VA Pittsburgh Healthcare System Animal Research Facility
Building 6 Ground Floor

Animal Biosafety Level 2 (ABSL-2) Safety Manual
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VA Pittsburgh Healthcare System

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1. Introduction

Animal Biosafety Level 2 (ABSL-2) practices must be used when working with laboratory animals that are administered biological agents associated with human disease and pose moderate hazards to laboratory and animal care personnel as well as the environment. Risks for exposure include ingestion, percutaneous exposures (e.g., needlesticks), and mucous membrane exposures (e.g., splashes to eyes, nose, and mouth).

The ABSL-2 designation builds upon the practices, procedures, containment equipment, and facility requirements of animal biosafety level one (ABSL-1). In addition to the ABSL-1 requirements, ABSL-2 also necessitates:

1) Restricting access to the animal facility;

2) Ensuring personnel have specific training in animal facility procedures, the handling of infected animals, and the manipulation of pathogenic agents;

3) Guaranteeing personnel are supervised by individuals with adequate knowledge of potential hazards, microbiological agents, animal manipulations, and husbandry procedures; and

4) Conducting procedures involving the manipulation of infectious materials, or where aerosols or splashes may be created, in biosafety cabinets (BSCs) or by use of other physical containment equipment. In addition to engineering controls, appropriate personal protective equipment must be used to reduce exposure to infectious agents, animals, and contaminated equipment.

This manual serves as a training tool for individuals that will work with animals that have been administered biological agent(s). It is the responsibility of all personnel who work on IACUC projects approved at BSL-2 to read, understand, and follow this manual. This manual will be reviewed annually and will be revised and re-issued accordingly by the Biosafety Officer for Research and any other applicable personnel.

2. Entrance Requirements: Training and Medical Surveillance

2.1 Training requirements

Animal Research Facility (ARF) Staff and laboratory personnel that utilize the ARF must complete the following required training sessions prior to working in the ABSL-2 housing or procedure rooms:

General training:

- Bloodborne Pathogens
- Research Laboratory Safety

The above listed trainings must be completed on an **annual** basis.

IACUC training requirements:

- Working with the VA IACUC
- Working with Mice in Research Settings
- Working with Rats in Research Settings
- Post-Procedural Care of Rodents

- Safe Transport of Division 6.2 Infectious Substances, Biological Specimens, Dry Ice and Related Materials – Saf-T-Pak training. This training is only required when shipping biohazardous materials and/or dry ice.

All of the above listed trainings must be completed every **two** years.

2.2 Medical surveillance requirements
Personnel performing work with animals at the VAPHS must be enrolled in the VAPHS Animal Exposure Preventive Medicine Program (AEPMP) or an equivalent program at another institution. A medical evaluation is conducted which includes an initial physical exam and a complete health evaluation. During enrollment, Occupational Health Staff will screen employees at risk for developing work related allergies. All participants in the VAPHS AEPMP must return to Occupational Health for annual review of their health information.

ARF Staff and laboratory personnel may want to discuss options of immunizations for work conducted in the ABSL-2 rooms. This may include the Hepatitis B vaccination series, and possibly other immunizations depending on what biological agent will be used by personnel and administered to the animals.

3. ABSL-2 Housing and Procedure Location

The designated ABSL-2 housing rooms each contain a Class II Type A2 biosafety cabinet for work with biological agents. Administration of the biological agent should be performed under the biosafety cabinet only if injectable anesthetics are used (i.e., ketamine/xylazine). If the animal must be anesthetized with isoflurane during administration of the biological agent(s), then the procedure must be performed in one of the ABSL-2 procedure rooms (see below).

There are also designated ABSL-2 procedure rooms. All procedures performed in these rooms are carried out under the chemical fume hood or ventilated work station. Specific procedures include administration of the biological agent(s) if the procedure requires use of an anesthetic gas. Once the animals are considered ABSL-2, all other surgeries performed that use anesthetic gases are carried out in this room. When ABSL-2 animals are sacrificed by overexposure to isoflurane, personnel use the chemical fume hood or ventilated work station. When sacrificing animals with carbon dioxide, a separate chamber is used.

The ABSL-2 procedure rooms are also used for procedures that involve animals which are not exposed to biological agents. The designated rooms have a sign-up sheet for use. The procedure rooms are only designated as ABSL-2 when the animals used in the room are exposed to biological agents. The user then complies with all of the ABSL-2 requirements (restricting access, biohazard door sign, ABSL-2 practices, disinfection, etc.) for these rooms. When non-ABSL-2 animals are used in the room, the rooms are considered ABSL-1.

4. Animal Procedures
Administration of biological agents into animals can include procedures that could accidentally expose lab personnel to the potentially infectious agent(s). The following procedures must be performed with caution:

- **Viral or human cell inoculations of mice or rats**
  Prior to inoculation of animals with virus/recombinant virus or human cells/cell lines, the Principal Investigator (PI) should review the use of Safety-Engineered Sharps devices (e.g., self-sheathing needles, retractable needles). It is recommended that these devices be used for inoculations of biological agents into animals once they are successfully trialed. Additional information on safety-engineered Sharps devices can be obtained through the Biosafety Officer for Research.

  The virus/recombinant virus or human cells/cell lines that will be administered to animals must be transported in a leak-proof secondary container that has a secure lid. The container must then be labeled as biohazardous. Prior to placing it on any surface, the secondary container should be wiped with an EPA-registered disinfectant specifically listed to inactivate the biological agent(s) used (see section 11).

  A Sharps container must be made available within a hands reach prior to the inoculations. All Sharps used during the administration of the BSL-2 agent must be disposed immediately into the Sharps container unless given approval otherwise by the IACUC.

  The surface of the biosafety cabinet must be decontaminated with an EPA-registered disinfectant for the appropriate contact time prior to and when finished with the work. The outside of the secondary transport container should be disinfected prior to removal from the room.

- **Bleeding Rodents**
  If a BSL-2 agent is administered to an animal, the blood collected after that administration must also be considered a biohazardous agent. All collection of the blood must occur under the biosafety cabinet or chemical fume hood. The containers of blood collected should be placed into a leak-proof secondary container that has a secure lid and is labeled as biohazardous. The outside of the container must be disinfected prior to leaving ABSL-2 rooms. Any spills of the blood must be decontaminated with an EPA-registered disinfectant for the appropriate contact time.

- **Tissue Harvest**
  If a BSL-2 agent is administered to an animal, the tissues collected after the administration must also be considered a biohazardous agent. All collection of tissues must occur under the biosafety cabinet or the chemical fume hood. If scalpels are used for cutting tissues, then it is recommended to use safety scalpels (i.e., BD protected disposable scalpels). For transport, tissues should be placed into secure containers (i.e., specimen jars) that are then placed into a leak-proof secondary container that has a secure lid and is labeled as biohazardous. The outside of the secondary container must be disinfected prior to leaving ABSL-2 rooms.

- **Use of Anesthesia**
  Injectable anesthetics can be used under the biosafety cabinet located in the housing rooms. However, if an investigator's staff needs to use isoflurane or other anesthetic gas, this must be performed in one of the ABSL-2 procedure rooms. All procedures that utilize anesthetic gases must be carried out under the chemical fume hood. Filling the vaporizer must also be done under chemical fume hood. If a bell jar is used with isoflurane, all manipulations (wetting the gauze or paper towel), including placement of the bell jar, must be performed under the chemical fume hood.

- **Sacrifice**
  Sacrifice of ABSL-2 animals is performed under the biosafety cabinet located in the housing room ONLY if injectables are used. However, if anesthestic gas or carbon dioxide is used for sacrifice, then the procedure occurs in one of the ABSL-2 procedure rooms. All work with anesthetic gas must be performed under the chemical fume hood.

5. Animal Caging

5.1 Cage Handling

Polycarbonate shoebox cages are used in the ABSL-2 housing rooms. The cages are placed on a stainless steel cart.

Prior to cage changes, the surface of the biosafety cabinet is disinfected with an EPA-registered disinfectant (i.e., Cavicide). After appropriate contact time, the disinfectant is wiped with paper towels.

All cages are changed under the biosafety cabinet. Both the clean and the dirty cage are placed under the biosafety cabinet. The animal is then transferred from the dirty cage into the clean one. The outside of the new cage is hand wiped with Cavicide after the transfer.

The dirty cage bedding is scraped into a small biohazard bag under the biosafety cabinet. The dirty cage is then sprayed with the disinfectant and placed into an autoclavable biohazard bag. The outside of the bag is wiped with the disinfectant and then is removed from the room and taken to the autoclave. The biohazard bag that contains the bedding from the dirty cages must be secured closed when approximately 2/3 full and then placed into the larger biohazard bag that is located in the room.

5.2 Cage Labeling

A cage card must be maintained on all animal cages. The white cage card is provided and filled out by the ARF Staff. The cage card lists the precise protocol number under which the animals have been purchased. Animals may only be manipulated in accordance with the designated approved protocol.

The white cage card is used to identify the animals housed in the cage. Each cage has a white cage card that includes the following:

- Investigator's name
- Protocol number

In addition to the above, the following must be included with each cage either listed on the cage card itself or on a separate card:

- Date received (may be the same as date of birth for in-house bred animals)
- Gender
- Strain
- Date of birth
- Number of animals/inventory

When the animals are administered biological agent(s), the animal is designated as biohazardous or ABSL-2. A small biohazard sticker is placed on the cage card after administration of the agent. Also, a biohazard door sign is posted on the entrance to the housing room. The investigator and his/her

personnel post the door sign indicating the appropriate hazard once the agent(s) is/are administered to the animals.

In addition to the white cage card, a green post-procedure card must be filled out for each animal. The post-procedure cards must be used by the investigator and his/her personnel. These green cards are provided by the ARF Staff and are to be placed behind the white cage card. The post-procedure card is used to quickly inform all personnel and site inspectors as to the procedures performed on the animal(s) and the date they are performed.

The green post-procedure cards are used to quickly identify animals that have been manipulated in some manner. A post procedure card includes the following:

- Investigator's name
- Protocol number
- Contact person
- Contact information (phone number and email address)
- Surgeries or other invasive procedures and the date performed
- Recording of the analgesic/treatments administered by date(s)
- Administration of chemical or biological agents and the date

6. Carcass Disposal

All animal carcasses are placed into a red biohazard bag after euthanasia. The exterior surface of the bag is sprayed or wiped with disinfectant (approved disinfectant for the agent of concern) and allowed to air dry. The red biohazard bag and the outer pair of gloves are placed into a second biohazard bag and are labeled with the name of the biological agent and the date. The bag must be placed into the freezer that is located in the center hallway. The carcasses are then disposed as biohazardous waste.

7. Animal Movement or Transportation

If the protocol requires the animals to be transported out of the primary housing facility, this must be described in detail in the approved IACUC protocol. The animals are transported in disposable transport containers within a secondary transport container. For specific information about the transport of animals, please see VAPHS Policy #A-006 Rodent Transport Policy.

8. ABSL-2 Facility Information

PIs and their staff must restrict access during work in the ABSL-2 housing rooms and the ABSL-2 procedure rooms. All work with the biological agents must either be performed under the biosafety cabinet located in the ABSL-2 housing rooms or under the chemical fume hood/ventilated work station located in the ABSL-2 procedure rooms depending on the procedure being performed.

8.1 Facility Entry

The ABSL-2 housing rooms and procedure rooms are located on the ground floor of Building 6 located at the University Drive Facility of the VAPHS. Entrance to the ARF is from interior corridors and is restricted to approved personnel only by card access at the entrance.

8.2 Directional Airflow

ABSL-2 housing rooms operate under a negative air pressure system as per the guidelines specified in the *Guide for the Care and Use of Laboratory Animals* (8th edition, p. 139). In order to maintain the negative pressure gradient, it is imperative that the doors be kept shut at all times.

8.3 Visitors

Visitors to the ABSL-2 rooms within the ARF are not permitted. Guest investigators are also not permitted in the ABSL-2 rooms of the ARF.

8.4 Contractors and Vendors

Outside contractors will be permitted entry by and escorted by ARF Staff into the ABSL-2 rooms. The ARF Staff will advise the contractors of mandatory safety measures which must be adopted, including wearing the full complement of personal protective garb.

8.5 Emergency Medical Personnel

In case of a medical emergency, dial 911 from a VA phone. All work in the ABSL-2 rooms should cease immediately and all potentially infectious materials must be put away. If the individual is conscious and can be moved, move him/her from the ABSL-2 room immediately. If the individual is unconscious, begin first aid **only if properly trained to do so**. Instruct emergency medical personnel in proper gowning and entrance procedures and accompany them at all times while inside the ABSL-2 room.

8.6 Emergency power

The entire building that houses the ARF is on emergency power. Thus, the BSCs located in the ABSL-2 housing rooms are also on emergency power.

9. Personal Protective Equipment and Basic Hygiene

9.1 Garb requirements

All personnel who wish to enter the ABSL-2 rooms must comply with the following procedure:

Upon entrance into the ARF, personnel must don gloves and booties. When entering into the ABSL-2 housing room or procedure room, personnel must don a second pair of booties, a bonnet, a full face shield, a disposable gown, and a second pair of gloves.

9.2 Garb removal and exit procedures

When work is complete, personnel must comply with the following procedures:

The outer pair of booties, disposable gown, face shield, bonnet, and outer pair of gloves can be removed and placed into the biohazard box for disposal. In the event that laboratory personnel or ARF Staff have to re-enter the laboratory in the same day, he/she may re-use a gown and face shield. After exiting the ABSL-2 room, the inner pair of gloves can be removed and disposed in the biohazard bag located inside the doorway. Hand sanitizer is located right outside of the entrance to the housing room and the procedure room. After using hand sanitizer, all personnel should immediately wash their hands.

10. Safe Work Practices

10.1 General good laboratory practices

Hand washing at frequent intervals is one of the most important ways of protecting against infection when work in the laboratory. Gloves must be worn at all times when in the ABSL-2 rooms. Two pairs of disposable, liquid barrier gloves must be worn when performing experiments, handling specimens, and when touching surfaces, materials or equipment exposed to potentially infectious materials. Prior to leaving the laboratory, all gloves are to be removed (outer glove removed before exit; inner glove removed after exit) and hands washed thoroughly washed with antibacterial soap and water.

Mouth pipetting is not permitted. Mechanical pipetting devices must be used at all times. Plastic lab ware must be used to minimize the risk of contamination and to minimize risk of injury that may result from using glassware.

10.2 Food and drink policy

No food and drink, tobacco products, or chewing gum are allowed in the ABSL-2 rooms. Cosmetics shall not be brought into or applied in the rooms. Contact lenses shall not be handled in the rooms. All pens, pencils, and fingers should be kept out of the mouth and away from the face.

10.3 Sharps policy

Sharps are defined as any sharp object that may puncture or cut the skin. Among the most common laboratory injuries are those resulting from needlestick or other Sharps-related injuries.

Use of Sharps must include the following:

- Sharps shall be stored in a manner that prevents personnel from injury. Uncapped needles and uncovered razor and scalpel blades shall not be left in drawers, on equipment, or on the bench top.
- Supportive devices may be used with traditional or safety-engineered sharps devices to help reduce the potential for sharps injuries and include Sharps transfer trays, needle recapping trays (using the one-handed technique), and scalpel blade removal devices.
- Needles shall not be recapped. Needles and scalpels shall not be bent, blunted, broken, or sharpened manually.
- Lab personnel shall receive training on the safe use of Sharps prior to using them with infectious agents. Lab personnel shall consider the use of additional safety equipment such as cut-resistant or puncture-resistant gloves, if applicable, when handling Sharps.
- Sharps such as needles, syringes, scalpel blades, and blood collection devices, shall be disposed immediately after use only in approved, hard-walled, puncture-resistant, sharps disposal containers located in areas which are close to the site of use.
- Broken glass shall be discarded in the Sharps container and discarded as Sharps waste.
- Sharps injuries shall be reported to the employee's immediate supervisor, who shall complete the appropriate injury forms (e.g., CA-1). The Supervisor must ensure that the Sharps exposure is indicated within the ASISTS database. The ASISTS injury management program automatically maintains a log of Sharps injuries. Personnel with sharps injuries shall report to Occupational Health Services for medical treatment.

10.4 Proper use of biosafety cabinet (BSC)

A Class II Type A2 biosafety cabinet (BSC) is installed in each of the ABSL-2 housing rooms. All handling of potentially infectious materials must be within a BSC. BSCs are designed to protect the user by providing a vertical curtain of sterile, filtered air between the user and the specimen or culture being manipulated. Air is drawn through perforations around the work area up through the blower system where it is forced through high efficiency particle air (HEPA) filters above the work area. Air emerges from these filters downward at a uniform velocity where it is drawn into the perforations surrounding the work areas. It is important to keep all airflow areas, including the front and back grills, clear of obstructions that can create turbulence in this uniform air circulation. A small volume of room air is also drawn through the front of the work area via the opened sash. Unnecessary or rapid movement of hands/arms or materials through the front opening of the BSC should be avoided as it can create turbulence and destroy the protective air curtain. The cabinet recirculates HEPA-filtered air into the ABSL-2 housing room.

An ultraviolet (UV) lamp is also present in some of the BSCs. Additional use of UV light may contribute to maintaining a sterile work area when the BSC is not in use. However, it is the policy of the VAPHS Research and Development Department not to depend upon UV irradiation for decontamination of the BSC, but to use an EPA-registered disinfectant for decontamination. The UV light is switched on along with the blowers and left on in the BSC only when no one is performing work.

Keep the front intake grill and the exhaust opening at the back of the cabinet free from clutter. When removing hands from the BSC, remove the outer (second) pair of gloves or thoroughly wipe down with Cavicide. A double-bagged small biohazard bag should be present in the cabinet. This bag should be used for discarding solid waste only (gloves, tubes, etc.).

The BSC is inspected and certified on a semi-annual basis by a qualified third-party vendor and documentation of this certification is located on the cabinet and on file with the Biosafety Officer for Research. The blowers in the BSC must remain on at all times when work is being conducted and may be turned off after decontamination once the hood sash is closed. Work with all specimens, cultures, and live/recombinant virus must be performed in the BSC. The BSC must be cleaned and decontaminated before **AND** after each use.

10.5 Transport of agents

All potentially infectious materials must be transported in a durable, leak proof secondary container that has a tight-fitting lid and is capable of quick and easy decontamination with an EPA-registered disinfectant. The secondary container must also be labeled as biohazardous. After transport of potentially infectious materials, the transport container should be thoroughly decontaminated with the disinfectant and allowed to dry.

Any agents that would be transported back to the laboratories must be packaged in the same way.

10.6 Biological aerosol producing activities

Biological aerosols or bioaerosols refer to airborne suspensions of biological agents (i.e., liquid particles such as droplets of viruses).

Opening containers can produce aerosols and splashes onto skin and into eyes, nose, and mouth. Screw-cap closures should be used when possible since splashes are less frequent upon opening this type of cap compared to other types of caps (e.g., snap cap).

11. Disinfection of Surfaces, Equipment, and Wastes

Good disinfection practices include cleaning and disinfecting all work surfaces, tools, equipment, wastes, and any other potentially infectious materials prior to beginning work, as work occurs, at the end of the day, and in the case of any spill or accident. Personnel shall disinfect potentially infectious materials prior to storage, transport, and disposal.

All work areas must be thoroughly wiped down with disinfectant before beginning work, at the close of work, and following any spills. Wiping down items for use in the BSC as a precaution before use can be performed with Cavicide. A 1:10 dilution of sodium hypochlorite solution (Clorox®) or another approved EPA-registered disinfectant is required for wiping items after work and prior to removal from the BSC, for cleaning spills, and for decontaminating the surface of the BSC before and after work. The EPA-approved disinfectant that is supplied by the ARF is Cavicide.

11.1 Liquid waste handling

All potentially contaminated liquid materials must be decontaminated by inactivation with an EPA-registered disinfectant and/or autoclaving before disposal.

Liquid waste should be put into a special container inside the BSC containing an approved EPA-registered disinfectant. Liquid waste will be allowed to react at least 30 minutes before disposal. To dispose of liquid waste, wipe outside of container with disinfectant, remove from BSC and drain the container in the sink followed by flushing with large amounts of water. The liquid waste container should then be wiped with the disinfectant.

11.2 Solid waste handling

All potentially contaminated solid materials must be decontaminated by inactivation with a disinfectant and/or autoclaving before disposal. Contaminated solid wastes such as pipettes, tubes, and tips must be inactivated by soaking in an approved EPA-registered disinfectant or 10% bleach solution for at least 30 minutes prior to removal from the laboratory. Potentially contaminated materials including gloves and gowns that cannot be inactivated by a bleach solution must be disposed in the biohazard bag within the room. All contaminated materials must be labeled with the universal biohazard symbol (see symbol below).

11.3 Autoclave Use and Cycles

The autoclave is a Getinge USA Model 733LS vacuum/gravity microcomputer controlled sterilizer. The autoclave is located in GA110.

All wastes created in the ABSL-2 rooms will be autoclaved prior to removal from the ARF using the autoclave. All waste will be wiped down with Cavicide prior to placement inside the second biohazard bag marked with indicator tape. All infectious waste is autoclaved on the dry cycle for at least 30 minutes. After autoclaving is completed, the waste is removed and collected into a biohazard box. When the biohazard box is full, it is closed and placed for removal.

The Biomedical Engineering Department is contacted if there is a problem with the autoclave. Quality control includes steam sterilization indicators (autoclave indicator tape) attached to each bag. Weekly quality control includes inactivation of a biological indicator. This weekly test accurately monitors steam and sterilization processing of the autoclave. Results of the weekly quality control test will be maintained in a logbook that is kept in room GA151. Finally, all autoclave cycles are recorded on tape and are stored in GA151.

12. Biological Spill Response

A spill control procedure for biological agents is posted in the ABSL-2 rooms.

Minor spills of potentially infectious materials inside the BSC are considered those spills that can be safely contained and decontaminated without the assistance of safety and emergency personnel. In general, minor spills involve less than 10 milliliters of liquid. A biohazard spill kit is available in the room for response to minor spills.

In the event of a minor spill:

- Inform personnel in the immediate area of the spill.
- Immediately remove and disinfect any material that has been contaminated by the spill, including removal and replacement of any contaminated clothing.
- Cover the spill with absorbent pads, paper towels, or gauze.
- Carefully soak the absorbent material covering the spill with Cavicide, moving in the direction from the outside of the spill inward.
- Allow the absorbed spill to remain for at least 30 minutes providing sufficient time for the disinfectant to inactivate the potentially infectious material prior to cleanup.
- Place a sign on the outside of the BSC or chemical fume hood stating “DO NOT USE”.
- Remove the second (outer) pair of gloves and place in a biohazard waste bag inside of the BSC or chemical fume hood.
- After 30 minutes, don a clean pair of outer gloves and place all cleanup materials (absorbent materials, contaminated personal protective equipment, etc.) into a biohazard waste bag inside the BSC or chemical fume hood.
- Clean the original spill area a second time to ensure adequate disinfection and clean up.

In the event of a major spill:

- Immediately alert personnel in the immediate area to evacuate.
- Remove and replace all contaminated personal protective equipment.

- Close the sash of the BSC or the chemical fume hood and post a sign.
- Call Spill Responders at 412-360-3705.
- Wait an hour to allow for dissipation of any aerosols created by the spill.
- After an hour, follow the minor spill procedure outlined above.

When any quantity of potentially infectious materials becomes aerosolized from a spill outside of the BSC or the chemical fume hood, the person should:

- Remain calm.
- Inform others that may be working in the room.
- Evacuate the ABSL-2 room.
- Call Spill Responders at 412-360-3705.
- If safe to do so, immediately cover the spill with absorbent material and soak the absorbent material with an EPA registered disinfectant to limit further aerosolization using the biohazardous material spill kit located in the ABSL-2 room.
- If the potential for exposure to aerosols or the biohazardous agent spilled exists, leave the spill and immediately evacuate the room.
- Once outside, the person responsible for the spill will post an orange warning sign on the door stating "Warning! Do Not Enter! Hazardous Condition: Biohazard Agent in Use". Door signs and tape will be stored in the ABSL-2 room.

13. Facility Emergencies

Facility emergencies may occur in conjunction with or independently of medical emergencies. The following is a list (not necessarily inclusive) of potential facility emergencies and the recommended course of action to be taken by the individual identifying the problem. In all emergency situations, personnel must use his/her best judgment to assess the situation and act accordingly. In general, personnel should act first to resolve the emergency so that all personnel are safe and secure.

13.1 Exhaust failure

In case of an exhaust failure or change in negative air pressure, personnel must evacuate the ABSL-2 room immediately following the exit procedure for removal of personal protective equipment (section 9.2). If negative air pressure is not returned within two minutes, a sign should be placed on the door to the room warning personnel not to enter the room. The ARF Staff should then be notified of the incident. The ARF Staff will notify Facilities Management Services during normal work hours. After hours, personnel must call the Boiler Plant at 412-360-6139 to report the failure.

13.2 Electrical failure

In case of a power outage, loss of power to the building will trip the emergency generator so that the power should be restored. If power has not returned within two minutes, all personnel will immediately evacuate the ABSL-2 room and an emergency sign will be posted on the door warning personnel not to enter the laboratory.

If the blower fan of the BSC or the exhaust of the chemical fume hood stops working, any person working in them is required to cease all work immediately, secure the biological agent, close the sash, place a sign stating "DO NOT USE", and exit the laboratory following the exit procedure for removal of personal protective equipment (section 9.2). The blower must be on the BSC or the exhaust must be

running for at least 30 minutes before work can resume. In case of a blackout, all personnel are to evacuate the ARF.

13.3 Fire

In the event of a fire, all work must cease immediately and all personnel must evacuate the ABSL-2 room following the exit procedures (section 9.2). If possible, attempt to secure the agent if outside of the BSC or the chemical fume hood and/or close the sash to contain work within the cabinet.

Evacuation out of the ARF is through one of two ways. The main entrance of the ARF is one option to leave the facility. The loading dock entrance by the dirty cage wash (GA101) is another way to leave the facility.

14. Medical Emergencies

In case of a medical emergency dial the VA Police Department 412-360-6911. All work in the ABSL-2 room should cease immediately and all potentially infectious materials must be put away. If the individual is conscious and can be moved, move him/her from the ABSL-2 room. If the individual is unconscious, begin first aid **ONLY IF PROPERLY TRAINED TO DO SO**. Instruct emergency personnel in proper garbing procedures and accompany them in the ABSL-2 room. Notify the Biosafety Officer for Research when the medical emergency is under control. Once the medical emergency has been handled, the Biosafety Officer will assess the situation for additional facility emergencies and/or further decontamination procedures that may be needed. Only when all of the above have been resolved is it safe to resume normal operations in the ABSL-2 room.

For **non-medical emergencies**, all potential occupational exposures must be reported to Occupational Health 412-360-3556. In the event of an accidental exposure, remain calm. As soon as possible, the injury (cut, puncture, abrasion) should be immediately washed with disinfectant soap and water for at least 15 minutes. A first aid kit is available in GA119. Contaminated eyes or mucous membranes should be washed with water for at least 15 minutes using the eyewash station. Eyewash stations are available in the dirty side of the cage wash, and in the ABSL-2 procedure rooms. Spills on intact skin should be thoroughly flushed with soap and water for at least 15 minutes. Once the exposed area has been washed, contaminated clothing should be removed, placed in a biohazardous waste bag and autoclaved.

Any injury should be reported to Occupational Health (412-360-3556) during normal work hours and the University Drive Emergency room (412-360-6322) after hours and on weekends. If assistance is needed, call the VA Police Department (911 from a house phone or 412-360-6911).

14.1 On-the-job injury

If you require medical treatment, report to Occupational Health located in Building 1 room 1A246 (412-360-3556) during normal work hours or the University Drive Emergency Room Building 1 room 1N44C (412-360-6322) after hours and on weekends. As soon as possible fill out the appropriate forms (CA1 or CA2 and Worker's Compensation Forms).

14.2 Bloodborne pathogen injury

If the injury involves a bloodborne pathogen exposure (such as a needlestick, contaminated Sharp, bodily fluid splash), medical treatment must be obtained by Occupational Health located

in Building 1 room 1A246 (412-360-3556) or the Emergency Room located in Building 1 1N44C (412-360-6322) so that appropriate prophylaxis, counseling and follow-up monitoring and treatment can be initiated.

14.3 Sharps injury

If the exposure involves a needlestick or Sharp, the Supervisor must complete a CA1 and incident report in the ASISTS injury management program. The ASISTS program automatically maintains a log of Sharps injuries. The program creates this log in a manner that protects the privacy of employees. When completing cases in ASISTS, supervisors should ensure that each Sharps case contains the following information:

1. The type and brand of device involved in the incident.
2. The location of the incident (department or work area).
3. Description of the incident.

The data collected in the ASISTS database will be evaluated to decrease future incidences.

14.4 Animal-related injury

If the injury involves an animal or animal-related tissue, blood or blood products, personnel should do the following:

1. Immediately wash and rinse the wound with soap and water. Apply pressure if necessary to control bleeding.
    a. If the injury involves mucous membranes (eyes, nose, and/or mouth), flush with water for 15 minutes at eyewash station or other potable water source.
    b. Notify and/or request assistance from co-workers.

2. Report the incident to your immediate supervisor, the Principal Investigator (if not the immediate supervisor), and the ARF Supervisor or ARF Staff that are available at the time of the injury. The supervisor will notify the medical treatment facility indicated below.

3. Proceed to the designated medical treatment facility:
    a. <u>In the event of a minor injury</u> (penetrating wound, small laceration, etc.), report to **Occupational Health**, University Drive, Building 1, Room 1A246, **phone 412-360-3556. Clinic hours are Monday through Friday 8:00 am-4:00 pm.**

    b. <u>During non-clinic work hours</u>, report to the **University Drive Emergency Room, Building 1, 1N44C, phone 412-360-6322**.

    c. <u>In the event of serious or imminently life-threatening injury</u> (massive bleeding, loss of consciousness, inability to breathe, etc.), report to the University Drive Emergency Room. **Call VA Police 911 from a house phone or 412-360-6911 for assistance in emergency medical transport.**

All injuries should be reported (either directly or via the supervisor) to departmental administrators, so they can be documented on the Employee's Report of Occupational Illness or Injury (worker's compensation form).

15. References

Biosafety in Microbiological and Biomedical Laboratories, 5th ed., Centers for Disease Control and Prevention and National Institutes of Health. 2007. Washington, D.C.: U.S. Department of Health and Human Services.

16. Emergency Contacts

In the event of an emergency, the following contact information is posted near the phone in the Animal Research Facility.

Title		Phone number
ARF Supervisor/ARF Staff		**412-360-6107**
Biosafety Officer for Research		**412-360-2842**
Police		**911 from house phone; 412-360-6911**
Emergency Room		**412-360-6322**
FIRE		**911 from house phone; 412-360-6911**
Chemical Spill	**Normal Work Hours: After Hours:**	**412-360-3705 412-360-6319 (Boiler Plant)**
Biological Spill	**Normal Work Hours: After Hours:**	**412-360-3705/412-360-2842 412-360-6319 (Boiler Plant)**
Safety Department Manager		**412-360-3076 412-216-9130 (Cell)**
VAPHS Police		**412-360-6911**
Occupational Health		**412-360-3556**

VA Pittsburgh Healthcare System

17. Signature Page

I have read and understood this ABSL-2 Safety Manual and I agree to comply with all rules contained therein.

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