

University of Hawai'i at Manoa
VERTEBRATE ANIMAL FACILITY
Occupational Health and Safety Program

2004
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ATTACHMENTS

ATTACHMENT 1 - HEALTH AND SAFETY DIRECTORY

TABLES

TABLE 1 - OCCUPATIONAL HEALTH PROGRAM FOR ANIMAL HANDLERS

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 LAS 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 LAS 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. LAS Director

The LAS 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.

E. Institutional Animal Care and Use Committee (IACUC)

The IACUC is charged with ensuring that appropriate review for potential hazards is taking place. Review of proposed animal use by the IACUC can request information from the principal investigator (PI) regarding potential hazards

involved in the proposed research. The protocol review process should identify personnel who will be involved in the animal activity and potentially exposed to the associated hazard.

The IACUC reviews and inspects the occupational health and safety program, including the research in progress. 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](#) 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.
- 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**) 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). Refer to addendum for the links to complete Hazard Communication Program.

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 companies such as *Red Bag 3*. 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 of 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 standard 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. Please refer to Appendix 5 as a guide for assessing hazards.

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.

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 a 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. The Laboratory Inspection Checklist was developed primarily for laboratories, but may be revised for offices and other settings.

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.

At LAS, all animal bites and scratches received during the work day should be recorded in the Bite/Scratch logs located in the employee break rooms in Kakaako 123, and Biomed T203A. These should be reported to the personnel officer of the respective department, for documentation for Worker's Compensation purposes.

7. Recordkeeping

All matters pertaining to employee/student health and safety concerns must be fully documented. Written records of activities, such as development of special LAS 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 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.

8. 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.

9. Medical Surveillance

At LAS, all employees required to wear N95 or higher respiratory protection should be respiratory fit tested by a qualified person prior to use. In addition, LAS regularly provides basic health exam post-hire for its employees. This is conducted at Straub Clinic on Beretania Street, and is paid for by LAS. 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, LAS 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. HOUSEKEEPING

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 on 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 suppress 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 drugs 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. A list of potential zoonotic pathogens is listed at the website (<http://www.humboldt.edu/~iacuc/Zoonoses%2OUUCSB.html>).

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 with 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](#).

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 yourself). 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 psig 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, LAS 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 LAS 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/>)
2. The LAS Director, Industrial Hygienist and the Biological Safety Officer must be fully informed by the investigator before studies are undertaken which involve the use of hazardous chemical or infectious agents. Specific methods for prevention of exposure of personnel and other experimental animals to such hazards must be agreed upon by the LAS Director, Industrial Hygienist, Biological Safety Officer and the Principle Investigator 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.
3. 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 the UH veterinarian must be contacted immediately in case of an accident or emergency.

4. Animal rooms and cages containing infected or carcinogen treated animals are to be posted with “**BIOHAZARD**” 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 LAS business office, where what is required is above and beyond normal husbandry procedures. Protective garments should also be worn while handling tissues, excreta, etc.
5. 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 LAS 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 LAS veterinarian.
6. After each set of experiments, the Principal Investigator should arrange for LAS to decontaminate containment areas. These services may be charged back to the PI by LAS. Filter top cages with solid bottom and sides should be used for transfer of infected rodents between buildings. The Biological Safety Officer must be notified before transfer between buildings of animal infected with Class 3 etiologic agents or etiologic agents not yet classified as to hazard. The LAS Director should be consulted about appropriate transfer procedures for non-rodent species. 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 plastic bags that are closed before

removal from the work area and disposed of by appropriate methods as described in section IV.3.c above.

7. 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.
8. 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 by incineration. 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.
9. 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 LAS 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 to 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 more information on medical surveillance, visit [EHSO Medical Surveillance.doc](#).

B. Definition

For the purpose of this section, individuals having animal contact, refers to employees, visiting scientists, and students who in the course of their employment, research or education have substantial animal contact. Refer to **Table 1** 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 LAS director should be contacted.

C. Physical Exams and Medical Histories

1. Physical Examination and Medical Histories

- a. All animal care staff working at LAS should be skin tested at least yearly for tuberculosis (to protect the closed colony of non-human primates), tetanus booster inoculations within 10 years of immunization (to protect the employee or student) and other testing as deemed necessary by the Director. For those skin test positive for tuberculosis, will be referred to their family physician for further workup (chest x-ray), bloodwork, and of course drug treatment. Once completed drug treatment, then no further x-rays will be required, unless the person develops symptoms that are suspicious of tuberculosis. Then they must re-seek medical attention for tuberculosis follow up. Depending on the circumstances of the individual about to experience animal exposure and the risks associated with the animal involved, the supervisor, PI, or Director of LAS may require physical examination, health history, immunization, and laboratory tests either prior to animal exposure or periodically while animal exposure is present. All medical surveillance is subject to advisory review by the IACUC and EHSO.
- b. Office workers in the vicinity of animals, but with no regular contact-check with UH policy on medical surveillance.
- c. Shop personnel –wear 3M dust mask when working/visiting the Aotus room.

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 individuals shall be informed of the characteristics of the zoonosis, any special considerations such as risks to pregnant women, 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.

3. 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 Lab Animal Services (LAS), 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 LAS Director for LAS, or supervisor or PI for other facilities.

Under LAS 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 203 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; 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 LAS, or contacting the supervisor or PI at other facilities.

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 micro-organisms or infectious agents into delicate tissues.

Written protocols for such emergency response must be immediately available to all employees at risk for exposure. Training in using the emergency first aid procedures must be given.

Specific instructions for biohazardous projects should be reviewed with the staff prior to commencement of activities. Signs pertaining to the activity and procedures to follow in the event of an accidental exposure to the biohazardous agents will be posted in the vicinity of the specific activity.

TABLE 1 – Occupational Health Program for Animal Handlers

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

Code Number Procedure

- 2 Tetanus Immunization (every 10 years or following injury on advise of physician)
 - 3 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.
 - 6 Special Education on Large Animal Diseases
 - 7 Special Consideration by Infectious Disease Committee
 - 8 Post-Employment Physical
 - 9 Annual Physical Exam
-

ATTACHMENT 1
UNIVERSITY OF HAWAII AT MANOA
HEALTH AND SAFETY DIRECTORY

I. EMERGENCY SERVICES	EXTENSIONS
Campus Security – Emergency response For all emergencies	X66911
University Health Services	X68965
Straub Occupational Services	544-4320/ 522-4451
Dr. Francis Pien Internal and Infectious Disease 1010 S. King st. # 111	597-8765
II. LAS EMERGENCY CONTACTS	
Dr. Sylvia Kondo	X68770, X64444 Cell 286-5468 uhlas@hawaii.edu
III. ENVIRONMENTAL HEALTH AND SAFETY OFFICE	
Biosafety Hubert Olipares olipares@hawaii.edu	X63197
Biosafety Kakaako Steve Case stevec@hawaii.edu	X68009
Health & Safety Kakaako Tavia Shiroma tavias@hawaii.edu	692-1854
Industrial Hygiene Emma Kennedy ekennedy@hawaii.edu	X63204
Radiation Safety Irene Sakimoto isakimot@hawaii.edu	X66475

Fire Safety Junior Agape (http://www.hawaii.edu/ehso/fire/)	X64953
Laboratory Safety Mark Burch (http://www.hawaii.edu/ehso/lab/)	X65180
Environmental Compliance/Hazardous Material Management (http://www.hawaii.edu/ehso/compliance/)	X63198

Note: EHSO telephone numbers are answered only during regular business hours. Contact Campus Security for 24-hour emergency assistance.

IV. 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
<http://www.hawaii.edu/ehso/bio/biowaste.htm>
- PERSONAL PROTECTIVE EQUIPMENT
See [Health Safet Guide.doc](#)
- HAZARD ASSESMENT GUIDE

See <http://www.hawaii.edu/ehso/industrial/Hazard.pdf>

- 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
http://www.hawaii.edu/ehso/bio/BSM_part26.htm
- UH BIOLOGICAL SAFETY PROGRAM
<http://www.hawaii.edu/ehso/bio/>