety Committee at 612-873-6644 OR
   c. Email an update to safetycommittee@hhrinstitute.org

B. Internal Security Threat Alert

1. An Internal Security Threat Alert is an immediate notice that security measures are needed during an internal security incident that compromises the safety of persons on property owned or leased by Hennepin Health Systems. Examples of such instances may include:
   a. An individual’s safety is threatened
   b. An escaped prisoner
   c. Hostage situation
   d. Civil disturbance or gang activity
   e. Bomb threat (see Bomb Threat Procedures below)

2. An Internal Security Threat Alert is pertinent only to the HCMC Main Campus. This includes HCMC owned buildings for which the HCMC Security Department serves as first responders. This specifically includes the:
   a. Purple Building
   b. Red Building
   c. Orange Building
   d. Green Building
   e. Blue Building
   f. Shapiro Building
   g. Clinic & Specialty Center
   h. Life Sciences Building
   i. HCMC Parking Ramp
   j. Hospital Parking Ramp

3. Individuals on the HCMC Main Campus should report a known or suspected Internal Security Threat by notifying the HCMC Security Operations Center (SOC) at 911 immediately.

4. The SOC will initiate the following:
   a. Lock the exterior doors of the HCMC campus buildings.
   b. Staff may enter through any entrance using badge access.
   c. Non-staff entry will be allowed through the monitored 730 S. 8th Street entrance on the Emergency Drive for the duration of the Internal Security Threat.
   d. An Internal Security Threat warning will be an overhead page as follows: “ATTENTION HOSPITAL PERSONNEL, INTERNAL SECURITY THREAT ALERT” (Insert location in the Building and Floor) Staff in this location should shelter in place (Message repeated three times)

5. If an alarm sounds that the security alert is in your location, follow the shelter in place policies (page 9)
6. If an alarm sounds and the security alert in **not** in your location, adhere to the following procedures:
   a. Make sure all doors are closed.
   b. Bring cell phones with you if possible.
   c. Meet in the elevator lobby.
   d. It is the supervisors’ and Emergency Team Leaders’ responsibility to confirm that all personnel and visitors are accounted for.
   e. If necessary, check offices and conference rooms to assure that all individuals are following the alert rules.
   f. If individuals are not following the alert rules, remind them of their responsibility to do so.
   g. Wait in the elevator lobby area until the “all clear” is sounded or your floor is given other instructions.
   h. Individuals in transit between departments, or who do not have an assigned work area should proceed to, and remain within, the nearest occupied area.

7. If affected by a major alert, WHEN ABLE, HHRI employees housed in Shapiro should:
   a. Call the Chair of the Safety Committee at 612-873-6341 for a personnel status update OR
   b. Call the Coordinator of the Safety Committee at 612-873-6644 OR
   c. Email an update to hhrisafetycommittee@hhrinstitute.org
C. Internal Security Threat Alert (Bomb Threat)

1. HHRI personnel should respond to potential bombs and bomb threats in a manner to protect individuals, the facility, and to minimize the disruption of service.

2. HCMC Security Operations Center (SOC) will maintain visible deterrents including uniformed patrol and effective lighting.

3. All personnel should properly display their Photo IDs to facilitate the identification of unauthorized persons.

4. Departments should keep their own areas clean and orderly to facilitate the identification of unauthorized objects.

5. HHRI will respond to potential bombs and bomb threats in light of the following priorities:
   a. Protect personnel and visitors
   b. Protect the facility
   c. Minimize disruption to ongoing activities

6. A bomb threat is a threat received in any form (telephone call, letters, memos, writing on a wall, e-mail, etc.) that a bomb has been placed. Telephone calls are the most common way. Bomb threats may be specific or nonspecific:
   a. A nonspecific threat is limited to a simple statement that a bomb has been placed. No other information is available.
   b. A specific threat contains details such as a location, appearance of the bomb, time set for activation, or the motive behind planting the device.
   c. General characteristics of threats associated with the high probability of a bomb include:
      1) Long distance call or letter
      2) Detailed list of grievances
      3) Specific target named
      4) Detailed justification or rationale for planting the bomb
      5) Previous bomb threats involving real bombs

7. Evacuation or interruption of service to all or part of Shapiro requires the decision of the HCMC Security and/or Facility personnel unless individuals are clearly in imminent danger. The Minneapolis Fire and/or Police Department are also authorized to order an evacuation.

8. Written bomb threat:
   a. Handle the note as minimally as possible.
   b. If a threat is received by email do not delete the message.
   c. Notify the HCMC Security Operations Center (SOC) at 911 immediately.

9. If a suspicious package or article is found:
   a. Notify the HCMC Security Operations Center (SOC) at 911 immediately.
   b. Bombs may be hidden or camouflaged as a common package or article. Signs of a suspicious package or article may include:
      1) No return address, poorly handwritten address or misspelled words
      2) Excessive postage
      3) Stains, strange odor, or strange sounds
      4) Incorrect titles, unexpected delivery
   c. Remove any individuals in the immediate area, cordon off the area.
   d. Do not touch the package or article.
10. Telephoned bomb threat.
   a. A bomb threat may be received by anyone. Most threats are phoned in and the person making the call will usually deliver their message to the first person contacted.
   b. Show order and calmness throughout the call.
   c. Response
      1) If a bomb threat is received, keep as calm as possible. Have another person listen in on the call if possible.
      2) Copy the number and/or letters on the window display of the phone.
      3) Immediately call (or have someone else call) HCMC Operations Center (SOC) at 911. Do not speak to anyone else.
      4) Obtain as much information as possible; complete the Bomb Threat Checklist found behind this policy.
      5) Be courteous, even if the caller is abusive. The longer the caller remains on the line the more information you can get. Do not interrupt.
      6) Listen carefully to everything the caller says and to any background noise.
      7) Do not hang up upon termination of the call, keeping the line open increases the possibility of tracing the call.
      8) If a disinterested third party calls and states that someone told him/her to call to report the bomb, obtain this individual’s name, address, phone number, and ask the person to stay on the phone.
      9) Personnel should, when possible, avoid the use of the word “bomb” to fellow personnel and visitors. Maintain calm by specifying a “safety problem”.

11. Threat made in person.
   a. Note the description of the individual.
   b. Note the direction the person is traveling.
   c. Notify the HCMC Security Operations Center (SOC) at 911 immediately.
   d. The appropriate initial response will be determined by the HCMC Security Operations Center (SOC). They will determine:
      1) Level of search required
      2) Whether evacuation is indicated
      3) The level of evacuation required to ensure the safety of personnel and visitors
12. If affected by a major alert, WHEN ABLE, HHRI employees housed in Shapiro should:
   a. Call the Chair of the Safety Committee at 612-873-6341 for a personnel status update OR
   b. Call the Coordinator of the Safety Committee at 612-873-6644 OR
   c. Email an update to hhrisafetycommittee@hhrinstitute.org
TELEPHONED BOMB THREAT CHECKLIST

Telephone number received at: ____________________ Date received: ______________

Time call received: ___________________ Termination of call: ____________________

Sex: Male Female Adult Juvenile

Age: Young/Old 20 30 40 50 60 70

Voice: Loud Soft High Pitch Deep Intoxicated

Accent: Yes ___ No ____

Speech: Fast Slow Stutter Lisp Slurred Intoxicated

Language: Excellent Good Poor Fair Foul

Manner: Calm Angry Serious Laughing

Unusual Phrases: _________________________________________________________

Background Noises:

Music _________ Traffic ____________
Horns _________ Machinery _________
Running Motor (Type) _________ Whistles _________
Aircraft ___________ Bells _________
Other _________________________________________________________

When will bomb go off? _____________________________________________

Where is the bomb? ___________________________________________

How big is the bomb? _______________________________________________

What kind of bomb is it? (Explosive) (Incendiary/Fire)

Whom is the caller mad at? __________________________________________

Why was the bomb planted? _________________________________________

What is the caller’s name? __________________________________________

What is the caller’s address? _________________________________________

Did the caller place the device or was there someone else involved?

Did the caller seem familiar with the building when describing where the device was placed?
D. Shelter-in-Place Alert

1. Shelter-in-Place is used to prevent individuals from entering the building; secure compartmentalized areas; and discourage people from moving throughout HHS property.

2. A Shelter-in-Place warning will be an overhead page as follows:

   “ATTENTION HOSPITAL PERSONNEL, SHELTER-IN-PLACE ALERT (Insert location in the Building and Floor) (Message repeated three times)

3. When staff receive a Shelter-in-Place Alert, the following procedures should be followed:
   a. Close doors.
   b. Conduct a sweep of the floor, lead visitors to a lockable secure room.
   c. Close corridor blinds.
   d. Close fire or compartment doors within the floor.
   e. Take mobile phones with you, silence the phone. Phones placed on vibrate can still be heard.
   f. Turn off lights.
   g. Go to a lockable room and secure the door.
   h. If an area is normally locked, ensure nobody exits the area permitting unwanted entrance to the locked unit
   i. Be aware that the violent person(s) may bang on the door or yell for help in an effort to make you open the door.
   j. Do not make any unnecessary calls to the SOC.
   k. Follow instructions given by law enforcement or security.
   l. Stay in the secure room until an “all clear” is announced.

4. Immediately after the Shelter-in-Place Threat has been cleared:
   a. Supervisors and Emergency Team Leaders should search and account for all individuals and visitors.
   b. Notify the SOC of any persons unaccounted for.

5. If affected by a major alert, WHEN ABLE, HHRI employees housed in Shapiro should:
   a. Call the Chair of the Safety Committee at 612-873-6341 for a personnel status update OR
   b. Call the Coordinator of the Safety Committee at 612-873-6644 OR
   c. Email an update to hhrisafetycommittee@hhrinstitute.org
E. Active Shooter Alert

1. An Active Shooter is defined as an individual(s) actively engaged in killing or attempting to kill people in a confined and populated area by means of any type of weapon. A weapon is defined as any firearm, knife, or instrument that can cause bodily harm, injury or death.

2. Report a known or suspected Active Shooter by calling the HCMC Security Operations Center (SOC) at 911. Be prepared to provide the following information to the SOC dispatcher:
   a. Name of the person reporting the threat.
   b. Number and description of assailants including clothing color and style.
   c. Current location or last known location.
   d. Type of weapon(s).

3. An Active Shooter Alert warning will be an overhead page as follows:

   “ATTENTION HOSPITAL PERSONNEL, SECURITY ALERT ACTIVE SHOOTER”
   There is a person using a weapon in the vicinity of
   (Insert location in the Building and Floor)

   Exterior doors have been locked. Security has initiated their Active Shooter procedures.
   Staff should shelter in place.
   (Message repeated three times)

4. If staff observes an Active Shooter approaching or hear sounds of violence, staff should immediately choose the best action for the immediate circumstances.
   a. **RUN**
      1) Evacuate if there is a safe, accessible escape path available.
      2) Move far away from the incident and find safe cover and/or concealment.
      3) If you believe that police have not been notified, call 911 after it is safe for you to do so.
      4) Be prepared to provide details of the current situation.
   b. **HIDE**
      1) Close doors.
      2) Conduct a sweep of the floor, lead visitors to a lockable secure room.
      3) Close corridor blinds.
      4) Close fire or compartment doors within the floor.
      5) Take mobile phones with you, silence the phone. Phones placed on vibrate can still be heard.
      6) Turn off lights.
      7) Go to a lockable room and secure the door.
      8) If an area is normally locked, ensure nobody exits the area permitting unwanted entrance to the locked unit.
      9) Be aware that the violent person(s) may bang on the door or yell for help in an effort to make you open the door.
      10) Do not make any unnecessary calls to the SOC.
      11) Follow instructions given by law enforcement or security.
      12) Stay in the secure room until an “all clear” is announced.
c. **FIGHT - Use only as a last resort and only when your life is in imminent danger**
   1) Attempt to disrupt or incapacitate the violent person(s).
   2) Act aggressively against him/her.
   3) Yell loudly.
   4) Throw items or improvise weapons such as a fire extinguisher or scissors.
   5) Shine a bright light into the eyes of the violent person(s).
   6) Strike the violent person’s hand that holds the weapon with a heavy object.
   7) Use furniture as shields and objects to trap or knock the violent person(s) to the ground.
   8) Use several people to swarm the violent person(s) to the ground.

5. When interacting with the Security Department and/or law enforcement:
   a. Stay calm and follow officers’ instructions.
   b. Ensure your Photo ID is prominently displayed.
   c. Put down any items in your hands.
   d. Immediately raise hands and spread fingers.
   e. Avoid making quick movement towards the officers such as holding onto them for safety.
   f. Avoid pointing, screaming, or yelling.
   g. Do not stop to ask officers for directions or help when evacuation, just proceed to the direction from where officers are entering or where they are directing you to escape.

6. Immediately after the Active Shooter Threat has been cleared:
   a. Supervisors and Emergency Team Leaders should search and account for all individuals and visitors.
   b. Notify the SOC of any persons unaccounted for.

7. If affected by a major alert, WHEN ABLE, HHRI employees housed in Shapiro should:
   a. Call the Chair of the Safety Committee at 612-873-6341 for a personnel status update OR
   b. Call the Coordinator of the Safety Committee at 612-873-6644 OR
   c. Email an update to hhrisafetycommittee@hhrinstitute.org
F. External Security Threat Alert

1. An External Security Threat is defined as a security threat that exists in the vicinity of property owned or leased by Hennepin Health Systems and security measures are needed to ensure the safety of persons on the property. Examples of such instances include:
   a. A police chase.
   b. A report of a shooting or violent crime with suspect(s) at large.
   c. A large civil disturbance or disorder.

2. An External Security Threat Alert is pertinent only to the HCMC Main Campus. This includes HCMC owned buildings for which the HCMC Security Department serves as first responders. This specifically includes the:
   a. Purple Building
   b. Red Building
   c. Orange Building
   d. Green Building
   e. Blue Building
   f. Shapiro Building
   g. Clinic & Specialty Center
   h. Life Sciences Building
   i. HCMC Parking Ramp
   j. Hospital Parking Ramp

3. Individuals on the HCMC Main Campus should report a known or suspected External Security Threat by notifying the HCMC Security Operations Center (SOC) at 911 immediately.

4. The SOC will initiate the following:
   a. Lock the exterior doors of the HCMC campus buildings.
      1) Staff may enter through any entrance using badge access.
      2) Non-staff entry will be allowed through the monitored 730 S. 8th Street entrance on the Emergency Drive for the duration of the External Security Threat.

5. An External Security Threat Alert warning will be an overhead page as follows:

   “ATTENTION HOSPITAL PERSONNEL, EXTERNAL SECURITY THREAT ALERT”
   In the vicinity of (insert Building and Street(s))
   Exterior doors have been locked; remain inside the building until further notice
   (Message repeated three times)

6. An External Security Threat does not affect normal internal operations. Movement throughout corridors should proceed as normal unless the HCMC Security Department announces restrictions or additional instructions.

7. When an announcement is made personnel should ensure the safety of all HHRI personnel and visitors by doing the following:
   a. Meet in the elevator lobby area.
   b. It is the Supervisors’ and Emergency Team Leaders’ responsibility to confirm that all personnel and visitors are accounted for.
   c. If necessary, check offices or laboratories to assure that all individuals are following the alert rules.
d. If individuals are not following the alert rules remind them of their responsibility to do so.

e. Note who is on the floor and then return to normal internal operations.

f. Advise visitors who may be unfamiliar with the HCMC campus to remain on the floor until the External Security Threat has been cleared or other directions are given.

8. Immediately after the External Security Threat has been cleared:
   a. Supervisors and Emergency Team Leaders should account for all individuals and visitors.
   b. Notify the SOC of any persons unaccounted for.

G. Flooding

1. Flooding may for many reasons including if pipes break, a sprinkler head is damaged, or water lines freeze and burst.

2. If flooding should occur:
   a. Immediately contact the HCMC Security Operations Center (SOC) at 612-873-4116.
   b. Personnel should protect equipment from damage if not endangering yourself or others. This may be done by covering it with plastic, removing equipment from the area, or raising equipment above the water line in the area that is flooding. Unplug all electrical equipment if this can be accomplished safely.
   c. Personnel should move themselves and all visitors to a safe, dry area. HHRI personnel must stay with visitors until an evacuation can be completed if necessary.
   d. The HCMC SOC Facility will determine the cause of the flooding and expedite repairs and clean-up as needed.
   e. Flooding may evolve into an Internal Security Threat Alert. If an Internal Security Threat Alert is called follow the Internal Security Threat Disaster Plan.

H. Severe Weather Alert

1. The purpose of the Severe Weather Alert is to warn all personnel and visitors of the possibility of danger associated with severe weather.

2. A Severe Weather Alert may occur:
   a. If the possibility of a severe storm or tornado exists, a warning will be received by HCMC through National Oceanic and Atmospheric Administration (NOAA)
   b. If the situation warrants, a Severe Weather Alert warning will be an overhead page as follows:

      “ATTENTION HOSPITAL PERSONNEL, SEVERE WEATHER ALERT IS IN EFFECT FOR THE MEDICAL CENTER”
      A (description of the event) warning has been issued valid until (time frame)
      (Message repeated three times)

   3. When an announcement is made personnel should ensure the safety of all HHRI personnel and visitors by doing the following:
      a. Close all doors and blinds.
b. Ensure that visitors are safe.
c. All personnel and visitors are to meet in the elevator lobby area.
d. It is the Supervisors’ and Emergency Team Leaders’ responsibility to confirm that all personnel and visitors are accounted for.
e. If necessary, check offices or laboratories to assure that all individuals are following the alert rules.
f. If individuals are not following the alert rules remind them of their responsibility to do so.
g. Restrict traffic and the use of the elevators.
h. Wait in the elevator lobby area until the “all clear” is sounded or your floor is given other instructions.
i. If a TORNADO WARNING is called immediately move to an interior hallway, away from all windows and glass doors. Sit down and put your head as close to your lap as possible or kneel and protect your head with your arms.
j. Individuals in transit between departments, or who do not have an assigned work area should proceed to, and remain within, the nearest safe area.
k. When the Severe Weather Alert has expired the “Severe Weather Alert, All Clear” page will be announced.

4. If affected by a major alert, WHEN ABLE, HHRI employees housed in Shapiro should:
   a. Call the Chair of the Safety Committee at 612-873-6341 for a personnel status update OR
   b. Call the Coordinator of the Safety Committee at 612-873-6644 OR
   c. Email an update to hhrisafetycommittee@hhrinstitute.org
I. Missing Newborn/Toddler/Child Alert

1. The purpose of this policy is to, on suspicion of an actual or attempted infant or child, abduction, have a coordinated plan to locate and protect the victim as quickly and safely as possible.

2. A Missing Newborn/Toddler/Child Alert will be an overhead page as follows:

   “ATTENTION HOSPITAL PERSONNEL
   MISSING (New born, infant, toddler, child) (Age, description) (Building, floor, unit)
   (Message repeated three times)

3. If an alert sounds:
   a. Meet in the elevator lobby.
   b. Post individuals to exits, hallways, stairwells, and elevators to observe for abductor.
   c. Call the HCMC Security Operations Center (SOC) at 911 with any sightings.
   d. When the abducted victim has been found an all clear will be announced.

J. Relocation Alert or Evacuation Alert

1. When a Relocation or Evacuation Alert is called the warning will be an overhead page as follows:

   “ATTENTION HOSPITAL PERSONNEL, (relocation or evacuation) ALERT”
   (Insert location in the Building and Floor)
   (Message repeated three times)

2. When a Relocation Alert or Evacuation Alert is called the pertinent instructions should be followed as appropriate.

3. Evacuation from the Working Area
   a. Meet in the elevator lobby.
   b. It is the Emergency Team Leaders’ and Supervisors’ responsibility to ensure that all personnel and visitors are accounted for.
   c. Evacuate at a safe pace, do not run, do not go back to collect personal or business items.
   d. Stay together.
   e. Use the stairwells unless other directions are given.
   f. Ensure that injured or physically challenged individuals are given assistance.
   g. Evacuate in an orderly fashion.
   h. Proceed to the designated assembly area.
   i. Reassess that all personnel and visitors are accounted for.
   j. Meeting sites are:
      1) Primary meeting site: Lower Level Shapiro Building, North Hallway
      2) Secondary meeting site: HCMC Blue Building Lower Level Conference Room
4. Evacuation from the Building
   a. Meet in the elevator lobby.
   b. It is the Emergency Team Leaders’ and Supervisors’ responsibility to ensure that all personnel and visitors are accounted for.
   c. Evacuate at a safe pace, do not run, do not go back to collect personal or business items.
   d. Stay together.
   e. Use the stairwells unless other directions are given.
   f. Ensure that injured or physically challenged individuals are given assistance.
   g. Evacuate in an orderly fashion.
   h. Proceed to the designated assembly area.
   i. Reassess that all personnel and visitors are accounted for.
   j. Primary meeting site: Soccer Field at Elliot Park, back corner, nearest the PPC.

Building (9th Avenue side)

5. If affected by a major alert, WHEN ABLE, HHRI employees housed in Shapiro should:
   a. Call the Chair of the Safety Committee at 612-873-6341 for a personnel status update OR
   b. Call the Coordinator of the Safety Committee at 612-873-6644 OR
   c. Email an update to hrisafetycommittee@hhrinstitute.org
   d. Employee and visitor accounting results should be given to the Vice President of Operations, Safety Committee Chair, Safety Committee Coordinator, or Emergency Team Leader(s)
APPENDIX A

GAS LEAK OR SUSPECTED GAS LEAK

In the case of a suspected or actual gas leak – **DO NOT:**

1. Turn lights on or off
2. Operate any electric switches
3. Use any electrical device – including computers
4. Use a phone, either land or cell
5. Smoke
6. Ignite matches or lighters
7. Use a flashlight or electrical lantern
IV. Animal Specific Disaster Plan

A. Alerts & Evacuations

1. Personnel working with laboratory animals will follow HHRI safety procedures for all alerts and evacuations, except as noted below.
2. If an animal is anesthetized, one person will stay with the animal during an alert. The floor team leader will note who remains and their location.
3. If the alert changes to an evacuation, the animal must be euthanized and everyone will evacuate the building. The floor team leader will notify the person who remained with the animal.

B. Natural Disasters

1. Inclement weather and personnel unable to get to work.
   a. If weather creates unsafe conditions for travel, veterinary services personnel will communicate with each other via phone to locate someone within the department who is able to travel to the facility within 24 hours.
   b. If no one within the department is able to get to the facility, they will attempt to contact animal research personnel who may be able to get to the facility, and provide at least minimum care to resident animals. Veterinary Services personnel will provide verbal instructions via phone to any person who can get to the facility. HCMC security can provide access to all rooms, if needed.
   c. If delivery of supplies is delayed beyond available stock, the director will develop a plan for alternate bedding, extend time intervals for cage changes, and/or substitute foods.

C. Power failure

1. Back-up generators provide electricity in case of a power outage. But if the generators are unable to support the building due to a lack of fuel supply or other reasons, the Director will evaluate conditions and decide if animals can safely and comfortably remain in the facility. If not, valuable animals will be removed from the building and housed elsewhere.
2. Animals that cannot be moved or that are not yet on study will be humanely euthanized.

D. Building compromise – explosion, fire, tornado, loss of roof integrity

1. Access to the animals will be limited to essential personnel after HCMC Facilities Services and the Minneapolis Fire Department determines that the building can be entered safely.
2. HCMC Security will notify the Director of Veterinary Services if the building is compromised outside of business hours. If the Director is not available, the Facility Coordinators will be notified.
3. The Director or Facility Coordinators will evaluate the animals and facility with the assistance of HCMC Security and HCMC Facilities departments. If the animals may be safely and comfortably maintained in the facility, they may remain in place. If not, the animals will be euthanized or evacuated.

E. Facility Not Habitable

1. If time allows, the Veterinary Director will contact investigators to determine which animals may be evacuated vs euthanized.
2. The Veterinary Director will decide if the animal should be euthanized for humane reasons or if the researcher cannot be contacted.
3. Animals to be evacuated will be transported in shoebox cages (rodents and rabbits) or in wheeled cages (kennelled species) to a staging area near an exit or a loading dock. They will be transported to another facility, such as the University of Minnesota Research Animal Resources, via an arranged vehicle such as a van or loading truck that is enclosed (not an open bed truck).
4. Sufficient CO₂, commercial euthanasia drug, or a combination of anesthetic drugs and KCL will be kept on hand to euthanize animals that will not be evacuated. Euthanasia will be performed according to the recommendations in the most current AVMA Guidelines on Euthanasia.

F. Animal Rights Activities

1. Break-in
   a. HCMC Security will evaluate the situation and take action to secure the facility. If warranted, they may notify the Minneapolis Police and the local FBI office.
   b. HCMC Security will notify the President and COO of HHRI, and the Director of Veterinary Services. They will evaluate the damage, loss, and condition of the animals. Together they will notify researchers, HHRI officers, and HHS officials, as necessary.

2. Protest
   a. HCMC Security will ensure that protesters leave the premises.
   b. If protests occur on city property, the Minneapolis Police will be notified so that they may determine if the protest is occurring within legal bound.

G. IT compromise

1. The Director of Information Systems will be notified immediately. They will investigate and respond to keep information secure.
H. Publicity

1. Any public response or announcement will be coordinated through the HHRI administration in consultation with HHS officials and legal counsel as necessary.
Chapter 4: Fire Safety

I. Fire Prevention.....................................................................................................................1

II. Training Requirements.........................................................................................................2

III. Fire Classification................................................................................................................3

IV. Fire Extinguishers................................................................................................................3

V. Other Fire-Related Equipment.............................................................................................4

VI. Fire Alert..............................................................................................................................4
CHAPTER 4
FIRE SAFETY

I. Fire Prevention

A. The cause of most fires can be attributed to carelessness, inattention, lack of knowledge, unsafe environments, or unattended operations.

B. All laboratory personnel must take responsibility to recognize potential fire hazards and take appropriate measures to ensure the safety of themselves and others.

C. Four principles of fire prevention and response are:
   1. Handle ignition sources and flammable materials appropriately.
   2. Prevent accumulation of flammable materials.
   3. Use appropriate safety devices when using flammables.
   4. Know how to respond in the event of a fire.

D. General safety practices for fire prevention and control practices to be used in the Hennepin Healthcare Research Institute (HHRI) spaces include:
   1. No smoking in any areas of the Fred L. Shapiro Building (S-Building).
   2. Do not block fire extinguishers.
   3. Do not leave any ignition sources unattended. Ignition sources may include open flames, warming plates, heating elements, and electrical equipment that can produce a spark.
   4. Do not allow trash to accumulate in any area.
   5. Do not allow materials soaked with solvents, oils, or other flammable materials to accumulate in any area.
   6. Keep gas cylinders secured at all times.

E. Flammable liquids and solvents
   1. Do not use flammable liquids or solvents in the presence of an ignition source. These materials can emit vapors that may burn or explode without actual contact with the liquid.
   2. Store flammable liquids and solvents in approved flammable storage areas.
   3. Bulk quantities must be stored in flammable storage cabinets within the laboratory, in the flammable storage room on the east wing of S-3, or in a flammable storage area within a fume hood.
      a. Diluted flammable liquids, e.g., 70% alcohol solutions, may be stored on an open shelf within a laboratory area.
      b. Flammable liquids should never be stored above eye level.
      c. Use eye protection when working with flammable liquids and solvents.
      d. Use carriers when transporting flammable liquids between areas.
      e. Contact the Laboratory Services Coordinator for disposal information.
      f. Clean up flammable liquid spills immediately.
      g. See Chapter 10: Safe Chemical Handling.
F. Electrical equipment
   1. Check all electrical tools, instruments, cords, and plugs for worn areas or exposed wires. Electrical equipment should be grounded and/or have a polarized plug.
   1. Do not attempt to use any electrical instrument or device that is causing a mild electrical shock. Unplug the device immediately and have it properly serviced.
   2. The use of extension cords should be restricted to those situations when it is absolutely necessary.
      a. Extension cords must be UL approved.
      b. The extension cord must be as heavy as the cord it is plugged into.
      c. The extension cord must have a polarized plug or be grounded.
      d. Extension cords cannot be strung together.
      e. Do not use octopus connectors or plug-in adaptors.

II. Training Requirements

A. All personnel with job duties in the S-Building are required to complete a yearly safety quiz.
   1. A reminder will be sent by HHRI Human Resources.
   2. The information and quiz are available through the HHRI Website.
   3. Contact the Laboratory Services Coordinator or Human Resources for access information.

B. Laboratory personnel are also responsible to know:
   1. Type and location of the nearest fire extinguisher.
   2. Location of the nearest fire pulls.
   3. Location of the nearest fire exits, and evacuation routes.
   4. Location of the nearest emergency shower and/or eye wash station.
   5. Emergency telephone number and fire procedures.
III. Fire Classification

A. All fires rely on three basic elements to maintain themselves:
   1. A fuel source or combustible material.
   2. An ignition source.
   3. Oxygen.
   4. Certain materials, such as flammable liquids, may be both a fuel and ignition source.
   5. Removal of any one of these elements will extinguish a fire.

B. Fires are commonly grouped into four basic classifications, according to the type of combustible material.
   1. **Class A fires**: Dry materials such as wood, paper, textiles, etc.
   2. **Class B fires**: Flammable and combustible liquids and gases such as oil, solvents, acetylene gas, propane gas etc.
   3. **Class C fires**: Electrical fire such as those caused by a short circuit.
   4. **Class D fires**: Combustible metals such as magnesium and titanium.

IV. Fire Extinguishers

A. Fire extinguishers are rated according to both the size and type of fire for which they are recommended.

B. All fire extinguishers in the S-Building are the ABC type.
   1. An all-purpose fire extinguisher, an ABC extinguisher is to be used on all classes of fires, with the exception of Class D fires.
   2. The ABC extinguisher uses a dry chemical designed to smother the fire by depriving it of oxygen.

D. All fire extinguishers require routine safety checks. In the S-Building, this is the responsibility of the HCMC Facilities Services Department. Fire extinguishers are checked for:
   1. Proper type of extinguisher for the area.
   2. Intact seal.
   3. Intact pin.
   4. Proper pressure within the tank.
   5. Date on tank.
V. Other Fire-Related Equipment

A. Automatic sprinkler system
   1. Sprinkler heads are located throughout the S building.
   2. Each sprinkler head is capable of covering 50 square feet of floor space with a discharge rate of 60-150 gallons of water per minute at high pressure. It is designed to extinguish Class A type fires quickly.
   3. To ensure proper functioning of the automatic sprinkler system, items must not be stored directly under or up against a sprinkler head. Items must be no less than 18” from the sprinkler head.

B. Fire hoses are located on each floor.

C. Fire blankets are located on S2 and S3 laboratory areas.

VI. Fire Alert

A. Fire Alert
   1. All floors in Shapiro are equipped with visual and audible alarms except for the 11th floor (visual alarms only). All areas have an overhead heat activated sprinkler system. It is an employee’s responsibility to know the locations of fire extinguishers and alarms. If fire or visible smoke occurs in the immediate work area, follow the standard response plan:
      a. RESCUE: Anyone in danger.
      b. ALERT: Pull the nearest fire alarm (located at each stairwell and near each exit door). Call the HCMC Security Operations Center (SOC) at 911 immediately. Provide your name, exact location, and description of what is burning.
      c. CONTAIN: Close all doors. Turn off all fans.
      d. EXTINGUISH: Only if it does not place you in danger. To use a fire extinguisher, remember P.A.S.S.
         1) Pull – the safety pin.
         2) Aim – the nozzle at the base of the fire.
         3) Squeeze – the handles together.
         4) Sweep – the nozzle across the base of the fire.
   1. If the fire becomes too large, or the extinguisher is emptied without successfully extinguishing the fire, remove yourself as quickly as possible from the area.
      a. Move horizontally to an area that is clear of smoke.
      b. Avoid the use of elevators.
      c. Crouch below the smoke level while moving to an area of refuge.
      d. Follow the evacuation protocol for the area in which you are working.
   3. A Fire Alert warning will be an overhead page as follows:
      “ATTENTION HOSPITAL PERSONNEL, FIRE ALERT”
      (Building, Floor, Location)
      (Message repeated three times)
   4. If an alarm sounds:
      a. Make sure all doors are closed including doors to common areas
      b. Meet in the elevator lobby to await further instructions.
      c. It is the supervisors’ and Emergency Team Leaders’ responsibility to confirm that all personnel and visitors are accounted for.
      d. If necessary, check offices and laboratories to assure that all individuals are following the alert rules.
      e. If individuals are not following the alert rules, remind them of their responsibility to do so.
f. If the fire is in an adjacent building, do not enter the affected building except in an emergency. Do not use the elevators in the affected building.
g. Wait in the elevator lobby area until the “all clear” is sounded.
h. During a fire drill, Emergency Team Leaders have the discretion to allow employees back to their workspaces if more than 10 minutes has passed without an all clear.

5. **If affected by a major alert, WHEN ABLE, MMRF employees housed in Shapiro should:**
   a. Call the Chair of the Safety Committee at 612-873-6341 for a personnel status update OR
   b. Call the Coordinator of the Safety Committee at 612-873-6644 OR
   c. Email an update to mmrf安全性committee@mmrf.org
Chapter 5: Electrical Safety

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II. Procedures ................................................................................................................................2

A. Electrical Safety .............................................................................................................2

B. Electrical Repairs ...........................................................................................................2

C. Electrical Shock .............................................................................................................2
CHAPTER 5

ELECTRICAL SAFETY

I. Policy

A. Electrical equipment is to be checked for proper grounding and safety when first used and if problems are noted during use.

B. Grounding

1. OSHA regulations stipulate that the requirements of the National Electric Code must be met when grounding electrical equipment.

2. All exposed non-current carrying metal parts of fixed or portable electric equipment should be properly grounded.
   a. If an electrical leak develops to the exposed metal part, the current is conducted directly to the ground rather than through an individual who touches the metal part. If the electrical leak is sufficiently large, the current carried directly to the ground will exceed that for which the equipment is fused and the fuse will blow.
   b. If the equipment is not protected by a fuse, the current may reach an amount which will blow the fuse or trip the circuit breaker for the circuit supplying the equipment.

C. Provisions for emergency power to S-Building facilities and laboratories:

1. A 750 KW automatic diesel generator provides emergency power to the Shapiro Building (S-Building) in approximately 8 to 12 seconds after loss of power from the main lines. This generator has a 5-day fuel supply and is exercised one hour per month under load conditions.

2. Emergency power is provided to elevators, all egress illumination, all exit signs, the fire alarm system, and selected receptacles on the 3rd, 9th, 10th, and 11th floor of the S-Building. This system is wired and operated in compliance with all applicable NFPA codes.
   a. Receptacles supplied with emergency power are identified by a red color. All critical equipment, such as -70°C freezers and incubators should be plugged into a red outlet.
   b. Orange outlets indicate that the power supply is on an independent circuit, which lowers the potential of power failure due to electrical surges. Orange outlets are NOT supplied with emergency power.

3. A built-in battery back-up system supplies power to the 10th and 11th floor security systems in the event of a power failure.

4. In case of electrical failure, call the HCMC Security Operations Center (SOC) at 612-873-4116.
II. Procedures

A. Electrical safety
   1. Check all electrical tools, instruments, cords, and plugs for worn areas or exposed wires when using equipment.
   2. Ensure that electrical equipment is grounded and/or has a polarized plug.
   3. Use approved outlet strips and surge protectors.
   4. Restrict the use of extension cords to those situations when it is absolutely necessary.
      a. Extension cords must be UL approved.
      b. The extension cord must be as heavy as the cord it is plugged into.
      c. The extension cord must have a polarized plug or be grounded.
   5. Ensure that a plug is dry before plugging it into a circuit.
   6. Do not work on, or attempt to repair, any electrical instrument.
   7. Do not use any equipment with worn wires.
   8. Do not handle electrical equipment or connections with damp hands or when standing in or near water.
   9. Do not continue to run a piece of electrical equipment after liquid has been spilled on it. Turn it off immediately and allow it to dry thoroughly inside and out. Inform co-workers that the equipment is not to be used for a definite period.
   10. Do not use any electrical instrument or device that is causing an electrical shock. Unplug the device immediately, inform co-workers that the device is malfunctioning, tag it as broken, and have it properly serviced.
   11. Do not place extension cords across passageways or sink areas. Extension cords cannot be suspended overhead and cannot be strung together.
   12. Do not use octopus connectors or plug-in adaptors.

B. Electrical Repairs
   1. Report all electrical equipment problems or malfunctions regarding laboratory equipment to your supervisor.
   2. For facility-related electrical problems or concerns, contact one of the following:
      a. For facilities problems on the 3rd floor, report the problem to the S-3 Laboratory Services Coordinator.
      b. For facilities problems on the 10th and 11th floors, report the problem to the Attending Veterinarian.

C. Electrical Shock
   1. Report all electrical shocks immediately to your supervisor, including small tingles. Small shocks often precede major shocks. A small tingle may indicate potential trouble.
   2. In case of major electrical shock:
      a. Shut off the current or cautiously remove contact from victim, using an insulator. Use heavy rubber gloves to push the victim or current source aside – a dry stick or dry towel will not suffice.
      b. Call 911 in the Shapiro Building to request an emergency medical response team.
      c. Begin first aid/CPR if trained in proper techniques.
Chapter 6: Right to Know Program (Hazardous Communication)

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II. Scope....................................................................................................................................1
III. Responsibilities....................................................................................................................2
IV. Chemical Inventory/Material Safety....................................................................................2
V. Chemical Labeling...............................................................................................................2
VI. Training................................................................................................................................3
VII. Record Keeping ..................................................................................................................4
CHAPTER 6

RIGHT TO KNOW PROGRAM
(Hazardous Communication Program)

I. Policy

A. The Hennepin Healthcare Research Institute (HHRI) has established the following program to comply with the OSHA Hazardous Communication Standard (29 CFR 1910.1200) and the Minnesota Employee Right to Know Act of 1983.

B. This hazardous communication program is designed to fill the following objectives:
   1. To safeguard all laboratory personnel by providing necessary information on dangers associated with hazardous chemicals, harmful physical or health agents, and infectious agents in the work place.
   3. To assure areas of responsibility relating to the Right to Know Program are clearly defined.

II. Scope

A. The HHRI written Hazardous Communication Right to Know Program will provide laboratory personnel with a description of the Program.

B. The Program will consist of:
   1. A chemical inventory of all hazardous chemicals stored and used at HHRI facilities.
   2. A mechanism to ensure that hazardous chemicals are properly labeled.
   3. A mechanism to ensure that Safety Data Sheets (SDS) are available for all chemicals listed in a chemical inventory.
   4. A policy to ensure that SDS accountability is required of each laboratory area.
   5. A comprehensive training program to provide information on the handling of hazardous chemicals and infectious agents in the work place.
   6. Protocols that ensure incoming contractors are provided information about hazardous substances, harmful physical agents, or infectious agents they may encounter at HHRI facilities.
   7. Relevant training records.
   8. A provision for review of the HHRI Right to Know Program to ensure the program continues to meet all requirements of the OSHA Hazardous Communication Standard and the Minnesota Right to Know Act.
III. Responsibilities

A. The HHRI Board of Directors has entrusted to the HHRI Laboratory Safety Committee the responsibility of developing and implementing the Right to Know Program.

B. Each individual is responsible for implementing the program to protect themselves, other laboratory personnel, and visitors.

C. The written Hazard Communication and Right to Know Program will be reviewed annually by the HHRI Laboratory Safety Committee and updated as needed.

IV. Chemical Inventory/Material Safety

A. Each laboratory is responsible for compiling and maintaining an updated inventory list of hazardous chemicals used or stored at HHRI.

B. Each laboratory will keep a copy of SDS for chemicals used in their laboratory in a designated notebook.
   1. If a copy of the SDS is not included with any chemical shipment, the laboratory is responsible for contacting the manufacturer or supplier to obtain one.
   2. SDS materials can often be found on-line at the suppliers’ websites.

C. All vendor samples of hazardous substances will be accompanied by an SDS.

D. HCMC Facilities Services will retain copies of any SDS for hazardous chemicals used by Housekeeping and Facilities staff.

V. Chemical Labeling

A. All containers of hazardous chemicals received by HHRI will be properly labeled.
   1. The name/identity of the chemical substance.
   2. The name and address of the manufacturer.
   3. The hazard warning(s) of the hazardous material.
   4. Physical Hazard (flammable, explosive, etc.).
   5. Health Hazard (carcinogen, toxic, etc.).
   6. Each laboratory will write the name of the Principal Investigator and the date received on every container of hazardous chemicals.
   7. A budget number for disposal will be required.

B. Principal Investigators/Laboratory Supervisors are responsible for:
   1. All chemicals labeled with the name of the Principal Investigator.
   2. All chemicals labeled with date received.
   3. Illegible labels must be replaced with new labels that contain similar warnings and information as the original label.
   4. Secondary containers into which chemicals are transferred must be labeled with the same information as the original container.
   5. Correct disposal of used, unwanted, or old chemicals.
   6. Correct usage of chemicals.
   7. Correct storage of chemicals (Corrosives, Flammable, and Explosives) in labeled, designated storage areas according to the specific hazards of the chemicals.
VI. Training

A. All personnel who use, handle or transport chemicals or are exposed to infectious agents will be trained by the Principal Investigator to recognize the hazards with the chemicals and/or infectious agents. Personnel will receive initial training and annual training thereafter. Whenever a new hazardous chemical is introduced into the work place, additional training will be implemented.

B. The training program will include:

1. An overview of the OSHA Hazard Communication and the Minnesota Right to Know Program.
2. Location of the HHRI Hazard Communication and Right to Know Program.
3. The location and availability of the SDS and how to interpret and understand the information on the SDS.
4. The hazardous substances, physical agents or infectious agents that may be encountered in the workplace.
5. The physical and health hazards of chemicals and infectious agents, including the signs and symptoms of over exposure, and any medical conditions known to be aggravated by overexposure.
6. The measures individuals should take to protect themselves against occupational exposure to hazards in the work place (work practices, personal protective equipment).
7. Emergency procedures.
8. Training on infectious agents must include the chain of infection and method used to prevent occupational exposure.
9. Training in the shipping of hazardous materials will be documented, and a completion of training certificate for each laboratory as needed will be filed in the SDS notebook.

C. The Laboratory designated trainer and the S3 Laboratory Services Coordinator will be responsible for implementing the training provisions of the HHRI Right to Know Program.

D. Training formats may include audio-visual training, hands-on instruction, and information packets.

E. Personnel who are changing positions must receive Right to Know training prior to assuming their new duties if not previously trained. When a new individual is assigned or transferred to a department in which hazardous chemicals or infectious agents are present, his/her orientation must include all of the above training elements as well as all other specific safety and health training required.

F. Mandatory safety training will be conducted annually.

G. Contractors, vendors, service personnel, and visitors will be informed of areas where potential exposure to hazardous chemicals could occur, the labeling system in use, protective measures to be taken, safe handling procedures to be used, and the location and availability of the safety data sheets by laboratory personnel in the area.

H. The HHRI will expect all non-HHRI personnel to comply with established worker protection programs. HHRI will also request that the appropriate supervisory personnel be notified if an outside contractor or vendor intends to introduce any hazardous substances into HHRI facilities.
VII. **Record Keeping**

A. Records of training will be kept. Training records will contain:

1. Dates when training was conducted.
2. Description of the training.
3. The name of the trainee and trainer.
4. Training records will be made available upon request for review by employees and representatives of OSHA.
Chapter 7: Waste Handling

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II. Procedures for Handling of Specialized Waste .......................................................... 3

III. Spill Procedures ........................................................................................................ 5
Laboratory and animal care settings generate many different types of waste, and each type has its own method of disposal. Proper and consistent segregation of waste is essential to maintain a safe working environment for both HHRI laboratory personnel as well as HCMC Facilities Services personnel.

I. Procedures for Handling of Standard Waste

<table>
<thead>
<tr>
<th>Type of Waste</th>
<th>Example</th>
<th>Disposal Method</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Laboratory Waste</td>
<td>Non-contaminated gloves, paper towels, gauze, chux pads, and syringe covers</td>
<td>Clear plastic trash bags</td>
<td>Picked up daily by EVS</td>
</tr>
</tbody>
</table>
| Sharps                        | Needles, scalpel blades, all pipettes (plastic and glass), glass slides, small glass vials, any contaminated glassware pieces | Approved puncture resistant sharps container         | Obtain at Fred L. Shapiro Building (S-Building) S-3 Services Coordinator desk or in S10.202
• Fill to 3/4 full, then close tightly and mark as “FULL”
• Picked up by EVS (place filled containers in hallway)
• Smaller non-broken glass items permitted
• No capped needles |
| Glass                         | Broken glass, large glassware pieces (Non-contaminated only) | Approved glass disposal boxes                        | Obtain at S-3 Laboratory Services Coordinator desk
• Close and tape shut when full, mark as “FULL”
• Picked up by EVS |
| Biohazard Waste               | Tissues, body fluids, culture plates or media (Non-sharps) | Red biohazard bags                                   | Standard sizes provided by Facilities, or on S-10 and S-11
• Tie shut when full
• Picked up daily by EVS |
| Animal Waste – Non-infectious, compostable | Used bedding, feed                                     | Compostable bags                                     | Barrels located in S-11 hallway and S-10 cagewash
• 10 lb maximum limit
• Tie shut when full
• Picked up daily by EVS |
<table>
<thead>
<tr>
<th>Type of Waste</th>
<th>Example</th>
<th>Disposal Method</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Animal Waste – Biohazard      | Used bedding and/or feed from animals exposed to infectious agents    | Red autoclavable biohazard bags      | • Obtain from animal care  
• Close and spray with disinfectant  
• Transport to S-10 autoclave and process through an appropriate cycle  
• Autoclaved items are processed as usual through S-10 cage washer |
| Rodent Carcass – Standard     | Non-contaminated rodent carcasses, larger organs or tissues            | Brown paper lawn and leaf bags       | • Obtain from S10.203 , S-11 hallway shelves, or above carcass freezer in S-3 north wing  
• Place in designated freezers on S-3 north wing, S-10 or S-11  
• Multiple rats and mice can be placed in one bag  
• No extra materials – e.g., chux pads, gloves, etc.  
• Picked up weekly by licensed contractor |
| Animal Carcass - Biohazard     | Carcasses of rodents exposed to infectious agents                      | Red biohazard bags                   | • Obtain from animal care  
• Tie shut when full  
• Place in hallway freezers on S-3 north wing, S-10 and S-11 elevator lobbies  
• Multiple rats and mice can be placed in one bag  
• Extra materials (chux pads, gloves, etc.) permitted  
• Picked up daily by EVS |
II. Procedures for Handling of Specialized Waste:

<table>
<thead>
<tr>
<th>Type of Waste</th>
<th>Example</th>
<th>Disposal Method</th>
<th>Disposal Area</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Radioactive waste - solid</strong></td>
<td>Pipette tips, culture plates, gloves, chux pads, etc. used with radioactive isotopes</td>
<td>Plastic bags; designated cardboard boxes for $^3$H, $^{14}$C, $^{125}$I, $^{35}$S, etc. Clear plastic bags in clear plastic bins for $^{32}$P</td>
<td>Radioactive storage area on S-3 north wing</td>
<td>“GL” key opens door&lt;br&gt;Waste segregated according to isotope used&lt;br&gt;Waste with long decay times also segregated by investigator&lt;br&gt;Fill out waste disposal form provided near each disposal box for each drop off&lt;br&gt;Decayed in storage or picked up regularly by HCMC nuclear medicine staff</td>
</tr>
<tr>
<td><strong>Radioactive waste – liquid</strong></td>
<td>Culture media, counting cocktails, etc.</td>
<td>Sink/Sewer</td>
<td>Radioactive waste sink in S-3 common room</td>
<td>Leave water running for 10 minutes after completing disposal&lt;br&gt;Fill out waste disposal log found near sink</td>
</tr>
<tr>
<td><strong>Animal carcass – radioactive</strong></td>
<td>Animal carcasses exposed to radioactive isotopes</td>
<td>Clear plastic bags, or brown paper lawn and leaf bags</td>
<td>Designated radioactive carcass freezer on S-3 north wing freezer room</td>
<td>Clearly label isotope, date stored, and calculated activity with each bag&lt;br&gt;Picked up for transfer to HCMC long term facility</td>
</tr>
<tr>
<td><strong>Chemical waste</strong></td>
<td>Unused liquid or solid chemicals that cannot be disposed of in the sink or evaporated, chemical waste from laboratory</td>
<td>Keep in original container, or place in a container labeled as chemical waste</td>
<td>Chemical waste storage room in S-Building lower level</td>
<td>Obtain proper forms and key to room from S-3 Services Coordinator desk&lt;br&gt;Identify laboratory, budget number, date disposed, amount and chemical name&lt;br&gt;Keep copy for laboratory, and submit original to S-3 Services Coordinator</td>
</tr>
<tr>
<td>Type of Waste</td>
<td>Example</td>
<td>Disposal Method</td>
<td>Disposal Area</td>
<td>Comments</td>
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</tr>
<tr>
<td>Chemo-therapeutic waste</td>
<td>Specialized waste that can be infectious</td>
<td>Red biohazard bag</td>
<td>Specialized plastic containers located in certain laboratories and in hallways on S-10 and S-11</td>
<td>• Animal carcasses must be frozen before disposal</td>
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<td></td>
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<td></td>
<td>• Picked up weekly by a licensed contractor</td>
</tr>
<tr>
<td>Dry Ice</td>
<td></td>
<td>Evaporation</td>
<td>Laboratory area</td>
<td>• Place pieces in a Styrofoam box, stainless steel sink or container</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>• Do Not use black sinks to evaporate – sinks may crack</td>
</tr>
<tr>
<td>Human blood and other regulated body fluids</td>
<td>Human waste that may be infectious</td>
<td>Items saturated with regulated body fluids are placed into a red biohazard bag at the point of generation.</td>
<td>Laboratory area</td>
<td>• Standard sizes of red biohazard bags are provided by Facilities, or on S-10 and S-11</td>
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<td></td>
<td>• Tie shut when full</td>
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<td></td>
<td></td>
<td>• Picked up daily by EVS</td>
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<td></td>
<td>• Obtain sharps containers at S-3 Services Coordinator desk or in S10.202</td>
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<td></td>
<td>• Fill to 3/4 full, then close tightly and mark as “FULL”</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Picked up by EVS (place filled containers in hallway)</td>
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<td></td>
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<td></td>
<td>• Smaller non-broken glass items permitted</td>
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<td></td>
<td></td>
<td></td>
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<td>• No capped needles</td>
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</tbody>
</table>

Chapter 7: Waste Handling
Revised 2019
III. Spill Procedures

A. The HHRI maintains a number of spill kits for clean up in the event of a chemical spill. These are found in the common equipment area on the 3rd floor of the S-Building. The types of spill kits include:
   1. Acid spill kit
   2. Caustic/Base spill kit
   3. Mercury spill kit
   4. Solvent spill kit
   5. Kitty litter for oil spills

B. Each of these kits contains instructions and protective equipment suitable for the type of chemical spill to be handled.

C. Safety Data Sheets can also be used for reference materials.

D. For specific instructions on dealing with chemical spills, consult Chapter 10: Safe Chemical Handling in this manual. However, there are several key points that all laboratory personnel should know about hazardous chemical spills:
   1. Do not attempt to handle the spill alone. You may risk incapacitation by chemical fumes.
   2. Take care of the most immediate concern first.
      a. If there had been direct contact with the chemical, immediately flush skin and/or eyes with water, and removed any contaminated clothing.
      b. With solvent spills, remove all ignition sources from the area.
   3. If unsure how to handle the spill, ask for assistance. In the S-Building, you may contact the HCMC Security Operations Center (SOC) at 612-873-4116.
   4. Report any spills to the S-3 Laboratory Services Coordinator so replacement materials can be ordered for any used spill kits, and any repair of facilities can be initiated.
Chapter 8: Working with Human Pathogens or Other Potentially Infectious Human Materials

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CHAPTER 8

WORKING WITH HUMAN PATHOGENS OR OTHER POTENTIALLY INFECTIOUS HUMAN MATERIALS

I. Policy

A. The Hennepin Healthcare Research Institute (HHRI) policy is to provide safe working environments for all personnel. The HHRI is committed to providing staff all pertinent information regarding pathogenic hazards associated with their work.

B. The HHRI is a multidisciplinary organization. The opportunity for exposure to pathogenic organisms for personnel working within or visiting HHRI laboratory and common spaces can run the range from nearly non-existent to daily contact with known pathogens. Personnel must be familiar with the standard precautions outlined in this chapter to safeguard their own health and the health of other individuals.

C. Please see Chapter 11 of this manual for information about health hazards for individuals in contact with animals.

II. Purpose

A. Minimize exposures to human pathogens and other potentially infectious human materials.

B. Familiarize personnel with the principles and practices that define standard precautions.

C. Protect personnel from the health risks associated with human pathogens and other potentially infectious human materials.

D. Comply with the Occupational Safety & Health Administration (OSHA)/Department of Labor Occupational Exposure to Bloodborne Pathogens, 29 CFR 1910.1030, and other pertinent regulations.

III. Scope and Responsibilities

A. This policy applies to all HHRI personnel who encounter occupational exposures to human pathogens or to other potentially infectious human materials.

B. HHRI Responsibilities

1. To support the safety of all personnel, the HHRI shall provide:

   a. Training

      1) Ensure that all personnel that have the potential for occupational exposure to human pathogens or to other potentially infectious human materials receive information and training relating to proper standard precaution practices. Training will be provided at the time of initial assignment to tasks and annually thereafter.

      2) Provide retraining and progressive discipline, when necessary, to individuals who fail to comply with standard precaution policies and procedures.

   b. Work practice controls

      1) Implement engineering and work practice controls in order to eliminate or minimize exposure to pathogens.
2) Ensure that the work site is maintained in a safe, clean and sanitary condition.

3) Monitor and document compliance with exposure control practices on a regular basis.

4) Ensure that all laboratory areas and procedural areas where infectious agents, blood, tissue samples, or other potentially pathogenic materials are being used are appropriately labeled.

5) Ensure that warning labels are placed on containers of regulated waste, refrigerators, and freezers containing blood or other potentially infectious materials.

6) Label other containers used to store, transport, or ship blood or other potentially infectious materials.

c. Personal protective equipment

1) The Principal Investigator must provide standard personal protective equipment appropriate for the tasks prescribed in the performance of their duties.

2) The Principal Investigator must provide specialized personal protective equipment as determined by the specific pathogens to be used.

d. Exposure evaluation and care

1) Provide post occupational exposure evaluation and follow-up for all personnel who have an exposure incident.

2) Following a report of an exposure incident, a confidential medical evaluation and follow-up will be immediately made. Follow-up will include:

   (a) Documentation of the route(s) of exposure.
   (b) Circumstances under which the exposure incident occurred.
   (c) Identification, testing, and documenting of the source individual, unless HCMC/HHRI can establish that identification is infeasible or prohibited by law.

2. To support the safety of laboratory personnel working with human tissues and/or blood, the HHRI shall:

   a. Make the Hepatitis B vaccine and vaccination series available to all personnel who have occupational exposure to human blood or tissue.

   b. Medical evaluations and procedures including the Hepatitis B vaccine and vaccination series and post exposure evaluation and follow-up shall be:

      1) Made available at no cost to the individual.
      2) Made available to the individual at a reasonable time and place.
      3) Performed by or under the supervision of a licensed physician.

C. Personnel working in all areas of the Hennepin Healthcare Research Institute shall:

   1. Know what tasks they perform that may expose them to occupational exposure.
2. Understand the principles of standard precaution policies and procedures.
3. Comply with the standard precaution and exposure control policies and procedures established by the HHRI.
4. Report incidents of actual or suspected exposure to potentially infectious materials to their supervisor.
5. Participate in required training.

D. Principal Investigators shall:
1. Provide and maintain the usual and specialized personal protective equipment appropriate for the tasks associated with their particular laboratory risks.
2. Ensure that an individual is seen in the appropriate medical facility as soon as possible after an occupational exposure incident.

IV. Training Curriculum

A. The HHRI ensures employees have the appropriate knowledge and skill level in the risks, prevention, and follow-up for pathogen exposures. Personnel with exposure to human blood/tissues or other potentially infectious materials will have, and be trained in, the following:
1. Personnel will have access to the pertinent references cited.
2. A general explanation of the epidemiology and symptoms of the bloodborne pathogen.
3. An explanation of the modes of transmission of pathogens.
4. An explanation of the HHRI exposure control plan and how to obtain a copy of the plan.
5. How to identify tasks and other activities that may involve exposure to potentially infectious materials.
6. An explanation of the appropriate engineering controls, work practices, and personal protective clothing/equipment to prevent or reduce exposure.
7. Information on the types, proper selection and use, location, removal, handling, decontamination, and disposal of personal protective equipment.
8. Information on the Hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated and that the vaccine and vaccination will be provided free of charge based on reasonable risk of exposure.
9. Information on the appropriate actions to take and persons to contact if an exposure occurs that involves potentially infectious material.
10. An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
11. Information on the post-exposure evaluation and follow-up that the HHRI is required to provide to the individual following an exposure incident.
12. An explanation of appropriate warning signs and labels.
B. Training records will contain:
   1. Dates of the training.
   2. Contents of the training.
   3. Names and qualifications of the person(s) conducting the training.
   4. Name of person attending the training.
   5. Records will be maintained for 3 years from the date on which the training occurred.
V. Definitions

A. **Biological Cabinet**: A device enclosed except for necessary exhaust purposes on three sides and top and bottom, designed to draw air inward by means of mechanical ventilation, operated with insertion of only the hands and arms of the user. Certified biological safety cabinets are used for activities with infectious materials that pose a threat of exposure to droplets, splashes, spills, or aerosols.

1. **Class I**: A ventilated cabinet for personnel protection with an un-recirculated inward airflow away from the operator and high-efficiency particulate (HEPA) air filtered exhaust air for environmental protection.

2. **Class II**: A ventilated cabinet for personnel, product, and environmental protection having an open front with inward airflow for personnel protection, HEPA filtered laminar airflow for product protection, and HEPA filtered exhaust air for environmental protection.

3. **Class III**: A totally enclosed, ventilated cabinet of gas-tight construction. Operations in the cabinet are conducted through attached protective gloves.

B. **Blood**: Human blood, human blood components, products made from human blood. Human blood components include plasma, platelets, and serosanguinous fluids. Also included are medications derived from blood, such as immune globulins, albumin, and factors 8 and 9.

C. **Bloodborne Pathogens**: Microorganisms that are present in human blood and/or other certain human body fluids and may cause disease in humans. Includes, but not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).

D. **Contaminated**: Presence, or the reasonably anticipated presence, of blood or other potentially infectious materials on an item or surface.

E. **Contaminated Laundry**: Laundry that has been soiled with blood or other potentially infectious materials or may contain sharps.

F. **Contaminated Sharps**: Any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and test tubes.

G. **Decontamination**: The use of physical or chemical means to remove, inactivate, or destroy pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

H. **Engineering Controls**: Controls (i.e., sharps disposal containers, self-sheathing needles, needleless systems, and sharps with engineered sharps injury protection) that isolate or remove the pathogen hazard from the workplace.

I. **Exposure Incident**: A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an individual’s duties.

J. **Handwashing Facilities**: A facility providing an adequate supply of running water, soap, and single use towels or hot air drying machines.

K. **HBV**: Hepatitis B virus.
L. **HCV**: Hepatitis C virus.

M. **HIV**: Human immunodeficiency virus.

N. **Needleless system**: Device that does not use needles for:
   1. Collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established.
   2. Other procedures involving the potential for occupational exposure to pathogens due to percutaneous injuries from contaminated sharps.

O. **Occupational Exposure**: Actual or reasonably anticipated skin, eyes, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an individual’s duties.

P. **Other Potentially Infectious Materials** (In addition to blood as defined):
   1. Semen
   2. Vaginal secretions
   3. Cerebrospinal fluid (CSF)
   4. Synovial fluid
   5. Pleural fluid
   6. Pericardial fluid
   7. Peritoneal fluid
   8. Breast Milk
   9. Saliva
   10. Amniotic fluid
   11. Other body fluids or waste containing visible blood
   12. All body fluids or waste in situations where it is difficult or impossible to differentiate between body fluids
   13. Unfixed tissue or organs (other than intact skin) from a human (living or dead)
   14. Any of the following, if known or reasonably likely to contain or be infected with HIV, HBV, HCV.
      a. Cell, tissue cultures, or organ cultures from humans
      b. Culture medium or other solutions

Q. **Parenteral**: The piercing of mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

R. **Pathogen**: Any microorganism (virus, bacteria, fungal agent, prion) capable of causing disease.

S. **Personal Protective Equipment**: Specialized clothing or equipment worn for protection against a hazard. General work clothes not intended to function as protection against a hazard are not considered personal protective equipment.

T. **Regulated Waste**: Liquid or semi-liquid blood or other potentially infectious materials. Contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.
U. **Research Laboratory**: A laboratory using human blood or other potentially infectious materials in scientific endeavors. A laboratory producing or using research-laboratory scale amounts of any infectious pathogens of human or animal origin.

V. **Sharps**: Any object used or encountered that can be reasonably anticipated to penetrate the skin or any other part of the body, and to result in an exposure incident. Sharps include, but are not limited to, needle devices, scalpels, lancets, broken glass, broken capillary tubes, drills, and burs.

W. **Sharps with Engineered Sharps Injury Protections**: Non-needle sharps or needle devices used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

X. **Sharps Injury**: Any injury caused by a sharp, including, but not limited to, cuts, abrasions, or needlesticks.

Y. **Source Individual**: Any individual (living or dead) whose blood or other potentially infectious materials may be a source of occupational exposure.

Z. **Sterilize**: The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

AA. **Standard Precautions**: A system of barrier precautions to be used by all personnel for contact with blood, all body fluids, secretions, excretions, nonintact skin, and mucous membranes of all subjects, regardless of the subject’s diagnosis. These precautions are the standard of care. This system embodies the concepts of Universal Precautions and Body Substance Isolation. Standard Precautions focuses on reducing the risk of transmission of microorganisms.

BB. **Work Practice Controls**: Controls that reduce the likelihood of exposure by altering the manner in which a task is performed.
VI. Exposure Determination

A. The HHRI is a multidisciplinary organization. Because of the variability of the job responsibilities, the common factor associated among individuals in whom it is reasonably anticipated that a potential exists for exposure to human pathogens is the direct handling of, or reasonably anticipated exposure to, blood and/or other potentially infectious materials in fulfillment of their work obligations.

B. The laboratory environment, in part, determines specific work practice controls and universal safety precautions to be followed. For purposes of this chapter only human blood or other potentially infectious materials will be addressed. Please see Chapter 11 of this manual for potential animal infectious exposure procedures.

VII. Standard Precautions for Working with Human Blood, Fluids, and Tissues

A. The HHRI requires the application of Standard Precautions as recommended by the Centers for Disease Control for instances where the potential for occupational exposure to bloodborne pathogens or other infectious materials exists. Implementation of Standard Precautions constitutes the primary strategy to prevent transmission of infectious agents in research. The HHRI requires that these precautions be strictly followed whenever the potential of occupational exposure exists.

1. Standard Precautions combine the major features of Universal Precautions and Body Substance Isolation and are based on the principle that all blood, body fluids, secretions, excretions, nonintact skin, and mucous membranes may contain transmissible infectious agents.

2. Standard Precautions include a group of infection prevention practices that apply to all research subjects, regardless of suspected or confirmed infection status. These include:
   a. Gloves
   b. Gown
   c. Mask
   d. Eye protection or face shield

B. Handwashing

1. Hands should be washed for 20 seconds using warm water, soap and friction, giving particular attention to areas around and under fingernails, between fingers, and backs of the hands. Dry well with a clean cloth or towel.

2. Hands should be washed immediately after contamination with blood, body fluids, and/or other potentially infectious materials.

3. Hands should be washed immediately, or as soon as feasible, after removal of gloves or other personal protective equipment. If not feasible to wash immediately use an alcohol-based hand sanitizer and wash with soap as soon as possible.

C. Personal protective equipment/clothing

1. When utilizing protective barriers, judgment must be exercised based on procedural variables. The following criteria should be considered in order to determine what protective barriers are appropriate:
   a. The procedure being performed.
b. The type of exposure being anticipated.
c. The type of potentially infectious body fluid or substance.
d. The volume of body fluid or substance.
e. The potential routes(s) of exposure, e.g. sharps injury, contact with open cuts or skin abrasions, contact with mucous membranes of eyes, nose or mouth.
f. The probability of exposure.

2. Personal protective equipment should be inspected periodically and repaired or replaced as needed to maintain its effectiveness. Reusable personal protective equipment must be cleaned and decontaminated. Disposable gloves must be discarded properly after use.

3. Gloves
   a. Worn when contact with blood, other body fluids, or other potentially infectious material is anticipated.
   b. Worn when contact with non-intact skin is anticipated, e.g., when the user has a cut or open sore on his or her hand.
   c. Worn when contact with items or surfaces soiled with blood and/or other potentially infectious materials are anticipated.
   d. Worn when performing venipuncture or vascular access procedures.
   e. Worn when handling contaminated laundry.
   f. Remove gloves aseptically, by grasping the bottom edge of the glove and pulling inside out over hand.
   g. Replace gloves as soon as possible if visibly soiled, torn, punctured, or at any time their ability to function as a barrier is compromised.
   h. Cleanse hands immediately, or as soon as feasible, after removal of gloves or other personal protective equipment.
   i. Use hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives if allergic to latex.
   j. Always discard after use. Do not attempt to wash or disinfect surgical or examination gloves for reuse.

4. Water-impermeable gowns, lab coats, aprons, and other protective body clothing:
   a. Worn during procedures that are likely to soil clothing or generate splashes of blood or other potentially infectious materials.
   b. Worn when handling contaminated laundry.
   c. Buttoned or snapped to protect clothing.

5. Surgical caps or hoods and/or shoe covers or boots are worn in instances when gross contamination can be reasonably anticipated.

6. Masks, protective eyewear with solid shields, or chin length face shields are worn whenever splashes or splatters of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated to occur.

D. Environmental maintenance
   1. All equipment and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials.
2. Perform cleanup after completing procedures, when surfaces are overtly contaminated, immediately after any spill of blood, body fluids, or other potentially infectious materials, and at the end of the work shift.
   a. Wear appropriate personal protective equipment.
   b. One of the following may be used to decontaminate the area:
      1) A blood spill kit containing powdered disinfectant.
      2) Chlorine bleach diluted 1:10–fresh solutions must be made daily.
   c. Allow disinfectant to sit per instructions, bleach must sit for at least ten minutes.
   d. Sweep up solidified spill with spatula provided in blood spill kit. If liquid disinfectant is used, paper towels should be used to absorb the liquid.
   e. Place all waste in a red plastic biohazard bag. Dispose of the bag in the hazardous waste receptacle.
   f. If a spill has occurred on the floor, after cleaning areas as described above, request that housekeeping clean the area with water and a detergent soap.
   g. Wash hands thoroughly.
3. All reusable containers that have a potential for becoming contaminated with blood or other potentially infectious materials shall be decontaminated as soon as possible upon visible contamination.
4. Broken glassware is not picked up directly by hand. Mechanical means such as brushes, dustpans, tongs, or forceps will be used to handle the glass.

E. Engineering and work practice controls
   1. Biological cabinets or hoods should be utilized whenever possible when working with human blood, fluids, and/or tissues. Hoods will be inspected and certified annually.
   2. Eating, drinking, smoking, gum or tobacco chewing, applying cosmetics or lip balm, or handling contact lenses should not be performed in areas where there is a reasonable likelihood of occupational exposure to blood, body fluids, or other potentially infectious materials.
   3. Food and drinks should not be kept in refrigerators, freezers, shelves, cabinets, counters, or bench tops in the laboratory.
   4. Mouth pipetting/suctioning is prohibited.
   5. Mechanical pipetting devices should be used for all liquids. Pipette tips will be disposed of in biohazard containers.
   6. Blood specimens and specimens of body fluids or other potentially infectious materials should be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping.
   7. Gloves, masks, face shields, and gowns should be removed as soon as possible before leaving the work area. When overtly contaminated, place these items in proper containers for storage, washing, decontamination, or disposal.
   8. All procedures involving blood, body fluids, or other potentially infectious materials should be performed to minimize splashing, spraying, spattering, or generating droplets of these substances.
   9. All specimens should be kept in clean and dry outside containers with a secure lid and transported in a secondary container that prevents leakage during handling,
processing, storage, transport or shipping. The containers need to be labeled with a biohazard sticker.

10. Only authorized personnel are allowed in the laboratory areas. Non-laboratory personnel must be closely supervised and appropriate measures (e.g. protective clothing) should be used to ensure that they do not cause harm to themselves or the laboratory staff.

F. Needles and sharps disposal
   1. Use extreme caution when handling used needles, syringes, or miscellaneous disposable sharp equipment. Handle as little as possible.
   2. Do not recap ANY needles.
   3. Use appropriate incorporated safety devices.
   4. Sharps containers must be rigid, puncture resistant, leak proof on the sides and bottom, portable if portability is necessary, and labeled as a biohazard.
   5. Obtain disposal containers for sharps from the S3 Laboratory Services Coordinator. Place sharps disposal containers in areas accessible by staff.
   6. Place all syringes, needles, blood lances, glass pipettes, slides, broken glass ampules, broken glass, test tubes, and any item possessing a puncture point that has come in contact with blood, body fluids, or other potentially infectious material in the designated sharps container.
   7. Place all items point down in the container and with safety device in place.
   8. Do not overfill container beyond the warning line (approximately 3/4 full).
   9. Do not attempt to pack or stuff sharps into containers.
   10. Do not attempt to remove an item from a sharps container.
   11. Sharps containers should not be opened, emptied, or cleaned in any manner which would expose personnel to the risk of a sharps injury.
   12. When sharps containers are full, close the lid completely or tape the lid closed, and write “FULL” on the lid. Place all filled sharps containers in the hallway for pick-up.

G. Laundry
   1. Contaminated laundry should be handled with minimal agitation while wearing gloves.
   2. Contaminated laundry is to be bagged at the location where it is used and placed in water impermeable plastic bags.
   3. Close the bag leaving a minimal amount of air in the bag.
   4. Reinforce any bag with a second bag if it is leaking or appears as though it may leak.
   5. All soiled laundry will be treated as though it is contaminated.

H. Waste disposal
   1. Infectious waste is isolated, stored, transported, and disposed of in accordance with the Minnesota Infectious Waste Control Act (Minnesota. Statutes 116.75-116.83).
   2. See also Chapter 7: Waste Handling.
VIII. Standard Precautions for Working with Infectious Agents of Human Origin

A. The HHRI requires the application of Standard Precautions as recommended by the Centers for Disease Control for instances where the potential for occupational exposure to bloodborne pathogens or other infectious materials exists. Implementation of Standard Precautions constitutes the primary strategy to prevent transmission of infectious agents in research. The HHRI requires that these precautions be strictly followed whenever the potential of occupational exposure exists.

B. Handwashing

1. Hands should be washed for 20 seconds using warm water, soap and friction, giving particular attention to areas around and under fingernails, between fingers, and backs of the hands. Dry well with a clean cloth or towel.

2. Hands should be washed immediately after contamination with infectious materials.

3. Hands should be washed immediately, or as soon as feasible, after removal of gloves or other personal protective equipment. If not feasible to wash immediately use an alcohol-based hand sanitizer and wash with soap as soon as possible.

C. Personal protective equipment/clothing

1. When utilizing protective barriers, judgment must be exercised based on procedural variables. The following criteria should be considered in order to determine what protective barriers are appropriate:
   a. The procedure being performed.
   b. The type of exposure being anticipated.
   c. The current state of the infectious agent, e.g. broth culture, agar plate culture, infected tissue.
   d. The potential route(s) of exposure e.g. sharps injury, contact with open cuts or skin abrasions, contact with mucous membranes of eyes, nose or mouth, ingestion.
   e. The probability of exposure.

2. Personal protective equipment should be inspected periodically and repaired or replaced as needed to maintain its effectiveness. Reusable personal protective equipment must be cleaned and decontaminated. Disposable gloves must be discarded properly after use.

3. Gloves
   a. Worn at all times while working with the infectious agent.
   b. Worn in the laboratory area when contact with non-intact skin is anticipated, e.g. when the user has a cut or open sore on his or her hand.
   c. Worn when contact with items or surfaces soiled with infectious materials are anticipated.
   d. Worn when handling contaminated laundry.
   e. Remove gloves aseptically, by grasping the bottom edge and pulling inside out over hand.
   f. Replace gloves as soon as possible if visibly soiled, torn, punctured, or at any time their ability to function as a barrier is compromised.
g. Cleanse hands immediately, or as soon as feasible, after removal of gloves or other personal protective equipment.

h. Use hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives if allergic to standard gloves.

i. Always discard after use. Do not attempt to wash or disinfect surgical or examination gloves for reuse.

4. Water-impermeable gowns, lab coats, aprons, and other protective body clothing
   a. Worn during procedures that are likely to soil clothing or generate splashes of infectious materials.
   b. Worn when handling contaminated laundry.
   c. Buttoned or snapped to protect clothing.

5. Surgical caps or hoods and/or shoe covers or boots are worn in instances when gross contamination can be reasonably anticipated.

6. Masks, protective eyewear with solid shields, chin length face shields are worn whenever splashes or splatters of infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated to occur.

D. Environmental maintenance

1. All equipment and working surfaces shall be cleaned and decontaminated after contact with infectious materials.

2. Perform cleanup after completing procedures, when surfaces are overtly contaminated, immediately after any spills, and at the end of the work shift.
   a. Wear appropriate personal protective equipment.
   b. One of the following may be used to decontaminate the area:
      1) Chlorine bleach diluted 1:10 – a fresh solution must be made up daily
      2) A 1:18:1 dilution of chlorine dioxide : water : acetic acid (Clidox-S solution) – a fresh solution must be made up every 14 days
   c. Allow disinfectant to sit for at least ten minutes.
   d. Use paper towels to absorb the liquid, and wipe surfaces dry.
   e. Place all waste in a red plastic biohazard bag. Dispose of the bag in the hazardous waste receptacle.
   f. Wash hands thoroughly.

3. All reusable containers that have a potential for becoming contaminated with infectious materials are decontaminated as soon as possible upon visible contamination.

4. Broken glassware and dropped sharps should not be picked up directly by hand. Mechanical means such as brushes, dustpans, tongs, or forceps are to be used to handle broken glass.

E. Engineering and work practice controls

1. Biological cabinets or hoods should be utilized whenever possible when working with human infectious agents. Biohazard hoods will be inspected and certified annually.

2. Eating, drinking, smoking, gum or tobacco chewing, applying cosmetics or lip balm, or handling contact lenses should not be performed in laboratory areas where infectious agents are used.
3. Food and drink should not be kept in refrigerators, freezers, shelves, cabinets, counters, or bench tops in the laboratory.
4. Mouth pipetting/suctioning is prohibited.
5. Mechanical pipetting devices should be used for all liquids. Pipette tips will be disposed of in biohazard containers.
6. Infectious materials and specimens should be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping.
7. Gloves, masks, face shields, and gowns should be removed as soon as possible before leaving the work area. When overtly contaminated, these items will be placed in proper containers for storage, washing, decontamination, or disposal.
8. All procedures involving infectious materials should be performed to minimize splashing, spraying, spattering, or generating droplets of these substances.
9. All specimens should be kept in clean and dry outside containers with a secure lid and transported in a secondary container that prevents leakage during handling, processing, storage, transport or shipping. The containers will be labeled with a biohazard sticker.
10. Only authorized personnel are allowed in the laboratory areas. Non-laboratory personnel are closely supervised and appropriate measures (e.g. protective clothing) should be used to ensure that they do not cause harm to themselves or the laboratory staff.

F. Needles and sharps disposal
   1. Use extreme caution when handling used needles, syringes, or miscellaneous disposable sharp equipment. Handle as little as possible.
   2. Do not recap ANY needles.
   3. Sharps containers must be rigid, puncture resistant, leak proof on the sides and bottom, portable if portability is necessary, and labeled as a biohazard.
   4. Obtain disposal containers for sharps from the Laboratory Services Coordinator on S3. Place sharps disposal containers in areas accessible for use by staff.
   5. Place all syringes, needles, blood lances, glass pipettes, slides, broken glass ampules, broken glass, test tubes, and any item possessing a puncture point that has come in contact with infectious material in the designated sharps container.
   6. Place all items point down in the container and with safety device in place.
   7. Do not overfill container beyond the warning line (approximately 3/4 full).
   8. Do not attempt to pack or stuff sharps into containers.
   9. Do not attempt to remove an item from a sharps container.
10. Sharps containers should not be opened, emptied, or cleaned in any manner which would expose personnel to the risk of a sharps injury.
11. When sharps containers are full, close the lid completely or tape the lid closed, and write “FULL” on the lid. Place all filled sharps containers in the hallway for pick-up.

G. Laundry
   1. Contaminated laundry should be handled with minimal agitation while wearing gloves.
   2. Contaminated laundry is to be bagged at the location where it is used and placed in water impermeable plastic bags.
   3. Close the bag leaving a minimal amount of air in the bag.
4. Reinforce any bag with a second bag if it is leaking or appears as though it may leak.
5. All soiled laundry will be treated as though it is contaminated.

H. Waste disposal
1. Infectious waste is isolated, stored, transported, and disposed of in accordance with the Minnesota Infectious Waste Control Act (Minnesota. Statutes 116.75-116.83).
2. See also Chapter 7: Waste Handling.
IX. Services Provided by HCMC Employee Occupational Health and Wellness Department for HHRI Personnel

A. Hepatitis B vaccination
   1. All HHRI personnel with the potential of occupational exposure to human tissues and/or samples are offered the Hepatitis B vaccine series. If their Hepatitis status is questionable, the individual is offered testing for the Hepatitis B antibody.
   2. The Hepatitis B vaccination program will consist of three doses of vaccine.
   3. Following administration of an initial dose, subsequent doses will be given at one month and six months.
   4. Individuals who decline the Hepatitis B vaccination will be educated on the need for the vaccine and offered the vaccine each year. A waiver will be signed by those declining, and kept in their Employee Health Service file.
   5. A Hepatitis B antibody level will be drawn at one month after the Hepatitis B series is completed.
   6. It is required that all HHRI personnel who are sustain an occupational exposure to human blood and/or other potentially infectious materials report their exposure and receive the necessary follow-up in the Employee Occupational Health and Wellness Department. All results will be kept confidential in the individual’s Employee Occupational Health and Wellness record. The source individual (if known or applicable) will have a blood sample collected to test for bloodborne pathogens. This is in accordance with Minnesota State Statute 144.7407.

B. Exposure procedures
   1. Individuals must, immediately wash their hands and any other skin contaminated with potentially infectious materials with copious amounts of soap and water. Mucous membranes must be copiously flushed with water immediately following contact of such body areas with potentially infectious materials.
      a. The exposed person will report for evaluation as soon as it is safe to leave the worksite. All exposed employees need to be seen within 2 hours of the exposure.
      b. The exposed person will report to the HCMC Employee Occupational Health and Wellness Department located in the Lower Level of the HCMC Purple Building. The phone number is 612-873-2383 and they are located in PL.710. Hours are Monday – Friday: 7a.m. – 4p.m. For exposures taking place after 3p.m. the individual must go to the HCMC Emergency Room/Express Care immediately.
      c. If seen in the HCMC Emergency Room/Express Care, follow-up with the Employee Occupational Health and Wellness Department is mandatory the next working day.
      d. Information on occupational blood and body fluid exposures will be discussed along with occupational blood and body fluid follow-up procedures.
      e. Follow-up will include the following elements:
1) Documentation of the route(s) of exposure and the circumstances under which the exposure occurred.

2) Testing of the exposed person’s blood as soon as feasible and within legal parameters. Tests will include testing for the presence of the Hepatitis B surface antibody, Hepatitis C antibody, and the HIV antibody.

3) Blood testing of the exposed person and source patient will be arranged per HCMC’s policy and procedures.

4) Treatment and ongoing evaluation will be arranged per HCMC’s policy and procedures.

C. Record keeping
   1. A record is maintained for each individual with occupational exposure in the Employee Occupational Health and Wellness Department. Each record contains the following:
      a. Individual’s name and social security number.
      b. A copy of the individual’s Hepatitis B vaccination status including the dates of all Hepatitis B vaccinations and any medical records relative to the individual’s ability to receive vaccination.
      c. A copy of the results of examinations, medical testing, and follow-up procedures.
      d. A copy of the healthcare professional’s written opinion regarding recommendation on Hepatitis B vaccination and post-exposure follow-up.
      e. A copy of the information provided to the healthcare professional, which documents the description of the exposed person’s duties as they relate to the exposure incident, result of the source individual’s blood testing, if available, and all medical records relevant to the appropriate treatment of the individual including vaccination status.

D. The HHRI Safety Committee will review all bloodborne pathogen exposures for trends and make recommendations for change in safety practices.

X. References

   1. U.S. Department of Labor: Occupational Safety & Health Administration.
      Bloodborne pathogens – 1910.1030
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CHAPTER 9

RADIATION SAFETY

This chapter is intended to provide a general overview of the principles and safe working practices designed to minimize the potential of occupational exposure to radioactive isotopes and x-radiation. Personnel working with radioactive sources and x-radiation must also be familiar with the information contained in the HHRI Radiation Safety Manual, which covers the subject matter in more depth, including specific health risks of exposure to radiation, spill procedures, and how to report safety concerns to the Nuclear Regulatory Commission. A copy of the Radiation Safety Manual can be found at the Fred L. Shapiro Building (S-Building) S3 Laboratory Services Coordinator’s desk.

I. Policy

   A. In accordance with state and federal regulations and guidelines, the HHRI is committed to establishing programs, use procedures, and engineering controls adhering to the principles of ALARA. The purpose of this policy is to provide personnel using radiation sources with the proper training, equipment, and standards of use to minimize the potential for occupational exposure to radioactive isotopes and x-radiation.

   B. ALARA is an acronym for As Low As Reasonably Achievable. This is a radiation safety principle for minimizing radiation doses and releases of radioactive materials by employing all reasonable methods.

   C. Laboratory personnel who are exposed to radiation sources in the course of their duties in HHRI spaces must also be responsible to ensure that they are handling these materials in accordance with these same regulations and guidelines, to protect the safety of themselves and those around them.

II. Responsibilities

   A. Responsibilities of the HHRI:
      1. Secure and maintain access to a license for the use of radioactive materials. Currently, the license for use of isotopes in HHRI facilities is held and maintained by the HCMC Nuclear Medicine Department.
      2. HCMC is also charged with appointing a Radiation Safety Officer (RSO) to oversee the program for the HHRI.
      3. Secure and maintain registration of all x-ray devices with the Minnesota Department of Health.
      4. Provide body badges and/or finger monitors for personnel exposed to radiation sources, and provide feedback to laboratory personnel via an occupational exposure report.
      5. Provide appropriate training, which will include information on exposure risks, standard procedures for use, and spill procedures.
      6. Provide safety equipment and instruments for surveying.
      7. Maintain radioactive spill kits, and provide assistance in spill cleanup.
      8. Perform quality control procedures on x-ray unit and protective equipment.
B. Responsibilities of the supervisor:
   1. Obtain appropriate user permits for selected isotopes.
   2. Purchase and maintain specialized shielding as required by the specific isotope used.
   3. Provide locked storage for radioactive materials when not in use.
   4. Ensure personnel are trained and adhering to safety procedures.

C. Responsibilities of the user:
   1. Wear appropriate body badges and/or finger monitors.
   2. Use appropriate shielding, including personal protective equipment.
   3. Perform surveys at required intervals.
   4. Appropriately mark areas where radioactive materials are used (bench tops and refrigerators).
   5. Secure radioactive materials from unauthorized access.
   6. Report spills to the Radiation Safety Officer (RSO).

III. Training Requirements

A. Initial training
   1. All laboratory personnel who work with radioactive isotopes are required to undergo initial radiation safety training before beginning isotope work. This initial training involves a review of radiation safety precautions and procedures by way of the HCMC My Learning Radiation Safety Module, written materials, videotapes, or multimedia presentation.
   2. To complete initial training, new laboratory personnel will receive training in the laboratory procedures associated with their individual laboratory. Topics will include survey procedures, proper handling and disposal procedures, and record keeping. The designated laboratory trainer will conduct this training.

B. Annual training
   1. All personnel who conduct basic and/or animal research in HHRI research facilities (whether or not they use radiation sources) are required to participate in an annual radiation in-service.
   2. Personnel will be required to take the HCMC My Learning Radiation Safety Module SS-110280_RAD_Annual_Radiation_Safety_Training annually. Training must be completed by October 31.
IV. Procedures

A. General safety practices for working with radioactive isotopes include-
   1. Always:
      a. Wear a lab coat
      b. Wear gloves
      c. Wear a body badge and/or finger monitor (not necessary for Tritium)
      d. Use a clean work area. Use a designated bench top within the laboratory and mark it appropriately with radioactive label tape. Protect bench top with chux pads or other disposable materials.
      e. Report spills/incidents involving personnel or laboratory to supervisor and the RSO.
      f. Use radiation shields and fume hoods as appropriate.
      g. Perform proper radiation surveys.
   2. Never:
      a. Eat, drink, smoke, or chew gum or tobacco in the laboratory.
      b. Store food in any laboratory refrigerator.
      c. Mouth pipette radioactive liquids.

B. Shielding
   1. Decaying radioactive isotopes emit particles of a type specific to the isotope, including alpha, beta or gamma particles. These particles differ from each other in energy level and their ability to penetrate solid matter. Higher energy particles are capable of traveling a significant distance from the radiation source, while lower energy particles are not. Particles with high penetration potential constitute a risk for direct skin exposure, while those with a low penetration potential do not – the greatest risk is exposure to these particles is through ingestion.
   2. The type of shielding necessary for working with a radioactive isotope is determined based both on the energy level and type of particles being emitted. For some isotopes, no shielding is required; for others acrylic plastic or lead shielding may be required.
   3. Consult Table I for a guideline in selection of proper shielding for the isotopes commonly used at the HHRI.

C. Surveys
   1. Survey of work areas where radioactive isotopes are used and/or stored must be accomplished on a regular basis to ensure that the area has not been contaminated with radioactive materials.
   2. As with shielding, the type of survey to be performed is determined by the specific isotope used. Consult Table I for guidelines on survey methods for the HHRI.
   3. Wipe tests (also called swab surveys)
      a. Wipe tests are used when working with low energy particles that would not routinely be detected with a survey meter.
      b. Laboratory personnel are responsible for conducting wipe tests.
      c. A wipe test should be performed weekly in each laboratory area that is using these types of isotopes.
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4. Meter surveys
   a. The principal isotope that requires the use of a survey meter is $^{32}$P. When using $^{32}$P, a survey should be done immediately after working with this isotope.
   b. As with the wipe test, all possible sites that may have become contaminated should be surveyed, including hoods, countertops, refrigerator handles, sinks, light switches, etc. Note the serial number of the survey meter on the survey map.
   c. First verify proper operation of the meter. This is done by turning the dial to the battery check location and noting if the needle progresses to the far right of the meter dial. Turn the dial to the X1 scale, and hold the pancake wand close to the check source located on the side of the survey meter (a lantern mantle). Again, the needle should progress to the far right of the meter dial.
   d. Turn the dial to the most sensitive scale (X0.1) and take a background reading in an area away from the work site.
   e. Slowly wave the wand around the area where the radioactive work occurred, keeping the wand about 4 inches above the surface.
   f. On the survey map, note the highest reading found. Results are written in mR/hr.
   g. Trigger levels for radioactive contamination are $\geq 1$ mR/hr. If these levels occur, contact the RSO immediately.
D. Disposal

1. Liquid waste is disposed of in the radioactive disposal sink located in the common equipment room in the north wing of S3 (Room S3.210).
   a. Liquid counting cocktail, culture media and other radioactive liquids can be aspirated from their vials or containers using the aspirator attachment located on the faucet of the sink. Turn the cold water tap on to generate a sufficient vacuum for suctioning. Attach a glass pipette to the aspirator attachment and use it to suction as much liquid as possible.
   b. Once all liquid waste is dumped, leave the cold water running for approximately 5-10 minutes to completely flush the contents into the sewer system.
   c. Use the liquid waste disposal log located on the shelf above the sink to record the date, isotope, and amount of waste generated. The amount of waste can be calculated using standard formulas based on the isotope and amount used.

2. Solid radioactive waste is disposed of in Room S3.242 located in the north corridor of the S3 building.
   a. Solid waste is segregated according to the half-life of the isotope to be disposed of. Generally, those with a shorter half-life can be held for decay in storage, while those with longer half-lives must be shipped to an appropriate long-term waste storage facility. Consult Table I to determine what type of disposal method is appropriate.
   b. Long-term solid waste is also segregated by principal investigator, as the costs involved with long-term storage are passed directly on to the investigator. For this type of waste, the box will be marked with the investigator’s name.
   c. $^{32}$P waste is placed in one of 3 clear acrylic storage bins, while other isotopes are placed in designated cardboard boxes on the floor of the room.
   d. Place all solid waste (gloves, chux pads, pipettes, vials, etc.) in double plastic bags, and tie bags shut before placing in appropriate box. There are also white plastic buckets located in front of the cardboard boxes – these may be used when disposing of items that constitute a leak hazard, such as partially emptied vials or culture plates. Remove or obliterate all radioactive symbols.
   e. Log the amount of waste and the types of materials disposed of on the waste log located by the bin or box.
   f. When sinking waste, log the amount of waste and type of materials disposed of in the waste log located by the disposal sink.
   g. Reagent vials in which radioactive materials are shipped should be completely emptied of their contents and placed in the appropriate solid waste disposal site. All writing on the reagent vials must be obliterated before disposing.
   h. Empty carriers (lead pigs or plastic carriers) can be placed in a designated area on the floor of the solid waste disposal room. Carriers must be swabbed and counted before placing them in the waste disposal room.
i. Radioactive animal carcasses must be placed in the radioactive carcass freezer located in the common freezer room. Carcasses must be wrapped in plastic and labeled clearly with the investigator’s name, the isotope used, the amount, and the date of disposal.

E. Recordkeeping
   1. Due to the regulatory concerns related to the appropriation, use, and disposal of radioactive isotopes, appropriate documentation must be maintained at multiple time points throughout use.
   2. At a minimum, each laboratory using radioactive isotopes should have the following records:
      a. Newly received isotopes are logged in with isotope type, activity level, lot number, and date received. This is done by Nuclear Medicine.
      b. As isotopes are used in experimental studies, their date and amount of use are recorded.
      c. Regular survey logs in areas of radioactive isotope use.
      d. Liquid waste disposal logs
      e. Solid waste disposal logs

V. Table I: Common Radiation Sources at the HHRI
   A. * Isotope has a low meter efficiency.

<table>
<thead>
<tr>
<th>Isotope</th>
<th>Half-Life</th>
<th>Emission Type</th>
<th>Shielding</th>
<th>Survey Type</th>
<th>Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^3$H</td>
<td>12 years</td>
<td>Beta</td>
<td>Fume Hood</td>
<td>Wipe test</td>
<td>Long-term storage</td>
</tr>
<tr>
<td>$^{14}$C</td>
<td>5700 years</td>
<td>Beta</td>
<td>Fume Hood</td>
<td>*Survey meter while working with isotope; Wipe test following work</td>
<td>Long-term storage</td>
</tr>
<tr>
<td>$^{35}$S</td>
<td>87 days</td>
<td>Beta</td>
<td>Fume Hood</td>
<td>*Survey meter while working with isotope; Wipe test following work</td>
<td>Decay in storage</td>
</tr>
<tr>
<td>$^{32}$P</td>
<td>14 days</td>
<td>Beta</td>
<td>Acrylic (10 mm thickness)</td>
<td>Survey meter</td>
<td>Decay in storage</td>
</tr>
<tr>
<td>$^{125}$I</td>
<td>60 days</td>
<td>Gamma</td>
<td>Fume Hood, Lead Acrylic</td>
<td>Survey meter while working with isotope; Wipe test following work</td>
<td>Decay in storage</td>
</tr>
<tr>
<td>X-ray</td>
<td>N/A</td>
<td>X-radiation</td>
<td>Lead Aprons and Mitts</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
VI. Working with X-Rays

A. X-Ray facts
   1. X-rays are a source of ionizing radiation used for diagnostic and research purposes at the HHRI. Scientific studies have demonstrated an increased risk of certain cancers for employees who routinely work with x-radiation sources.
   2. A training and safety program has been developed at the HHRI specifically to address the risks associated with the use of x-radiation.
   3. Most of the training program, badge and equipment requirements, and quality control procedures are required by the Minnesota Department of Health. Failure of adherence to licensing agreements can lead to revocation of the HHRI license.

B. Training program
   1. Prior to using an x-ray machine or fluoroscopic unit, personnel must undergo training specific for the use of the HHRI units. This includes required HCMC and hands-on training.
   2. All training is coordinated through Veterinary Services.

C. Badges
   1. Personnel using an x-ray machine are required to obtain radiation exposure badges, available through the Nuclear Medicine Department of HCMC. The badge requisition form is the same as used for working with radioactive materials.
   2. Staff using x-ray machines is potentially exposed to a much higher level of radiation than is found when handling other radioactive materials. For this reason, there are different badges for these types of uses. Employees who use both radioactive compounds and the x-ray machines require appropriate badges for both activities. Badges for these different uses must be kept separately.
   3. Badges are always worn OUTSIDE of any protective equipment, i.e., clipped on to the front of the lead apron.
   4. Active badges will be kept in the immediate x-ray area.

D. Protective equipment
   1. Because x-rays can possibly penetrate walls and flooring, the HHRI static x-ray unit is located in an isolated area that minimizes exposure to personnel not in the room. Lead shielding has been built into some of the wall space and in the glass viewing window, to protect personnel in the same room as the unit.
   2. Lead aprons and thyroid shields are provided and must be used for all personnel who will be in the x-ray alcove during exposure.
   3. Lead slit mitts are provided to assist in holding animals during the x-ray exposure time.

E. General safety techniques
   1. When using an x-ray unit, the exposure time (mAs) and intensity (kVp) should be at the absolute minimum to obtain quality films. A technique chart, which provides standard exposure times and x-ray levels for common views, is available and should be used at all times. Repeated exposures due to poor technique only serve to increase potential exposure times to personnel.
   2. Use the collimator on the machine to focus the x-ray beam to the narrowest possible width and length to encompass the area of interest.
3. Only personnel needed to hold the animal in a steady position should be in the x-ray alcove when x-rays are being taken. Non-essential personnel should move behind the lead shielded wall.

4. Care must be taken to keep all body parts as far away from the x-ray beam as possible. Fingers and hands are especially vulnerable to getting caught in the beam.

5. When using a (portable) fluoroscopic unit within a surgical space, all unnecessary personnel must exit the room. The door must be closed with a sign affixed to the door stating: “RADIATION SOURCE IN USE – DO NOT ENTER ROOM”.

F. Quality control

1. The licensing agreement with the state radiation unit dictate a number of regular quality control checks to ensure proper functioning of the x-ray unit as well as the protective equipment.

2. Any new equipment needs an acceptance test report showing that the unit meets the requirements in MN DOH 4732.1100. This is typically done by a physicist. Contact the Radiology Manager at HCMC when new (equipment new to HHRI, even if it is a used piece) equipment needs to undergo an acceptance test.

3. The unit itself is inspected every year for stray radiation and proper function. Contact the Radiology Manager at HCMC to assure that all units are on the inspection list.

4. Lead aprons and slit mitts are examined for tears or cracks in the protective lead layer, and certified on a yearly basis.

5. X-ray film cassettes are also checked yearly for proper operation, to prevent having to repeat exposure due to less than ideal results.
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V. Emergency Procedures

VI. Exposure Assessments and Medical Services

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CHAPTER 10
CHEMICAL HANDLING

I. Policy

A. The policy of the Hennepin Healthcare Research Institute (HHRI) is to provide a safe working environment for all personnel. The HHRI is committed to providing laboratory personnel all pertinent information regarding chemical related hazards associated with their work. In addition, HHRI’s Safe Chemical Handling Plan complies with OSHA Standard for Occupational Exposures to Hazardous Chemicals in Laboratories, Title 29 Code of Federal Regulations 1910.1450.

B. This chemical handling program is designed to:
   1. Inform HHRI laboratory personnel of hazards associated with chemicals in the workplace.
   2. Ensure the safe use, handling, and disposal of hazardous chemicals in the laboratory.

C. This policy applies to all HHRI personnel working on laboratory scale operations involving laboratory use of hazardous chemicals.

II. Responsibilities

A. The HHRI Vice President of Operations retains the ultimate responsibility for the laboratory safe chemical handling program.

B. The HHRI Safety Committee
   1. Works with administrators and other personnel to develop and implement appropriate chemical safety policies and practices.
   2. Monitors procurement, use, and disposal of chemicals used in laboratories.
   3. Sees that appropriate audits are maintained.
   4. Assists Principal Investigators develop adequate facilities and precautions.
   5. Seeks ways to improve the safe chemical handling program.

C. The HHRI Laboratory Services Coordinator
   1. Is responsible for the safe chemical handling program implementation within the laboratories.
   2. Works with the HHRI Vice President of Operations, the HHRI Safety Committee, and other personnel to develop and implement appropriate safe chemical handling policies and practices.
   3. Oversees disposal of chemicals per Environmental Protection Agency policies.
   4. Is aware of the legal requirements concerning regulated substances, biohazardous safety requirements, and waste disposal.
5. Seeks ways to improve the safe chemical handling program.
6. Contracts with appropriate vendors to test and certify all fume hoods, laminar flow cabinets, and other ventilated workstations on an annual basis. If testing of these devices is necessary outside the annual cycle, will contact the vendor to arrange for a separate visit.

D. Principal Investigator/Laboratory Supervisor
1. Has overall responsibility for the safe chemical handling within assigned laboratories.
2. Monitors procurement and use of chemicals used in their laboratories.
3. Ensures that workers know and follow safe chemical handling rules, that protective equipment is available and in working order, and that appropriate training has been provided.
4. Knows the current legal requirements concerning any regulated substances used in their laboratory.
5. Determines the required protective apparel and equipment to be used when working with chemicals used in their laboratories.
6. Ensures that facilities and training for the use of any material being ordered are adequate.

E. Laboratory Personnel
1. Adheres to HHRI safe chemical handling policies and procedures.
2. Adheres to laboratory-specific safe chemical handling policies and procedures.
3. Reads the SDS information for each chemical prior to initial use.
4. Learns and understands the proper use of personal protective engineering controls including, but not limited to, proper handwashing techniques, ventilation and label requirements, fume hood operation, use of spill kits.
5. Plans and conducts all operations in accordance with applicable safe chemical handling procedures.
6. Immediately reports all spills, accidents, and injuries to the laboratory supervisor.
7. Disposes of hazardous waste according to HHRI procedures.

F. HCMC Facilities
1. Maintains physical plant and systems.
2. Maintains and monitors ventilation and airflow.
3. Tests and maintains fire extinguishers and sprinkler systems.
III. Definitions

**Acid**: Any chemical that undergoes dissociation in water with the formation of hydrogen ions. Acids turn litmus paper red and have pH values of 0 to 6. They may cause severe skin burns.

**Action Level**: A concentration designated in 29 CRF 1910 for a specific substance, calculated as an 8-hour time weighted average (TWA) which initiates certain required activities to ensure exposure levels are controlled.

**Acute Effect**: Adverse effect on a human which has severe symptoms developing rapidly and coming quickly to a crisis. Also see chronic effect.

**Acute Toxicity**: Acute effects resulting from a single dose or exposure to a substance.

**Aerosol**: A fine aerial suspension of particles sufficiently small in size to confer some degree of stability from sedimentation.

**Alkali**: The hydroxides and carbonates of the alkali metals and alkaline earth metals. They neutralize acids, impart a soapy feel to aqueous solutions, and are the most common cause of occupational dermatitis.

**Asphyxiant**: A chemical (gas or vapor) that can cause death or unconsciousness by suffocation.

**Base**: A water soluble compound capable of reacting with an acid to form a salt by releasing an un-shared pair of electrons to the acid or by receiving a proton from the acid.

**Boiling Point**: The temperature at which a liquid changes to a vapor state at a given pressure.

**Bulk**: Mass of powdered or granulated solid material per unit of volume.

**“C” or Ceiling**: A description seen in connection with a published exposure limit. It refers to the concentration that should not be exceeded.

**Carcinogen**: A substance or agent capable of causing or producing cancer in mammals, including humans. Also see Select Carcinogen

**Caustic**: See alkali.

**CFR**: Code of Federal Regulations. A collection of the regulations that have been promulgated under USA law.

**Chemical**: Any element, chemical compound, or mixture of elements and/or compounds where chemical(s) are or distributed.

**Safe Chemical Handling Plan**: Written work practices that enable personnel to recognize, understand, and protect themselves from health hazards presented by hazardous chemicals used in the laboratory.

**Chemical Reaction**: A change in the arrangement of atoms or molecules to yield substances of different composition and properties.
**Chronic effect:** An adverse effect on a human, with symptoms which develop slowly over a long period of time or which recur frequently. Also see acute effect.

**Chronic Exposure:** Long-term contact with a substance.

**Combustible Chemical:** Chemicals that evaporate quickly enough to generate sufficient vapor to ignite in the presence of an ignition.

**Concentration:** The relative amount of a material in a combination with another material.

**Corrosive:** A liquid or solid that causes visible destruction or irreversible alterations to another substance.

**Cryogenic Liquid:** A liquid that has a boiling point that is less than -90°C at one atmosphere pressure. Can cause fires, explosions, embrittlement of structural materials, asphyxiation, and tissue destruction.

**Decomposition:** Breakdown of a material or substance into parts or elements or simpler compounds.

**Density:** The mass (weight) per unit volume of a substance.

**Designated Area:** An area that may be used for work with select substances that have a high degree of acute toxicity.

**Engineering Controls:** Environmental, mechanical, or structural factors that serve to encourage, facilitate, or complement safe behaviors in the workplace.

**Evaporation Rate:** The rate at which a material will vaporize (evaporate) when compared to the known rate of vaporization of a standard material.

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

**Exposure:** State of being open and vulnerable to a hazardous chemical in the course of work. Exposure may occur by inhalation, ingestion, skin contact, absorption, or any other course.

**Eye Protection:** Recommended safety glasses, chemical splash goggles, face shields, etc. to be used when handling a hazardous material.

**Face Velocity:** Air velocity at the face opening required to retain contaminants in the hood.

**Flash Point:** The minimum temperature at which a liquid will give off enough flammable vapor, mixed with air, to ignite.

**Formula:** The scientific expression of the chemical composition of a material.

**Grounding:** The procedure used to carry an electrical charge to ground through a conductive path.

**Hand Protection:** Specific type of gloves or other hand protection required to prevent harmful exposure to hazardous materials.
Hazard Warning: Words, pictures, symbols, or combination thereof presented on a label or other appropriate form to inform of the presence of various materials.

Hazardous Chemical: Any substance or mixture of chemicals having properties capable of producing adverse effects to the health or safety of a human. Includes chemicals which are carcinogens, toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes.

Hepatotoxin: A substance that causes injury to the liver.

Ignitible: Capable of being set afire.

Impervious: A material that does not allow another substance to pass through or penetrate it.

Incompatible: Materials that could cause dangerous reactions by direct contact with one another.

Ingestion: Taking in by mouth.

Inhalation: Breathing in of a substance in for form of a gas, vapor, fume, mist, or dust.

Inhibitor: A chemical added to another substance to prevent an unwanted chemical change.

Insoluble: Incapable of being dissolved in a liquid.

Irritant: A liquid or solid substance that gives off dangerous or intensely irritating fumes.

Laboratory: A facility where the laboratory use of hazardous chemicals occurs on a non-production basis.

Laboratory Use of Chemicals: The handling or use of chemicals in which all of the following conditions are met:

1. Chemical manipulations are carried out on a laboratory scale.
2. Multiple chemical procedures or chemicals are used.
3. The procedures involved are not part of a production process nor in any way simulate a production process.
4. Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

LC: Lethal concentration. The concentration of a substance that will kill.

LCL: Lethal concentration low. Lowest concentration of a gas or vapor capable of killing.

LC50: Concentration of a material in air that will kill 50% of a group of test animals with a single exposure.

LD: Lethal dose. Quantity of a substance that will kill.

LDL: Lethal dose low. Lowest administered dose of a material capable of killing.

LD50: Single dose of a material expected to kill 50% of a group of test animals.
LEL or LFL: Lower explosive limit, or lower flammable limit, of a vapor of gas; the lowest concentration that will produce a flash of fire when an ignition source is present.

Local Exhaust: A system for capturing and exhausting contaminants from the air at the point where the contaminants are produced.

Material Safety Data Sheet (MSDS): Written material concerning a hazardous chemical.

Melting Point: Temperature at which a solid substance changes to a liquid state.

Mixture: Any combination of two or more chemicals if the combination is not, in whole or part, the result of a chemical reaction.

Mutagen: A substance or agent capable of altering the genetic material in a living cell.

Nephrotoxin: A substance that causes injury to the kidneys.

Odor: A description of the smell of a substance.

Organic Peroxide: An organic compound that contains the bivalent -0-0 structure and may be considered a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

OSHA: Occupational Safety and Health Administration.

Overexposure: Exposure to a hazardous material beyond the allowable exposure levels.

Oxidizer: A substance that readily yields oxygen to stimulate the combustion (oxidation) of organic matter.

PEL: Permissible exposure limit. An exposure limit established by OSHA. May be a time weight average (TWA) limit or a maximum concentration exposure limit.

pH: The symbol relating the hydrogen ion (H-) concentration to that of a given standard solution. A pH of 7 is neutral. Numbers increasing from 7 to 14 indicate greater alkalinity. Numbers decreasing from 7 to 0 indicate greater acidity.

Particularly Hazardous Substances (PHS): Term used by OSHA in defining certain carcinogens, reproductive toxins, and substances with high acute toxicity. The presence of PHS requires employers to consider the need for precautions in addition to those for handling toxic substances.

Peroxide-forming Chemical: A chemical, that when it takes on oxygen from the atmosphere, becomes explosive

Personal Protective Equipment: Devices or clothing worn by a worker to protect against hazards in the environment.

Physical Hazard: Chemicals of a nature such as a combustible liquid, compressed gas, explosive, flammable, organic peroxide, oxidizer, phrophoric, unstable (reactive), or water reactive.
**Polymerization**: A chemical reaction in which one or more small molecules combine to form larger molecules. A hazardous polymerization is a reaction that takes place at a rate that releases large amounts of energy.

**Protective Laboratory Practices and Equipment**: Laboratory procedures, engineering/administrative controls, work practices, and protective clothing and/or equipment used to minimize exposure to hazardous chemicals.

**Pyrophoric Chemical**: A chemical that will ignite spontaneously in air.

**Sensitizer**: Substance, which on first exposure causes little or no reaction in human or animal subject but which, on repeated exposures might cause a marked response not necessarily limited to the contact site.

**Reaction**: A chemical transformation or change. The interaction of two or more substances to form new substances.

**Reactive Chemical**: A compound that can absorb a small amount of energy and rapidly be rearranged to a more stable compound and release significant amounts of energy.

**Reactivity**: Chemical reaction with the release of energy.

**Reducing agent**: In a reduction reaction (which always occurs simultaneously with an oxidation reaction) the reducing agent is the chemical or substance with (1) combines with oxygen or (2) loses electrons to the reaction. See oxidation.

**Reproductive Toxin**: A chemical that affects the reproductive system and may produce chromosomal damage (mutation) and/or adverse effects on the fetus (teratogenesis).

**Respiratory Protection**: Device protects the wearer’s respiratory system from overexposure by inhalation to airborne contaminants.

**Select Carcinogen**: Any substance meeting one of the following criteria:

1. Regulated by OSHA as a carcinogen.
2. Listed as a known carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP).
3. Listed under Group I (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC).
4. Listed in either Group 2A or 2B by the IARC or under the category “reasonably anticipated to be carcinogens” by the NTP.

**Sensitizer**: A chemical that causes a substantial proportion of exposed personnel to develop an allergic reaction after repeated exposure.

**Short-Term Exposure Limit (STEL)**: The maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures.
Solubility in Water: The percentage of a material (by weight) that will dissolve in water at ambient temperature.

Solvent: A substance in which other substances are dissolved.

Specific Gravity: The weight of a material compared to the weight of an equal volume of water is an expression of the density of a material.

Spill or Leak Procedures: Methods, equipment, and precautions that should be used to control a spill or leak.

Splash Proof Goggles: Eye protection made of a non-corrosive material that fits snugly against the face and has indirect ventilation ports.

Spontaneously Combustible: A material that ignites as a result of retained heat from processing, or which will oxidize to generate heat and ignite, or which absorbs moisture to generate heat and ignite.

Stability: The ability of a material to remain unchanged.

Teratogen: A substance or agent, exposure to which by a pregnant female can result in malformations in the fetus.

Threshold Limit Value (TLV): Airborne concentration of substances that represents conditions under which it is believed that nearly all workers may be exposed daily with no adverse effect. TLVs are expressed in three ways:

1. TLV-TWA: The allowable Time Weighted Average concentration for a normal 8-hour workday or 40-hour workweek.

2. TLV-STEL: The Short-Term Exposure Limit, or maximum concentration for a continuous 15-minute exposure period (maximum of four such periods per day, with at least 60 minutes between exposure periods, and provided the daily TLV-TWA is not exceeded).

3. TLV-C: The ceiling exposure limit, the concentration that should not be exceeded even instantaneously.

Toxic Substance: Any substance which can cause acute or chronic injury, or which is suspected of being able to cause diseases or injury under some conditions.

Toxicant: Any substance producing a toxic effect.

Unstable: Tending toward decomposition or other unwanted chemical change during normal handling or storage.

Unstable Reactive: A chemical that, in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or become self-reactive under conditions of shocks, pressure, or temperature.

Vapor: The gaseous form of a solid or liquid as it evaporates.
Vapor Density: Relative density or weight of a vapor or gas compared with an equal volume of air.

Vapor Pressure: The pressure that is exerted by the vapor from a liquid and which varies with temperature. A high vapor pressure indicates that a liquid will evaporate easily.

Volutility: A measure of how quickly a substance forms a vapor at ordinary temperatures.

Water Reactive Chemical: A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.
IV. Training Program

A. All personnel working with, or exposed to, potentially hazardous chemicals in a laboratory will undergo training in occupational exposure to hazardous chemicals.

B. The intent of training is to assure that all personnel are informed about hazards and protection when working in the laboratory.

C. Requirements

1. Initial training is required upon assignment to the laboratory.
   a. Basic laboratory chemical safety training – performed by HHRI.
   b. Laboratory-specific training and information – performed by the Principal Investigator, the laboratory supervisor and/or the designated trainer.

2. On-going training
   a. Yearly – chemical safety included in mandatory HHRI annual safety training.
   b. When a new chemical or procedure is introduced or a new hazard or procedure is introduced with an existing chemical – performed by the Principal Investigator, the laboratory supervisor and/or the designated trainer.
   c. Review of group specific chemicals – performed by the Principal Investigator, the laboratory supervisor and/or the designated trainer as needed.
V. Emergency Procedures

A. Emergency Phone Numbers
   1. Laboratory Services Coordinator: 612-873-6644

B. High Hazard (Major) Emergencies
   1. Emergency situations that pose an immediate threat to health, property, or the environment. A high hazard emergency may:
      a. Require evacuation of personnel in the area.
      b. Require response from outside the immediate release area.
      c. Pose, or have the potential to pose, conditions that are immediately dangerous to life and health.
      d. Pose a serious threat of fire and explosion.
      e. Require immediate attention due to imminent danger.
      f. Cause high levels of exposure to toxic substances.
      g. Cause worker uncertainty that he or she can handle the severity of the hazard with personal protective equipment and equipment that is provided, and that the exposure limit might easily be exceeded.
      h. Cause a situation that is unclear, or data is lacking, regarding important factors.

2. Responding to a high hazard emergency.
   a. Notify the Principal Investigator and/or supervisor.
   b. Notify the Laboratory Services Coordinator.
      1) Identify yourself and the reason you are calling.
      2) Identify the exact location of the emergency.
      3) Identify the nature of the emergency, injuries or symptoms involved, and the identity of any hazardous materials involved if known.
   d. Situations that threaten fire or explosion.
      1) Follow building fire protocol. See also Chapter 3: Emergency Preparedness Plan in this manual.
      2) Leave the area and tell others to leave.
      3) Close, but do not lock doors behind you to isolate the area.
      4) If you have time to do so safely, close fume hood sashes.
      5) If you have time to do so safely, post a sign to warn others not to enter the area.
      6) Call HCMC Security - 612-873-3232 from a safe location.
   e. Situations where spills release hazardous vapors.
      1) Leave the area and tell others to leave the area.
      2) Close, but do not lock doors behind you to isolate the area.
      3) If you have time to do so safely, close fume hood sashes.
4) If you have time to do so safely, post a sign to warn others not to enter the area.
5) Call HCMC Security - 612-873-3232 from a safe location.

f. Situations where fire or smoke is spreading to other areas.
   1) Follow building fire protocol. See also Chapter 3: Emergency Preparedness Plan in this manual.
   2) Call HCMC Security - 612-873-3232 from a safe location and inform them of the situation.
   3) Be available to advise emergency response personnel by identifying yourself. Be prepared to provide details of the incident, identify the types and quantities of chemicals stored there and their locations within the rooms.

g. Situations where gases or vapors are spreading to other areas.
   1) Follow building fire protocol. See also Chapter 3: Emergency Preparedness Plan in this manual.
   2) Call HCMC Security - 612-873-3232 from a safe location and inform them of the situation.
   3) Be available to advise emergency response personnel by identifying yourself. Be prepared to provide details of the incident, identify the types and quantities of chemicals stored there and their locations within the rooms.

C. Low Hazard (Simple) Spill
   1. A simple spill is defined as one that does not spread rapidly, does not endanger people or property except by direct contact, and does not endanger the environment outside the building. A simple spill can be neutralized, absorbed, or otherwise managed by the user(s) of the chemical. All other spills or releases should be considered as a high hazard emergency.
      a. All personnel who handle chemicals should be aware of the hazards and spill procedures associated with the chemicals they work with.
      b. Notify the Laboratory Services Coordinator for spill kit. Spill kits are kept in the S3 common equipment corridor above the centrifuges. Each of the kits contains instructions and protective equipment suitable for the type of chemical spill to be handled.
      c. Alert persons in the area that a spill has occurred.
      d. Wear personal protective equipment when cleaning up a spill.
      e. Cordon off the spill area.
      f. Clean spill according to SDS and instruction sheets for the pertinent chemical.
D. The HHRI Safety Committee will review all Hazard Emergency Incident Reports for trends and make recommendations for change(s) in safety practices.

VI. Exposure Assessments and Medical Services

A. Many hazardous chemicals have defined exposure limits called Permissible Exposure Limits (PELs). These exposure limits may be based on an 8-hour Time Weighted Average (TWA) exposure, a 15-minute Short Term Exposure Limit (STEL), or an upper limit exposure (Ceiling). When specific limits are given, the laboratory standard requires exposures not to exceed these limits. If an overexposure is suspected, an exposure assessment is necessary.

B. Exposure Assessment
   1. To determine if there was an exposure that may have caused harm to an individual.
   2. To identify the chemical(s) involved.

C. When to suspect overexposure
   1. If an individual manifests symptoms including, but not limited to, headache, rash, nausea, coughing, tearing, irritation or redness of the eyes, irritation of the nose or throat, dizziness, loss of motor dexterity or judgment and:
      a. Some or all the symptoms disappear when the individual is removed from the exposure area.
      b. The symptoms reappear soon after the individual returns to work with the same hazardous chemical(s).
   2. Two or more personnel in the same laboratory work area have similar complaints.
   3. A hazardous chemical leaked, spilled, or was otherwise rapidly released in an uncontrolled manner.
   4. An individual has had direct skin or eye contact with a hazardous chemical.

D. Exposure procedures
   1. Inhalation:
      a. Move the affected person to an area of fresh air.
      b. Close chemical containers to prevent further exposure.
      c. Turn fume hoods on to dissipate remaining chemical fumes.
   2. Eye contact:
      a. Promptly flush eyes with water for a prolonged period (at least 15 minutes).
      b. Hold the eyelids open and rotate the eyeball.
   3. Ingestion:
      a. Provide emergency medical treatment as outlined on the appropriate SDS sheet.
      b. Do not induce vomiting unless directed to do so.
4. Skin contact:
   a. Promptly flush the affected area with copious amounts of water period (at least 15 minutes).
   b. Remove any clothing or jewelry that may have chemical contamination.
   c. When removing shirts or pullover sweaters, be careful not to contaminate the eyes.
   d. Wash skin with mild soap and water – do not use neutralizing agents, creams, lotions, or salves.
   e. If pain returns after the 15-minute flooding, resume flooding the area.
5. Cryogenic liquid spill:
   a. Re-warm the affected area as quickly as possible by immersing it in warm, but not hot water.
   b. Do not rub the affected tissues.
   c. Do not break blisters; instead, cover with a sterile dressing.
6. Clean up spills.
7. Notify your Principal Investigator and/or supervisor of the exposure.
8. The exposed person will be sent for evaluation and treatment as soon as possible.

E. Medical Consultation and Medical Examinations
1. An exposed person may report to the HCMC Employee Occupational Health and Wellness Department located in the Lower Level of the Purple Building, the HCMC Emergency Room located on the first floor of the Red Building, or to their own personal medical provider based on preference and severity of injury.
3. All medical examinations and consultations shall be performed by or under the direct supervision of a licensed practitioner.
4. The following information shall be provided to the practitioner:
   a. The identity of the hazardous chemical(s) to which the individual may have been exposed.
   b. A copy of the appropriate SDS for the chemical(s) involved.
   c. A description of the conditions under which the exposure occurred.
   d. A description of the signs and symptoms of exposure.
5. For examination or consultation required under OSHA standards, the HHRI shall obtain a written opinion from the examining physician which shall include the following:
   a. Any recommendation for further medical follow-up.
   b. The results of the medical examination and any associated tests.
   c. Any medical condition revealed in the course of the examination that may place the individual at increased risk as a result of exposure to a hazardous chemical found in the workplace.
d. A statement that the physician has informed the individual of the results of the consultation or medical examination and any medical condition that may require further examination or treatment.

e. The written opinion shall not reveal specific findings of diagnoses unrelated to occupational exposure.

6. HHRI will establish and maintain for each individual an accurate record of any measurements taken to monitor exposures and any medical consultation and examinations including tests or written opinions required by Federal and/or State standards.

7. HHRI will assure that such records are kept, transferred, and made available in accordance with 29 CFR 1910.1020.

F. The HHRI Safety Committee will review all chemical exposures for trends and make recommendations for change(s) in safety practices.
VII. Safe Chemical Handling Procedures

A. Safe Work Practices with All Chemicals

1. Minimize all chemical exposures.
2. Avoid underestimating the risk of exposure.
3. Obtain and review Safety Data Sheets (SDS) before ordering and using chemicals. Ensure that the chemical can be safely procured, stored, used, and disposed of.
4. Provide adequate ventilation.
5. Do not allow release of toxic substances in cold or warm rooms.
6. Vent any apparatus which may discharge toxic chemicals.
7. Observe the Permissible Exposure Limits of OSHA, the Threshold Limit Values of the American Conference of Governmental Industrial Hygienists, or Recommended Exposure Limits of the National Institute for Occupational Safety and Health.
8. Post emergency contact information in all laboratory entrances.
9. Laboratory coats are required wear in the laboratory.
10. Dress appropriately for the laboratory environment. Clothing should cover the skin and not be loose, skimpy, or torn. Shoes preferably should be full foot covering and NO open toesed shoes are allowed in the laboratory. Confine long hair.
11. Laboratory coats and gloves are to be worn in the laboratory only and not in hallways or common areas.
12. No eating, drinking, smoking, gum or tobacco chewing, manipulating of contact lenses, or applying cosmetics in the laboratory or common areas.
13. Do not smell or taste chemicals.
14. Do not use mouth suction for pipetting or starting a siphon.
15. Use appropriate personal protective apparel and equipment.
16. Inspect non-disposable personal protective equipment for defects before each wearing.
17. Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation.
18. For unattended operations leave lights on, place an appropriate sign on the door, and provide for containment of toxic substances in the event of failure of a utility service.
19. Ice, glassware, utensils, ovens, refrigerators, and other equipment used for laboratory operations should not be used for storage, handling, or consumption of food or beverages.
20. Wash hands before and after using restrooms, after handling chemicals, and before eating or smoking.
21. Keep access routes to exits, emergency equipment, and utility controls open and unblocked.

22. Keep laboratory areas clean and uncluttered.

23. Know the hazards associated with materials you are using.

24. Use chemicals only as directed and for their intended purpose.

   Ensure that necessary supplies or equipment is available for handling small spills.

26. Know the location of safety equipment.

27. Do not work alone in the laboratory if working with chemicals.

28. Purchase the minimum amounts necessary to accomplish work, dispense only amounts necessary for immediate use.

29. Make sure containers of volatile chemicals have secure closures and are tightly closed when not being dispensed.

30. Label all containers with:
   a. Principal Investigator name.
   b. Date opened.
   c. Budget number for disposal

31. Label all secondary containers with the hazard information found on the primary container.

32. Make sure that labels on primary and secondary containers do not become damaged. Replace them when necessary.

33. Avoid practical jokes or other behavior that might confuse, startle, or distract other personnel.

34. Laboratories placarded with any of the following or similar warning signs will be regarded as restricted access areas:
   a. CAUTION – BIOHAZARD
   b. CAUTION – CARCINOGENS, REPRODUCTIVE TOXINS, OR OTHER EXTREMELY TOXIC CHEMICALS
   c. CAUTION – RADIOACTIVE MATERIAL

35. Visitors must sign in at the Laboratory Services Coordinator’s desk and must wait in reception area until escorted by an authorized laboratory representative.
**B. Safe Work Practices with Particularly Hazardous Substances** – (See also Section VIII.A.: Safe Work Practices with All Chemicals)

1. **Toxins**
   a. **Hazards**
      1) Effects of exposures to toxic chemicals are either acute or chronic.
         a) Acute – characterized by prompt or slightly delayed health effects such as burns, allergic reactions, and immediate damage to organs such as eyes.
         b) Chronic – occur over a long period of time and are characterized by cumulative damage to organs including carcinogenic effects.
      2) Minimize or eliminate exposure to afford protection from toxic hazards. To minimize exposure it is necessary to determine the route by which exposure may occur.
   b. **Precautions**
      1) Know the hazards of the material. Review SDS sheets and do additional research if necessary.
      2) Use less toxic materials if possible.
      3) Use and store toxic chemicals in established areas and in the smallest amount possible.
      4) Transport toxic chemicals in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.
      5) Use appropriate personal protective equipment.
      6) Be prepared for spills and know when to take emergency action.
      7) Wash hands and arms immediately after working with toxic chemicals.
      8) Dispose of chemical wastes in accordance with policy. As appropriate, perform chemical decontamination of containers, washes and materials from experiments.
      9) Consider whether additional precautions are needed for substances with high toxicity. See also “Carcinogens, Reproductive Toxins, and Highly Toxic Chemical: Chemical Handling Procedures.”

2. **Carcinogens, Reproductive Toxins, and Highly Toxic Chemicals**
   a. OSHA defines certain carcinogens, reproductive toxins, and substances with high acute toxicity as Particularly Hazardous Substances (PHS).
   b. Select Carcinogen – any substance that meets one of the following criteria:
      1) Regulated by OSHA as a carcinogen.
      2) Listed as a known carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP).
3) Listed under Group I (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC).

4) Listed in either Group 2A or 2B by the IARC or under the category “reasonably anticipated to be carcinogens” by the NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:

   a) After inhalation exposure of 6-7 hours /day, 5 days/week, for a significant portion of a lifetime, to dosages of < 10mg/m$^3$.
   
   b) After repeated skin application of < 300 (mg/kg of body weight)/week.
   
   c) After oral dosages of < 50 mg/kg of body weight/day.

Reproductive Toxins – includes substances that can affect reproductive capabilities such as mutagens, teratogens, and reproductive hazards that may affect female or male reproductive health.

d. Highly Toxic Chemicals – substances (poisons) that fall within any of the following categories:

   1) Median lethal dose (LD50) administered orally is < 50mg.
   
   2) LD50 administered by continuous contact is <200 mg/kg.
   
   3) Median lethal concentration administered by inhalation is <200 ppm.
   
   4) Chemicals whose properties are unknown.

e. Precautions

   1) As a minimum, follow precautions listed under Toxins.
   
   2) Determine whether additional precautions are needed for PHS materials.
   
   3) Amend or add procedures as needed.
   
   4) Post the area for use. Inform laboratory occupants of designated areas.
   
   5) Consider factors such as potency, concentration, quantity, physical properties, and conditions surrounding the use of the substances. Specifically consider if additional precautions are needed for:

      a) Areas to be designated for use and posted i.e., fume hood, glove box, or entire room.
      
      b) Containment devices.
      
      c) Procedures for decontamination and waste disposal.
      
      d) Additional training or personal protective equipment for users.

3. Flammables and Combustibles – can generate sufficient vapor to cause a fire in the presence of an ignition source. Categorized based on flash point – the minimum temperature at which a liquid gives off vapor in sufficient concentrations to allow the substance to ignite.
a. Flammable materials: Can generate sufficient vapors to ignite at temperatures <100°Fahrenheit.
b. Combustible materials: Can generate sufficient vapors to ignite at temperatures >100° Fahrenheit.
c. Hazards
   1) The liquid does not itself burn, the vapors from the liquid burns.
   2) The rate of vapor generation depends upon the liquid’s vapor pressure, which increases with temperature.
   3) The degree of fire hazard depends upon the ability of vapors to mix with air to form combustible or explosive mixtures and the ease of ignition of these mixtures.
   4) Flammables are more volatile than combustibles, thus making them more hazardous.
   5) Safe handling procedures are based upon controlling one or more of the elements necessary to initiate a fire: fuel, ignition source, and oxygen.
d. Precautions
   1) Eliminate ignition sources such as open flames, hot surfaces, sparks from welding or cutting, operation of electrical equipment, and static electricity.
   2) Minimize the quantity kept in work area.
   3) Store in approved flammable liquid containers and storage cabinets.
   4) Transport flammable chemicals in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.
   5) Store away from oxidizers.
   6) Limit of 10 gallons per laboratory group.
   7) Refrigerators and freezers used for storage of flammables must be explosion safe and labeled as such.
   8) Assure appropriate sprinklers and fire extinguishers are in the area.

4. Corrosives – causes visible destruction or irreversible alterations of living tissue by chemical action at the site of contact. May be solid, liquid, or gaseous and act on body tissues by direct contact, inhalation, or ingestion.
   a. May be categorized as:
      1) Strong acid.
      2) Strong base.
      3) Dehydrating agent.
      4) Oxidizing agent.
      5) Water-reactive.
b. Precautions
   1) Eye protection and gloves should always be worn. A face shield, rubber apron, and rubber boots may also be appropriate depending upon work performed.
   2) Transport corrosive chemicals in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.
   3) If diluting, always add acid to water.
   4) Dehydrating agents should be mixed with water by adding the agent to water.
   5) In the event of skin or eye contact, immediately flush the area of contact with cool water for 15 minutes and remove all affected clothing. Get medical help.
   6) Strong oxidizing agents such as chromic acid should be stored and used in glass or other inert containers (preferably unbreakable). Corks and rubber stoppers should not be used.

c. Storage
   1) Containers and equipment used for storage should be corrosion resistant.
   2) Acids and bases should be stored separately.
   3) Strong oxidizing acids should be stored separately from other acids and bases.
   4) Store organic and inorganic acids separately.
   5) Glacial acetic acid must be stored alone. It may be stored in the S3 common corridor storage area if preferred.

5. Compressed gases – generic term for three different types of gas products, compressed gases, liquefied compressed gases, and cryogenic liquefied gases.
   a. A compressed gas is either:
      1) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 pounds per square inch (psi) at 70° Fahrenheit.
      2) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 pounds psi at 130° Fahrenheit regardless of the pressure at 70° Fahrenheit.
      3) A liquid having a vapor pressure exceeding 40 psi at 100° Fahrenheit.

b. Hazards
   1) Compressed gases may be grouped into different hazard categories based upon their physical or health properties, or both. Any gas could be placed into more than one category.
   2) A gas may be corrosive, flammable, toxic, an oxidizer, or act as an asphyxiant.
   3) Gases are stored under high pressure.
c. Precautions

1) Order only the quantities needed.
2) Label each cylinder with Principal Investigator’s name and amount of gas in cylinder.
3) Before using cylinders, read all label information and SDS sheets associated with the gas being used.
4) Transport cylinders on a cylinder cart with a safety chain.
5) Always secure gas cylinders to a wall or store small cylinders in a cylinder holder.
6) Never drop cylinders or permit them to strike each other violently.
7) Don’t remove protective cylinder caps until the cylinder is secured.
8) Keep only the cylinders necessary for current laboratory work.
9) Keep cylinders away from all sources of heat and direct sunlight.
10) Never tamper with safety devices in valves or cylinders.
11) Use the correct regulator for a particular gas.
12) Use compressed gases in well-ventilated areas. Toxic, flammable, and corrosive gases should be handled in a fume hood.
13) When discharging gas into a liquid, a trap or suitable check valve should be used to prevent liquid from getting back into the cylinder or regulator.
14) For flammable cryogens the precautions detailed in precautions for Flammable and Combustibles should be followed.
15) When handling cryogens always wear safety goggles. If there is a splash or spray hazard, personnel protective clothing should also include a face shield, impervious apron or coat, trousers without cuffs, and shoes that cover the foot. Gloves should be impervious.
16) Containers and systems containing cryogens should have pressure relief mechanisms.
17) Containers and systems should be capable of withstanding extreme cold without becoming brittle.
18) Turn off the main valve and regulator when not using the cylinder.
19) Mark empty cylinders as “empty”.
20) When returning empty cylinders close the valve leaving some positive pressure in the cylinder. Replace any valve outlet and replace protective caps.

6. Peroxide Formers – peroxide formers, or peroxidizables, are materials that react with oxygen to form peroxides, which can explode with impact, heat, or friction.

a. Hazards – can be divided into three hazard categories. Storage times are based on time after opening container.

1) Compounds forming peroxides that can spontaneously decompose during storage. Maximum storage time is 3 months.
2) Compounds forming peroxides that require the addition of a certain amount of energy (distillation, shock) to explosively decompose. Maximum storage time is 12 months.

3) Compounds that have the potential to form peroxide polymers, a highly dangerous form of peroxide that precipitates from solution easily and are extremely heat and shock sensitive. Maximum storage time is 12 months.

b. Precautions
   1) Use precautions listed under flammable precautions.
   2) Date all peroxidizables upon receipt and opening. Unless the manufacturer has added an inhibitor, materials should be disposed of in a timely manner.
   3) Do not open any container that has obvious crystal formation around the lid.
   4) Transport peroxide formers in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.
   5) Hazards of peroxide formation can be minimized by adding oxidation inhibiting compounds, and testing for peroxide concentration.

7. Reactives – chemicals that display a broad range of reactions.
   a. Chemical class may include explosives, oxidizers, reducers, water sensitive, acid sensitive, air sensitive, and unstable.
   b. Capable of producing toxic gases, explosive mixtures, being explosive, reacting with water violently, or may contain cyanide of sulfide.
   c. Exhibit moderate to extremely rapid reaction rates and include materials capable of rapid release of energy by themselves (self-reaction or polymerization), and/or rates of reaction that may be increased by heat or pressure or by contact with incompatible substances.
   d. May be broadly classified into two groups – those that explode and those that do not. Reactivity of individual chemicals in specific chemical classes varies and may also vary as a result of aging or contamination.
   e. There are eight classes of reactives based upon their chemical behavior.
      1) Class I – chemicals normally unstable that readily undergo violent change without detonating.
         (a) Pyrophorics – spontaneous ignition on contact with air.
            (1) Prevent contact with air or water.
            (2) Use and store in inert environments.
            (3) Transport in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.
(b) Polymerizables – spontaneous polymerization in contact with air.
   (1) Keep cool.
   (2) Avoid contact with water.
   (3) Transport in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.

(c) Oxidizers – violent reaction in contact with organic materials or strong reducing agents.
   (1) Use minimum amounts for procedure.
   (2) Do not keep excessive amounts of material in the vicinity of process.
   (3) Store away from organic materials, flammable materials, and reducers.
   (4) Transport in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.

2) Class II – chemicals that react violently with water.
   (a) Causes large evolution of heat in contact with water.
   (b) Decomposes in moist air.
   (c) Violently decomposes with liquid water.
      (1) Handle materials like corrosives.
      (2) Use acid resistant rubber or plastic clothing with gloves and face shield.
      (3) Handle materials in fume hood.
      (4) Transport in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.

3) Class III – chemicals that form potentially explosive mixtures with water.
   (a) Chemicals decompose violently in water with evolution of heat and flammable gases that may ignite if exposed to ignition source.
   (b) Evolution of heat with water may be sufficient to cause auto-ignition and explosion.
      (1) Provide ventilation to disperse flammable gases.
      (2) Use dry sand to smother materials.
      (3) Avoid contact with and handle away from water sources.
      (4) Transport in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.
4) Class IV – chemicals that, when mixed with water, generate toxic gases, vapors or fumes in quantity sufficient to present a danger to human health or the environment.
   
   (a) Reacts rapidly with water with the production of gases or vapors that are acutely toxic to human health.
   
   (1) Provide adequate ventilation when handling.
   
   (2) Keep containers sealed.
   
   (3) Do not handle near water.
   
   (4) Transport in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.

5) Class V – cyanide or sulfide bearing chemicals.

   (a) Acid sensitive cyanides and sulfides that produce extremely toxic hydrogen cyanide or hydrogen sulfide gases on contact with acids.

   (b) Acid sensitive cyanides and sulfides that produce extremely toxic hydrogen cyanide or hydrogen sulfide gases on contact with materials which form acids in the presence of moisture or liquid water.

   (1) Do not store in cabinets with acids and oxidizers.

   (2) Isolate from other reactive chemicals.

   (3) Protect sulfide salts from moisture.

   (4) Provide adequate ventilation to prevent severe inhalation hazard of hydrogen cyanide and hydrogen sulfide and acute toxic effects from skin contact with hydrogen cyanide.

   (5) Transport in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.

6) Class VI – chemicals capable of detonating or exploding if subjected to a strong initiating source or if heated under confinement.

   (a) Detonation or explosion can occur if heated above ambient temperature.

   (b) Detonation or explosion can occur if exposed to an initiating source such as shock, mechanical shock, spark, or flame.

   (c) Detonation or explosion can occur if exposed to a catalyst that accelerates decomposition.

   (1) Protect containers from physical damage.

   (2) Protect containers from heat.

   (3) Protect containers from incompatible chemicals.
(4) Know the properties of the materials being worked with.
(5) Check MSDS sheets for information on incompatibles when storing.
(6) Transport in secondary containment trays if the container is over 500cc or if multiple bottles are being carried.

7) Class VII – chemicals readily capable of detonation, explosive decomposition, or reaction at standard temperature and pressure.
   (a) Capable of detonation or explosive decomposition under ambient temperature without any external initiating source.
   (b) Capable of detonation or explosive decomposition under ambient pressure without any external initiating source.

(7) Materials should only be handled by knowledgeable and trained personnel.
(8) Evaluate chemicals periodically to determine whether deterioration has occurred.
(9) Check MSDS sheets for information on incompatibles for storage and chemical properties of materials handled.
(10) Follow MSDS recommendations for personal protective equipment and transport.

8) Class VIII – forbidden explosives, Class A explosives, and Class B explosives as defined in 49 CRF 173.
   (a) Forbidden explosives are capable of detonation or explosive decomposition under ambient conditions.
   (b) Forbidden explosives are considered too dangerous for transportation.
   (c) Materials should be handled by experienced and properly equipped persons.

C. Laboratory Facility
   1. The facility should be designed to have as a minimum:
      a. An appropriate general ventilation system.
      b. Adequate, well-ventilated stockrooms and storerooms.
      c. Laboratory fume hoods and sinks.
      d. Other safety equipment including eye wash stations and emergency showers.
      e. Arrangements for waste disposal.
   2. Safe chemical handling-related equipment will undergo continuing maintenance, including regular appraisal and testing. Equipment will be repaired or replaced if found to be inadequate.
   3. Work conducted and its scale must be appropriate to the physical facilities.
4. Ventilation
   a. General laboratory ventilation should provide a source of air for breathing and input to local ventilation devices. General ventilation alone should not be relied on for protection from toxic substances.
   b. Special ventilation areas. Exhaust air from glove boxes and radioactive iodine fume hoods should be passed through scrubbers or other treatment before its release.
   c. Doors to the laboratory must be closed to ensure correct airflow.

5. Fume hoods: a local exhaust device whose primary purpose is to protect laboratory workers from hazards of airborne chemical contaminants.
   a. Check the hood area daily for visible blockage of airflow.
   b. Visually inspect the hood and observe airflow monitor devices before each use to ensure that the hood is working.
   c. Avoid opening and closing the fume hood sash rapidly; avoid swift arm and body movements in front of or inside the hood.
   d. Use a fume hood when working with chemicals that may generate contaminants near or above exposure limits.
   e. Do not have a source of ignition inside the hood when flammable liquids or gases are present.
   f. Keep all items 6 inches back from the front edge of the hood to avoid blocking the airflow path.
   g. Elevate large objects 2 inches off the floor of the hood so air can pass under the object and out the back slots of the hood.
   h. Do not use large pieces of equipment in a hood, as they tend to cause dead spaces in the airflow.
   i. Do not put your head in the fume hood, particularly when there are contaminants in the hood.
   j. During hood use, lower the sash to the sash arrow sticker, below the chin and more if possible.
   k. Lower and use the sash as a safety shield when working with reactive materials or materials that may splatter.
   l. Keep the hood free of extraneous materials. Only those materials necessary to the procedure should be in the hood while work is being conducted.
   m. Keep interior hood surfaces in a clean condition.
   n. Close the sash when the hood is not in use.
   o. Hoods are not to be used as chemical storage areas.
   p. Contact Facilities Management in the event of a ventilation failure or recurring low flow alarm.
D. Chemical Procurement, Distribution, and Storage

1. Procurement
   a. Order the smallest amount of chemicals needed.
   b. Do not store chemicals above eye level.
   c. Information on proper handling, storage, and disposal should be known to involved personnel.
   d. Place SDS sheet in laboratory SDS file/notebook.
   e. Information on a SDS will provide:
      1) Name of supplier, address, phone number, and date the SDS was prepared or revised.
      2) Name of the substance as it appears on the label.
      3) Physical and chemical properties – boiling point, molecular weight, vapor pressure, vapor density, specific gravity, melting point, evaporation rate, solubility in water, physical appearance, and odor.
      4) Physical hazards related to flammability, reactivity, and explosive properties.
      5) Toxicity data. Includes Permissible Exposure Limit (PEL), Threshold Limit Value (TLV) and other recommended exposure limits.
      6) Health hazards – acute and chronic, routes of entry, carcinogenicity, signs and symptoms of exposure, medical conditions generally aggravated by exposure, emergency and first aid procedures.
      7) Storage and handling procedures – precautions for handling or storage, lists appropriate control measures, required personal protective equipment, work/hygiene practices, first aid treatment, steps to take if the material is released or spilled, and guidelines for proper disposal of waste material.

2. Distribution
   a. Use bottle carriers for glass containers.
   b. Use carts with edges to prevent containers from falling off the cart.

3. Storage
   a. Maintain an up-to-date list of all hazardous chemicals.
   b. Examine stored chemicals at least annually (or more frequently for age sensitive chemicals) for replacement, deterioration, and container integrity.
   c. Ensure materials are stable.
   d. Do not remove or deface labels on original chemical containers.
   e. Ensure containers and caps are in good condition.
   f. Label containers with the Principal Investigator’s name and date opened.
   g. Avoid chemical storage on the floor.
h. Do not store liquids above solids.
i. Use anti-roll lips on shelves.
j. Use shelving that can be cleaned and won’t soak up spilled chemicals.
k. Store all chemicals below eye level.
l. Do not store chemicals on top of flammable storage cabinets.
m. Maintain an 18-inch open area from storage areas to ceiling
n. Store chemicals in compatible categories.
o. Separate acids, bases, corrosives, and toxics.
p. Store corrosive chemicals in a corrosion proof cabinet.
q. Label storage areas by chemical group.
r. Do not store cryogens or dry ice in non-ventilated rooms such as cold rooms.
s. Flammable liquids must be kept in flammable liquid storage cabinets or in common flammable storage area on S3.
t. Limit flammable liquids to 10 gallons per laboratory group.
u. Discard unneeded chemicals or identify as surplus.
v. Chemical wastes.
   1) Store in secondary container in the fume hood.
   2) Label container “waste”; include contents, date, and Principal Investigator name.
   3) See Waste Disposal Program for chemical waste disposal procedures.
w. Procedures to transfer chemicals between laboratories include:
   1) Complete a Chemical Transfer Form (see Page 30 of this chapter), which requires signatures from both laboratories.
   2) Submit the completed form to the Laboratory Services Coordinator.
   3) When the completed Chemical Transfer Form is submitted to the Laboratory Services Coordinator, all responsibility for the chemical is transferred.
Chemical Transfer

Transferring from:

Investigator_______________________________________________________
Lab room number________ Phone____________________________________
Signature__________________________________________________________

Chemical name____________________________________________________
Amount__________________________________________________________

Transferring to:

Investigator_______________________________________________________
Lab room number________ Phone____________________________________
Date of transfer____________________________________________________
Signature__________________________________________________________

Office use only

Chemical code #____________
_______________________________________________________________
Laboratory Services Coordinator Date
E. Housekeeping, Maintenance, and Inspections

1. Housekeeping
   a. Housekeeping provided by HCMC.
   b. Keep aisles and corridors clean, unobstructed, and well lighted.
   c. Keep exits, emergency equipment, and utility controls unblocked and accessible.
   d. Use non-combustible wastebaskets.
   e. Eye wash stations are available in each laboratory. Body showers are available on S3, and S10.

2. Maintenance
   a. Activate eye wash stations for 5-10 minutes weekly. Document on appropriate record.
   b. Body showers will be tested and documented yearly on S3 under the auspices HCMC
   c. Body showers will be tested and documented yearly on S10 under the auspices of HCMC.

F. Personal Protective Apparel

1. Laboratory coat – designed to protect the clothing and skin from chemical spills or splashes. The HHRI provides laboratory coats to employees at no charge and may be obtained from the Laboratory Services Coordinator.

2. Eye protection – appropriate eye protection is required when there is a chance of spraying or splattering chemicals. Eye protection equipment must be made available from the Principal Investigator at no charge to the employee.
   a. Safety glasses with permanently attached side shields are required where there is a potential of being struck by projectile objects.
   b. Chemical splash goggles are required in chemical handling operations where protection is needed against mists, aerosols, and sprays.
   c. Face shields are required where facial skin and protection is needed for chemical or physical agents. Where both eye and face protection is needed, the face shield is used in addition to the safety glasses or goggles.

3. Foot protection – open-toed shoes are not allowed. Full covering shoes are preferred.

4. Hand protection
   a. Gloves should be worn whenever there is a potential for contact with corrosive or toxic materials, or materials of unknown toxicity. Hand protection must be made available from the Principal Investigator at no charge to the employee.
   b. Certain glove material may dissolve in contact with solvents; match the type and material of the protective glove with the chemical(s) being used.
   c. Check that there are no tears or holes in gloves.
   d. When working with extremely corrosive material, wear thick gloves or more than one pair of gloves. When removing gloves, peel the glove off.
the hand starting at the wrist and working toward the fingers. Keep the working surface of the glove from contacting skin during removal.

e. Wash hands as soon as possible after removing gloves.

f. Discard disposable gloves in approved containers. Replace non-disposable gloves periodically depending on frequency of use and permeability to the substance(s) being handled.

G. Glove types are:

1) Plastic – protects against light corrosives and irritants.
2) Latex/non-latex substitutes – provides light protection against irritants.
3) Natural rubber – protects against light corrosive material and electric shock.
4) Neoprene – for working with solvents, oils, or light corrosive material.
5) Cotton – absorbs perspiration, keeps objects clean, provides some fire retarding properties.
6) Zetex, - replacement for asbestos gloves when handling small burning objects.
7) Insulated gloves – for handling dry ice are available in the dry ice room.

5. Respiratory protection – respirators will be fit by HCMC Employee Health and Wellness Service. Respiratory protection must be provided by the Principal Investigator at no charge to the employee.

G. Equipment

1. Refrigerators
   a. No food or drink for human consumption allowed in the laboratory refrigerators.
   b. Must be kept clean.
   c. Must have thermometer.

2. Electrical
   1. Know the location of electrical shut-off switches and/or circuit breakers in or near the laboratory.
   2. Extension cords.
      1) Only approved extension cords can be used. See Laboratory Services Coordinator for acceptable extension cords.
      2) Multiple plug outlets (octopus) are not allowed.
      3) Always use electrical power strips.
   3. All electrical equipment should be inspected to ensure that cords and plugs are in good condition.
   4. Frayed, cracked, or eroded wires should be repaired immediately.
   5. All electrical equipment should have three-pronged, grounded connectors.
6. Reports any shocks to the supervisor or Principal Investigator. Immediately remove faulty equipment from service until repaired.
7. See Chapter 5: Electrical Safety for more information.

3. Flammable liquid storage cabinets
   a. Must comply with National Fire Protection Association (NFPA) standards.
   b. Must have self-closing door(s) with red lettering stating “Flammable Keep Fire Away”.
   c. Two doors are required on all cabinets except 10 and 20-gallon sizes where one door is required. Where two doors are required, they may be either bi-folding or hinged on each side.
   d. Door must be provided with three-point latch arrangement and the doorsill shall be raised at least two inches above bottom of the cabinet to retain spilled liquid within the cabinet.
   e. Cabinets must be of approved metal construction and meet minimum construction requirements:
      1) Bottom, top, sides, and doors shall be at least #18 gauge sheet metal and double walled 1½ air space.
      2) Joints must be riveted, welded, or made liquid tight.

3. Gas hose connectors i.e., hoses connecting a gas source to an appliance or equipment, are allowed to be used for laboratory equipment per the National Fuel Gas Code provided that all the following items are met:
   a. A shut off valve must be installed where the connector is attached.
   b. The connector should not exceed 6 feet.
   c. The connector should not be concealed or pass from room to room or through walls, ceilings, or floors.
   d. This code specifically disallows use of latex tubing as a connector between a gas source and a Bunsen burner.

H. Signs and Labels
   1. Prominent signs and labels of the following types will be posted:
      a. Emergency telephone numbers of facilities management and laboratory supervisors.
      b. Chemical labels showing contents of containers, associated hazards, Principal Investigator name, and date opened.
      c. Location signs for emergency showers, eye wash stations, other safety and first aid equipment, and exits are permitted.

I. Waste Disposal Program
   1. Assures that minimal harm to people, other organisms, and the environment will result from the disposal of waste laboratory chemicals.
      a. Sharps – Any item used or unused that is designed to cut or puncture skin. Also consists of any broken material that may cut or puncture skin.
         1) Handle as little as possible.
2) Do not recap ANY needles.
3) Obtain disposal containers for sharps from the Laboratory Services Coordinator. Place sharps disposal containers in areas accessible for use by staff.
4) Place all syringes, needles, glass pipettes, slides, broken glass ampules, broken glass, test tubes, and any item possessing a puncture point in the designated sharps container.
5) Sharps containers should be rigid, puncture resistant, leak proof on the sides and bottom, portable if portability is necessary, and labeled as a biohazard.
6) Place all items point down in the container.
7) Do not overfill container beyond the warning line (approximately 3/4 full).
8) Do not attempt to pack or stuff sharps into containers. Do not attempt to remove an item from a sharps container.
9) Sharps contains should not be opened, emptied, or cleaned in any manner which would expose personnel to the risk of a sharps injury.
10) Place all filled sharps containers in the designated hazardous waste box or barrel for pick-up.

b. Non-sharps
   1) Non-contaminated waste should be discarded in regular trash.
   2) Infectious waste should be discarded in a Biohazard red bag.
   3) Unbroken glass should be placed in a cardboard “glass disposal” box.
   4) As appropriate, perform chemical decontamination of containers and glassware before putting in “glass disposal” box.

c. Chemicals
   1) Store all hazardous waste in closed, labeled, impervious containers.
   2) Each laboratory is responsible for its own chemical disposal costs.
   3) Label contents of all waste containers with contents, date, and Principal Investigator name.
   4) Procedures to dispose of chemicals between laboratories include:
      a) Fill out Hazardous Waste Disposal Form.
      b) Label EACH BOTTLE with green “Chemical Waste” sticker available at Laboratory Services Coordinator’s desk.
      c) Notify Laboratory Services Coordinator to place waste in waste room for pick-up.
HAZARDOUS WASTE DISPOSAL FORM

Instructions:  Print all information clearly
Fill out form completely, one line per each item of waste
Distribution list:  Original to S^3 Laboratory Services Coordinator
    1 copy to accompany the waste to the hazardous waste storage area
    1 copy for your records

<table>
<thead>
<tr>
<th>Date of Disposal</th>
<th>Name of Chemical Waste</th>
<th>Amount of Waste Present</th>
<th>Physical State (solid vs liquid)</th>
<th>Type of Container (Plastic vs Glass)</th>
<th>Size of Container (Ex. 400ml)</th>
<th>Cost Center (Budget Number)</th>
<th>Disposers Name and Lab Name</th>
</tr>
</thead>
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</table>
VIII.  References


C. Subpart Z, Title 29 Code of Federal Regulations
Appendix A

Chemical Compatibility Chart

Below is a chart adapted from the CRC Laboratory Handbook that groups various chemicals into 23 major groups. The chart includes examples of the materials within a group and its incompatible chemical groups. This chart is only a general guide. Always check SDS sheets.

<table>
<thead>
<tr>
<th>GROUP</th>
<th>NAME</th>
<th>EXAMPLE</th>
<th>INCOMPATIBLE GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>Inorganic Acids</td>
<td>Hydrochloric acid</td>
<td>2, 3, 4, 5, 6, 7, 8, 10, 13, 14, 16, 17, 18, 19, 21, 22, 23</td>
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<tr>
<td></td>
<td></td>
<td>Hydrofluoric acid</td>
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<td></td>
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<td>Hydrogen chloride</td>
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<td>Hydrogen fluoride</td>
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<td></td>
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<td>Nitric acid</td>
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<td>Sulfuric acid</td>
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<td>Phosphoric acid</td>
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</tr>
<tr>
<td>Group 2</td>
<td>Organic Acids</td>
<td>Acetic acid</td>
<td>1, 3, 4, 7, 14, 16, 17, 18, 19, 22</td>
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<tr>
<td></td>
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<td>Butyric acid</td>
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<td>Formic acid</td>
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<td>Propionic acid</td>
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<td>Group 3</td>
<td>Caustics</td>
<td>Sodium hydroxide</td>
<td>1, 2, 6, 7, 13, 14, 15, 16, 17, 18, 20, 23</td>
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<td></td>
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<td>Ammonium hydroxide</td>
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<tr>
<td></td>
<td></td>
<td>solution</td>
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<td>Group 4</td>
<td>Amines and Alkanolamines</td>
<td>Aminoethylethanolamine</td>
<td>1, 2, 5, 7, 8, 13, 14, 15, 16, 17, 18, 23</td>
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<td></td>
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<td>Aniline</td>
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<td>Diethanolamine</td>
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<td>Dimethylamine</td>
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<td>Ethylenediamine</td>
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<td>2-Methyl-5-ethylpyridine</td>
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<td>Monoethanolamine</td>
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<td>Pyridine</td>
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<td>Triethylenetetramine</td>
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<tr>
<td>GROUP</td>
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<td>EXAMPLE</td>
<td>INCOMPATIBLE GROUPS</td>
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<tr>
<td><strong>Group 5</strong></td>
<td>Halogenated Compounds</td>
<td>Allyl chloride, Carbon tetrachloride, Chlorobenzene, Chloroform, Methylene chloride, Chloroform</td>
<td>1, 3, 4, 11, 14, 17</td>
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<td></td>
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<td>Monochlorodifluoromethane, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, Trichloroethylene, Trichlorofluoromethane</td>
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<tr>
<td><strong>Group 6</strong></td>
<td>Alcohols, Glycols, Glycol Ether</td>
<td>1,4-Butanediol, Butanol (iso, n, sec, tert), Diethylene glycol, Ethyl alcohol, Ethyl butanol, Ethylene glycol, Furfuryl alcohol, Isoamly alcohol, Methyl alcohol, Methylamyl alcohol, Propylene glycol</td>
<td>1, 7, 14, 16, 20, 23</td>
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<tr>
<td><strong>Group 7</strong></td>
<td>Aldehydes, Acetaldehyde</td>
<td>Acrolein, Butyraldehyde, Crotonaldehyde, Formaldehyde, Furfural, Paraformaldehyde, Propionaldehyde</td>
<td>1, 2, 3, 4, 6, 8, 15, 16, 17, 19, 20, 23</td>
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<td><strong>Group 8</strong></td>
<td>Ketones</td>
<td>Acetone, Acetophenone, Diisobutyl ketone, Methyl ethyl ketone</td>
<td>1, 3, 4, 7, 19, 20</td>
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<tr>
<td><strong>Group 9</strong></td>
<td>Saturated Hydrocarbons</td>
<td>Butane, Cyclohexane, Ethane, Heptane, Paraffins and Paraffin wax, Pentane, Petroleum ether</td>
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</tbody>
</table>

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Chapter 10: Chemical Handling
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<table>
<thead>
<tr>
<th>GROUP</th>
<th>NAME</th>
<th>EXAMPLE</th>
<th>INCOMPATIBLE GROUPS</th>
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<tr>
<td><strong>Group 10</strong></td>
<td>Aromatic Hydrocarbons</td>
<td>Benzene</td>
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<td>Cumene</td>
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<td>Ethyl benzene</td>
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<td>Xylene</td>
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<td><strong>Group 11</strong></td>
<td>Olefins</td>
<td>Butylene</td>
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<td>1-Decene</td>
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<td>1-Dodecene</td>
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<td>Ethylene</td>
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<td>Turpentine</td>
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<td><strong>Group 12</strong></td>
<td>Petroleum Oils</td>
<td>Gasoline</td>
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Major Incompatible Groups:
1. Acidic and Alkaline
2. Spontaneously Combustible and Acidic
3. Acidic and Flammable
4. Acidic and Cyanide
5. Acidic and Reactive Sulfides
6. Oxidizers and Organics
7. Nitrates and Acids
8. Ammoniated Compounds and Hypochlorites and Bleach
9. Organic Nitrates/Perchlorates and other Oxidizers or Metals
10. Azides and Metals, Metal Salts, Acids, Strong Oxidizers, Halogens
11. Perchloric Acid and Metals, Metal Salts, Charcoal, Ethers, Organics, Combustibles, Acids
Appendix B
Particularly Hazardous Substances

The U.S. Occupational Safety and Health Administration’s (OSHA) standard for Occupational Exposures to Hazardous Chemicals in Laboratories requires that a Laboratory’s chemical safety plan include provisions for additional protection for work with particularly hazardous substances (PHS). Particularly hazardous substances include select carcinogens, reproductive toxins, and substances that have a high degree of acute toxicity (Also see Section VIII.B.: Safe Work Practices with Particularly Hazardous Substances in this chapter). These substances are described more fully in this appendix.

BI. Select Carcinogens
A. Select Carcinogen – any substance that meets one of the following criteria:
   1. Regulated by OSHA as a carcinogen.
   2. Listed as a known carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP).
   3. Listed under Group I (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC).
   4. Listed in either Group 2A or 2B by the IARC or under the category “reasonably anticipated to be carcinogens” by the NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:
      a. After inhalation exposure of 6-7 hours/day, 5 days/week, for a significant portion of a lifetime, to dosages of < 10mg/m³.
      b. After repeated skin application of < 300 (mg/kg of body weight)/week.
      c. After oral dosages of < 50 mg/kg of body weight/day.
   5. See Appendix B-1, Select Carcinogens.

BII. Reproductive Toxins
A. Reproductive toxins include any chemical that may affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis). No recognized list of known human reproductive toxins exists. OSHA only specifically regulates four agents based on their reproductive toxicity. These are:
   1. Dibromochloropropane (DBCP)
   2. Lead
   3. Ionizing radiation
   4. Ethylene oxide
B. Other potential reproductive hazards are listed in Appendix B-1. This list is not comprehensive; chemicals may be added when research indicates a potential risk. Handle all chemicals with caution. Check the SDS to determine if a chemical you are unfamiliar with is considered a reproductive toxin.
BIII. Substances with a High Degree of Acute Toxicity

C. The OSHA Laboratory Standard does not list or define substances with a high degree of acute toxicity. The rule’s preamble describes substances with a high degree of acute toxicity as those substances that are “fatal or cause damage to target organs as a result of a single exposure or exposures of short duration”. Hydrogen cyanide, hydrogen sulfide, and nitrogen dioxide are given as examples. High acute toxicity includes any chemical that falls within any of the following:

1. Median lethal dose (LD50) administered orally is < 50mg.
2. LD50 administered by continuous contact is <200 mg/kg.
3. Median lethal concentration administered by inhalation is <200 ppm.
4. Any chemical whose properties are unknown.

D. To determine if you use a substance with a high degree of acute toxicity consult the SDS or the Registry of Toxic Effects of Chemical Substances.
Appendix B-I

SELECT CARCINOGENS*

*Not an exhaustive list: Always check SDS sheets prior to using a chemical

OSHA – Occupational Safety and Health Administration, U.S. Department of Labor
Group ORC: OSHA Regulated Carcinogen (ORC)
Group S: OSHA Select Carcinogen (S)

IARC – International Agency for Research on Cancer
Group 1: Carcinogenic to Humans
Group 2A: Probably Carcinogenic to Humans
Group 2B: Possibly Carcinogenic to Humans

NTP – National Toxicology Program, U.S. Department of Health and Human Services
Group 1: Known to be Human Carcinogens (K)
Group 2: Reasonably Anticipated to be Human Carcinogens (R)

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Chapter 10: Chemical Handling
Revised 2019
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<td>para-Chloro-ortho-toluidine and its strong acid salts</td>
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<td>3,3’-Dimethoxybenzidine (ortho-Dianisidine)</td>
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<td>para-Dimethylaminoazobenzene</td>
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Chapter 10: Chemical Handling
Revised 2019
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Appendix B-II
Reproductive Toxins*

*Not an exhaustive list: Always check SDS sheets prior to using a chemical

Reproductive Toxins

Acrylonitrile
Aniline
Arsenic and its compounds
Benzene
Benzo(a)pyrene
Beryllium
Boric acid (Boron)
Cadmium and its compounds
Carbon monoxide
Chlordecone (Kepone)
Chloroform
Chloroprene
Dibromochloropropane (DBCP)
Dichlorobenzene
1,1-Dichloroethane
Dichloromethane
Dioxane
Epichlorohydrin
Ethylene Dibromide
Ethylene Dichloride
Ethylene Oxide
Fluorocarbons
Formaldehyde
Formamides
Lead (Organic)
Manganese and its compounds
Mercury and its compounds (Inorganic)
Methyl n-butyl ketone
Methyl chloroform
Methyl ethyl ketone (MEK)
Nitrogen Dioxide
Ozone
Platinum and its compounds
Polybrominated biphenyls (PBB)
Polychlorinated biphenyls (PCB)
Selenium and its compounds
Styrene
Tellurium and its compounds
Tetrachloroethylene
Thallium and its compounds
Toluene
Toluene-2,4-diisocyanate
α-Toluidine
Trichloroethylene
Vinyl chloride
Vinylidene chloride
Xylene
Appendix B-II
Highly Acute Toxic Materials*

*Not an exhaustive list: Always check SDS sheets prior to using a chemical

Abrin
N-Acetoxy-2-acetylaminofluorene
Actinomycin D
Aldicarb
o-Aminoazobenzene
2-Aminofluorene
Anabasine
Apholate
Arsenious Acid, Monosodium Salt
Arsenic trioxide
Atropine
N,N-bis(2-chloromethyl)-2-Naphthylamine
Bromoethyl methanesulfonate
1,4-Butanediol dimethylsulfonate
Canthardin
2-chloro-4-Dimethyl-amino-6-methylpyrimidine
Cyanogen Bromide
Diazomethane
Digalen
Digifolin
Digoxin
7,12-Dimethylbeza[a]anthracene
3,3'-Dimethoxybenzidine
3,3'-Dimethylbenzidine
Dimethylthelylenimine
1,2-Dimethylhydrazine
3,3'-Dimethoxybenzidine, dihydrochloride
1,4-Dinitrosoperazine
Duboisine
Ethionine
Ethylenimine
Ethylene glycol dinitrate
Ethyl methanesulfonate
Fluroactetic acid
Gitalin
Heroin
Hexaaethyl tetraphosphate
Hydrazoic acid
Hydrocyanic acid
N-Hydroxy-2-acetylamino fluorene
Hyoscyamine
Inorganic arsenic
Isobenzan
K-Strophanthin
Lanatoside
Lysergic acid diethylamide
3-Methylcholanthrene
Methyl chloromethyl ether
4,4'-Methylene bis-(2-chloraniline)
Methylhydrazine
Methyl methanesulfonate
Nicotine salicylate
N-[4-(5-Nitro-2-furyl)-2-thiazoly]-formamide
Nitroglycerin
N-Nitroquinoline-1-oxide
N-Nitrosodimethyamine
N-Nitroso-N-methylurethane 2H-1,3,2-oxazaphosphorine,2[bis(2-chloroethyl) Amino]tetrahydro-2 oxide
Pantopon
Parathion
Paroxon
Phosphine
Phosphorodithioic acid
Phosphorous (Yellow)
Propylenimine
2-propyl-piperidine
Ricin
Scopolamine
Sarin
Sodium Azide
Sodium Selenate
Sulfoteppe
Tabun
Tepp
2,3,7,8-Tetrachlorodibenzofuran
Thimet
m-Toluenediamine
Uracil mustard
Chapter 11: Safety in the Animal Facility

I. Common Safety Practices
II. Occupational Health Program
   A. Initial Health Screen
   B. Annual Health Screen
   C. Personal protective equipment
   D. Visitors in S10 and S11 Facilities
III. Animal Facility Hazards
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CHAPTER 11

SAFETY IN THE ANIMAL FACILITY

I. Common Safety Practices

A. Safety practices common to all labs must also be followed on 10th and 11th floors.
   1. No food, drink, dishes, or other food-related items are allowed except in the office S10.201 and the 10th floor elevator lobby. Smoking, gum chewing, or applying cosmetics is also prohibited.
   2. No open toe shoes are allowed.
   3. Laboratory hazard sheets must be posted in each laboratory area.
   4. Eyewash stations are checked weekly for proper operation. Documentation of eyewash checks will be posted by all eyewash stations.
   5. Waste cans must be non-combustible.
   6. Chairs and stools with covers must be washable, no cloth covers are permitted.
   7. Sharps must be discarded in the provided puncture-resistant containers. Use universal precautions and do not recap needles.
   8. Compressed gas containers must be secured at all times.

B. Animals or animal materials that are transported outside of S10 or S11 must be covered with a drape or cage lid.

C. The “C” elevator can be placed on independent service mode by use of a key. This mode is to be used only when transporting animals or animal materials outside of S10 and S11. Do not allow non-animal users to ride the elevator with these items.

II. Occupational Health Program

A. Initial Health Screen
   1. Prior to hire, all candidates for positions involving contact with animals will be informed of the risks associated with the job duties they are expected to perform.
   2. At the time of hire, new employees will undergo an initial health screening at the HCMC Employee Occupational Health and Wellness (EOHW) Department. This includes a health history survey, initial tuberculosis screening, and review and update of immunizations, if needed.
      a. Tetanus vaccination is highly recommended for all animal handlers. If an employee is not currently vaccinated, this will be done at the time of the initial health screening. Boosters are recommended every 5 to 10 years. Booster vaccinations can be given by EOHW or by the employee’s own personal health care provider.
      b. Tuberculosis testing is done during the initial health screening for new employees only.

B. Annual health screening
   1. All HHRI personnel with significant animal contact must complete the annual periodic health screening form (Appendix A).
   2. The forms will be distributed and will include an envelope addressed with the location of a central administrative HHRI office.
3. When the employee completes the screening form it should be placed in the addressed envelope, sealed, and sent to the address.
4. The sealed envelopes will then be collected and sent to the HCMC EOHW Department for evaluation by a qualified health care provider. Anyone with changes to their health status or with identified problems will be contacted by the HCMC EOHW for follow-up.

C. Personal protective equipment
1. Hand-washing facilities and safety showers with eyewash stations are located throughout the facilities.
2. Scrubs and gowns are provided by the facility for animal users and approved guests.
   b. Gowns are available in S10.202 or on S11 at the elevator lobby.
3. Gowns, surgical masks, shoe covers, caps, hearing protection and gloves are provided at various stations throughout the facility for all animal users and approved guests.
4. Other safety equipment is provided for animal care job-related positions. This includes chemical goggles, face shields, rubber gloves and boots, and respirators.

D. Visitors in S10 and S11 Facilities
1. Visitors are defined as any person that is not currently listed on an active IACUC-approved animal protocol.
2. Visitors must be escorted at all times by their host and are not allowed to perform any animal work.
3. The attending veterinarian should be notified in advance of any visitors.
   a. Include the name of the visitor and the date and purpose for the visit, i.e., scientist, collaborator, clinician, trainee, reporter, industry representative.
   b. The notice should also indicate if the visitor is receiving commercial support for the visit.
   c. Students or faculty for regularly scheduled teaching labs do not need advance notice but are required to review and sign a visitor orientation form.
4. All visitors are required to review and sign a visitor orientation form acquainting them with the rules of the facility and potential hazards (Appendix B).
   a. The form must be signed at least once each calendar year.
5. The daily log must be signed each day the visitor is in the facility.
6. Visitor orientation forms and logs are available outside of S10.201.

III. Animal Facility Hazards

A. Animal allergies
1. An allergen stimulates an allergic response in sensitized individuals when introduced into the body. Allergens can be inhaled, ingested, or come into direct contact with the skin.
2. The major sources of animal allergens are proteins found in urine and saliva. Animals that groom themselves, such as rabbits and rodents, spread these salivary
antigens across their hair in the act of grooming. When dried, the saliva adheres to dander which flakes off and can become airborne.

3. It is estimated that 30-70% of individuals exposed to laboratory animals will develop allergy symptoms. Allergy symptoms can range from mild to serious.

4. The most common symptoms are a stuffy or runny nose, sneezing, itchy nose or mouth, watery or itchy eyes, and skin rashes.

5. More serious symptoms include coughing, wheezing, shortness of breath, or tightness in the chest.

B. Prevention of Animal Allergies

1. Gloves should be worn at all times while handling animals. Wash your hands after removing gloves because “spatter” can occur in the act of removing the gloves.
   a. Avoid touching your face with gloves or after handling an animal.
   b. Wear the provided scrub suits or gowns in animal rooms. Do not bring scrubs or gowns worn in animal rooms home to launder. Instead place these in the soiled linens hamper.

2. If you are experiencing mild symptoms of allergies, do the following:
   b. Schedule an appointment with a health professional for a full allergy evaluation.
   c. If needed, respirators will be provided by the HHRI. Fit testing and instructions for wear should be done by an occupational health care professional. The HCMC Employee Occupational Health and Wellness Department will provide this evaluation and training.

3. Severe allergies can be life threatening. Symptoms may include respiratory signs such as wheezing or shortness of breath, extensive itching or hives, swelling of the face, tongue, and/or throat, that can even proceed to unconsciousness. If these symptoms occur:
   a. Terminate contact with the animals at once, remove and discard PPE and change out of scrubs. Leave the animal facility and notify your supervisor immediately. If the supervisor isn’t immediately available notify other available personnel.
   b. Seek medical care promptly.
   c. If an employee is incapacitated Call 911 in the Shapiro Building to request an emergency medical response team.

C. Zoonotic diseases

1. A zoonotic disease is a disease that can be transmitted from animals to people. More specifically it is a pathogen that exists in animals but that can infect humans. Some pathogens are anthroponotic, or communicable from humans to animals. Some pathogens can be both and are shared between animals and people.

2. Zoonotic diseases are of little risk in barrier raised rodents. However, the rodents may acquire and carry some bacterial infections from people while at HHRI, such
as *Streptococcus sp.* Always wear gloves when you handle any animal and wash your hands when you remove the gloves.

3. Other species such as pigs, sheep and rabbits are raised conventionally and may be more likely to carry zoonotic diseases.

   a. **Contagious ecthyma (orf) in sheep:** Orf is characterized by ulcerating sores and blisters along the lips and within the mouth of infected sheep. This disease is prevalent among sheep used at the HHRI, and is caused by a parapoxvirus. It is easily transmitted to humans by direct contact with the mouth or saliva of infected animals. Symptoms in humans include lesions on hands or face, and can range from mild sores to painful open ulcers. The lesions can be slow to heal, and humans can be re-infected from repeated exposures.

   b. **Q fever:** This disease is caused by a gram negative coccobacillus *Coxiella burnetti*. Transmission to humans primarily occurs via direct contact with placental or aborted materials from affected sheep, goats, or cattle. It may also be transmitted by inhalation of contaminated materials. The disease in humans has an incubation period of 1-3 weeks, and is characterized by fever, headache, myalgia, malaise, and cough. Untreated cases may lead to endocarditis, an inflammation of the lining of the heart.

   c. **GI pathogens:** Several diarrheal diseases can be acquired from animals. *Salmonella sp.*, *Lawsonia intracellularis*, *Clostridium difficile*, and certain strains of *E coli*. Transmission is usually from contaminated materials via ingestion. Wear gloves, avoid touching your face with the gloves, and wash your hands after you remove your gloves.

   d. **Ringworm:** This is a fungal infection of the skin that can be transmitted via direct contact with infected rabbits, dogs or cats. The typical skin lesion is a circular patch that is scaly and reddened along its outer margins but normal appearing in the center. Lesions most often appear on the hands and forearms. Oral and topical anti-fungal agents are used as treatment.

D. **Bites or scratches**

1. Any of the species used currently at the HHRI has the potential to bite or scratch. Proper handling of laboratory animals is the best way to prevent these types of physical injuries.

2. Treatment of minor bites and scratches (hands and arms):
   a. Immediately wash the affected area thoroughly with soap and water. If the wound is bleeding slightly, allow the flow of blood to continue for several minutes to help wash out the area.
   b. Apply direct pressure to the area if the wound continues to bleed. A bandage and/or topical antiseptic can be applied if desired.
   d. For minor wounds, a tetanus booster immunization is recommended if it has been 10 or more years since the most recent booster. If you experience a puncture wound a booster within 5 years is recommended.
e. Monitor the area for continued bleeding, pus, excessive redness or pain in the area, fever, tingling or numbness in the area, or swelling. If these signs appear more than 24 hours after the injury, seek treatment by a health care professional.

3. Treatment of major wounds:
   a. Deep puncture wounds and any bite to the face, neck, chest, abdomen, or back require evaluation and treatment by a health care professional. The employee should seek immediate attention either at the HCMC Emergency Department or from their own personal health care provider.
   b. Immediately wash the affected area thoroughly with soap and water. If the wound is bleeding, allow the flow of blood to continue for several minutes to help wash out the area.
   c. Apply direct pressure to the affected area to control bleeding.
   d. Tetanus prophylaxis should be considered if it has been 5 or more years since the most recent booster.

E. Physical Hazards
   1. Lifting
      a. Personnel must be aware of and apply proper lifting techniques at all times to prevent back injuries, strains, and muscle fatigue.
      b. The animal facilities have several types of equipment designed to ease lifting hazards and prevent injury. A motorized lift table is available for use with transporting animals from the animal rooms in the surgical area. Step-up devices are provided for accessing hard to reach areas.
      c. Heavy or bulky items and large animals must always be handled by at least two people.
   2. Noise
      a. Pigs can be very loud when vocalizing. Long-term exposure to high noise levels can lead to hearing loss.
      b. Ear protection is provided in the pig anteroom and should be used when the animals are noisy.
   3. Slippery floors
      a. Concrete floors in the large animal rooms can become slippery when wet, especially during daily cleaning of the animal runs.
      b. Rubber non-skid boots are supplied for all large animal handlers. The boots should fit snugly for the best traction on floors.
      c. Floors must be dried with a squeegee following daily cleaning.
   4. Crushing injuries
      a. Hoofed animals such as sheep and pigs may cause injury due to their larger size and hard feet. Personnel working with hoofed stock must wear proper protective footwear.
      b. Open-toed shoes/sandals are not allowed in animal housing or laboratory areas.
   5. Steam and hot water
a. Hot water and steam are associated with autoclaves and the pass-through cage washer. Improper use of either can result in serious burns. Do not bypass safety features.

b. Items removed from the cage washer immediately after the cycle completes should always be handled with heavy-duty waterproof gloves. Always check for items in the cagewash that may have tipped and contain hot water. Prior to moving the rack, tip the items to empty the water in a way that the hot water does not spill or splash on you.

c. Heat- and moisture-resistant gloves must always be worn when handling hot autoclaved items.

d. An exhaust vent is located above the autoclave in S10. 202. The autoclave door should initially be opened only slightly to allow the majority of the steam to escape. After a short pause it may then opened fully to remove sterilized items.

e. Specialized autoclavable waste bags must always be used when autoclaving contaminated waste. When the autoclave cycle is complete, the contents must be allowed to cool completely before disposal or disassembly of cages.

F. Chemical Hazards
   1. The chemicals used in the cagewash to clean and disinfect animal cages are concentrated. In their concentrated form they are very caustic and/or corrosive and can cause serious injury to the eyes and skin. A Safety Data Sheet (SDS) is provided for each chemical and exposure procedures are described in the event of direct contact with skin, mucous membranes or eyes. Safety goggles and gloves must be worn at all times when moving and/or connecting the large chemical barrels used for cage washer compounds.

   2. Scrubs or gowns must be worn at all times while mixing disinfecting compounds such as quaternary ammonium mixes, chlorine dioxide mixes, and degreasing compounds used in animal rooms. Gloves must be worn to prevent skin contact with the concentrated solutions. Skin irritation may result from direct contact with the diluted working solutions – hands should be washed with soap and water and rinsed well after contact with these solutions.

   3. All caging and related materials must be thoroughly rinsed free of all chemicals before any animal is brought back into direct contact with surfaces.

G. Experimental Infectious Agents
   1. Use of any infectious agent in animals must be approved by the Institutional Biosafety Committee (IBC). Application forms and SOP templates are available from the Lab Services Coordinator on 3rd floor or at the HHRI website. Safety procedures and precautions must be described and approved by the IBC before any work commences.

   2. All rooms where ABSL2 and ABSL3 infectious agents are used must be labeled with required signage (Appendix C), which includes:
      a. Universal biohazard symbol
      b. Name of the agent
      c. Animal biosafety level
d. Principle Investigator’s name & telephone number (or alternate responsible person)
e. Personal protective equipment requirements
f. Required procedures for entering and exiting the room

3. Access to the room must be limited to only those personnel required for program or support purposes.

4. The Principle Investigator must ensure that all personnel receive appropriate training regarding their duties, animal husbandry procedures, potential hazards, manipulations of infectious agents, necessary precautions to prevent exposures, and hazard/exposure evaluation procedures.
   a. Personnel must receive annual updates and additional training when procedures or policies change.
   b. Records must be maintained for all hazard evaluations, employee training sessions and staff attendance.

5. Equipment and work surfaces are routinely decontaminated following IBC approved procedures after work with an infectious agent; and after any spills, splashes, or other overt contamination.

6. Animals not associated with the work being performed are not permitted in the areas where infected animals are housed or are manipulated.

7. All waste and dirty PPE from the animal room (including animal tissues, carcasses, and bedding) are transported from the animal room per the procedures described in the approved IBC application.

IV. Animal Facility Waste Handling

A. Nonhazardous Waste
   1. Compostable Waste, e.g., used bedding, feed
      a. Dirty cage bedding and feed is dumped into compostable bags, either in front of the bioBUBBLE bedding disposal unit or while wearing an N95 mask.
      b. Bags should be filled to a 10 lb. maximum limit and be tied shut.
      c. These are picked up daily by Environmental Services (EVS) for discard in the Compost Dumpster.
   2. Animal carcasses or tissues
      a. Place rodents and animal tissues in brown paper lawn and leaf bags in the freezers on S11 or S3-north.
      b. Multiple rodents can be placed in one bag, but fill the bag only about 66% to allow closure.
      c. Place larger animals in heavy black plastic bags that are securely closed and taped, then stored in the freezer on S10.
      d. Avoid placing trash or extra materials in the bags, e.g., absorbent pads, gloves, etc.
      e. These are picked up weekly by licensed contractor.
B. Biohazard Waste

1. Animal caging and waste – ABSL2, e.g., dirty cages from animals exposed to infectious agents
   a. Caging components with used feed and bedding are placed in autoclavable bags and closed tightly. Water from bottles may be dumped in the sink in S11.210, or treated as approved by the IBC and then dumped.
   b. The bags are disinfected as described and approved by the IBC. Then the closed bags are transported to the autoclave and processed through the appropriate cycle.
   c. After the items have cooled, the bags are opened and the contents may be processed as nonhazardous waste. The autoclaved bags should be torn or cut to prevent re-use and discarded with the regular trash.

2. Animal carcasses or tissues – ABSL2
   a. Place carcasses and tissues of rodents exposed to ABSL2 infectious agents in red biohazard bags and tie securely. Disinfect the bags as described and approved by the IBC.
   b. Place the closed and disinfected bag in hallway freezers on S3 north wing or S11 elevator lobby.
   c. Multiple rodents can be placed in one bag.

3. A limited amount of extra materials (absorbent pads, etc.) are permitted if soaked with biohazard fluids.

4. The frozen red bags are picked up by EVS for disposal by a licensed contractor.

C. Radioactive Waste

1. Carcasses and tissues of rodents exposed to radioactive isotopes should be placed in brown leaf bags or clear plastic bags and tied securely, then placed in the designated radioactive carcass freezer on S3 north wing freezer room.

2. Clearly label the bag with the isotope, date stored, and calculated activity with each bag.

3. These bags are picked up for transfer to HCMC long term storage facility.

D. Pharmaceutical Waste

1. Unused pharmaceuticals are placed in the black box waste containers on S10 and S11.

2. All items going into the pharmaceutical hazardous waste container must be labeled with a drug name. Labeling facilitates sorting by hazardous waste personnel.

3. All free liquids or drugs without packaging must be sealed in plastic bags prior to being placed in the pharmaceutical hazardous waste containers.
   a. IV bags with drug additives must be properly plugged or placed in sealed zip lock bag.
   b. Federal P-Listed waste (including empty containers/packaging) must be sealed in plastic bags prior to being placed in the pharmaceutical hazardous waste containers. P-Listed Medications include:
      1) Nicotine
      2) Nitroglycerin
      3) Phenol
4) Physostigmine
5) Warfarin

4. Some drugs and drug waste do NOT go into the pharmaceutical hazardous waste containers:
   a. Empty controlled drug packaging, vials, ampules, syringes, and IV bags are placed in the regular trash after all drug or liquid has been wasted with a witness.
   b. All empty drug packaging and containers (vials, syringes without needles, tablet or capsule packaging, bottles, bags, etc.) will be disposed of in regular trash.
   c. Liquid containers including vials and IV bags are considered empty if they contain less than 3% of their original volume and may be thrown away as is.
   d. Any pharmaceutical that has been contaminated with infectious agents or that is classified as hazardous to handle must be discarded in accordance with HHS Policy # 001832.

5. To obtain a replacement container when one becomes full call the HHS Safety Staff hotline number, 873-9278, Monday-Friday from 8:00AM - 4:30PM.

V. Animal Specific Disaster Plan

A. Alerts & Evacuations
   1. Personnel working with laboratory animals will follow HHRI safety procedures for all alerts and evacuations, except as noted below.
      a. If an animal is anesthetized, one person will stay with the animal during an alert. The floor team leader will note who remains and their location.
      b. If the alert changes to an evacuation, the animal must be euthanized and everyone will evacuate the building. The floor team leader will notify the person who remained with the animal.
      c. A surgical procedure should not be interrupted for a drill.

B. Natural Disasters - inclement weather and personnel unable to get to work
   1. If weather creates unsafe conditions for travel, veterinary services and animal care personnel will communicate with each other via phone to locate someone within the department who is able to travel to the facility within 24 hours.
   2. If no one within the department is able to get to the facility, they will attempt to contact animal research personnel who may be able to get to the facility, and provide at least minimum care to resident animals. Veterinary Services personnel will provide verbal instructions via phone to any person who can get to the facility. HCMC security can provide access to all rooms, if needed.
   3. If delivery of supplies is delayed beyond available stock, the director will develop a plan for alternate bedding, extend time intervals for cage changes, and/or substitute foods.

C. Power Failure
   1. Back-up generators provide electricity in case of a power outage.
   2. If the generators are unable to support the building due to a lack of fuel supply or other reasons, the Director will evaluate conditions and decide if animals can
safely and comfortably remain in the facility. If not, valuable animals will be removed from the building and housed elsewhere. Animals that cannot be moved or that are not yet on study will be humanely euthanized.

D. Building Compromise – explosion, fire, tornado, loss of roof integrity
   1. Access to the animals will be limited to essential personnel after HCMC Facilities Services and the Minneapolis Fire Department determines that the building can be entered safely.
   2. HCMC Security will notify the Director of Veterinary Services if the building is compromised outside of business hours. If the Director is not available, the Facility Coordinators will be notified.
   3. The Director or Facility Coordinators will evaluate the animals and facility with the assistance of HCMC Security and HCMC Facilities departments. If the animals may be safely and comfortably maintained in the facility, they may remain in place. If not, the animals will be euthanized or evacuated.

E. Facility Not Habitable
   1. If time allows, the Veterinary Director will contact investigators to determine which animals may be evacuated vs. euthanized. Ultimately, the Veterinary Director will decide if the animal should be euthanized for humane reasons or if the researcher cannot be contacted.
   2. Animals to be evacuated will be transported in shoebox cages (rodents and rabbits) or in wheeled cages (kenneled species) to a staging area near an exit or a loading dock. They will be transported to another facility, such as the University of Minnesota Research Animal Resources, via an arranged vehicle such as a van or loading truck that is enclosed (not an open bed truck).
   3. Sufficient CO2, commercial euthanasia drug, or a combination of anesthetic drugs and KCL will be kept on hand to euthanize animals that will not be evacuated. Euthanasia will be performed according to the recommendations in the most current AVMA Guidelines on Euthanasia.

F. Animal Rights Activities
   1. Break-in
      a. HCMC Security will evaluate the situation and take action to secure the facility. If warranted, they may notify the Minneapolis Police and the local FBI office.
      b. HCMC Security will notify the President and COO of HHRI, and the Director of Veterinary Services. They will evaluate the damage, loss, and condition of the animals. Together they will notify researchers, HHRI officers, and HHS officials, as necessary.
   2. Protest
      a. HCMC Security will ensure that protesters leave the premises.
      b. If protests occur on city property, the Minneapolis Police will be notified so that they may determine if the protest is occurring within legal bounds.
   3. IT compromise
      a. The Manager of Information Systems will be notified immediately. They will investigate and respond to keep information secure.
4. Publicity
   a. Any public response or announcement will be coordinated through the HHRI administration in consultation with HHS officials and legal counsel as necessary.
# APPENDIX A Periodic Health Screening Form

## HENNEPIN HEALTHCARE RESEARCH INSTITUTE
### PERIODIC HEALTH UPDATE FORM

**Last name:** __________________________  **First name:** _________________________________

**Gender:**    ☐ Male    ☐ Female  **Date of Birth:** _________________________________

**Job Title:** _________________________________________________________________

<table>
<thead>
<tr>
<th><strong>Section I: Animal Contact</strong></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your current position involve the use of research animals?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>If yes, please respond to the following questions. If no, move on to Section II.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the past year, have you developed any of the following NEW health conditions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Hay fever?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Asthma?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Sinusitis?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Other chronic respiratory infections or conditions?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Eczema?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Allergic skin problems?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Food allergies?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In the past year, have you experienced any of the following symptoms:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Runny or stuffy nose?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Sneezing spells?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Watery or itchy eyes?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Itchy mouth?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Coughing or wheezing?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Shortness of breath?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Difficulty swallowing?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>▪ Skin rash or hives?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Does animal contact cause any of the above symptoms?</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Section II: Infectious Agent Contact</strong></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your current position expose you to infectious agents of human and/or animal origin?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>If yes, please respond to the following questions. If no, move on to Section III.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the past year, have you experienced any symptoms related to the agent(s) you work with?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>If yes, did these symptoms require medical intervention?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In the past year, have you had a diagnosed illness traced to the source agent(s)?</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Section III: Chemical/Radiation Contact</strong></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your current position expose you to any chemical hazards? (includes carcinogens, toxins, radioactive compounds, acids, bases, flammables, anesthetic</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
APPENDIX A Periodic Health Screening Form

gasses, and x-rays)
If yes, please respond to the following questions. If no, move on to Section IV.
In the past year, have you experienced any symptoms related to your exposure?  
If yes, did these symptoms require medical intervention?  

<table>
<thead>
<tr>
<th>Section IV: Physical Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your current position expose you to any of the following physical hazards: heavy lifting, sharps, repetitive motion, noise, steam or other heat source, ultraviolet light, slippery floors, or compressed gasses?</td>
</tr>
<tr>
<td>In the past year, have you experienced any of the following symptoms:</td>
</tr>
<tr>
<td>▪ Back spasm or injury?</td>
</tr>
<tr>
<td>▪ Hernia?</td>
</tr>
<tr>
<td>▪ Joint pain or immobility?</td>
</tr>
<tr>
<td>▪ Cuts or needle sticks?</td>
</tr>
<tr>
<td>▪ Burns?</td>
</tr>
<tr>
<td>▪ Hearing loss?</td>
</tr>
<tr>
<td>▪ Eye injury?</td>
</tr>
<tr>
<td>▪ Allergic skin response to latex?</td>
</tr>
<tr>
<td>If yes, did any of these require medical intervention?</td>
</tr>
</tbody>
</table>

**Note:** The information provided in this form is **CONFIDENTIAL** and will be reviewed only by a qualified medical professional. Information may be used to assess effectiveness of training programs and use of personal protective equipment.

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I certify that the information provided by me in this questionnaire is complete and true to the best of my knowledge:

Signature: ________________________________ Date: ________________
Welcome to the animal facility for the Minneapolis Medical Research Foundation. The following guidelines apply to all collaborators, volunteers and visiting students who will be working in the animal facility.

**Procedures:**
1. You are required to comply with all health, safety and security procedures. If you have any questions, please ask an HHRI staff member for clarification.
2. All procedures must be conducted as described in an Institutional Animal Care and Use Committee (IACUC) approved protocol. Any procedure or personnel changes must be approved by the IACUC. You may not perform any procedure on an animal unless the IACUC has authorized you to do so.
3. You may not take photographs or videos (except fluoroscopy videotapes) without prior approval from the Director of Veterinary Services. Cell phones and cameras may not be used for any purpose in a room with animals or ongoing experiments.

**Occupational health and safety:**
1. If you have any concerns regarding your own health, exposure to potentially adverse allergens or hazards, and/or accidents that occur, you must consult your own healthcare professional. No occupational health services are provided for non-employees.
2. Tetanus vaccination is required every 10 years, although recommended every 5 years for anyone who works with animals.
3. Proper attire consists of scrubs or a lab coat, gown, or other appropriate outerwear over street clothes. Sandals and open-toed shoes are not permitted. Wear disposable gloves when handling animals, animal products, or equipment that comes into contact with animals.
4. You may not eat or drink in the animal rooms, surgery suites, procedure rooms or laboratories. No food or drink is allowed except in the 10th floor office or elevator lobby.
5. Know and use proper technique with potentially hazardous materials or situations.
6. If you will be participating with an X-ray or fluoroscopy procedure you must wear a lead apron.
7. If you have animal allergies or if you experience allergy symptoms or skin irritation consult with your healthcare professional. Extra precautions may apply to women who are pregnant.

I have read and understand the guidelines for non-employees in the HHRI animal facility. I understand that I may be exposed to potentially hazardous materials or situations. I have had the opportunity to ask questions to clarify any issue regarding my obligations and I agree to comply.

__________________________          ____________________
Sign Name                               Date

__________________________
Print Name
### HHRI BIOHAZARD SIGN

**Date posted:**

IACUC and/or IBC Protocol#

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## APPENDIX C – ABSL2 Room Sign

### HHRI BIOHAZARD SIGN

**BIOSAFTEY LEVEL**

(Circle all that apply)

<table>
<thead>
<tr>
<th>BSL1</th>
<th>BSL2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSL1</td>
<td>ABSL2</td>
</tr>
</tbody>
</table>

Biohazardous Agent(s) in use:

PPE Required for entry/use:

Lab Director/Principal Investigator:  
Phone:

Emergency Contact Name(s):  
Phone:

**Version 6/2018**
Chapter 12: Scheduled Substances

A. Acquisition

B. Storage

C. Handling

D. Record Keeping
CHAPTER 12

SCHEDULED SUBSTANCES

Storage and handling of many drug agents is mandated by a number of federal laws, including the Controlled Substances Act of 1970 and the Animal Welfare Act. These laws cover not only the use of scheduled substances, but other agents as well. The specialized acquisition, storage, handling, and record keeping requirements of scheduled substances are delineated in the Controlled Substances Act, and administered by the Drug Enforcement Administration (DEA).

I. Acquisition
   A. The HHRI Veterinary Services will maintain a current registration for the purchase of Schedule II, III, IV and V agents used in experimental testing, research, and teaching for treatment, anesthesia, or analgesia of HHRI animals. This registration is for active investigators. The registration does not cover experiments that examine the properties or effects of controlled substances.
   B. Investigators wishing to obtain Schedule I compounds for use in experimental animals must submit a separate application to the DEA.

II. Storage
   A. All scheduled substances are to be kept in a secure area, including a minimum of one lock that must be opened to obtain access to the compound. Access to the areas of storage should be secured (e.g., locking laboratory doors when area is vacant).
   B. Schedule I and II agents must be stored in areas behind two separate locks. Specialized drug storage cabinets can be used or a safe within a locked cupboard.
   C. Schedule III, IV, and V agents must be stored in an area behind at least one lock in addition to a locked door. A lock should be installed on a refrigerator if the substance needs to be cooled.
   D. Further storage considerations may be required for Schedule I compounds. Consult the DEA for additional requirements.

III. Handling
   A. State and federal laws require that scheduled substances ordered from veterinary supply companies be shipped to a registered veterinarian. All such orders for HHRI investigators will be processed through the Veterinary Services department.
   B. Laboratory personnel must be adhere to the specific rules governing the storage, use, and documentation when using scheduled substances.
   C. All outdated scheduled substances must be discarded as witnessed by two people and documented.
   D. Loss or theft of any scheduled substances must be reported to the local police and the regional DEA office immediately upon discovery.

IV. Record keeping
   A. An initial inventory of all scheduled substances must be done upon establishment of an active research laboratory. A full follow-up inventory is to be done every two years after the initial inventory.
   B. Records must be kept for incoming inventory as well as dispensing and use records. Minimum information includes the generic name of the compound, the dose or strength, pertinent lot numbers, the date of receipt or withdrawal, the amount received or withdrawn, and the name of
the person recording the transaction. Schedule I compounds may require that two individuals be present when substances are entered or removed from the locked area.

C. Inventory records of substances ordered through Veterinary Services will be archived with Veterinary Services. Use of current bottles that have been dispensed to researchers must be kept with the drug and returned when the bottle is empty.

D. Records are to be kept a minimum of two years.