Animals Administered a Hazardous Substance Requiring Containment

Last Updated 27 June 2016

1. Purpose

   Research activities may involve the administration of hazardous substances to laboratory animals. If not contained properly, these activities can negatively impact the health of research and animal care personnel as well as other animals. This document outlines procedures to be utilized by personnel working with animals exposed to hazardous substances in ABSL2 containment rooms (not including radioactive materials, see related documents section). Extra precautions must be taken at the time of agent administration due to the increased potential for human exposure. Immuno-compromised individuals may be at an increased risk or susceptibility to a hazardous substance and must be identified through OSEH’s medical surveillance process.

2. Responsibilities

   a. ULAM Containment Coordinator: Has oversight over ULAM animal containment rooms and the use of hazardous substances in animal research.
   b. Institutional Biosafety Committee (IBC): The U of M committee that oversees and approves recombinant DNA and infectious disease research conducted at the University.
   c. Investigative personnel and ULAM Personnel: Must be familiar with and follow the procedures outlined in this SOP and perform safety measures to minimize the risk of exposure to hazardous substances.
   d. Principal Investigator (PI): Must identify all hazardous substances and the potential hazards associated with each in the animal use protocol, and other responsibilities outlined in this SOP.
   e. OSEH Personnel: Review all protocols involving the administration or exposure of a hazardous substance to an animal and determines whether containment housing is necessary.

3. Definitions and Abbreviations

   a. Animal housing cubicle: A small, self-contained animal housing room constructed within a larger room. All statements within this SOP for “rooms” will apply to cubicles unless otherwise specified in this SOP.
   b. Biological Safety Cabinet (BSC): A biological safety cabinet is used to provide containment of splashes or aerosols that may be generated while working with hazardous substances or animals exposed to such substances. All direct manipulation of
animals within a containment room must be conducted within a BSC. When used correctly, BSC's provide personnel, product and environmental protection.

c. Containment Room: A room in which animals administered a hazardous substance (as determined through OSEH review) are contained utilizing special practices and procedures to minimize risk of exposure to personnel.

d. Containment Room Sign: Sign describes chemical or infectious hazards used within the animal room. Also refers to the appropriate PPE required to enter the animal room.

e. Hazardous chemical: A chemical for which there is evidence that acute or chronic health effects may occur in exposed employees. Examples include carcinogens, teratogens, and corrosives.

f. HEPA filter: High Efficiency Particulate Air filters remove 99.97% of all particles 0.3 um in size.

g. Infectious agent, or biologic agent: A live organism (e.g. virus, bacteria, rickettsia, fungi, parasite) capable of causing disease in humans or human tissue (normal or diseased).

h. Occupational Safety and Environmental Health (OSEH): The U of M department responsible for ensuring safe work environments and practices for U of M employees.

i. Personal Protective Equipment (PPE): Personal protective equipment is worn by people and provides a physical barrier to hazardous substances.

j. Toxin: An antigenic poison or venom of plant or animal origin, especially one produced by or derived from microorganisms and causing disease when present at low concentration in the body.

4. General Containment Housing Communication and Procedures

a. Requesting Animal Containment Housing

i. Investigative personnel complete the Containment Housing Request (CHR) form (Appendix I) and returns the form to the ULAM Husbandry Supervisor.

ii. Requests for the transfer of animals into containment housing must be directed to the ULAM Husbandry Supervisor responsible for the requested containment area.

iii. Requests for containment housing must be made before the animal order is submitted or at least 72 hours before animals are placed in the containment room.

iv. Store electronic copies in the appropriate team folder in W:\ULAM_HUSBANDRY\H_SUPER\Bio Hazard Users\ (team). File hard copies in the ULAM Husbandry Supervisor’s office, if appropriate.

v. The ULAM Husbandry Supervisor reviews OSEH’s recommendations when a laboratory requests to initiate a study in ULAM containment housing.

vi. The ULAM Husbandry Supervisor notifies the PI regarding containment room space availability as well as the room number of the containment housing room.

vii. Newly received animals ordered directly into containment housing are placed in containment housing upon arrival.

viii. Prior to handling animals, caging, or equipment in a containment room all personnel (ULAM and non-ULAM personnel) must attend the IACUC/ULAM-required “Hazard Containment” courses.

ix. Access to containment rooms is limited to personnel who have completed the required training and are required to conduct study or husbandry related functions.

b. Posting of the Containment Room Signs

i. The ULAM Husbandry Supervisor completes, Hazard Containment Entry Signs for the procedure room and for the animal room.

ii. Post the Hazardous Agent Entry Sign on the door when animals are transferred to the room.

1. Special instructions for handling, labeling, and disposing of food or water containing a hazardous substance are posted on the Containment Room Sign and Containment Housing Request.

iii. Post a Containment Procedure Room Sign on the door of procedure rooms in which hazardous substances are used.

iv. In addition to the entry sign, post a Containment Procedure Room Sign on procedure rooms in which hazardous substances are actively being used. Place the sign on the inside of the door once work with hazardous substances has been completed.

1. List all agents that could potentially be used on this sign. One each for infectious and chemical.

v. The ULAM husbandry technician will remove the Containment Room Sign and project-related information when the experiment is terminated. Keep signs in the housing room (such as in a binder or on a clipboard) until the ULAM Husbandry Supervisor determines that it is unlikely that it will be used again in the near future or until the expiration of the protocol.

vi. A Containment Room Sign must remain posted on animal housing door until the room is emptied of all animals and the room is sanitized.

c. Animal Containment Housing Entry Procedures

i. Personal Protective Equipment (PPE):

1. Store PPE supplies inside the animal room unless the nature of the hazard necessitates putting on PPE before entry.

2. Don protective clothing immediately upon entering.

3. Minimally required PPE for working in containment rooms/cubicles include:
   a. Disposable gown
   b. Sleeves worn over the gown (for ULAM husbandry personnel, see section 5.a.ix. below)
   c. Face mask (surgical or molded)
   d. Shoe covers
   e. Hair bonnet
   f. Examination gloves (latex, nitrile or puncture resistant)
   g. Protective safety glasses, goggles, or face shield. Prescription glasses cannot be used in place of
safety glasses (goggles can be placed over prescription glasses).

4. If an employee is unable to wear PPE as required, departments provide alternate PPE if deemed to be at least as effective as the required equipment. If the employee is unable to wear PPE or an alternate is not acceptable to either party, then the employee will not be able to conduct the work tasks in which PPE is deemed necessary.

5. **Standard Husbandry and Substance Administration Practices**

   **a. General Considerations**
   
   i. Unless otherwise directed in this document, animal care procedures should be performed as per ULAM standard operating procedures.
   
   ii. Animals administered hazardous chemicals, toxins, and/or infectious substances can be housed in the same containment room.
   
   iii. Changing PPE between cubicles within a suite is not required when personnel are performing only animal health checks; as long as no potentially contaminated equipment is manipulated and no animal cages are opened.
   
   iv. Disinfect the BSC with Clidox or a freshly prepared bleach/water solution by wetting and wiping the horizontal work surface as well as side and back walls.
   
   v. Allow the disinfectant contact with the surface for a minimum of 10 minutes before working in the area. If bleach residue is a concern, wipe surfaces with water prior to working.
   
   vi. Do not mix bleach with ammonia or acids.
   
   vii. Open and perform all cage manipulations within the BSC only.
   
   viii. Even within the BSC, two cages containing animals must not be opened at the same time. Exceptions are when uninfected, new arrival animals are unpacked into their caging or separating/weaning animals.
   
   ix. Allow a 10 minute disinfection contact time between different infectious or biological agents (10 minute contact time is not necessary between chemical agents).
   
   x. Change gowns or sleeves (ULAM husbandry personnel only), and gloves and disinfect the BSC with Clidox or bleach water, between cubicles, Principal Investigators or different hazardous substances if:
      1. cages are opened from different cubicles.
      2. working within a cubicle, but animals belong to different Principal Investigators.
      3. working within a cubicle, but animals are administered different hazardous substances.

   **b. Appropriate Animal Caging and Bedding**
   
   i. House rodents that have been administered hazardous substances in solid-bottom cages.
   
   ii. House non-rodents that have been administered hazardous substances in cages suspended over pans filled with bedding or have a liner, unless otherwise directed by OSEH.

   **c. Hazard Identification on Animal Cages and Cage Cards (infectious agents, hazardous chemicals, and toxins)**
   
   i. Identify hazardous substances using one of the following methods:
      1. Cage card
      2. On an additional card placed vertically behind the original
      3. On a yellow acetate placed over the cage card
      4. On an appropriate sticker applied to the cage card or acetate indicating biological, infectious or chemical hazard
   
   ii. Place the following information directly on one of the identification methods listed above:
      1. Full name of the substance
      2. Date administered
      3. Concentration (for hazardous chemicals or toxins)
   
   iii. Investigative personnel must place a colored, pre-printed, dissolvable sticker in a visible location on the cage bottom indicating the type of hazard (biologic agent or hazardous chemical and toxin).
      1. Orange stickers indicate the presence of a biological (infectious) hazard
      2. Green stickers indicate the presence of a hazardous chemical or toxin

   **d. Containment Husbandry Practices**
   
   i. Provide food and water and report all animal health issues according to the species specific husbandry SOPs.
   
   ii. **Water Bottle Procedures:**
      1. Place an appropriately colored dissolvable sticker directly on a water bottle containing a hazardous substance.
         a. Place a piece of tape on the water bottle and record the full substance name and the date of administration.
      2. Identify and include information about the hazard on the cage card using one of the methods above.
         a. It is permissible to refill water bottles containing the same hazardous substance between water bottle sanitation periods. Return the bottle to the cage from which they came if bottle is being refilled.
         b. Sanitize water bottles at least every 1 week.
         c. Collect and store soiled water bottles in a #3 cage bottom.
            i. Cover the bottle collection cage at all times.
            ii. The bottle collection cage can be kept on the floor as long as it is kept covered.
            iii. See section 5.i.i and ii. for disposal procedures.
   
   iii. **Animal Cage Procedures:**
      1. Change bedding in cages while minimize aerosols.
      2. **Infectious Cages:** Cover any cage removed from the BSC with a micro-isolation top or a plastic bag.
         a. A short stack of soiled cages can be maintained inside the BSC.
         b. Cover the stack inside the BSC.

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5. Animal Escape Procedures

i. Attempt to capture animals that have escaped from cages or observed free within the containment room.

ii. Cleaning housing cages for standard biocontainment sanitization practices. Place secondary transport containers in the containment room (or appropriate location in BSRB cagewash) following transport for standard bioclean container sanitation practices.

iii. Return empty housing cages to the original containment room for proper processing.

iv. If the animals transported out of the containment room may still pose a hazard (e.g., an animal is brought to the BSC) be processed through the standard cage wash system.

v. Secure cages in which animals are being transported (e.g., rubber bands stretched over cage top and bottom).

vi. Place housing cages in a rigid, sealed, secondary transport container and transport it on a cart with sides.

vii. Place the animals in a clean housing cage (provided in each containment room), place a dissolvable sticker on the cage and wipe the outside of the cage with a suitable disinfectant within the BSC, wait 10 minutes.

viii. Place the uncapped needle and syringe in a puncture-resistant container (sharps container).

ix. Place the housing cages in a rigid, sealed, secondary transport container and transport it on a cart with sides.

x. If the animals transported out of the containment room no longer present a hazard, then the housing cages can be processed through the standard cage wash system.

vi. Secure cages in which animals are being transported (e.g., rubber bands stretched over cage top and bottom).

ii. Place secondary transport containers in the containment room (or appropriate location in BSRB cagewash) following transport for standard bioclean container sanitation practices.

iii. Autoclave secondary transport containers if a spill has occurred within it.

iv. Cleaning housing cages

1. If the animals transported out of the containment room no longer present a hazard, then the housing cages can be processed through the standard cage wash system.

2. If the animals transported out of the containment room may still pose a hazard (e.g., an animal is brought to the laboratory for a terminal procedure) the following procedure must be followed:
   a. Label the housing cages with the appropriately colored disposable sticker and secure the cage (e.g., placing 2 rubber bands over the top and bottom of the cage) to prevent a loss of contents.
   b. Return empty housing cages to the original containment room for proper processing.

   i. Except in BSRB, these cages should never be placed directly into a cage wash facility. Contact BSRB Husbandry Supervisors for information on the appropriate way to return dirty housing cages.

vi. Sanitize rooms when emptied. Consult the ULAM document, Room Sanitization SOP. The Containment Room Sign should remain posted after all animals are removed from the room until room sanitization is complete.

e. Biological Safety Cabinet (BSC) Procedures

i. ULAM husbandry personnel, sweep pre-filters in the BSC weekly and change them as needed. Discard filters into the biohazard trash. Lightly mist the pre-filters with a bleach solution or Clidox prior to sweeping. Filters should not be vacuumed unless a specially designed HEPA filtered vacuum is used.

ii. HEPA filters within the BSC must not be wetted or swept at any time. HEPA filters will be serviced or removed only by OSEH.

iii. OSEH performs annual certification of all BSCs. The date of the most recent inspection is indicated on a sticker placed on the cabinet by OSEH.

iv. OSEH must recently a BSC if it is moved between rooms or buildings.

iv. Use needle-locking syringes or disposable needle/syringe units (i.e., the needle is integral to the syringe) should be used for the injection or aspiration of hazardous substances.

   1. Do not bend, shear or replace needles in the needle cap or guard.
   2. Do not remove the needle from the syringe following use.
   3. Place the uncapped needle and syringe in a puncture-resistant container (sharps container).

v. Disinfect or discard equipment immediately after use and before removal from the containment room. Equipment may include:

   1. Restrainters, glassware, instruments or any equipment utilized during agent administration or handling animals after agent administration.
   2. Disinfect with clidox or bleach solution and allow a 10 minute contact time .
   3. Consult OSEH for guidance in choosing appropriate deactivation procedures for equipment exposed to hazardous chemicals.

f. Hazardous Substance Administration and Equipment Disinfection

i. Perform animal perfusions within the BSC using proper ventilation such as downdraft tables.

ii. Use only hypodermic needles and syringes for injection or aspiration of fluids from laboratory animals and diaphragm bottles.

iii. Use only hypodermic needles and syringes for injection or aspiration of hazardous substances.

   1. Do not bend, shear or replace needles in the needle cap or guard.
   2. Do not remove the needle from the syringe following use.
   3. Place the uncapped needle and syringe in a puncture-resistant container (sharps container).

iv. Place the uncapped needle and syringe in a puncture-resistant container (sharps container).

v. Disinfect or discard equipment immediately after use and before removal from the containment room. Equipment may include:

   1. Restrainters, glassware, instruments or any equipment utilized during agent administration or handling animals after agent administration.
   2. Disinfect with clidox or bleach solution and allow a 10 minute contact time .
   3. Consult OSEH for guidance in choosing appropriate deactivation procedures for equipment exposed to hazardous chemicals.

vi. Sweep and mop containment rooms/suites with bleach solution a minimum of once per week.

vii. Sanitize rooms when emptied. Consult the ULAM document, Room Sanitization SOP. The Containment Room Sign should remain posted after all animals are removed from the room until room sanitization is complete.

g. Transport of Animals From Containment Rooms

i. Animals may only be transferred to a standard (non-containment) animal room with prior approval given at the time of protocol review, as noted in OSEH recommendations.

ii. Transportation of animals to procedure rooms within the vivarium do not need to follow this process listed below.

iii. Place the animals in a clean housing cage (provided in each containment room), place a dissolvable sticker on the cage and wipe the outside of the cage with a suitable disinfectant within the BSC, wait 10 minutes.

iv. Leave all dirty caging in the containment room/cubicle covered with a plastic bag or with a micro-isolation filter lid covering the cage parts.

v. Bag dirty bedding and place in a secondary labeled OSEH approved waste container.

vi. Sanitize rooms when emptied. Consult the ULAM document, Room Sanitization SOP. The Containment Room Sign should remain posted after all animals are removed from the room until room sanitization is complete.

vi. Secure cages in which animals are being transported (e.g., rubber bands stretched over cage top and bottom).

vii. Place housing cages in a rigid, sealed, secondary transport container and transport it on a cart with sides.

viii. Return empty housing cages to the original containment room for proper processing.

ix. Place secondary transport containers in the containment room (or appropriate location in BSRB cagewash) following transport for standard bioclean container sanitization practices.

x. Cleaning housing cages

1. If the animals transported out of the containment room no longer present a hazard, then the housing cages can be processed through the standard cage wash system.

2. If the animals transported out of the containment room may still pose a hazard (e.g., an animal is brought to the laboratory for a terminal procedure) the following procedure must be followed:
   a. Label the housing cages with the appropriately colored disposable sticker and secure the cage (e.g., placing 2 rubber bands over the top and bottom of the cage) to prevent a loss of contents.
   b. Return empty housing cages to the original containment room for proper processing.

   i. Except in BSRB, these cages should never be placed directly into a cage wash facility. Contact BSRB Husbandry Supervisors for information on the appropriate way to return dirty housing cages.

h. Animal Escape Procedures

i. Attempt to capture animals that have escaped from cages or observed free within the containment room.
ii. Place a sign on the outside of the door noting “escaped animal”.
iii. Keep doors closed during the trapping process.
iv. Trap the animal inside an inverted cage.
v. Place animal in a clean cage with food and water. Indicate animal fell on floor and the cage must be changed last, see Rodent Husbandry SOP for more information.
vi. Call the ULAM husbandry supervisor if animal cannot be captured. ULAM husbandry supervisor sets humane live traps in attempt to capture the animal.
vii. Notify OSEH of any animal that cannot be captured.

i. Disposition of Animals in a Large-Scale Emergency
   i. Follow emergency or disaster response practices outlined in the ULAM document “Veterinarian Services and Animal Care Emergency Operations Plan”.
      1. Maintain animals within appropriately controlled environmental conditions to safeguard both animal welfare and research integrity.
      2. In the event that animal housing room conditions cannot be appropriately maintained such as in the event of prolonged power failure, flood, or fire, conduct the following:
         a. Do not remove infected animals from the facility.
         b. Follow euthanasia procedures (refer to section j.), if acceptable environmental conditions cannot be maintained.

j. Animal Euthanasia and Carcass Disposal
   i. Animals to be euthanized that would otherwise require containment housing, must be euthanized within the containment room or approved procedure room.
   ii. ULAM will provide carbon dioxide euthanasia stations in all containment areas in which animals will be euthanized by this means within the room. CO2 euthanasia must be performed inside the containment hood.
   iii. Clean gross contamination from euthanasia equipment with an appropriate disinfectant after use.
   iv. Spray/wipe down euthanasia station components with appropriate disinfectant after use or as needed.
   v. Carcass handling and disposal
      1. All animal carcasses removed from containment rooms must be contained within two sealed, leak-proof bags (gloves are acceptable “bags”) prior to removal from the animal room unless the carcass is being brought to the laboratory. In these cases, the carcass must still be contained within two leak-proof containers; however, sealable containers other than bags can be used.
         a. Animals administered infectious agents: The outer bag must be clearly labeled with a biohazard label and include the name of the infectious organism and the Principal Investigator.
            i. Label the outer bag with a biohazard sticker, PI name and date.
            ii. ULAM personnel: label the outer bag with biohazard sticker, PI name, room number and date.
            iii. All labeled, double bagged animal carcasses should then be placed in the designated area within the cooler. These carcass barrels are ultimately incinerated.
         b. Animals administered hazardous chemicals or toxins prior to death: The outer bag must be clearly labeled with the name of the hazardous chemical or toxin and the Principal Investigator.
            i. Label the outer bag with a hazardous chemical or toxin, PI name and date.
            ii. ULAM personnel: label the outer bag with a hazardous chemical or toxin, PI name, room number and date.
            iii. Within the carcass cooler, carcasses will be placed in barrels designated for chemically-contaminated carcasses.
            iv. The hazardous substance must be recorded on the OSEH Hazardous Waste sticker that is attached to the barrel and the barrel handled as outlined in section 7. below.
            v. If an animal is administered both an infectious agent and a hazardous chemical or toxin prior to death, it should be handled and disposed of the same as if it had a hazardous chemical. In addition, a biohazard sticker must be affixed to the carcass barrel.
         c. Carcasses perfused with a hazardous chemical post-mortem (such as paraformaldehyde) must be placed in an OSEH-approved carcass container labeled for chemically contaminated carcasses.

k. Departing the Containment Room
   i. Remove and discard PPE immediately into the appropriate OSEH approved waste container for that hazard prior to departing a containment room or cubicle. See waste procedures below.
   ii. Disinfect goggles or safety glasses prior to exiting the room.
   iii. Wash hands either immediately before (if the sink is located adjacent to the hallway door) or immediately after leaving a containment room.
      1. If a sink is not available for use, hands must be cleaned with a hand sanitizer (waterless soap). Wash hands with soap and water as soon as possible after leaving the area.

l. Disposal of Contaminated Food, Water, Filters and Bedding
   i. Infectious agents:
      1. Autoclave cages, water bottles, and equipment contaminated with an infectious agent prior to release to cagewash personnel for routine cleaning.
      2. Bag cages, pans, wall filters or waste with commercially produced biohazard bags or paper bags and add a biohazard label and seal. Paper bags cannot be used if it would be reasonably expected that a liquid may be transported through the hallways within a facility to reach the autoclave.
      3. Transport through the hallways within a facility to reach the autoclave.
      4. Bag cages in a brown paper bag (craft bag), place on a mobile shelving unit and shrink wrap prior to transport
between facilities to reach the autoclave, (i.e. via ULAM truck service).
5. Remove shrink wrap prior to autoclaving.
6. Disinfect cages that are too large to be autoclaved in the containment room.
   a. Spray cages with bleach/water dilution and allow a 10 minute contact time. Move cages directly to the
cage wash room for immediate washing.
   b. Cover and label large caging units on all sides with biohazard stickers prior to transport through the
hallways.
7. Autoclave cages or pans with soiled bedding with the bedding in place.
8. Autoclave food with the caging.
9. Transport water bottles in a covered box labeled with a biohazard sticker and sealed with autoclave tape.
   Autoclave water bottles on liquid cycle prior to dumping and washing.
ii. Hazardous Chemicals or Toxins:
1. DO NOT autoclave waste from animals administered a hazardous chemical or toxin.
2. Remove soiled bedding gently from cages or pans prior to moving them to the cage wash area.
   a. Use a HEPA filtered bedding dump station or a BSC.
3. Empty chemically contaminated food into OSEH approved container in the animal room.
4. Remove wall filters and autoclave filters after removal.
5. Collect all solid wastes (bedding, and disposable supplies) from the animal room in OSEH approved containers.
6. Pour waste water contaminated with a hazardous chemical or toxin into a water-tight OSEH approved primary
liquid waste container labeled with OSEH hazardous waste sticker indicate accumulation date, start date, name
of chemical and manifest number.
   a. Release empty water bottles to cage wash for routine cleaning.
7. Place primary containers into secondary containers.
8. Complete a “Waste Manifest” form. The form must accompany or be in close proximity to the container at all
times.
9. Indicate the following information on the Hazardous Waste sticker:
   a. EPA ID no.: The appropriate number for the building generating the waste can be found by contacting
OSEH at 763-4568.
   b. Manifest Document #: Number found on the upper right corner of the “Waste Manifest” document.
   c. Name: Note “ULAM”
   d. Room number
   e. Building
   f. Date that a chemical (or chemically contaminated material) at accumulation start date.
   g. Chemical Description: Full chemical name
   h. Contents of the container (solid or liquid).
10. Contact OSEH 60 days from the time the chemical waste is generated.
iii. Infectious agents and hazardous chemicals or toxins:
1. Handle items as described in “Hazardous Chemicals or Toxins” section above with the exception that cages are
dumped only within a BSC, not the HEPA filtered downdraft dump station.
2. Remove wall filters, place in a biohazard bag and autoclave after removal.
3. Affix a biohazard sticker and hazardous waste sticker to OSEH approved secondary container (not necessary to
affix a sticker to individual cages if they are placed in the appropriate labeled secondary container).
4. Complete a Waste Manifest form for the secondary container, include the list of all agents included in
receptacle, and contact OSEH as described in section above.
5. Follow procedures for infectious waste disposal as described above for dirty cage components.
6. Spills of Hazardous Substances
   a. Minor spills include spills that are less than 200 ml in volume. A major spill is anything more than 200 ml in volume.
   b. Work surfaces must be decontaminated after hazardous substance spills.
   c. Report spills that occur outside of the BSC to the ULAM husbandry supervisor. If ULAM husbandry supervisor, contact the ULAM
business office 764-0277 or contact DPS 763-1131.
   d. Spills that happen within the BSC, wipe up with absorbent towels and throw into the appropriate OSEH approved waste
container.
   e. Biohazard agent spills: All cleaning should be performed using techniques that require minimal force for removal and disruption
of the biologic material.
      i. Cover the spill area with freshly mixed bleach and water solution or cidlox solution. Apply the disinfectant from the
outside edges of the spill inward.
      ii. Allow the disinfectant to soak into biohazardous material for 20 minutes.
      iii. Wipe decontaminated material with paper towels or absorbent pads.
      iv. Place cleanup materials in an autoclave bag or an approved OSEH waste container.
      v. Seal waste containers when spill clean-up is complete.
      vi. If possible, autoclave the potentially contaminated materials used to contain and decontaminate the spill. For questions
related to spills, contact OSEH HazMat at 3-4568 for alternate methods of waste disposal.
   f. Hazardous chemicals:
      i. Spill kits with instructions, absorbents, reactants, and protective equipment may be available to clean up minor spills.
      ii. Use appropriate spill kits/absorbents to neutralize corrosives and/or absorb spill.
      iii. Clean spill area with soap and water.
         1. Use a reasonable amount of soap and water to clean the spill. There is no designated ratio of soap to water.
         2. Place a water receptacle, soap and paper towels near the sink to ease in clean up.
      iv. Report the spill.
         1. Dispose of absorbents or paper towels used to clean up the spill in an approved OSEH waste container for solid
chemical waste. Follow hazardous chemical labeling and disposal practices as indicated in section 5.i.ii.
         v. Chemical spills that personnel are not comfortable handling can be referred to OSEH for assistance.
         1. Alert people in the immediate area of the spill.
7. Waste Procedures within Containment Rooms
   a. Place all non-sharp, disposable materials believed to be free of contamination with a hazardous substance in non-regulated waste containers within the containment room.
   b. Separate, covered, waste containers must be maintained and clearly labeled for each type of hazardous substance (e.g., infectious agents or hazardous chemicals and toxins) present within a room or suite.
   c. Place waste suspected to be contaminated in the appropriate infectious or hazardous chemical labeled waste containers.
   d. Line re-useable waste containers with a water impervious bag (e.g., plastic bag). Biohazard bags must be used to contain biohazard contaminated materials; biohazard bags should not be used to contain waste contaminated with a chemical or toxin.
   e. Waste containers containing materials suspected to be contaminated with an infectious substance:
      i. Seal the biohazard waste bag or other appropriate waste liner when it is three quarters full.
      ii. Remove it from the waste container, place it in a brown bag and affix a biohazard label; and take it to an autoclave for disinfection.
   f. Waste containers containing materials suspected to be contaminated with a hazardous chemical:
      i. Seal the waste liner when it is three quarters full.
      ii. Label waste container with all chemicals that may be present.
      iii. Remove it from the waste container, place it in a second plastic bag, and immediately place it in an OSEH approved waste container, label it with a hazardous waste label and indicate the type(s) of hazards it contains.
      iv. Provide OSEH with a “Waste Manifest” form that lists all chemicals that may be present in the waste container. Follow hazardous chemical or toxin disposal procedures above.
   g. Remove, decontaminate or dispose of waste from waste containers at least once a week.
   h. Sharps Containers:
      i. One biologic and one chemical sharps container are maintained in each containment room.
      ii. Label these appropriately with the collection start date and biohazard or chemical stickers.
         1. Label sharps containers containing chemicals with a hazardous waste label and indicate the type(s) of hazards it contains.
      iii. The ULAM husbandry personnel replaces and appropriately disposes of the containers when full or has been in place for 60 days.
      iv. Contact OSEH for sharps container pick-up.

8. Storage of Hazardous Materials
   a. Store diet containing a chemical hazard within the food storage coolers located in ULAM managed areas.
      i. Identify the cooler as a place to store diet containing a chemical hazard.
      ii. Place a chemical hazard sticker or symbol on outside of the cooler door.
      iii. Indicate storage only; Procedures must not occur in this space.
   b. Storage of chemicals in the procedure room
      i. Label the chemical container.
      ii. Provide access to the SDS of the chemical within the procedure room.
      iii. For procedure rooms not approved for use:
         1. Post a chemical sticker or symbol on the refrigerator or room to indicate “storage only”.
         2. Procedures must not occur in this space.

9. Related Documents
   d. Biohazardous (Medical) Waste Disposal maintained by the University of Michigan OSEH (http://www.oseh.umich.edu/guidelines/bmwd.shtml)
   e. Veterinarian Services and Animal Care Emergency Operations Plan maintained by the Unit for Laboratory Animal Medicine
   f. Environmental Hazards Administered in Food and Water in Standard Rodent Housing Rooms SOP
   g. Monitoring Effectiveness of Autoclaves SOP
   h. Room Sanitization SOP
   i. Rodent Husbandry SOP
   j. Chicken Husbandry SOP

10. Appendices:
    a. Appendix 1: Containment Housing Request Form (CHR)
b. **Appendix 2: Infectious Agent Sign**

c. **Appendix 3: Chemical Agent Sign**

d. **Appendix 4: Hazardous Agent Entry Sign**

e. **Appendix 5: Containment Procedure Room Sign**

f. **Appendix 5: Personnel Contact Information:**
   i. ULAM Containment Coordinator: 764-0277
   ii. ULAM Supervisors for each containment area: Contact the ULAM front desk (764-0277) for current phone numbers
   iii. ULAM Veterinary Technician Office: 936-1037
   iv. ULAM Front Desk: 764-0277
   v. Occupational Safety and Environmental Health: 647-1143
   vi. Institutional Biosafety Committee (IBC) Coordinator: 615-3960
   vii. Haz Mat: 647-1143
   viii. Department of Public Safety (DPS): 763-1131
   ix. Radiation Safety Services (RSS): 764-6200

g. **Appendix 6: SporeKlenz, Clidox and Bleach Dilutions**
   i. SporKlenz (3 cups SporKlenz:1 gallon distilled water)
   ii. Clidox (1 part base:10 parts water:1 part activator).
   iii. Bleach (1 part bleach:10 parts water which equates to 3 cups bleach:2 gallons water).

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