

HEALTH SCIENCE CENTER

SAFETY STANDARDS

LA CROSSE MEDICAL HEALTH SCIENCE CONSORTIUM

HEALTH SCIENCE CENTER

1300 BADGER STREET

LA CROSSE, WISCONSIN 54601

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## GENERAL INFORMATION AND REQUIREMENTS

### WHAT IS THE HEALTH SCIENCE CENTER (HSC)?

The Health Science Center (HSC), located at 1300 Badger Street, La Crosse, Wisconsin 54601, houses academic programs and classrooms, a student health center, and a variety of research laboratories.

### WHY LABORATORY SAFETY?

Several HSC occupants conduct activities that require the use of infectious agents and potentially harmful chemicals. To ensure a safe environment for building occupants, the safety standards outlined in this manual must be followed wherever a potential hazard of any kind exists (chemical, infectious, caustic, etc.).

### WHAT INDIVIDUAL STEPS ARE NECESSARY?

The **Principal Investigator (PI)** or **Clinical Instructor (CI)** must make sure that all users of the space are aware of and follow mandated safety standards as appropriate to the conditions in which the personnel are working.

Safety violations (e.g., inappropriate protective clothing) should be immediately reported to the PI, CI, or HSC Safety Officer.

## SAFETY OFFICER

The Safety Officer (SO) will be nominated by the Health Science Center (HSC) Safety Team, and the nomination will be forwarded to the HSC Management Group (HSCMG) for final approval. Ideally, the SO will have indicated an interest in the position, will be knowledgeable in matters concerning laboratory and chemical safety requirements and will be readily available for consultation by other residents of the HSC building.

The role of the HSC Safety Officer will be as follows:

- The SO will be mandated by the HSCMG to ensure residents adhere strictly to the requirements specified in the HSC Safety Standards.
- The SO will be responsible for providing clarification and will also take the lead in addressing concerns or violations.

- The SO can request a HSC Safety Team meeting to formally address chronic violations, etc.
- The SO will be expected to ensure the Safety Plan is reviewed regularly to comply with changing dynamics within the building.
- The SO will be informed of significant incidents that may represent a safety hazard and ensure appropriate documentation of resolution.
- The SO will ensure that chemical/biological agents within the HSC building are inventoried biennially and obsolete inventory is removed appropriately.

## SAFETY TRAINING FOR PERSONNEL

Prior to beginning work in the HSC, PIs and CIs must ensure that people working under their direction are trained appropriately in the safe use of any hazards, equipment or supplies they will be using. Additional training must also be provided if modifications from normal safety procedures are necessary. Regular updates to this training should be provided as needed.

## IMMUNIZATIONS AND MONITORING FOR POTENTIAL EXPOSURES

When mandated by government regulation, appropriate immunizations or methods to monitor for exposure must be implemented prior to working with toxic or infectious agents. Additional costs associated with compliance are the responsibility of the PI/CI.

## PROTECTIVE CLOTHING

The PI/CI is responsible for ensuring the appropriate types, sizes and quantities of protective clothing are readily available and used appropriately when working in the HSC. Personal protective equipment (PPE), including laboratory coats, disposable gloves, and safety glasses, must be used by all personnel as appropriate for their working conditions. Clothing and shoes that do not provide sufficient protection from spills (e.g., shorts or open-toed shoes) must not be worn when working with or in the vicinity of any potential hazard.

PPE should be stored so as to avoid cross-contamination of clothing. Contaminated laboratory coats must be cleaned appropriately before re-use. The PI/CI is responsible for establishing procedures to ensure potentially contaminated laboratory coats do not leave the room and are decontaminated appropriately.

## SIGNS

Biohazard signs must be posted on all access doors where Level 2 or higher biohazards are present. These signs must identify the agents present, the names and phone numbers of the PI, CI, or other appropriate persons, and highlight any special requirements for entering the room. Waste containers must also be labeled with appropriate biohazard warnings.

## GENERAL SAFETY MANDATES

- Handwashing is required after removing gloves used to handle potentially infectious materials or potentially toxic chemicals. Frequent changing of gloves accompanied by hand washing is also encouraged. Antibacterial soap must be readily available if potentially infectious agents are present. Frequent use of hand lotion to prevent skin from drying and cracking is also encouraged.
- Access to the laboratory will be limited or restricted to appropriate personnel only.
- Eating, chewing gum, drinking, smoking, handling contact lenses, applying cosmetics, and storing food for human use are not permitted when in range of possible exposure to potential hazards.
- Safety glasses or chemical protective goggles must be worn where they are appropriate for the conditions when working with hazardous chemicals, potentially infectious materials, or other hazards.
- Policies for the appropriate handling, disposal, and transport of sharps must be followed. (*Extreme caution must be taken with contaminated sharp items including needles, slides, pipettes, etc. Needles or other sharp instruments should only be used when no other alternative exists. Needles must not be recapped. Broken glassware must be handled by mechanical means such as a brush and dustpan, tongs, or forceps. Do not pick up broken glassware with hands.*)
- Procedures to minimize splashing or aerosolizing must be used, even if work is performed in the biological or chemical safety hood. Procedures for handling a spill should be displayed clearly on the door of any room where there is a spill hazard.
- Work surfaces must be kept clean and decontaminated when appropriate.
- Potentially hazardous waste must be packaged and labeled appropriately before transport.

- Potentially infectious materials must be handled with proper PPE and/or in a biological safety cabinet.
- If appropriate for the chemical (e.g., moderate to high volatility, can be readily airborne, etc.), the use of hazardous chemicals must be handled in an approved fume hood and with proper PPE.
- PPE must be handled and stored in such a way as to avoid cross-contamination. Contaminated PPE must be cleaned appropriately before re-use or discarded.

## WASTE MANAGEMENT AND DISPOSAL

### GENERAL

Contact the Safety Officer for questions regarding procedures for disposing of hazardous wastes, except UWL employees, who should contact the UWL Environmental Health, Safety, and Sustainability Program Manager.

### LISTED HAZARDOUS WASTES

Wisconsin Administrative Code section NR 605.09 contains several tables that list approximately 500 specific wastes, primarily identified by chemical name. The lists are available from the Environmental Health and Safety Office by calling 785-6800 or on the internet at:

[http://docs.legis.wisconsin.gov/code/admin\\_code/nr/600/661](http://docs.legis.wisconsin.gov/code/admin_code/nr/600/661).

### NON-LISTED HAZARDOUS WASTE

Non-listed wastes are also hazardous if they exhibit any of the following:

**IGNITABLE** - liquid with a flashpoint at or below 140°F, ignitable compressed gas or oxidizer, or material that can cause fire through friction, absorption of moisture or spontaneous chemical changes.

**CORROSIVE** - liquid with a pH less than or equal to 2.0 or greater than or equal to 12.5.

**REACTIVE** - normally unstable, readily undergoes violent changes without detonating, reacts violently with water, forms potentially explosive mixtures with water, generates toxic gases or fumes when mixed with water or non-corrosive materials, is capable of detonation or explosive reaction, or is a forbidden Class A or B explosive.

**TOXIC** – chemical mixture that exceeds regulatory levels.

## NON-INFECTIOUS WASTE

Normally non-infectious waste such as gloves, paper wrappers, paper toweling from hand washing, etc. can be discarded in wastebaskets if they have not been in contact with potentially infectious agents.

## POTENTIALLY INFECTIOUS WASTE

Potentially infectious liquid waste must be placed in a leakproof container containing an appropriate volume of disinfectant (e.g., 10% bleach) or autoclaved for enough time sufficient to sterilize the field and then sewer in a laboratory sink with a copious amount of cold water as long as the waste cannot be classified as hazardous waste.

Potentially infectious solid waste should be discarded in a labeled biohazard waste receptacle.

Contaminated needles, syringes, scalpels, broken glass, etc. must be discarded in an approved sharps container, securely capped or closed when full, and placed in an appropriate biohazardous waste receptacle. Broken glass that is not infectious may be segregated into a puncture-resistant container (such as a sharps container) and discarded in regular trash.

Contaminated materials including gloves, pipets, slides, swabs, loops, etc. must be placed in an appropriate biohazard waste receptacle.

Waste containers must remain in the laboratory until sealed for transport to pick-up location.

## HSC MANAGEMENT GROUP POLICY/PRACTICES: INFECTIOUS WASTE DISPOSAL

Effective July 1, 2009, individual laboratories will be responsible for collecting and disposing of infectious wastes as outlined below. It is suggested that a person be designated in your lab to empty the waste at a designated time each week if it is full (e.g., Friday).

To empty infectious waste collection boxes:

1) Retrieve tape/dispenser from Room 1146B\* and seal boxes as follows (Very important):

- A. Completely seal center top seam.
- B. Completely seal side seams

C. Reseal center top seam

2) Transport sealed waste boxes to Room 1146B (transportation dolly is available from loading dock immediately adjacent to Room 1146B)

3) Pick up an empty box to take back to the lab

\*Directions to shipping area/1146B: Take the southeast elevator to the ground floor, turn left. Turn on the light switch located outside the door (on the left side) and enter through the shipping door. Go to the back, left corner of the room, unlock the door to room 1146B. When done, make sure 1146B is locked, and turn off the light when exiting.

Reminder:

Infectious disease waste boxes are picked up six times per year by Stericycle and HSC is charged a pickup and poundage fee. Therefore, care should be taken to discard ONLY infectious waste items in boxes (refer to attached). Recently the following have been found in the boxes and are not necessary to be placed in the box:

Gloves that have not touched infectious waste

Paper towels from drying your hands

Packaging for plastic ware/lab materials

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HSC LABORATORY INFECTIOUS WASTE DISPOSAL MEMO, MARCH 2009

The Wisconsin Department of Natural Resources has established a Medical Waste Management regulation in Chapter NR 526 of the Wisconsin Administrative Code.

The regulation identifies the following categories of wastes as infectious waste.

- Contaminated sharps which are both infectious and may easily cause punctures or cuts in the skin, including but not limited to: hypodermic needles, syringes with needles attached, scalpel blades, lancets, broken glass vials, broken rigid plastic vials and laboratory slides
- Unused or disinfected sharps which are being discarded, including hypodermic needles, scalpel blades, lancets and syringes with needles attached
- Bulk blood and body fluids from humans
- Human tissue
- Microbiological laboratory waste

- Tissue, bulk blood or body fluids from an animal which is carrying a zoonotic infectious agent.

Wastes presumed not to be infectious wastes include all of the following:

- Items soiled but not saturated with blood or body fluids from humans included in the definition of "bulk blood and body fluids"
- Items soiled with body fluids from humans not included in the definition of "bulk blood and body fluids"
- Intravenous tubing after needles have been detached
- Tissue, blood, body fluids or cultures from an animal which is not known to be carrying or experimentally infected with a zoonotic infectious agent
- Animal manure and bedding
- Other solid wastes, including but not limited to containers, packages, waste glass, laboratory equipment and other materials which have had no contact with blood, body fluids, clinical cultures or infectious agents
- Formerly infectious waste, after it has been treated

To apply good lab waste management practices in the HSC all lab personnel should:

- Place all non-infectious wastes in trash receptacles other than those designated for infectious wastes.
- Segregate sharps infectious wastes from other infectious wastes. Sharps infectious wastes shall be discarded in separate sharps containers.
- 
- Sharps containers, whether or not autoclaved, shall be placed in the infectious waste containers provided by the infectious waste contract service.
- Blood and body fluids may be discarded in a laboratory sink followed by copious amounts of rinse water or, if securely capped or contained, may be discarded in a biohazard container.
- Not discard radioactive, reactive, corrosive, ignitable, toxic or any hazardous wastes in infectious waste containers. Contact your employer to arrange disposal of these wastes.

## CHEMICAL WASTE

Chemicals must be properly labeled and segregated by hazard classification, compatibility and cross-reactivity. Each chemical must be disposed of according to that chemical's Safety Data Sheet (SDS) and/or federal, state, and local regulations.

Each space containing chemicals should have ready online or paper access to current MSDSs and SDSs. Spaces shared by multiple partners should have ready online or paper access to SDSs for all chemicals used by each partner, filed alphabetically by chemical name.

## LABORATORY EQUIPMENT

All laboratory equipment should be maintained according to the schedules outlined in the owner's manuals. Laboratory personnel are also expected to perform routine maintenance tasks (e.g., cleaning, decontamination).

## HOUSEKEEPING

Laboratories and classrooms should be kept clean. The amount of equipment and supplies should be minimized when possible to reduce clutter. Where appropriate, preventive maintenance logs must be dated and initialed by the person(s) completing the task.

## SHOWER AND EYEWASH STATION

Safety shower and eyewash stations must be tested at least monthly to ensure proper operation. A test log should be dated and initialed by HSC custodial/maintenance staff conducting the test.

## ANNUAL INSPECTIONS

Autoclaves must be tested and certified by an outside vendor.

Fire extinguishers must be inspected and tested by an outside vendor. A certificate of inspection must remain attached to the fire extinguisher.

Biosafety Cabinets and chemical fume hoods must be certified by a qualified professional. HEPA filters must be changed when the airflow remains below minimum levels or poses other safety hazards. A certificate of inspection must be visible on each cabinet surface.

## SAFETY INCIDENTS IN THE HSC

In the event of a safety incident, an Incident Report must be filed by the PI/CI with the HSC Safety Officer for follow-up and possible investigation. Incident report forms are provided on the Consortium website ([www.lacrosseconsortium.org](http://www.lacrosseconsortium.org)) and in Appendix A. If UWL personnel are involved in the incident, a copy of this report must be submitted to the UWL Risk Management and Environmental Health and Safety office.

The extent of the hazardous risk is dependent on the nature of the infectious agent or chemical, the volume of material, the concentration of the agent, and the location of the spill. Appropriate protective garments (eye protection, gloves, and laboratory coats) must be worn when cleaning spills. Paper towels or other absorbent materials and appropriate devices to pick up sharps or broken glass must be readily available. Each room that contains a potential chemical spill hazard must be equipped with an emergency chemical spill response kit.

If a spill cannot be managed without putting people at risk of harm, the area must be evacuated immediately and emergency personnel notified by calling 911.

## INFECTIOUS SPILLS

### SPILLS ON LABORATORY PERSONNEL

1. Remove contaminated items immediately and discard in appropriate biohazardous waste container. Wash hands and replace PPE.
2. If the spill penetrates the protective outerwear, contaminated personal clothing should also be removed immediately. Extra clothing or scrubs could be kept on-site if spills are a concern.
3. If the spill has contaminated a small amount of the skin, wash the site thoroughly with antibacterial soap. Don't abrade the skin. If a large amount of skin is involved, use the emergency shower.
4. Immediately report the incident to the PI/CI and seek appropriate medical care.
5. The PI/CI is responsible for filing an incident report with the HSC Safety Officer as soon as possible after the spill occurs.

### MINOR ENVIRONMENTAL SPILLS

(small volumes of specimen or culture, low-risk organisms, and little or no likelihood of aerosolization):

1. Notify other laboratory personnel to avoid the area.
2. Cover the spill with paper towels.
3. Slowly soak the paper towels with disinfectant. Start at the periphery and work toward the center.
4. Allow the spill area to soak for 10 minutes.
5. Remove and discard paper towels and transfer any broken glass by mechanical means to an appropriate biohazard container. Wipe up remaining liquid with fresh absorbent towels and discard.

6. Liberally cover spill area with disinfectant and wipe with paper towels.
7. Remove any potentially-contaminated protective barriers (gloves, etc.), wash hands thoroughly, and put on fresh outer garments.
8. The PI/CI must file an incident report detailing corrective actions to the HSC Safety Officer (or representative), who will review and sign off on the report following any investigation.

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#### MAJOR ENVIRONMENTAL SPILLS

(large volumes of culture, moderate or high-risk organisms including those that produce spores or conidia, and organisms with a high likelihood of aerosolization)

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#### INSIDE THE BIOSAFETY CABINET (BSC)

1. Notify the PI/CI.
2. Do not turn off the BSC. Continuous operation minimizes risk.
3. Disinfect the spill area by liberally covering with appropriate disinfectant for 10 minutes, followed by a rinse.
4. Wipe walls and equipment with appropriate disinfectant (e.g., 10% bleach followed by 70% ethanol).
5. Drain and clean catch pan if applicable (see manufacturer's instructions).
6. Discard waste in biohazard containers.
7. Do not clean or disinfect HEPA filters, as this may cause them to work improperly. Instead, replacement is recommended after a spill.
8. Immediately seek appropriate medical attention.

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#### OUTSIDE THE BIOSAFETY CABINET

1. Notify the PI/CI.
2. Immediately notify non-essential laboratory personnel to evacuate the area.
3. Remove and discard contaminated outerwear and wash any contaminated skin surfaces using the sink or emergency shower.
4. Cover the spill with paper towels.
5. Slowly soak the paper towels with disinfectant. Start at the periphery and work toward the center.
6. Allow the spill area to soak for 10 minutes.

7. Remove and discard paper towels and transfer any broken glass by mechanical means to an appropriate biohazard container. Wipe up remaining liquid with fresh absorbent towels and discard.
8. Liberally cover spill area with disinfectant and wipe with paper towels.
9. Disinfect contaminated equipment, countertops and floors. Disinfectant all cleaning equipment.
10. Immediately seek appropriate medical attention.

## CHEMICAL SPILLS

Chemicals must be properly labeled and segregated by hazard classification, compatibility and cross-reactivity. Each chemical must be disposed of according to that chemical's SDS.

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### SIMPLE SPILLS

Quantity does not spread rapidly, does not endanger other persons except by direct contact, and does not endanger the environment.

1. Neutralize, absorb, or otherwise manage as required in safety guide.
2. Notification of emergency responders is not normally required if the spill is less than one gallon.

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### MAJOR SPILLS (MORE THAN ONE GALLON), LOCALIZED FIRE THREAT, EXPLOSION THREAT, OR HAZARDOUS VAPORS

1. Immediately evacuate the area.
2. Close doors (do not lock) as evacuating.
3. Call 911.
4. Use a spill kit to contain the spill, if safe to do so.

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### SPREADING FIRE THREAT, EXPLOSION THREAT, OR HAZARDOUS VAPORS

1. Pull the fire alarm.
2. Dial 911.
3. Be available to advise emergency responders of type, quantity of spill and identify other chemicals and their location, etc.

## RADIATION SAFETY

*Note: Each institution has its own Radiation Safety Officer. Please check with your institution or on the Consortium website for your RSO contact information.*

### PROCEDURES FOR MATERIAL RECEIPT AND ACCOUNTABILITY

Radioactive material will be tracked from receipt to disposal to ensure accountability and to ensure that the possession limits listed on the license are not exceeded. Records (computer or logbook) will be maintained of receipt, transfer, and disposal.

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### ORDERING OF RADIOACTIVE MATERIALS

The Authorized User (or RSO as appropriate) will approve or place all orders for radioactive material and will ensure that the requested material, chemical/physical form, and vendor are authorized by the license and that the possession limits are not exceeded. Some vendors may require a copy of the RSO's certification to be on file for materials exceeding exempt limits in DHS 157 Appendix B.

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### RADIOACTIVE PACKAGE RECEIPT

Radioactive packages will be delivered by the vendor's courier directly to the laboratory. Packages will be delivered only during working hours. UWL packages will be delivered by way of shipping and receiving. Some levels of radioactivity are exempt from shipping regulations and possession limits. These are listed in DHS 157 Appendix B, and Appendix T gives transportation regulations.

Each package will be visually inspected for any signs of shipping damage such as crushed or punctured containers or signs of dampness. Any obvious damage must be reported to the Authorized User and the Radiation Safety Officer immediately. The person delivering the package must be requested to remain until monitored for contamination.

Packages not labeled as radioactive do not need to be monitored upon receipt.

Packages labeled as Radioactive (White I, Yellow II, or Yellow III) with contents that are not gas nor special form and less than Type A, will be monitored as soon as practicable but not less than 3 hours after receipt of the package.

As required by DHS 157.29(6), (referenced in Wisconsin Department of Health Services/Radiation Protection Section/WI Administrative Code) the licensee will immediately notify the final delivery carrier and the Wisconsin DHS if removable contamination or external radiation levels exceed the limits of 49 CFR 173.443.

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#### PACKAGE OPENING

Package opening procedures will follow the Sample Procedure for Safely Opening Packages Containing Licensed Materials in Appendix N to WISREG 1556, Volume 7, Guidance for Academic, Research and Development, and Other Licenses of Limited Scope.

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#### TRANSFER

If it is necessary to transfer radioactive materials, the transfer will be done in accordance with DHF 157.13(15).

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#### DISPOSAL

The HSC follows the model waste procedures published in Appendix T of WISREG 1556, Volume 7, Guidance for Academic, Research and Development and Other Licenses of Limited Scope.

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#### PROCEDURES FOR SAFE USE OF RADIOISOTOPES AND EMERGENCY PROCEDURES

Procedures will follow Appendix P, General Topics for Safe Use of Radioisotopes and Model Emergency Procedures, to WISREG 1556, Volume 7, Guidance for Academic, Research and Development, and Other Licenses of Limited Scope.

General safety guidelines are also outlined in Appendix F.

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#### GENERAL SAFETY

- Wear a laboratory coat or other protective clothing at all times, including long pants, eye protection, and full shoes or shoe covers, in areas where licensed materials and unsealed sources are used;

- Wear disposable gloves at all times when handling licensed materials;
- After each procedure or before leaving the area, monitor hands, shoes, and clothing for contamination in a low-background area;
- Do not eat, drink, smoke or apply cosmetics in any area where licensed material is stored or used;
- Do not store food, drink or personal effects in areas where licensed material is stored or used
- Wear personnel monitoring devices, if required, at all times while in areas where licensed materials are used or stored;
- Dispose of radioactive waste only in designated, labeled and properly shielded receptacles;
- Never pipette by mouth;
- Store radioactive solutions in clearly labeled containers; and
- Secure all licensed material when it is not under the constant surveillance and immediate control of the user(s).

#### RADIONUCLIDE SPECIFIC PROCEDURES

- Plastic (not lead) should be used for shielding beta emitters such as P-32 and S-35.
- Wear a ring badge when handling these materials.
- A test run without radioactive materials prior to the performance of unfamiliar procedures is recommended to preclude unexpected complications.
- The use of eye protection is recommended.

#### EMERGENCY PROCEDURES

- Appropriate first aid and other immediate medical needs of injured individuals should not be neglected, delayed, or ignored due to suspected contamination.
- The name and telephone number of RSO and an alternate person(s) will be posted conspicuously in areas of use.
- A spill kit will be kept readily available in the laboratory for handling spills. Spill kits should include the following:
  - Disposable gloves;
  - Disposable lab coats or other protective garment ;
  - Disposable head coverings;
  - Disposable shoe covers;
  - Roll of absorbent paper or chux;
  - Masking tape;

- Plastic trash bags with twist ties;
- "Radioactive Material" labeling tape;
- Marking pen;
- Pre-strung "Radioactive Material" labeling tags;
  - Box of Wipes;
  - Instructions for "Emergency Procedures";
  - Copies of the Radioactive Spill Report Form for the facility;
  - Pen or Pencil; and
  - Appropriate survey instruments including batteries (for survey meters) if survey meter is not otherwise available in laboratory

## MINOR SPILLS OF LIQUIDS AND SOLIDS

### INSTRUCTIONS TO WORKERS

1. Notify persons in the area that a spill has occurred.
2. Prevent the spread of contamination by covering the spill with absorbent paper.
3. Clean up the spill, wearing disposable gloves and using absorbent paper.
4. Carefully fold the absorbent paper with the clean side out and place in a plastic bag for transfer to a radioactive waste container. Put contaminated gloves and any other contaminated disposable material in the bag.
5. Survey the area with an appropriate low-range radiation detector survey meter or other appropriate technique. Check the area around the spill for contamination. Also check hands, clothing, and shoes for contamination.
6. Report the incident to the Radiation Safety Officer (RSO) promptly.
7. Allow no one to return to work in the area unless approved by the RSO.
8. Cooperate with RSO/RSO staff (e.g., investigation of root cause, provision of requested bioassay samples).
9. Follow the instructions of the RSO/RSO staff (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

### REMINDERS TO RSO

- Follow up on the decontamination activities and document the results;

- As appropriate, determine cause and corrective actions needed; consider bioassays if licensed material may have been ingested, inhaled, and/or absorbed through the skin; and
- If necessary, notify DHFS.

## MAJOR SPILLS OF LIQUIDS AND SOLIDS

### INSTRUCTIONS TO WORKERS

- Clear the area. If appropriate, survey all persons not involved in the spill and vacate the room;
- Prevent the spread of contamination by covering the spill with absorbent paper, but do not attempt to clean it up. To prevent the spread of contamination, limit the movement of all personnel who may be contaminated;
- Shield the source only if it can be done without further contamination or significant increase in radiation exposure;
- Close the room and lock or otherwise secure the area to prevent entry. Post the room with a sign to warn anyone trying to enter that a spill of radioactive material has occurred;
- Notify the RSO immediately;
- Survey all personnel who could possibly have been contaminated. Decontaminate personnel by removing contaminated clothing and flushing contaminated skin with lukewarm water and then washing with a mild soap;
- Allow no one to return to work in the area unless approved by the RSO;
- Cooperate with RSO/RSO staff (e.g., investigation of root cause, provision of requested bioassay samples); and
- Follow the instructions of the RSO/RSO staff (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

### REMINDERS TO RSO

- Confirm decontamination of personnel. If decontamination of personnel was not fully successful, consider inducing perspiration by covering the area with plastic. Then wash the affected area again to remove any contamination that was released by the perspiration;
- Supervise decontamination activities and document the results. Documentation should include location of surveys and decontamination results;
- Determine cause and needed corrective actions; consider need for bioassays if licensed material may have been ingested, inhaled, and/or absorbed through the skin; and

- If necessary, notify DHFS.

## INCIDENTS INVOLVING RADIOACTIVE DUSTS, MISTS, FUMES, ORGANIC VAPORS, AND GASES

### INSTRUCTIONS TO WORKERS

- Notify all personnel to vacate the room immediately;
- Shut down ventilation system, if appropriate, to prevent the spread of contamination throughout system and other parts of facility;
- Vacate the room. Seal the area, if possible;
- Notify the RSO immediately;
- Ensure that all access doors to the area are closed and posted with radiation warning signs, or postguards (trained) at all access doors to prevent accidental opening of the doors or entry to the area;
- Survey all persons who could have possibly been contaminated. Decontaminate as directed by the RSO;
- Promptly report suspected inhalations and ingestions of licensed material to the RSO;
- Decontaminate the area only when advised and/or supervised by the RSO;
- Allow no one to return to work in the area unless approved by the RSO;
- Cooperate with RSO/RSO staff (e.g., investigation of root cause, provision of requested bioassay samples); and
- Follow the instructions of the RSO/RSO staff (e.g., decontamination techniques, surveys, provision and collection of bioassay samples, requested documentation).

### REMINDERS TO RSO

- Supervise decontamination activities;
- Perform air sample surveys in the area before permitting resumption of work with licensed materials;
- Provide written directions to potentially contaminated individuals about providing and collecting urine, breath, blood, or fecal samples, etc;
- Consider need for medical exam and/or whole body count before permitting involved individuals to return to work with licensed material;
- Determine cause and corrective actions needed; consider need for bioassays if licensed material may have been ingested, inhaled, and/or absorbed through the skin. Document incident; and

- If necessary, notify DHFS.

## MINOR FIRES

### INSTRUCTIONS TO WORKERS

- Immediately attempt to put out the fire by approved methods (i.e., fire extinguisher) if other fire hazards or radiation hazards are not present;
- Notify all persons present to vacate the area and have one individual immediately call the fire department and RSO;
- Once the fire is out, isolate the area to prevent the spread of possible contamination;
- Survey all persons involved in combating the fire for possible contamination;
- Decontaminate personnel by removing contaminated clothing and flushing contaminated skin with lukewarm water, then washing with a mild soap;
- In consultation with the RSO, determine a plan of decontamination and the types of protective devices and survey equipment that will be necessary to decontaminate the area;
- Allow no one to return to work in the area unless approved by the RSO;
- Cooperate with RSO/RSO staff (e.g., investigation of root cause, provision of requested bioassay samples); and
- Follow the instructions of the RSO/RSO staff (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

### REMINDERS TO RSO

- Supervise decontamination activities;
- If decontamination of personnel was not fully successful, consider inducing perspiration by covering the area with plastic. Then wash the affected area again to remove any contamination that was released by the perspiration;
- Consult with fire safety officials to assure that there are no other possibilities of another fire starting;
- Determine cause and needed corrective actions; consider need for bioassays if licensed material may have been ingested, inhaled, and/or absorbed through the skin. Document incident; and
- If necessary, notify DHFS.

## FIRES, EXPLOSIONS, OR MAJOR EMERGENCIES

### INSTRUCTIONS TO WORKERS

- Notify all persons in the area to leave immediately; close door upon exiting the space where the fire is identified.
- Notify the fire department;
- Notify the RSO and other facility safety personnel;
- Upon arrival of firefighters, inform them where radioactive materials are stored or
- Where radioisotopes were being used; inform them of the present location of the licensed material and the best possible entrance route to the radiation area, as well as any precautions to avoid exposure or risk of creating radioactive contamination by use of high pressure water, etc;
- Cooperate with RSO/RSO staff (e.g., investigation of root cause, provision of requested bioassay samples);
- Allow no one to return to work in the area unless approved by the RSO; and
- Follow the instructions of the RSO/RSO staff (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

### REMINDERS TO RSO

- Coordinate activities with facility's industrial hygienist or environmental health & safety office, and with local fire department;
- Consult with the firefighting personnel and set up a controlled area where the firefighters can be surveyed for contamination of their protective clothing and equipment after the fire is extinguished;
- Once the fire is extinguished, do not allow the firefighters to enter the radiation area until a thorough evaluation and survey are performed to determine the extent of the damage to the licensed material use and storage areas;
- Perform thorough contamination surveys of the firefighters and their equipment before they leave the controlled area and decontaminate, if necessary;
- Supervise decontamination activities;
- Consider bioassays if licensed material may have been ingested, inhaled, and/or absorbed through the skin. Document incident; and
- If necessary, notify DHFS.

## OTHER EMERGENCIES

### ELECTRICAL FAILURE

During a power failure, all work under biosafety fume hoods must be ceased until normal power is restored. (A) Power outages may damage sensitive equipment or experiments. Sensitive electronic equipment and instruments should be shut down or unplugged. Power surges caused by resuming electrical power may damage equipment or create an unsafe condition. Please evaluate your laboratory for this situation. A surge suppressor is recommended to protect valuable equipment. For scheduled electrical outages, unplugging equipment prevents surge damage. (B) Shut down experiments that involve hazardous materials or equipment which automatically restart when power is available. (C) Make sure that experiments are stable and do not create uncontrolled hazards such as dangerous vapors, gases, or fumes in a non-functioning laboratory exhaust hood. The continued generation of flammable or combustible vapors or gases inside a non-functioning laboratory can result in a flash fire or explosion when power is restored. (D) Safely stop any operations that may be emitting hazardous materials. Cap all chemical containers that are safe to cap, place chemicals in proper chemical storage, and close the hood sashes. Do not use the laboratory exhaust hood to store chemicals. Leave the room. Do not use hazardous materials during the outage or enter areas that have storage of hazardous materials and that require mechanical ventilation.

### FIRE

Safety takes precedence. If a fire is discovered, call 911 and report room location, activate the nearest fire alarm, alert other laboratory personnel, and extinguish the fire if possible or evacuate as outlined by fire evacuation plan. Close the door to the space where the fire is identified upon evacuating the space.

### TORNADO WARNING

If possible, contain and store infectious materials before exiting laboratory. However, safety takes precedence. Stay alert to weather conditions, as sirens are not always audible in the HSC. Do not rely solely on sirens to alert you to dangerous situations, but use common sense when reacting to weather emergencies.

In the event of a tornado or dangerous high winds, assemble in a central hallway or restroom as far from glass as possible. The most suitable location, if reachable, is the east hallway of the lower level or other interior, but easily accessible, space with no windows.

## ENFORCEMENT OF THIS PLAN

This plan has been endorsed by the La Crosse Medical Health Science Consortium (LMHSC) Board of Directors. Chronic violations will be forwarded to the LMHSC Board of Directors by the HSC Safety Team for further review.

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*Approved by HSC Safety Team, April 22, 2011*

*Approved by LMHSC Board of Directors, June 7, 2011*

*Updated by HSC Safety Team, November 18, 2016*

*Approved by LMHSC Board of Directors, December 5, 2016*

## APPENDICES

The attached appendices are for reference and are as follows:

- A. HSC Incident Report
- B. Acid Spill Clean Up
- C. Caustic Spill Clean Up
- D. Flammable Solvent Spill
- E. Formalin Spills and First Aid
- F. Radionuclides
- G. Organic Compounds

**APPENDIX A. HSC SAFETY INCIDENT REPORT**

Employee Incident Report	
Employee Personal Details	
Last Name:	
First Name:	
Middle Initial:	
Gender:	
Date of Birth:	
Home Phone:	
Home Address: City, State, Zip	
Employee Work Details	
Job Position:	
Institution/Department:	
Phone:	
Supervisor Name:	
Is this a recurrence of an old injury:	

When did this original injury occur:	
<b>Incident Details</b>	
Started Work:	
Date/Time:	
Name(s) of others present:	
Location where incident occurred:	
Description of Incident: (facts only, be specific)	
What part(s) of the body were injured:	
Equipment Involved:	
Initial Action Taken:	
Have you been seen by a provider:	
Were you taken off work by a provider:	
Is your supervisor aware of this incident:	

**APPENDIX B. ACID SPILLS****PRINCIPLE:**

Prompt action is critical when responding to a hazardous chemical spill. This policy provides for quick reference to proper procedures for spill clean up. Any acids used in the HSC laboratories are compatible with the Acid Spill Cleanup Kit.

**REAGENTS:**

An approved spill kit for acids stored at room temperature.

**SAFETY INFORMATION:**

Avoid contact with eyes, skin and clothing. Avoid breathing dust. Wash thoroughly after handling. In case of contact with eyes, flush with water for at least 15 minutes and call 911.

Refer to the spill kit being used for safety information and/or SDS.

**MATERIALS:**

Gloves; safety goggles; plastic scoops; disposal bag with tie and label; sponge, lab coat or apron..

**Implementation****Spills exceeding approximately one gallon:**

1. Evacuate area. Call 911. A lab worker must remain in the area, within a safe distance, to provide information to the spill clean up team.
2. Dispose of the neutralized material either down the drain or in the regular trash.
3. When toxic vapors have been eliminated and the chemical clean up completed, employees may return to the area. Complete an incident form including the names of the persons involved in spill clean up.

**Spills of less than one gallon:**

These general guidelines apply, see spill kit container for specific details on using neutralizer vs. absorbent pads.

1. Encircle spill at its perimeter by pouring adequate neutralizer. Carefully mix neutralizer into the spill. After a few minutes the neutralization reaction will subside, test the spill to ensure proper neutralization. See spill kit container for specific details on testing pH.
  2. Pick up the neutralized spill material with the scoops and transfer to the plastic disposal bag provided. Wipe up any residual neutralized spill material with the sponge (moistened) provided.
  3. Place used sponge, scoops and gloves in the disposal bag and twist-seal with the bag tie provided. Fill out the disposal label, peel off backing and affix to the bag.
  4. Dispose of bag and contents in accordance with local, State, and/or federal environmental regulations that apply to the situation.
  5. Complete an incident form including the names of the persons involved in spill clean up.
-



**APPENDIX C: CAUSTIC SPILLS****PRINCIPLE:**

Prompt action is critical when responding to a hazardous chemical spill. This policy provides for quick reference to proper procedures for spill cleanup. Liquid caustics used in the HSC laboratories that are compatible with the Caustic Spill Cleanup Kit are aqueous solutions of ammonium hydroxide, potassium hydroxide and sodium hydroxide.

**REAGENTS:**

An approved spill kit for caustics. Stored at room temperature.

**SAFETY INFORMATION:**

Avoid contact with eyes, skin and clothing. Avoid breathing dust. Wash thoroughly after handling. In case of contact with eyes, flush with water for at least 15 minutes and call 911.

Refer to the spill kit being used for safety information and/or SDS.

**MATERIALS:**

Gloves; safety goggles; plastic scoops; disposal bag with tie and label; sponge, lab coat or apron.

**Implementation****Spills exceeding approximately one gallon:**

1. Evacuate area. Call 911. A lab worker must remain in the area, within a safe distance, to provide information to the spill cleanup team.
2. Dispose of the neutralized material either down the drain or in the regular trash.
3. When toxic vapors have been eliminated and the chemical clean up completed, employees may return to the area. Complete an incident form including the names of the persons involved in spill cleanup.

**Spills of less than one gallon:**

These general guidelines apply, see spill kit container for specific details on using neutralizer vs. absorbent pads.

1. Encircle spill at its perimeter by pouring adequate neutralizer. Carefully mix neutralizer into the spill. After a few minutes the neutralization reaction will subside, test the spill to ensure proper neutralization. See spill kit container for specific details on testing pH.
  2. Pick up the neutralized spill material with the scoops and transfer to the plastic disposal bag provided. Wipe up any residual neutralized spill material with the sponge (moistened) provided.
  3. Place used sponge, scoops and gloves in the disposal bag and twist-seal with the bag tie provided.
  4. Dispose of bag and contents in accordance with local, State, and/or federal environmental regulations that apply to the situation.
  5. Complete an incident form including the names of the persons involved in spill cleanup.
-

**APPENDIX D: FLAMMABLE SOLVENT SPILL****PRINCIPLE:**

Prompt action is critical when responding to a hazardous chemical spill. This document provides for quick reference to proper procedures for spill clean-up. Flammable solvents used in the HSC laboratories that are compatible with the Flammable Solvent Spill Cleanup Kit are acetone, ethanol, isopropanol, methanol, chloroform and xylene.

**REAGENTS/MATERIALS:**

An approved spill kit for flammable solvents stored at room temperature.

**Safety Information:**

In case of contact with eyes, flush eyes with flowing water, being sure to hold eyes apart and lift eyelids to flush under them. If irritation persists, get medical attention.

In case of contact with skin, immediately wipe or, with soft brush, remove all powdered chemicals from clothes and skin.

Refer to the spill kit being used for safety information and/or SDS.

Gloves; disposable scoops; disposal bag with tie and label, lab coat or apron.

**Implementation****Spills exceeding approximately one gallon:**

1. Evacuate area. Call 911. A lab worker must remain in the area, within a safe distance, to provide information to the spill cleanup team.
2. When toxic vapors have been eliminated and the chemical clean up completed, employees may

return to the area. Complete an incident form including the names of the persons involved in spill cleanup.

**Spills of less than one gallon:**

These general instructions apply; see spill kit container for specific details on using neutralizer vs. absorbent pads.

1. Pour solvent neutralizer on and around spill.
  2. Pick up solvent neutralizer with the scoops and transfer it to the plastic disposal bag provided.
  3. Place used scoops and gloves in the disposal bag and twist-seal with the bag tie provided.
  4. Dispose of the bag and contents in accordance with federal, state and local environmental regulations.
  5. Complete an incident form including the names of the persons involved in spill cleanup.
-

## APPENDIX E: FORMALIN SPILLS AND FIRST AID

### PRINCIPLE:

To establish necessary action and responsibility for handling accidents that occur during formalin handling.

### REAGENTS / MATERIALS:

Formalex, S&S Co. of Georgia, Inc.

Polyform-F, S&S Co. of Georgia, Inc.

#### Materials

Gloves

Face protection

Rags/terry towels

Dust pan

Plastic trash bags

### Implementation

#### FORMALDEHYDE/FORMALIN SPILLS

Use spill kits and neutralizing agents. Formalex and Polyform-F are both neutralizing agents used for either formaldehyde or glutaraldehyde spills. Residue should be disposed of through the responsible organization's hazardous waste vendor or other compliant disposal options.

#### Spills exceeding approximately one gallon:

1. Evacuate area. Call 911. A lab worker must remain in the area, within a safe distance, to provide information to the firemen.
2. Security will also notify the spill clean-up team to clean up the neutralized spill material. The neutralized material can be disposed of down the drain or in the regular trash.
3. When toxic vapors have been eliminated and the chemical clean-up completed, employees may return to the area. Complete an incident report including the names of the persons that worked on the spill.

#### Spills of less than one gallon (see "very small spills below"):

1. Evacuate area. Call 911. Dike the spill with towels, rags, etc.
2. Distribute Polyform-F around the perimeter of the spill to dike and prevent spreading. Start from upwind side, cover the entire area from edge to edge effectively covering the spill, taking care not to walk into the spill

if possible.

3. Let the material stand. With concentrations of 15% formalin or stronger, solidification and polymerization will occur in 10-15 minutes. With concentrations of less than 15%, polymerization will occur in 15 minutes but the material will not solidify. Residue material may be placed in plastic bags and disposed of in regular trash cans.

4. When toxic vapors have been eliminated and the chemical clean-up completed, employees may return to the area. Complete an incident report including the names of the persons that worked on the spill.

**Very small spills (or very dilute concentrations):**

1. Liberally spray Formalex on affected area. Let stand 3-5 minutes, then wipe up with paper towel. Dispose of in regular trash.

2. Rinse well with clear water. Wipe dry.

**FIRST AID:**

**Skin contact:** Remove contaminated clothing (including shoes) immediately. Wash the affected area of your body with soap or mild detergent and large amounts of water until no evidence of the chemical remains (at least 15 to 20 minutes). If there are chemical burns, cover the area with a sterile, dry dressing and bandages. Get medical attention if you experience appreciable eye or respiratory irritation.

**Eye contact:** In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

**Inhalation:** If affected by vapors, move patient to fresh air immediately. If not breathing, give artificial respiration, preferably mouth to mouth. If coughing continues for more than 10 minutes, call a physician.

**Ingestion:** If the victim is conscious, dilute, inactivate or absorb the ingested formaldehyde by giving milk, activated charcoal or water. Any organic material will inactivate formaldehyde. Keep affected person warm and at rest. Get medical attention immediately. If vomiting occurs, keep head lower than hips.

Complete an incident report including the names of the persons involved.

## APPENDIX F. RADIOACTIVE MATERIALS

**PRINCIPLE:**

To provide general information on the safe use of radionuclides and emergency procedures.

**REAGENTS / MATERIALS:**

## Materials

Protective lab coats

Disposable gloves

Film badge

Disposal containers designated for radioactive material

## **Implementation**

### **Radiation Safety, Rules, and Regulations:**

1. Eating, storing, or preparing food, smoking, or applying cosmetics is forbidden in any area within the radiation center.
2. Direct contact of unsealed radioactive materials must be avoided by using protective lab coats, disposable gloves, and by employing safety pipetting devices (never pipette by mouth).
3. All spills of radioactive materials must be reported to the instructor in charge, marked with a pen and decontaminated (cleaned) immediately.
4. Your film badge must be worn at all times when working around radioactive material. The badge must be returned to the board before you leave.
5. Work must be carried out in the exact areas designated by your instructor.
6. All containers with isotopes must be labeled with yellow warning tape and marked as to what isotope and quantity present.
7. Contaminated wastes: Liquids - these are to be poured into the specially marked containers designated by your instructor or RSO. Solids - (e.g. towels, gloves, are to be placed in specially marked containers.) These, too, will be pointed out by your instructor.
8. The storage of all radioactive materials will be in secure areas designated by your instructor.
9. At the end of each work period, work surfaces are to be monitored as demonstrated by your instructor.
10. Before leaving the laboratory after working with unsealed radioactive materials, each person should wash his/her hands and then check hands, feet and clothing with the monitoring equipment.

### **Emergency Procedures:**

All personnel working with radioactive materials should become familiar with this emergency procedure beforehand. See below how to handle emergencies involving fire, injuries, and spills of radioactive material. Notify your instructor/supervisor immediately. If a skin wound occurs, thoroughly wash it with running water, allow some bleeding and then bandage using items from the first aid kit. Wound will be monitored for radioactive contamination when the bleeding has stopped. If any clothing items are contaminated, remove them and place at designated sink areas. These items will be cleaned later. THEY MUST NOT LEAVE the lab

until the Radiation Safety Officer checks them. Mark any contaminated surface areas as demonstrated by the instructor. Thoroughly wash your hands. Then use the survey instrument to monitor your arms and hands, and legs and feet.

**Emergency Phone Numbers:**

Fire Department.....	911
Ambulance .....	911
UWL Police .....	9-9999
UWL Radiation Safety Officer:	
Office:.....	5-6999 or 5-6458
Home:.....	8-895-2478
Gundersen Lutheran Med. Center .....	8-785-0530
Mayo Clinic Health System Franciscan Healthcare.....	8-785-0940
La Crosse Area Poison Center .....	8-784-3971
Wisconsin Dept. Health and Family Services Hotline .....	608-258-0099

**Fire Emergencies Involving Radiation:**

1. Call Fire Department (911) and give nature and location of fire.
2. Set off fire alarm.
3. Assist in evacuation of personnel from area, if necessary.
4. Inform emergency personnel that radiation hazard may exist.
5. Notify Radiation Safety Officer (5-6999 or 8-895-2478)

**Medical Emergency Involving Radiation:**

1. Call ambulance (911), if necessary.
2. Inform medical personnel that a radiation hazard may exist.
3. Assist in contacting individual's personal physician and, if student, contact Student Health Center (5-8558).
4. Notify Radiation Safety Officer.

### **Radiation Safety Procedures**

1. Clear the area. If appropriate survey all persons not involved in the spill and vacate the room.
2. Prevent spread of contamination from accident site. Use nearest telephone for communications and avoid walking throughout the building.
3. Call 911, notify the appropriate emergency organization listed above and the Radiation Safety Officer.
4. Assemble all personnel in nearby safe area until radiation surveys and personnel decontamination are completed by Radiation Safety Officer.
5. Close doors and windows and if convenient, turn off air handling equipment that could lead to the spread of contamination throughout the building.
6. Control access to the radiation area and place warning signs indicating radiation and /or contamination hazards.
7. Decontamination of rooms and building shall be done under supervision of the Radiation Safety Officer.

Complete an incident report including the names of the persons involved.

## **APPENDIX G. ORGANIC COMPOUNDS**

### **PRINCIPLE:**

To establish hazards of benzene and benzene derivatives and emergency procedures for attending to spills and providing first aid in the event of exposure to benzene or its derivative.

**REAGENTS / MATERIALS:**

Vermiculite, dry sand, or similar materials in sealed container

Water spray to reduce vapors

Materials

Gloves

Eye protection

Respiratory protection

Sealable containers

**Implementation**

**BENZENE OR BENZENE DERIVATIVE SPILL:**

OSHA does not specify different responses based on the size of spill for benzene or benzene derivative, so personnel should use their best judgment to determine whether a spill is sufficient to be referred to the La Crosse Fire Department. In this case, call 911 for assistance.

1. Evacuate personnel, and secure the area, and control entrance to the area.
2. Eliminate all ignition sources.
3. Absorb liquids in vermiculite, dry sand, earth, or a similar materials and deposit in sealed containers.
4. Ventilate area of spill or leak.
5. Keep benzene out of confined spaces, such as sewer, because of the possibility of explosion.
6. DO NOT wash into sewer.
7. Properly dispose of spill residues through the responsible organization's hazardous waste vendor or other compliant disposal options.

**FIRST AID:**

Skin contact: Remove contaminated clothing (including shoes) immediately. Wash the affected area of your body with large amounts of soap and water.

Eye contact: In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while rinsing.

Inhalation: Remove person from exposure. If not breathing, give artificial respiration, preferably mouth to

mouth, and CPR if heart action has stopped. Transfer promptly to a medical facility.