University of Hawai’i at Manoa

VERTEBRATE ANIMAL FACILITY

Occupational Health and Safety Program

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Policy

It is the policy of the University of Hawaii to comply with all pertinent Federal, State, and local statutes, standards, and regulations regarding the provision of personnel health program for employees and students, who are exposed to animals.

The Occupational Health and Safety Program is an integral part of UH’s Animal Care Program. The Environmental Health and Safety Office (EHSO) and Animal and Veterinary Service (AVS) have developed this Occupational Health and Safety Program in compliance with the guidelines set forth in the NIH Guide for the Care and Use of Laboratory Animals, Biosafety in Microbiological and Biomedical Laboratories, Occupational Health and Safety in the Care and Use of Research Animals, Occupational Health and Safety in the Care and Use of Nonhuman Primates, as well as applicable federal and state standards on occupational health and safety. This program applies to AVS employees, faculty, students, visitors, volunteers, and other nonemployees, who are involved with the care and use of animals at this institution.

Individuals engaged in animal experimentation should be afforded protection from health risks through the following mechanisms:

1. education and training of personnel concerning identification of potential hazards associated with animal experimentation and methods to reduce or eliminate risks
2. veterinary management of laboratory animal health
3. isolation and containment of high risk animal experiments
4. administration of immunization or other prophylaxis for protection from specific health risks
5. use of appropriate protective apparel, equipment and facilities
6. exclusion of personnel from animal facilities who do not have bonifide need to use these facilities or who are usually susceptible to animal related illnesses
7. exclusion of personnel from animal facilities with active infectious disease that are hazardous to the health of experimental animals
8. periodic evaluation of personnel health status during work with animals including appropriate records of illness and
9. provision of emergency care of injuries or other animal research related illness

I. Responsibilities

A. AVS Director

AVS Occupational Health & Safety

Revised-3/12/2014
The AVS Director is responsible for establishing and maintaining the occupational health and safety program which will provide a safe and healthy working environment.

B. Employees and students

Each individual is responsible for following procedures and guidelines provided in this manual. Each employee/student must attend training sessions and understand applicable safety requirements. Individuals are also responsible for asking questions from their direct supervisor when concerned about unknown or hazardous situations or substances.

C. Principal Investigators

The principal investigators are responsible for assessing the specific risks, establishing procedures to minimize these risks, assuring the safe conduct of their experiments employing experimental animals, and following health and safety procedures from this manual. The principal investigator is also responsible for the health and safety of employee(s) under his/her supervision and the implementation of this occupational health and safety program.

D. Environmental Health and Safety Office (EHSO)

EHSO provides technical services that assist the institution in carrying out its responsibilities associated with health and safety; it involves people who have expertise in such fields as chemical safety, biological safety, physical safety, industrial hygiene, radiation safety, fire safety, and environmental health. EHSO is responsible for monitoring compliance with this policy. In case of life safety matters or imminent danger to life or health, the Director of EHSO or his/her designee has the authority to order the cessation of the activity until the hazardous condition is abated or adequate measures are taken to minimize exposure. For an overview of EHSO you may visit their website at www.hawaii.edu/ehso or review the Health_Safety_Guide.doc at http://www.hawaii.edu/ehso/industrial/HSG.pdf

E. Institutional Biosafety Committee (IBC)

The IBC is required to review and approve all live vertebrate animal use activities involving the use of recombinant genetic material (DNA), select agents, and regulated biological agents and materials prior to their use in live vertebrate animal models. The Research Compliance Office reviews IACUC protocols to determine whether these require IBC review. The IBC review is done independent of the IACUC review process.

F. Institutional Animal Care and Use Committee (IACUC)

The IACUC is charged with ensuring that appropriate review for potential hazards is taking place. The Regulatory Compliance Office will conduct reviews of applications prior to IACUC, EHSO, or Research Compliance Office distribution of protocols. EHSO will review the IACUC protocols to determine any additional measures to prevent human exposure and contamination on a case by case basis. The IACUC will incorporate the reviews into the
approval process into the IACUC approval letter to the PI. PIs bear full responsibility for ensuring that all concerns have been fully addressed before starting vertebrate animal use.

The IACUC reviews and inspects the occupational health and safety program involving the research in progress during their semi-annual inspections. The facility inspection should include review of compliance with safe work practices and standard procedures, as well as adequacy of facility and equipment. For more information visit www.hawaii.edu/LAS to visit the IACUC site.

II. Workplace Hazards

Individuals involved with the use of animals in biomedical and biological research may be exposed to health risks not normally encountered in other activities. Identification of hazards is dependent upon a number of factors and is the responsibility of everyone. See the Health_Safety_Guide.doc at http://www.hawaii.edu/ehso/industrial/HSG.pdf for more information. Hazardous agents and conditions encountered by animal care handlers include:

A. Those involving animal research may depend upon (1) the nature of the research for which the animals are used including chemicals or infectious agents (2) the species and health status of animals and (3) the duration and/or frequency of animal contact. Physical injury is the most common hazard associated with animal research. Animals are capable of inflicting extensive injury to humans. Most research animals can bite, batter or crush. Because disease and infection are easily spread by bites and scratches, researchers must take special care when working with animals.

B. Ergonomic hazards causing musculoskeletal injury (sprains and strains) from lifting heavy objects such as metal cages, bags of feed or bedding material. Repetitive motions may also pose a hazard.

C. Falls on slippery floors or from unsafe steps.

D. Allergens such as animal hair, skin flakes (dander), serum animal proteins, mite droppings and fungal spores are commonly found in large quantities in animal facilities. Employees who work with animals may develop allergic reactions, including rhinitis, conjunctivitis, asthma and dermatitis. Symptoms of animal allergy may include nasal congestion, sneezing, watery eyes, hives and eczema. Because of their widespread use in research, rabbits and rodents are the most common research animals that cause allergic reactions. Animal dander, fur, bedding, urine, saliva, and tissues are the primary sources of allergens. Mold spores and protein in animal feed may also act as allergens.

E. Human pathogens, bloodborne pathogens and zoonotic agents, can be latent in the environment, or introduced from the exterior of the facility. Refer to Appendix 1 for a copy of the “Model Bloodborne Pathogen Exposure Control Plan see addendum.

F. Hazardous Chemicals used in research, cleaning fluids or powders, decontamination solvents or acids for cage washes are commonly present. See Appendix 2: Use of Chemicals in Animals (Used in AVS Operated Facilities) Policy attached.
G. Research isotopes can contribute to hazardous exposure to employees.

H. Exposure to high noise levels from the operation of cage washers or noise associated daily operations of the animal facility.

I. Puncture wounds from needles and other sharp instrumentation. Refer to Appendix 1 for a copy of the “Model Bloodborne Pathogen Exposure Control Plan.”

III. General Health and Safety Requirements

The state of Hawaii Occupational Safety and Health (HIOSH) Standards require that employers provide safe and healthful work places and practices by elimination or reduction of existing or potential hazards. The University is committed to establishing and maintaining an occupational safety and health program.

1. Posting of Notice/Emergency Telephone Numbers

   a. Posting of Notice

      Each department shall keep posted the orange and yellow poster “Safety and Health Protection on the Job” which informs employees of protections and obligations under the law; and the availability of Assistance and information; including copies of the law and of specific safety and health standards from EHSO. Posting of notice shall be in accordance with Section 12-51-2, Title 12 of the HIOSH regulations.

   b. Emergency Telephone Numbers

      A poster shall be fastened and maintained, either on the first aid kit or cabinet or near telephones giving the phone numbers and addresses of doctors, hospitals and ambulance services to be contacted in case of an emergency or the campus emergency number (X66911 Manoa or X21911 Kaka’ako) shall be posted.

2. Hazard Communication

   The term “hazardous” refers to any substance or material, which could cause personal harm and injury to persons who may become exposed to the substances. Substances such as cleaning solvents, disinfectants, radioactive isotopes, endotoxins, etc., are all potentially hazardous materials which employees may be exposed to. Since the safe handling and use of chemicals are of concern, the Hazard Communication Program has been developed. The program introduces a set of procedures designed to minimize the risk of chemical exposure and to comply with the HIOSH Hazard Communication Standard (HazCom).
UH’s Hazcom Program has two primary goals: (1) to clearly identify hazardous substances being used in the workplace and (2) to inform employees about the hazardous properties of the substances, as well as methods of personal protection that will ensure their well-being while handling the material while on the job.

The Hazard Communication Program includes the following information:

Description of how labels, Material Safety Data Sheets (MSDS) and training are used to inform employees

Description of the method the University uses to inform employees about the hazards of non-routine tasks and unlabeled pipes

Description of how the University informs contractors of hazardous substances that may be encountered

Standardized form for chemical inventories

3. Hazardous Waste

a. General

The generation and disposal of hazardous waste at the University is strictly regulated by law. The EHSO Hazardous Waste Management Program safely disposes of waste in accordance with federal and state rules and regulation. Hazardous waste includes radioactive, flammable, explosive, poisonous and toxic chemicals, as well as infectious items. For radioactive waste call EHSO’s Radiation Safety Officer; infectious waste, EHSO’s Biological Safety Officer and for chemical waste, EHSO’s Hazardous Waste Management Specialists. For more information see addendum for links.

b. Non-Hazardous Waste

Non-hazardous waste is handled by the custodial section of the Building and Grounds Management Office (BGM). The custodians will empty waste baskets containing regular trash. For disposal of glass, each department must place glass waste in a puncture proof container, secure container with tape and label container with Principal Investigator’s or supervisor’s name and room number. The containers with glass waste must be placed outside the dumpster by each department.

c. Animal Waste

Animal carcasses are incinerated or disposed of through contract companies or using the Alkaline Hydrolysis technology. Animal bedding should be handled as to reduce aerosols, such as the use of change stations. If animal carcasses,
bedding, feed or general debris is not radioactive or infectious, it may be disposed as regular waste; otherwise disposal or animal carcasses and other materials must follow procedures set by the Biological Safety Officer and/or radiation Safety Officer.

d. Blood contaminated Sharps

Shall be discarded in biohazard red sharps containers, autoclaved, and placed in cardboard box for disposal by EHSO. Blood contaminated needles should not be recapped by user. If re-sheathing needles are not used, the needle can be recapped by inverting the empty cap in a test tube like holder, and engaging the used needle and syringe into the cap without touching the cap with one’s hands. For more information on safety needle policy see addendum for links.

4. Personal Protective Equipment (PPE)

Requirements for personal protective equipment are found in Section 12-64.1-1, Title 12 of the HIOSH regulations. This standard covers protective equipment for eyes, face, head, hands, and feet. The standards also include provisions on electrical equipment. For more information refer to the addendum. Under the PPE standard, there are two major requirements:

a. Hazard Assessment

Each department supervisor/principal investigator must assess the workplace to determine if hazards are present, or likely to be present, which necessitate the use of PPE. Refer to Hazard Assessment Guide, Appendix 1.

If such hazards exist or potentially exist, the supervisors/principal investigators with the assistance of EHSO shall select and have each affected employee use the types of PPE that will protect against the identified hazards. PPE must properly fit each employee and the employee shall verify the assessment in writing.

b. Training Requirements

Each department supervisor/principal investigator or designated representative must provide training to each employee required to use PPE. Training will include when PPE is needed, what PPE is needed, how to wear PPE, the proper care, maintenance, useful life and disposal of PPE. Supervisors/Principal Investigators must certify in writing that employee have received and understands the training.

In addition, training in hazard communication, biosafety, shipping, hazardous waste disposal, back safety, and other training as deemed necessary by each department based on hazard assessment. For more information on training visit www.hawaii.edu/ehso or see Health_Safety_Guide.doc at http://www.hawaii.edu/ehso/industrial/HSG.pdf.
5. Work Site Inspections

Section 12-60-1, Title 12 of the HIOSH regulations specifies that periodic inspections to identify unsafe conditions and work practices must be conducted. The purpose of the inspections is to identify and correct potential problems before employees become injured or property is damaged. Conducting inspections serves as one of the elements of a good accident prevention program, which helps to maintain greater safety awareness among all personnel.

EHSO conducts periodic inspections of labs, shops and administrative areas. However, the number of EHSO staff is not large enough to provide frequent and recurring inspections of all areas on campus. EHSO has conducted inspections upon request and continues to do so.

Inspections should be conducted at least biannually by the Principal Investigator/Supervisor or designated representative. Problems noted in the inspections should be addressed immediately by supervisory personnel. EHSO can be contacted for assistance in resolving problems.

6. Worker’s Compensation

The supervisor/principal investigator is responsible for informing his/her employees of their rights and responsibilities under the Worker’s Compensation Law.

Under the Worker’s Compensation Law, every work related injury or illness to an employee resulting in the absence of one or more days and requiring medical services other than first-aid treatment must be reported and documented (Form WC-1). Please refer to UH Administrative Procedure A9.720 on Worker’s Compensation for further instruction.

7. Reporting and Treatment of illness or injury

All illness and injury experienced during work should be reported promptly to the supervisor. Records should be kept of such incidents, and appropriate medical attention should be sought when necessary.

a. For UH employees: For UH employees, a “Worker’s Compensation” form should be filled out within 7 working days.

For AVS UH employees: The supervisor shall forward the worker’s compensation (WC) form immediately to the AVS WC Coordinator. This form shall be filed no later than 7 working days after the employee notifies the supervisor of the injury/illness. In addition, if the employee decides not to seek medical attention a letter signed by the affected employee should be on file, stating that they did not choose to seek medical attention at this time.
For RCUH employees: Any work-related illness/injury shall be reported to your supervisor immediately after its occurrence. The RCUH “Supervisor’s Report of Industrial Injury and Accident Investigation” form shall be completed by the supervisor. The employee shall also submit the “Employee/Claimant Consent” form.

For AVS RCUH employees: Both forms shall be forwarded to the AVS WC Coordinator within 24 hours of its occurrence.

b. Any individual bitten by a research animal should immediately report this to the animal facility supervisor and to their immediate supervisor. The animal facility supervisor will record the injury in the “Bite-Scratch” log kept in their possession in either Biomed T203A office or Kakaako 122. The log will include the injured person’s name, date and time of the incident, PI name and protocol number under which animal was kept, whether the animal was genetically modified, and a brief description of the incident. In addition, the procedures described in section 7.a. above should be followed. The immediate supervisor of the employee should inform the AVS Director within 24 hours of the incident. If the incident involves a genetically modified animal the immediate supervisor for the employee should also report the incident to the Biosafety Office (Research Compliance Office) within 24 hours.

Wounds (bites and scratches or abraded skin) should be cleaned for a full 15 minutes immediately following the incident. Seek medical attention for any injuries that result in potential infection, illness or appear life threatening following the incident.

8. Recordkeeping

All matters pertaining to employee/student health and safety concerns must be fully documented. Written records of activities, such as development of special AVS safety policies and procedures, training sessions for managers and employees, minutes of safety meetings and so on, must be maintained at the appropriate level as specified in the following:

a. EHSO is responsible for:

Documenting all education programs provided to each department by EHSO staff, including a participant list, date of presentation and topic discussed.

b. Principal Investigator/Supervisor
Maintaining records concerning employee injuries, incident reports, grievances involving safety matters, personnel records, training, etc.

Documenting any exchange of safety information with employees occurring through formal presentation and/or one-to-one meetings at the work site.

Records of all safety matters are subject to periodic review by EHSO, HIOSH and other applicable agencies conducting workplace inspections. They should be maintained in a clearly identified, central file in the department’s office for ease of access.

9. First aid

Prompt first aid is invaluable and staff should be given every encouragement to participate in First Aid courses. The use of first aid kits in a work place should be consistent with the provisions of HIOSH 12-62-5 First aid kit standard. The contents of the first aid kit should be checked regularly, and kept in a prominent and accessible area. Staff should be familiar with the location of the first aid kit, the names of the first aid-providers and telephone number of medically qualified personnel. For more information see addendum.

10. Medical Surveillance

At AVS, all employees required to wear N95 or higher respiratory protection should be respiratory fit tested by a qualified person prior to use. In addition, AVS regularly provides basic health exam post-hire for its employees. This is conducted as Straub Clinic on Beretania Street, and is paid for by AVS. For more information see section VII on Medical Surveillance and Table 1 below.

V. Standard Operating Procedures

A. GENERAL RULES

1. Bites, scratches and other such physical contact from animals must be avoided by using the correct handling method for each species and ensuring that PPE is worn when necessary.

2. When handling chemicals, employees should know:
   
   a. The chemical hazard, as determined from a MSDS or other appropriate reference;
   
   b. Appropriate safeguard for using that chemical, including personal protective equipment.
   
   c. How to properly store the chemical when it is not in use;
   
   d. Proper methods of transporting chemicals outside the laboratory;
e. Proper chemical waste disposal procedures see http://www.hawaii.edu/ehso/hazmat/UHHMMP01.pdf.

f. Appropriate procedures for emergencies, including first aid, evacuation routes, and spill cleanup procedures.

B. PERSONAL HYGIENE

1. High standards of personal hygiene are essential. Hands shall be washed after handling chemicals, infectious materials, animals and before leaving the animal rooms. Animal rooms shall be equipped with anti-microbial soap and dispensers and shall be utilized after hands-on work with animals. Shower facilities should also be made available for employees handling animals.

Note: Avoid the use of solvents for washing skin. Solvents remove the natural protective oils from skin and can cause irritation and inflammation. In some cases, washing with solvent may facilitate absorption of toxic chemicals.

2. Personal effects such as backpacks and books that can serve as fomites should not be taken into animal rooms. Notepads and computers dedicated for research use or husbandry care are allowed in animal rooms.

3. Protective clothing and devices shall be worn by all personnel working with animals or their tissues. Outer garments (lab coats, coveralls and disposable aprons) shall be worn in animal rooms. These outer garments shall not be worn outside the animal facility. Covered shoes shall be worn when working in the animal facility. Depending on hazards, other specifications for shoes may be required in the facility. For example, AVS employees routinely wear skid-resistant, steel-toed shoes dedicated to each animal facility.

4. Under no circumstances are personnel permitted to eat, drink, smoke or apply cosmetics in animal rooms. Eating, smoking, drinking and applying cosmetics are allowed in designated areas only.

C. HOUSKEEPING

Housekeeping is directly related to safety and must be given importance of equal value to other procedures. Lack of good housekeeping reduces work efficiency and may result in accidents.

1. Access to emergency showers, eyewashes, fire extinguishers, exits and circuit breakers shall never be blocked or obstructed. Eyewash stations should be flushed gently once a week to ensure that a fresh supply of non-contaminated water is readily available in the event of an emergency.

2. All aisles, corridors, stairs and stairwells shall be kept clear of chemicals,
equipment, supplies, boxes and debris. This allows unobstructed egress from a building in the event of an emergency.

3. Food and drink for human consumption shall not be kept in the same refrigerator used to store chemicals, biological and research samples. Eating and office areas must be clearly separated from animal rooms.

4. All cages should be regularly inspected for sharp edges and protrusions to prevent cuts or abrasions from metal parts.

5. The floors of the animal rooms should be kept free of spillage from water, chemicals, dirty bedding and dirt.

6. General housekeeping procedures which decrease the formation of aerosols such as the use of wet mop or a vacuum cleaner equipped with a high efficiency particulate air (HEPA) filter to remove particulates should be used.

7. In the necropsy and procedure rooms, sharp instruments and needles can cause severe lacerations and puncture wounds; correct methods of their use and disposal must be followed. Blood contaminated sharps must be disposed properly as described in section IV.3.d above.

8. Barbiturates and other controlled substances must be kept in a locked cabinet and issued only to authorized staff.

9. Fire and shock hazards should be avoided by the proper use of electrical cords and proper design of electrical outlets suitable for the function. For example, extension cords shall not be used in lieu of permanent wiring for electrical equipment. GFI and waterproof covered duplex outlets shall be used in areas where water is used.

D. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some animal species or their tissues, body fluids and excretions may transmit zoonotic pathogens to persons coming into contact with them. Therefore, persons handling animals or their tissues must take every precaution to lessen the zoonotic danger posed by the animals. At the same time they must protect the well being of the animals and minimize the effects of stress on the experimental parameters under study. It is incumbent upon the PI or supervisor for the facility to identify potential hazards and provide appropriate training and protection for these zoonotic pathogens. For example, those in naturalistic settings with animals must be cautioned about such hazards as Leptospirosis.

Similarly, persons must take precautions when working with chemical agents or test materials as part of the animal care regimen or study. The use of chemical agents (disinfectants, cleaning agents, etc.) and test materials (reagents, test kits, drug, and needle/syringes, etc.) shall conform to all safety policies and good laboratory practices as to lessen the physical danger of these items.
Protective clothing includes such items as lab coats, coveralls, disposable aprons, boots and hoods. Protective devices include vinyl gloves, filter respirators, safety glasses, face shields, ear plugs and sharps containers. All of these items should be made available to employees who are involved with the care and use of animals. Records should be kept by each facility as they are assigned to employees, training provided, and that they are properly maintained and replaced as needed. For more information visit Health_Safety_Guide.doc at http://www.hawaii.edu/ehso/industrial/HSG.pdf.

Some general guidelines to follow when using PPE are as follows:

1. Carefully inspect all protective equipment prior to use. Do not use defective equipment.

2. All chemicals including disinfectants and cleaning agents must be handled as to avoid splashes to the skin and eyes.
   a. Eye protection (safety glasses, chemical-resistant goggles, or face shield) shall be worn at all times when handling chemicals. Ordinary prescription glasses are not considered effective eye protection since they lack necessary shielding. Chemical-resistant goggles should be worn over the glasses or prescription safety glasses be provided to employees required to wear corrective lenses.
   b. The wearing of contact lenses when handling chemicals is very controversial. Safety glasses or chemical-resistant goggles shall be worn over contact lenses when handling chemicals.
   c. When working with corrosive, toxic, allergenic or sensitizing chemicals, rough or sharp-edged objects, very hot or very cold materials, gloves made of material known to be resistant to permeation by the substance shall be worn.

   No one glove can protect against all hazards. Cloth gloves, while not appropriate for use around liquids, can protect against light abrasive materials and moderate temperature changes. Synthetic or rubber gloves protect against corrosives, solvents, and poisons. Consult the manufacturer’s performance chart or contact EHSO for assistance.

3. Steel-toed shoes or protective boots should be worn by animal handlers when handling heavy items such as cage racks, cages, feed and corrosive chemicals. Shoes or sandals with open toes shall not be worn.

4. Skid resistant shoes shall be worn where there is a slipping hazard.

5. Long pants shall be worn when working around chemicals.

6. Long hair shall be held in place behind the head.
7. A full-body-length rubber, plastic or neoprene apron appropriate for the material being handled shall be worn if there is risk of splash or spill.

E. CORROSIVE CHEMICALS

1. Materials are classified as corrosive if they:
   a. Are capable of rapidly eroding building material or metals, or
   b. Burn, irritate or destructively attack organic tissues such as skin, eyes, lungs, and stomach.

   Employees caring for animals may use detergents, activators, descalers and disinfectants that contain corrosive chemicals in their formulation. Examples of chemicals in these products that have corrosive properties are:
   
   - Potassium hydroxide
   - Phosphoric acid
   - Sodium hydroxide
   - Hydrochloric acid
   - Chlorine
   - Sodium hypochlorite

   Safe handling procedures will vary with each operation and the type and concentration of the corrosive chemicals; refer to product’s MSDS for more information.

2. The following general guidelines should be followed for procedures involving acids and bases:
   a. Never pour water into acid. Slowly add acid to the water and stir.
   b. Suitable facilities, such as a safety shower and eyewash, shall be located within 100 feet of the work area for quick drenching or flushing of the eyes and body. EHSO personnel inspect and flush safety showers periodically. Eyewash stations should be flushed on a weekly basis by users.
   c. When disposable containers are completely emptied of their contents, flush them thoroughly with water before throwing them away.
   d. Never dispose of acids or bases in the sanitary sewer system (i.e. down the drain) until neutralized (pH 5.5-8.5). Neutralization should be conducted in a fume hood, then the solution poured slowly down the drain with copious amounts of water; i.e., leave the water running for approximately 5 minutes.
e. Contact Hazardous Waste Program at 956-3202 for assistance with disposal of large quantities (more than 2 gallons or 1 pound) of acids and bases.

f. All facilities should have access to a spill kit (specialized absorbents for acids and bases for neutralization). Never use combustible organic materials (sawdust, excelsior, wood scraps and shavings, paper, rags, or burlap bags) to absorb or clean-up spills.

F. COMPRESSED GAS CYLINDERS

Compressed gases such as carbon dioxide are used for euthanasia of animals and oxygen for anesthetic machines.

Use of compressed gases requires anticipating chemical, physical, and health hazards. Cylinders that are knocked over or dropped can be very dangerous. If a valve is knocked off, the cylinder can be a lethal projectile. Accidental releases may result in an oxygen depleted atmosphere or adverse health effects. In short, improper handling and use can cause structural damage, severe injury, and possible death.

The following guidelines will help ensure safe handling, use and storage of compressed gas cylinders.

Receiving and Storage

1. Be sure to have a return agreement for empty cylinders with suppliers prior to purchase since disposal of compressed gas cylinders is difficult and very expensive.

2. Cylinders should not be accepted unless the cylinder contents are clearly labeled. Color coding only should not be accepted, since it does not constitute adequate labeling.

3. Do not accept cylinders which are damaged or do not have a valve protection cap.

4. All gas cylinders in use shall be secured in an upright position in racks, holders, or clamping devices. When cylinders are grouped together, they should be individually secured and conspicuously labeled on the neck area.

5. Oxygen cylinders shall never be placed near highly combustible materials, especially oil and grease, or near stocks of carbide and acetylene or other fuel gas cylinders, nor near any other substance likely to cause or accelerate a fire.

6. Cylinders should have current hydrostatic test date (normally less than 5 years old for steel and 3 years old for aluminum) engraved on the cylinder. Cylinders should be returned to the supplier for servicing prior to the expiration date.
7. Do not place cylinders near heat, sparks or flames or where they might become part of an electrical circuit.

8. Do not store cylinders in exit corridors or hallways.

Handling and Use

1. Only Compressed Gas Association fittings and components are permitted for use with gas cylinders. Only use regulators approved for the type of gas in the cylinder. Do not use adapters to interchange regulators.

2. Open cylinder valves slowly and away from the direction of people (including you). Never force a gas cylinder valve. If the valve cannot be opened by the wheel or small wrench provided, the cylinder should be returned.

3. No attempt shall be made to transfer gasses from one cylinder to another, to refill cylinders, or to mix gases in a cylinder.

4. All cylinders are to be considered full unless properly identified as empty by the user. Empty cylinders must be returned to the supplier and not accumulated.

5. Compressed gases must not be used to clean your skin or clothing.

6. Never heat cylinders to raise internal pressure.

7. Always leave at least 30 psi minimum pressure in all “empty” cylinders. Do not leave an empty cylinder attached to a pressurized system.

G. ERGONOMIC CONSIDERATIONS

Musculoskeletal injury (sprains and strains) from lifting heavy objects such as metal cages, bags of feed or bedding material is a problem for animal care handlers. In addition, repetitive motions are also an ergonomic concern in animal facilities. Here are the basic lifting procedures recommended to reduce or prevent lifting injuries.

1. Plan your lift and test the load. Before you lift, think about the item you are going to move, and ask yourself: “Can I do this alone?” “Is it too awkward for one person?” “Is the path clear?” Also, test the load to see approximately how heavy it is before lifting. For example, AVS limits the load in each garbage can to be dumped in the dumpster at Biomedical Sciences Building to 30 lbs., in order to facilitate throwing contents into upright dumpsters.

2. Ask for help. If the load is too heavy or too awkward for you to lift, ask for assistance.
3. Get a firm footing. Keep your feet apart for a stable base and point your toes out.

4. Bend your knees. Don’t bend at the waist. Keep the principles of leverage in mind at all times.

5. Tighten your stomach muscles. Use intra-abdominal pressure to support your spine when you lift, offsetting the force of the load. Train your muscles to work together.

6. Lift your legs. Let your leg muscles do the work of lifting. Don’t rely on your weaker back muscles.

7. Keep the load close. Don’t hold the load away from your body. The closer it is to your spine, the less force it exerts on your back.

8. Keep your back upright. Whether lifting or putting down the load, don’t add the weight of your body to the load. Avoid twisting.

H. USE OF HAZARDOUS MATERIALS IN EXPERIMENTAL ANIMALS

1. The AVS Director must be fully informed by the investigator before studies requiring administration of radionuclides to experimental animals are undertaken. All such activity must receive prior approval by the IACUC, and EHSO before commencing. Both animal rooms and cages containing radioactive animals are to be posted with “CAUTION RADIOACTIVE MATERIAL” signs, and the rooms are to be restricted for entrance by authorized personnel only. Radioactive animals and animal wastes are to be disposed of according to instructions given by the Radiation Officer. All provisions of radioactive use must be in compliance with the policies set forth by the University’s Radiation Safety Manual. Website (http://www.hawaii.edu/ehso/radiation/)

The AVS Director, EHSO, and/or IBC must be fully informed by the investigator before studies are undertaken which involve the use of hazardous chemicals or infectious agents. Specific methods for prevention of exposure of personnel and other experimental animals to such hazards must be agreed upon by the AVS Director, Industrial Hygienist, Biological Safety Officer, the Principle Investigator, and/or IBC before initiating a study. Appropriate SOPs and training will be developed prior to commencement of any such activity. Disposal of animal carcasses or bedding contaminated with hazardous chemical or infectious agents shall be done in consultation with hazardous waste disposal guidelines.

2. Guidelines are provided in the Health and Human Services (HHS) Publication entitled “Biosafety in Microbiological and Biomedical Laboratories,” latest edition. All personnel involved in hazardous procedures must be fully informed by the Principle Investigator and given specific instructions about
procedures to be followed. Personnel are expected to follow all instructions given by the person responsible for conducting the study. Environmental Health and Safety Office, and/or IBC and the UH Veterinarian must be contacted immediately in case of an accident or emergency.

3. Animal rooms and cages containing infected or carcinogen treated animals are to be posted with “BIOHAZARD” or “Chemical Hazard” signs. Research personnel may be required to assume responsibility for routine husbandry of animals in containment areas depending upon the degree of risk and complexity of containment procedures. All personnel performing routine husbandry are to be provided and are to use protective garments as required by specific hazard involved. These may be charged back to the PI by the AVS business office, where what is required is above and beyond normal husbandry procedures. Protective garments should also be worn while handling tissues, excreta, etc. Refer to the Appendix 2: Use of Chemicals in Animals Policy for more information.

4. Experimentally or naturally infected animals likely to shed pathogens in body secretions or excretions must be isolated and are not housed in the same room with noninfected animals. Animals infected with Class 3 agents, or with agents not yet classified as to hazard MUST be housed under conditions providing at least ABSL3 level of physical containment. Unless the absence of human pathogens is indicated by appropriate screening procedures, it is best to regard tissues and other biological materials from animals as potentially pathogenic. Transplantable rodent tumors are of particular concern since it has been shown that they may harbor a variety of indigenous viruses, such as lymphatic choriomeningitis virus, a Class 3 human pathogen. Before arranging to obtain tumor-bearing rodents of unknown health history from a non-vendor source, it is imperative that the AVS Director is consulted to assure availability of a suitable isolation room. Screening procedures for detection of indigenous viruses in transplantable rodent tumors can be coordinated by the AVS veterinarian.

5. After each set of experiments, the Principal Investigator should arrange for AVS to decontaminate containment areas. These services may be charged back to the PI by AVS. Cages (including litter), water bottles, feed hoppers and other non-disposable items used for infected animals should be steam sterilized (autoclaved) before cleaning and washing for later use. Dead animals should be placed in leak-proof double-wall bags that are closed before removal from the work area and disposed of by appropriate methods as described in section IV.3.c above.

6. Animals treated with chemical carcinogens should be housed in a cage that confines feed, feces, urine and litter within the enclosure. When using a volatile chemical carcinogen, the cage should be used with appropriate ventilation systems. When chemicals are incorporated into animal diets, the use of gelled or pelleted diet is encouraged to reduce hazards associated with dust emanating from powdered diets.
7. Litter from cages used for carcinogen treated animals should be placed in double-wall plastic bags that are sealed before removal from the containment area and disposed of according to EHSO requirements. Specific requirements for temperature needed to destroy toxic chemicals must be followed carefully. Current operating temperature of the incinerator to be used must be verified and disposal procedures must be verified and disposal procedures must be coordinated to prevent inadvertent exposure to the operator or contamination of facilities. The use of disposable cages may be required to adequately decontaminate animal housing areas when some hazardous chemicals are used.

8. Work with certain species such as primates, captive wild animals and certain domestic animals of unknown health history are considered hazardous although no specific hazardous experimental hazard emanates from the possible existence of human pathogens as in apparent flora in these species. Personnel working with these species are required to follow minimum procedures for health protection. Recommendations for various species are available from UH veterinarian.

VI. Employee Safety Training

Effective dissemination of safety information is essential in the success of a health and safety training program. Section 12-60-2, Title 12 requires that safety training for employees be provided in the following: “general safe work practices and specific instructions with respect to hazards unique to the employee’s job assignment.”

The purpose of providing safety training to employees is to help them clearly understand the risks of hazards they face on the job and to provide information concerning methods of personal protection which will safeguard them while performing those tasks.

EHSO can provide training program in Hazard Communication, Radiation Safety, Fire Safety and Infectious Waste Management. Most training program material is general in nature so as to be applicable to a great number of departments. Sessions can be scheduled through EHSO for presentation to AVS employees/students as needed. A complete listing of training classes may be found in Appendix 9, and via the EHSO website www.hawaii.edu/ehso.

Specialized training sessions dealing with an employee’s unique job assignment must be developed by the PI or Supervisor. It is the supervisor’s responsibility to understand his/her employee’s job tasks and related hazards. For example, the operation of large autoclaves or incinerators may require specialized training. HIOSH standards require that supervisory personnel inform their employees about hazards they face on the job.

A long-range Departmental training plan should be developed which sets priorities for training sessions, including a schedule of presentations. Consideration should also be
given to frequency required for retraining purposes. These refresher programs should be incorporated into the long-range plan.

Complete documentation of all training activities must be maintained.

VII. Medical Surveillance

A. Purpose

Medical surveillance is required for individuals experiencing exposure to animals, including incidental or inadvertent exposure, in the course of performing their duties for the University in terms of education, research, or care of the animals. The emphasis of such a program is the prevention of illness, but it also includes provisions for early diagnosis and treatment when such illnesses occur. For general guideline on medical surveillance, see Appendix 3: Medical Surveillance

B. Definition

For the purpose of this section, individuals having animal contact, refer to employees, visiting scientists, and students who in the course of their employment, research or education have substantial animal contact. Refer to Table 1 below to determine the extent of animal contact and the type of medical surveillance required.

For assistance with individual risk assessment and guidance on appropriate health and safety measures, the EHSO and/or the AVS director should be contacted.

C. Physical Exams and Medical Histories

1. Physical Examination and Medical Histories
   a. Post Offer and Annual Physical Exams through Straub Occupational Health Services are required for AVS staff. The following tests are run: hearing, vision, dipstick urinalysis, complete physical exam, respirator clearance evaluation (pulmonary function test, respirator clearance certification for use of respirator).
   b. Office workers in the vicinity of animals, but with no regular contact-refer to Table 1, and follow appropriate precautions.
   c. Facilities personnel – Check with the AVS Operations Manager for specific PPE and entry requirements before entering animal rooms in the vivarium

2. Notification of Employees and Students of Risks of Zoonosis

Supervisors of employees and instructors of students having animal exposure shall notify those individuals of potential zoonosis that could be contracted as
a result of animal exposure. The notification should be made prior to start of the animal experiment involving the potential zoonosis. The individuals shall be informed of the characteristics of the zoonosis, any special considerations such as risks to pregnant women and immunocompromised individuals, and infection rate among other individuals with substantial similar animal exposure if available. Individuals should receive clear instructions as to the action they should take if they suspect they have contracted a zoonosis. Written documentation of training should be kept on file by the AVS Operations Manager.

3. Respirator Protection Program
Respirators will be worn based on a case by case assessment by EHSO, and/or IBC. See Appendix 4 for details on the Respiratory Protection Program.

4. Treatment of illness or injury
Illness and injury experienced during work should be reported promptly to the supervisor. Records should be kept of such incidents, and appropriate medical attention should be sought based on the judgment of the affected employee and supervisor, in consultation with an appropriate medical professional if necessary. A “Worker’s Compensation” form for staff should be filled out within 7 working days. For Animal and Veterinary Services (AVS), it is their policy that the Worker’s Compensation Claim will be turned in as a claim within 7 working days of the incident, only if the employee seeks to pursue medical attention. Otherwise, a letter signed by the affected employee should be on file, stating that they did not choose to seek medical attention at this time. The supervisor should report the illness or injury to the AVS Director, or supervisor or PI for other facilities.

Under AVS policy specifically, any individual bitten by a research animal should immediately report this to the supervisor, and record the injury in the “Bite-Scratch” log located in either Biomed T203A office or Kakaako 123. Wounds (bites and scratched or abraded skin) should be cleaned immediately for a full 15 minutes immediately following the incident.

If the injury or illness requires medical attention, all employees can go to the University Health Service; or Straub Clinic on Beretania, or report to their respective private physician or go to their Hospital Emergency Room. Phone numbers of occupational physicians should be made available through the business office or paging the Director at AVS, or contacting the supervisor or PI at other facilities.

Dr. Francis Pien has been identified as the AVS Infectious Disease Physician for potentially infectious biohazardous ABSL2 or ABSL3 agents. AVS employees will be advised to see Dr. Pien if they suspect a laboratory acquired infection during their husbandry duties associated with specific projects. The AVS Director will write a confidential referral letter to Dr. Pien, which will be hand carried by the affected AVS employee.
convalescent serum samples may be taken by Dr. Pien in case of suspected laboratory acquired infection.

5. AVS employees and students involved with animal care must receive Tetanus immunization every 10 years or following an injury on the advice of their physician. Proof of Tetanus immunization should be kept in their AVS personnel files.

6. Vaccinations may be made available through AVS for AVS employees who have responsibilities for animal husbandry involving ABSL2 or ABSL3 biohazardous activities. AVS will pay for the vaccinations. An LAS employee may decline vaccinations made available to them by the department, by completing the Vaccination Declination form – Appendix 5. The signed form will be kept in the employee’s personnel file.

7. Mucocutaneous exposure in spite of eye/face protection, mandate when working with primates or their wastes, or when working with other experimental animals, requires flushing of the eyes and mucous membranes for a full 15 minutes following accidental exposure using approved equipment and solutions. Care must be taken not to use towels to wipe out contaminating material, which may serve to enhance deposition of microorganisms or infectious agents into delicate tissues. These incidents shall be immediately reported to the AVS Facility Supervisors.

8. For AVS employees involved in animal care and husbandry involving ABSL2 or ABSL3 biohazardous agents:
   a. Specific PPE will be made available based on risk assessment prior to the initiation of the animal activities.
   b. Specific Standard Operating Procedures (SOPs) will be developed and approved by the IACUC, EHSO, and/or IBC prior to initiation of animal activities. Specific instructions for biohazardous projects shall be reviewed with staff prior to commencement of activities. Signs pertaining to the activity and procedures to follow in event of accidental exposure to the biohazardous agents will be posted in the vicinity of the specific activity.
   c. Staff will be trained and training records documented prior to initiation of the animal activities. Training records will be maintained by the AVS Operations Manager.
   d. Written protocols for emergency response must be immediately available to all employees at risk for exposure.
   e. Vaccinations when available will be offered to the employee.

University of Hawai’i at Manoa

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**TABLE 1 – Occupational Health Program for Animal Handlers**

AVS Occupational Health & Safety  |  Revised-3/12/2014
### Extent of Animal Contact

<table>
<thead>
<tr>
<th>Species used/Other Factors</th>
<th>Direct Regular Contact (8hrs/week or More)</th>
<th>Direct Contact Limited Exposure (less than 8hrs/week)</th>
<th>No Direct Contact, Occasional Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Animals (Rabbits, Rodents, Birds)</td>
<td>2, 8, 9</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Dogs, Cats, and Feral Animals</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Primates</td>
<td>2, 3, 8, 9</td>
<td>2, 3, 8, 9</td>
<td>3</td>
</tr>
<tr>
<td>Farm Animals</td>
<td>2, 6</td>
<td>2, 6</td>
<td></td>
</tr>
<tr>
<td>Amphibians, Reptiles, Fish, and Other Cold-Blooded Animals</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Infectious Disease Studies (Class III or Higher)</td>
<td>2, 7, 8, 9</td>
<td>2, 7, 8, 9</td>
<td>2, 7, 8, 9</td>
</tr>
<tr>
<td>Work with Animal Tissues</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

**Code Number Procedure**

1. **Tetanus Immunization** (every 10 years or following injury on advice of physician)
2. **TB test** (annually). Those who skin test positive for TB, will be referred to their family physician for further work up (chest x-ray), bloodwork, and course of drug treatment. Once treatment is completed, no further testing is required, unless the person develops symptoms of TB.
3. **Special Education on Large Animal Diseases**
4. **Special Consideration by IBC and/or EHSO**
5. **Post-Employment Physical**
6. **Annual Physical Exam**

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1 Reproduced from Table 5, P.C-7, PHS Guidelines with modifications by LAS

UNIVERSITY OF HAWAII AT MANOA
HEALTH AND SAFETY DIRECTORY

I. **EMERGENCY SERVICES**

<table>
<thead>
<tr>
<th>District</th>
<th>Phone</th>
</tr>
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<tbody>
<tr>
<td>Campus Security – Emergency response</td>
<td>X66911</td>
</tr>
<tr>
<td>Kaka’ako Campus – Emergency response</td>
<td>X21911</td>
</tr>
<tr>
<td>University Health Services</td>
<td>X68965</td>
</tr>
<tr>
<td>AVS Occupational Health &amp; Safety</td>
<td>Revised-3/12/2014</td>
</tr>
</tbody>
</table>
Straub Occupational Services 544-4320/
522-4451

Dr. Francis Pien 597-8765
Internal and Infectious Disease
1010 S. King st. # 111

II. AVS EMERGENCY CONTACTS

Dr. Sylvia Kondo X64444
Cell 286-5468
sylviak@hawaii.edu

III. ENVIRONMENTAL HEALTH AND SAFETY OFFICE
Visit www.hawaii.edu/ehso

IV. IBC c/o Research Compliance Office
Eleanor Low X68420

V. FACILITIES PLANNING AND MANAGEMENT

Work Coordination (regular hours) X67134
Work Coordination (after hours) X66911

HELPFUL REFERENCES

• EHSO HEALTH_SAFETY_GUIDE.DOC http://www.hawaii.edu/ehso

• MODEL BLOOD-BORNE PATHOGENS EXPOSURE CONTROL http://www.hawaii.edu/ehso/bio/BBP_ECP.rtf

• HAZARD COMMUNICATION PROGRAM (for locations other than research labs) see http://www.hawaii.edu/ehso/industrial/HSG.pdf

• CHEMICAL HYGIENE PLAN (for research laboratories) http://www.hawaii.edu/ehso/lab/reference.htm

• HAZARDOUS MATERIAL MANAGEMENT PROGRAM (HMMP) http://www.hawaii.edu/ehso/hazmat/

• CHEMICAL WASTE DISPOSAL

AVS Occupational Health & Safety Revised-3/12/2014
http://www.hawaii.edu/ehso/bio/biwaste.htm

• PERSONAL PROTECTIVE EQUIPMENT
  See Health_Safety_Guide.doc

• HAZARD ASSESSMENT GUIDE

• FIRST AID KIT REQUIREMENTS
  See http://www.hawaii.edu/ehso/industrial/HSG.pdf

• LIST OF EHSO TRAINING CLASSES
  See http://www.hawaii.edu/ehso/training.pdf

• SAFE NEEDLE POLICY FOR LAS

• UH BIOLOGICAL SAFETY PROGRAM
  http://www.hawaii.edu/ehso/bio/
HAZARD ASSESSMENT GUIDE

In order to determine the need for PPE, a walk-through survey of the workplace should be done to identify hazards. These are the basic hazards that you should look for:

- Impact
- Penetration
- Compression (roll over)
- Chemical
- Heat
- Harmful dust
- Light (optical) radiation

During the survey, you should look for:

- Machinery, processes, or sources of motion where any movement of tools, machine part or personnel could result in collision with stationary objects;
- Sources of high temperatures that could cause burns, eye injuries, or ignite protective equipment;
- Types of chemical exposures;
- Sources of light radiation (welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.);
- Sources of falling objects or potential for dropping objects;
- Sources of sharp objects that might pierce feet or cut hands;
- Sources of rolling or pinching objects that could crush feet;
- The layouts of the workplace and the location of co-workers;
- Any electrical hazards.

Also, you should check injury/accident data to help identify problem areas.

After you assess the hazards in your workplace, organize and analyze the information to decide what protective equipment is needed. You should estimate how serious each hazard is in terms of its level of risk and potential to cause injury. Also, consider the possibility of a worker being exposed to several
hazards at once.

1. Selecting PPE to guard against the hazards and the type of available and what it can do (impact protection, splash protection, etc.)

2. Compare the hazards to the capabilities of the PPE.

3. Selecting PPE that ensures a level of protection greater than the minimum required to protect employees from the hazards.

4. Fit PPE users and give instructions on the care and use of the equipment. It is very important that users are aware of all warning labels and limitations of their PPE.

As a reminder, workplace hazards should be reassessed as needed by identifying and evaluating new equipment and processes, reviewing accident records, and re-evaluating the suitability of previously selected PPE.
Appendix 2

USE OF CHEMICALS IN ANIMALS (USED IN AVS OPERATED FACILITIES) POLICY

<table>
<thead>
<tr>
<th>Date First Issued</th>
<th>Approved by:</th>
<th>Approved by UH IACUC: Initial 6/15/06, Revised 9/17/09</th>
<th>Revised: 5/1/07, 7/18/07, 8/27/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/15/06</td>
<td>S. Kondo</td>
<td></td>
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</tr>
</tbody>
</table>

In the course of research, laboratory animals may be dosed with chemical treatments and proprietary drugs. The animals may excrete these chemicals or their potentially toxic metabolites, especially during the first seventy-two (72) hours after dosing. This policy is designed to protect employees working under these conditions by managing and minimizing their exposure to hazardous and toxic chemical agents or their products.

The following are general guidelines developed by Environmental Health and Safety Office (EHSO) which are applicable to projects involving chemical dosing of animals. The Institutional Animal Care and Use (IACUC) protocols must be carefully reviewed by EHSO for activities occurring in Animal and Veterinary Service (AVS) to determine any additional measures to prevent human exposure and contamination on a case by case basis.

It is incumbent upon the Principal Investigator (PI) to comply with these guidelines and those specifically developed for their protocols. Failure to do so could result in the non-compliance being reported to the respective Federal agency and other negative consequences to the University.

**Principal Investigator's Responsibilities:**

1. The PI must provide a list of chemicals and information related to their hazards, e.g., Material Safety Data Sheets (MSDS), and/or literature citation on the prior use of the particular chemical in animals. This information should be attached to the UH IACUC protocol.
2. The PI must provide an assessment of whether the wastes, including soiled bedding, cages, and carcasses are considered either biohazardous, chemically hazardous, or a mixed hazard.
3. EHSO will review the information provided by the PI and determine:
   a. Waste disposal requirements in accordance with the EHSO Hazardous Material Management Plan. If the method of disposal includes segregating and collecting the bedding for disposal as chemical waste, AVS will work directly with EHSO to determine how the waste will be collected and stored while awaiting disposal by a licensed contractor.
   b. Occupational health and safety requirements (personal protective equipment, ventilation, etc.)
4. EHSO will provide their comments/recommendations regarding the protocol to the UH IACUC. The UH IACUC will incorporate these into their review and approval process. Disposal methods of chemically contaminated animal carcasses, cages and bedding, and other associated wastes during the 72-hour post treatment period must be determined before IACUC approval.
5. Costs associated with extra husbandry requirements and disposal of animal carcasses and wastes will be charged back to the PI, if the method of disposal exceeds what is covered by the current per diem rate for the species. AVS will inform the PIs of the additional charges.
6. In the IACUC approval letter to the PI, the IACUC will require that the PI contact the AVS Operations Manager (OM) prior to the initiation of the project. The OM will contact EHSO to confirm the protocol specific waste disposal and occupational health and safety requirements.
7. The PI shall provide protocol specific training to AVS prior to start of the project.

Chemicals in Animals Policy
Version 8/17/09

8. Training records for individual protocols involving chemically dosing in animals will be documented and archived by AVS.
Work Practices for Operations with Chemically Dosed Animals:

1. **Personal Protective Equipment (PPE):**
   a. Employees shall wash their hands before donning and after removing gloves.
   b. Disposable gloves shall be worn when handling contaminated animals and bedding. Gloves shall be inspected for tears or holes prior to donning, changed frequently, and not reused.
   c. A gown (preferably closed in front) shall be worn when handling contaminated bedding. If gowns are to be reused, they must be stored in a manner that does not permit contact between outer and inner surfaces.
   d. A face shield or safety goggles shall be worn when handling contaminated bedding.
   e. Respirator Safety Program requirements must be followed if respirators are required or recommended.

2. **Engineering Controls:**
   a. Cages shall be equipped with filtered microisolator tops, preferably High Efficiency Particulate Air (HEPA) filters, or with a minimum filter size of 25 um (Remay filters)
   b. Cages shall be handled in a ventilated cage changing station, biological safety cabinet, or laboratory fume hood.
   c. Bedding shall be dumped at a ventilated dumping station, biological safety cabinet, or laboratory fume hood. Cages shall be wiped out with wet paper towel after the bedding has been removed.
   d. Decontamination of the cage changing and dumping stations shall consist of surface cleaning with water and detergent followed by thorough rinsing with clean water. Cleaning shall proceed from the least to most contaminated areas.

3. **Signage:**
   a. When animals are dosed with a toxic chemical, their cages must be labeled with:
      i. Name of Principal Investigator
      ii. Chemical name and appropriate warning symbol
      iii. Approximate dose
      iv. Date and Time of administration
      v. Building name and room number

4. **Disposal:**
   a. Disposal of residual and unused chemicals and solutions will depend upon their regulatory status (this should be determined during protocol review by EHSO).
   b. Empty syringes used to administer the chemicals are not regulated as hazardous waste and may be disposed of with other sharp wastes.
   c. Disposal of carcasses and bedding shall be determined on a case-by-case basis during protocol review.
PART 10

MEDICAL SURVEILLANCE

Medical surveillance program includes healthcare workers who are at risk of acquiring and/or transmitting communicable diseases to patients, visitors and colleagues because of their exposure in the workplace. The program provides for an assessment of health risks associated with certain positions and a determination of appropriate medical testing and recommended vaccines. Medical surveillance will be required of certain positions, and additionally in certain cases, mandatory testing, immunization or other preventive procedures.

A. Immunizations

BSP may require specific immunization for personnel potentially exposed to certain biological commodities. Licensed Vaccines for Immunizations:

At minimum each personnel should have the following for their health clearance of immunizations— including diphtheria/tetanus within 10 years; polo and mumps; complete Hepatitis B vaccine series; and laboratory evidence (titer) of immunity to rubella, rubella and varicella—and TB Mantoux clearance. Personnel who have not taken a TB skin test within the last twelve (12) months must take the two-step TB test (PPD).

If there are licensed vaccines or medical prophylaxes available for the type of biological commodities actively being manipulated, IBC recommends the immunization or use of these medical treatments prior to initiation of project.

B. Serum Banking

A qualified person selected by the BSO, in consultation with the principal investigator and the department chair, may require medical examination including collection and storage of serum or other body fluids for future analysis for personnel exposed or potentially exposed to certain biological commodities.

NOTE: There may be requirements for development of an informed consent please seek advice from Human Subjects and Legal Counsel.

C. Reproductive Hazards

Researchers actively working with reproductive hazards explain the risk assessment at time of hire.

Disease-causing agents that are reproductive hazards for women in the workplace (NIOSH, Feb. 1998):

1. Cytomegalovirus (CMV)
2. Hepatitis B virus (HBV)
3. Human Immunodeficiency virus (HIV)
4. Human parvovirus B19
5. Rubella (German measles)
6. Toxoplasma gondii
7. Varicella zoster virus (Chickenpox)
8. Brucella sp.
9. Listeria monocytogenes
10. Lymphocytic Choriomeningitis Virus
11. Hepatitis E
12. Hepatitis virus
13. Mycobacterium tuberculosis (TB)
14. Treponema pallidum
15. Salmonella typhi
16. Others (Any use of Biosafety level 2 microbiological/infectious agents, human or non-human primate fluids (i.e., blood, serum, etc.) tissues or cells (i.e., cell lines, including established, immortalized cell lines like HeLa and Hep-2), and biological toxins (i.e., carcinogens, mutagens, teratogens, poisons, neurotoxins, etc.).)

The following steps should be taken by all employees (counseling to any woman or man of child bearing age working with reproductive pathogens or other potentially infectious materials) who are anticipating pregnancy or who are known to be pregnant:

- Female laboratory personnel, upon learning of their pregnancy should inform their immediate supervisor and the Health and Safety Branch.
- Employees are responsible for learning about the hazards in their workplace, using personal protective equipment, and following proper work practices.

The Biological Safety Program can offer an opportunity to review work procedures in the lab to ensure that potential exposure is minimized. Consideration for reassignment to other tasks that don’t involve exposure to the reproductive hazard (generally with actual pathogens, not necessarily for only other potentially infectious materials such as blood or body fluids).

Since little is known about reproductive hazards in the workplace, workers should also take the following steps to ensure their own safety:

- Wash hands after contact with hazardous substances and before eating, drinking, or smoking.
- Avoid skin contact, with biological commodities
- If biological commodities contact the skin, follow the directions for washing in the material safety data sheet (MSDS)/product insert or description of the biological commodities. Employers are required to have copies of MSDSs for all hazardous materials used in their workplaces and to provide them to workers upon request.
- Review all MSDSs to become familiar with any reproductive hazards used in your workplace. If you are concerned about reproductive hazards in the workplace, consult your doctor or health care provider.
- Participate in all safety and health education, training, and monitoring programs offered by your employer.
- Learn about proper work practices and engineering controls (such as use of biological safety cabinets).
- Use personal protective equipment (gloves, respirators, and
personal protective clothing) to reduce exposures to workplace hazards.

- Follow your employer's safety and health work practices and procedures to prevent exposures to reproductive hazards.
- Prevent home contamination with the following steps:
  - Change out of contaminated clothing and wash hands with soap and water before going home.
  - Store street clothes in a separate area of the workplace to prevent contamination.
  - Wash work clothing separately from other laundry (at work if possible).
  - Avoid bringing contaminated clothing or other objects home. If work clothes must be brought home, transport them in a sealed plastic bag.

D. Cost of Medical Surveillance

The principal investigator shall underwrite the costs for medical surveillance. In special cases, upon the IBC's recommendation, the University may request that the principal investigator include this type of expenses in their budget.

E. Periodic surveillance

When indicated for a job title, periodic follow-up may be necessary. The employee's supervisor will notify employees when a periodic evaluation is indicated.

F. Liability, Malpractice and Personal Health Insurance.

Some units may require liability and malpractice insurance, please see your respective human resource official for further information.

It is recommended that all individual in biological laboratories have basic health insurance coverage.

G. Worker's Compensation Information

Supervisors are responsible for informing employees of their rights and responsibilities under the State of Hawaii's workers' compensation law. The designated departmental Workers' Compensation Coordinator shall provide advice and guidance to the supervisor, including providing copies of the "Highlights of the Hawaii Workers' Compensation Law" brochure and "What To Do for Work-Related Injury/Illness" information sheet.

Under the worker's compensation law, every work-related injury or illness resulting in the absence of one or more days and requiring medical services other than first-aid treatment must be reported by the Employer within seven days to the Department of Labor and Industrial Relations, Disability Compensation Division. The Employee for reporting purposes is the University's insurance carrier. Employees, supervisor and WC Coordinators have a responsibility to timely report all work-related injuries/illness of an employee to the University's insurance carrier. The UH Form 79 (OPHR), "Report of Work-Related Injury/Illness", is available for reporting purposes. Please refer to the UH Administrative Procedures Appendix 3 (3/5)
Appendix 3 (4/5)

Compensation for further instruction in this matter.

Copies of completed UH Form 79 are received by EHSO where they are reviewed for injury trends that may occur within a department. If a trend is detected the EHSO conducts an investigation to determine the cause of injury/illness and ways to reduce or prevent the specific injury/illness.

All matters pertaining to employee/student health and safety concerns must be fully documented. Written records of activities, such as development of special department safety policies and procedures, training session for managers and employees and minutes of safety meeting and so on, must be maintained at the appropriate levels as specified in the following:

0. EHSO is responsible for:

Documenting all training programs provided to departments by EHSO staff, including a participant list, date of presentation and topic discussed.

1. Department is responsible for:

Maintaining records concerning employee injuries, incident reports, grievances involving safety matters, personnel exposure records, training, etc.

2. Supervisor is responsible for:

Documenting any exchange of safety information with employees occurring through formal presentation and/or one-to-one meetings at the work site.

Records of all safety matters are subject to periodic review by EHSO, HICSH, and other applicable agencies conducting work place inspections. They should be maintained in a clearly identified, central file within the department for ease of access.

Procedure for an injured staff:

3. Assess the severity of the injury and the circumstances surrounding the incident.

4. If work-related or non-employee injury or illness is determined to be of an emergency nature, the individual should receive treatment at the nearest medical emergency department.

5. In the event that an individual requires medical assistance at the scene of the incident or needs to be transported to the Emergency Room by medical personnel, call Campus Security at 6-5911.

6. It is highly suggested, for non-emergency injuries, send the employee or injured individual to University Health Services, Straub Hospital and Clinic or their private physician.

7. If the individual can be moved and transported safely by non-medical personnel, a supervisor or co-worker should accompany the injured individual to the appropriate healthcare facility.

8. You must complete an "Accident Injury and Illness Report" and/or WC-
Appendix 3 (5/5)

9. If unable to complete the "Accident Injury and Illness Report" at the time of the injury, a call from the medical advisor may be required to identify the employee and the department. Briefly explain the injury and identify it as work-related.

10. Even if the reported injury or illness is not serious enough to require treatment, an "Accident Injury and Illness Report" should be completed and sent to EHSO. If follow-up care is necessary, that care will be reported.

11. It is the employee's responsibility to contact their personnel officer if any lost time is involved, as well as to notify their department of their absence within the department.

Confidentiality

12. The confidential medical evaluation should include at least the following:
   a. Documentation of the injury or route of exposure, and the circumstances under which the injury or exposure incident occurred.
   b. Identification and documentation of the injury or exposure source, unless it can be established that identification is not feasible or prohibited by state or local law.
   c. The Supervisor shall ensure that the healthcare provider receive the appropriate incident report.

13. The medical advisor shall obtain and provide the exposed employee with a copy professional's written opinion within 15 days. Student evaluation from an injury exposure is a unit's internal policy.

14. The healthcare professional's written opinion for vaccination shall be limited to whether vaccination is indicated for the exposed individual, and if that individual received such vaccination.

15. The healthcare professional's written follow-up shall be limited to the following:
   a. A statement that the exposed individual has been informed of the results of the evaluation; and
   b. A statement that the exposed individual has been told about any medical conditions resulting from exposure to biological agents, blood or other potentially infectious materials which may require further evaluation or treatment.

16. All other findings or diagnosis shall remain confidential and shall not be included in the written report.

H. Emergency

See Part 11, Accidents Involving Biological Commodities
RESPIRATORY PROTECTION PROGRAM FACT SHEET

General Scope

A respirator is a personal protective device used to protect the wearer from inhalation of harmful levels of airborne contaminants. The use of respirators is acceptable only when engineering or work practice controls (e.g., local exhaust ventilation) are inadequate or not feasible, or while these controls are being designed or constructed. Respirators must be carefully selected, properly fitted, regularly inspected and cleaned, and repaired when broken. Wearers must be medically evaluated for respirator use and trained in the appropriate use, care, maintenance and limitations of respirator protective devices. Work areas must be periodically evaluated to determine the appropriate level of respirator protection necessary.

Applicable University Policy/EHSO Contact

UHM Respirator Protection Program; Industrial Hygiene section (956-3204)

Applicable Regulations


Note: More specific requirements for respirator use may be contained within substance – specific regulations (e.g., asbestos, formaldehyde, lead, etc.)

Summary of Requirements

☐ Development of a written respirator protection program.
☐ Respirator users shall be evaluated by a licensed health care professional to determine if they are physically able to perform work while using a respirator.
☐ Respirators shall be selected based upon the contaminant hazards presented to the wearer.
☐ Training shall be provided annually and include information on: selection of respirators; inspection, maintenance, storage and cleaning of respirators; limitations and emergency procedures; and methods of donning, adjusting and fit-checking.
☐ NIOSH-certified respirators must be used.
☐ All negative pressure respirators shall be fit-tested on an annual basis.
☐ Compressed air used for supplied air respirators shall comply with the air quality requirements for Grade D Breathable Air described in CGA Commodity Specifications G-7.1-1989.
☐ Current records for training, fit-testing, medical evaluation and hazard assessments should be maintained by the supervisors.
☐ The UHM Respirator Protection Program shall be reviewed annually with modifications implemented as necessary.

Voluntary Use of Respirators

When an employee chooses to use a dust mask but is not required to wear one for protection against a hazard, the employee does not need training or fit-testing but must be informed of Appendix B of the University's respiratory protection program.

If an employee chooses to use a non-disposable, tight fitting facepiece (i.e., rubber half-face) but is not required to, then the employee must comply with all requirements of the University’s respiratory protection program.

05/06
Attachment 5

Vaccination Declination Form
(First Issued 10/16/09)

I, ________________________ (print full name), understand that due to my occupational exposure providing husbandry to animals who have been exposed to potentially hazardous biological agents am at risk of acquiring disease or be exposed to recombinant activities. I have been given the opportunity to be vaccinated for ____________________ (list agent), at no charge to myself. However, I decline the vaccination at this time. I understand that by declining the vaccination, I continue to be at risk of acquiring serious or fatal disease. If, in the future, I want to be vaccinated, I can receive the vaccination(s) at no charge to me.

_____________________________________
Employee’s Print Name

______________________________________    __________
Employee’s Signature                      Date

Acknowledged by AVS Director

_____________________________________
Print Name

______________________________________    __________
Signature                                  Date

C: Personnel Files