

**University of California,  
San Francisco**

**OCCUPATIONAL HEALTH  
AND SAFETY  
IN THE CARE AND USE  
OF RESEARCH ANIMALS**



**May 2000**

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# **PART ONE**

## **POLICY INFORMATION**

## Introduction

The UCSF Occupational Health and Safety Program is intended to provide guidelines for establishing a high level of safety for all individuals who are involved in the care and use of research animals. This Program incorporates the requirements of:

- 8 CCR 3203 (Illness and Injury Prevention Program);
- the University of California's Systemwide Policy on Health, Safety and Environmental Protection;
- *Occupational Health and Safety in the Care and Use of Research Animals* (National Academy Press, 1997);
- This document by reference.

## University of California Systemwide Policy Statement

*The following is an excerpt from the UC policy on health and safety:*

*"The University of California is committed to maintaining a safe environment for its students, academic appointees, staff, visitors, and members of the general public. Further, it is dedicated to minimizing the impact of its operations on the environment surrounding its campuses and laboratory sites. The University has a commitment to promote effective loss reduction and loss prevention measures for the University's property and casualty exposures. It is the policy of the University to conduct its operations in conformance with applicable laws, regulations, and relevant published standards and practices for health, safety and environmental protection."*

## Program Overview

This Program provides guidance in all areas of occupational health and safety and environmental protection. It is organized by types of hazards and risks, followed by the educational and preventive programs that address those hazards and risks, and concluding with mechanisms to maintain and improve the Program.

## Responsibilities

- The UCSF Chancellor and Laboratory Directors are responsible for ensuring the implementation of the Policy on Health, Safety and Environmental Protection at all facilities under their control;
- UCSF Vice Chancellors, and Deputy and Associate Laboratory Directors are responsible for implementing the Policy in all facilities within their respective jurisdictions;
- UCSF Deans, Directors, Department Heads, Principal Investigators, and all other managers and supervisors are responsible for compliance with this Policy as it relates to operations under their control in carrying out their day-to-day responsibilities;
- All UCSF employees, students, and other campus members are responsible for adherence to this Policy in carrying out their day-to-day responsibilities.

## Hazard Categories

The general hazards associated with the care and use of animals can be divided into five broad categories:

### A) *Bites and Scratches*

The potential for receiving a bite or scratch is an ever-present hazard that faces all employees working directly with laboratory animals and related equipment. Employees should be properly trained in handling and general restraint techniques of the species they are assigned to. Additionally, all staff should be familiar with first aid procedures specific to each species.

### B) *Allergens*

One of the most common health concerns in the laboratory animal setting is a work-associated allergy. The risk of developing an allergy depends on parameters such as species, facility, ventilation and the employee's "base-line" health status.

The Committee on Occupational Safety and Health in Research Animal Facilities lists four overlapping Risk Groups:

- **Normal:** No evidence of allergic disease;
- **Atopic:** Pre-existing allergic disease;
- **Asymptomatic:** Antibodies to animal allergens;
- **Symptomatic:** Clinical symptoms on exposure to allergenic animal proteins.

Symptoms of allergic reaction vary depending on the severity of the reaction and include:

- **Contact urticaria** with symptoms such as: redness, itchiness of skin, welts and hives;
- **Allergic conjunctivitis** with symptoms such as: sneezing, itchiness, clear nasal drainage, nasal congestion;
- **Allergic rhinitis** with symptoms such as: sneezing, itchiness, clear nasal drainage, nasal congestion;
- **Asthma** with symptoms such as: cough, wheezing, chest tightness, shortness of breath;
- **Anaphylaxis** with symptoms such as: generalized itching, hives, throat tightness, eye or lip swelling, difficulty in swallowing, hoarseness, shortness of breath, dizziness, fainting, nausea, vomiting, abdominal cramps, diarrhea.

### C) *Protocol Related Hazards*

Protocol-related hazards are defined as those specifically associated with either routine operational or experiment-specific protocols. Some general hazards also associated with protocols, such as the risk of fire in the use of bunsen burners or torches, or electrical hazards in the use of experiment-specific equipment are not included in the category of protocol-related hazards. Protocol-related hazards are protocol-specific, for example: hazards associated with the use of a specific viral vector carrying a transgene for toxin production or with a piece of prototype equipment to perform an experimental task.

Experimental studies can involve any number of hazards such as the use of radioactive

materials, infectious agents, toxins or toxic chemicals, flammable substances, etc.

### **General Safety Precautions**

- Successful abatement of protocol-related hazards requires recognition and description of the hazards prior to the start of the experiments. This is primarily the responsibility of the campus technical safety committees, which are ***Biological Safety Committee, Chemical Safety Committee and Radiation Safety Committee***.

The Radioactive and Biological Use Authorization programs identify relevant hazards associated with submitted protocols and work with the PI to abate these hazards by ensuring proper facilities, equipment, training and awareness to the staff involved in the study.

#### **Note:**

- *If your work involves potential exposure to any biological agents, chemicals, radioactive materials or ionizing radiation, you must attend a training program prior to your exposure to any such hazards.*

***Investigators using biological, chemical or radioactive materials in animals must post a copy of the Animal Involvement in the Laboratory Animal Resource Center form on the door to the room housing their animals. All Special Conditions relevant to safety will be shown on the Animal Involvement form. This form must be approved by the appropriate committee (i.e., Biological or Radiation Safety)***

There are some basic safety precautions that apply to all work environments regardless of the types of hazardous materials used. These include:

- Read and understand the protocol related procedures before you start the experiment. If necessary do a dry run;
- Avoid using sharps whenever possible; substitute manually operated pipettes for needles and syringes, and cannulae for needles;
- Do not recap needles; dispose of them in appropriate sharp containers;
- Use safety needles and sharp devices.
- Until you have washed your hands, keep them away from your mouth, nose and eyes;
- Do not eat, drink or store food in research areas;
- Do not handle contact lenses in the laboratory;
- Wearing of gloves, lab coat or scrubs is required. Other personal protective equipment such as dust/mist masks or approved respirator masks (e.g., Type N95 by 3M company) are strongly recommended when working with animals;
- Please read and understand the special safety requirements for each work area (e.g. sheep containment facility) or animal species (e.g. non-human primates);
- Follow all safety precautions prescribed;
- Clean all spills immediately;

- Dispose of all waste materials into the appropriate waste stream;
- Report all incidents or equipment malfunctions to your supervisor immediately.

***Additional information regarding various protocol-related hazard abatement programs may be obtained from [www.ehs.ucsf.edu](http://www.ehs.ucsf.edu).***

#### **D) Zoonoses**

Zoonotic diseases are those that can be transmitted from animals to humans.

Although there are a variety of zoonotic agents in addition to the Herpes B-virus that staff working in this environment should be aware of, it is more likely for a person to injure or contaminate themselves from an experiment mishap in the lab than to contract a disease from an animal.

**For additional information please visit [www.larc.ucsf.edu](http://www.larc.ucsf.edu)**

#### **E) Inherent Hazards**

There are some potential hazards inherent in any work environment. These include poor ergonomics, slips and falls, electrical safety hazards, etc. UCSF has developed a wide range of environmental health and safety guidelines to address these potential hazards. ***Additional information may be obtained from [www.ehs.ucsf.edu](http://www.ehs.ucsf.edu).***

#### **F) General Precautions**

All employees and students working with animals should be aware that laboratory animals may bite or scratch. In addition, handling of cages, pens and other equipment could cause cuts or scratches. Cuts, bites and scratches could potentially expose the employees to viral, bacterial, parasitic or allergic agents, which are transmissible from animals to humans.

Although the risk of bites and scratches is species dependent, there are a few simple guidelines, which, if followed will significantly reduce the potential risks of such incidents. These include:

- Always wear appropriate personal protective equipment, especially hand and face/eye protection;
- If moving large contaminated items (e.g. non-human primate cages), wear heavy gloves;
- When available and appropriate, use mechanical restrainers when performing procedures on unanesthetized animals;
- All bites and scratches that result in bleeding should be immediately and thoroughly scrubbed and cleansed with soap and running water for at least 15 minutes;
- Do not discard or disinfect any object which caused the injury; hold for analysis;
- Notify supervisor and seek medical attention immediately.

## **PART TWO**

# **SPECIES - SPECIFIC INFORMATION**





Birds can carry organisms that may be potentially infectious to humans. Bird colonies in the laboratory setting are closely managed to produce high quality, healthy animal models. The likelihood of a person contracting a disease from a bird is very low. However, there is always a risk of an outbreak occurring within a colony, either from new animals being introduced into an established colony or from individuals with asymptomatic disease-carrying pet birds inadvertently contaminating a colony via their shoes or clothing. A disease, such as *psittacosis*, is infectious both to other birds and to people; therefore an outbreak within a colony could significantly increase the risk of human exposure.

#### RECOMMENDED PREVENTIVE MEASURES

- Approved respirator masks (e.g., Type N95 by 3M company), gloves and outer clothing, such as a lab coat or surgical gown, should be worn at all times when working with birds.
- Wash hands after handling animals;
- When seeking medical advice for any illness, inform your physician that you work with birds.

To reduce the risk of exposure to allergens when birds are transported to or used in laboratories, staff are advised to adhere to the following practices:

- Perform procedures in a laminar flow hood whenever possible;
- Minimize wearing protective clothing such as lab coats outside of animal areas;
- Keep transport carriers out of labs/offices/public areas;
- Use disposable supplies whenever possible;
- Sanitize lab benches after animal work;
- Follow posted Personal Protective Clothing requirements.

#### RESPONSE TO INJURY

The species of birds maintained at UCSF are usually docile animals. If injury does occur:



1. Wash any injured site with soap and water for at least 15 minutes;
2. Control bleeding by applying direct pressure with a sterile gauze or bandage;
3. Cover wound with clean bandage (do not apply ointment or spray);
4. **Seek advice from emergency room physician.**

## INFECTIOUS DISEASES

**Psittacosis (Ornithosis, Chlamydiosis):** Psittacosis is a disease caused by the bacteria, *Chlamydia psittaci*. Psittacosis is common in wild birds of all types and can occur in laboratory bird colonies as well.

- Reservoir/source of infection to people: Infected birds, especially ones displaying symptoms (diarrhea, respiratory signs, conjunctivitis and nasal discharge) are highly contagious to other birds and to humans;
- Transmission: The disease is spread by direct contact or from aerosolization with exudative materials (e.g. pus), secretions or feces. **Direct contact with the bird is not necessary;**
- Disease in people: 7-14 days after exposure, an infected human may develop a respiratory illness of varying severity: from flu-like symptoms in mild cases to pneumonia in more significant infections. Serious cases can result in extensive pneumonia, hepatitis, myocarditis, thrombophlebitis, and encephalitis. It is responsive to antibiotic therapy. Relapses occur in untreated infections.

**Avian Tuberculosis** caused by the bacteria, *Mycobacterium avium*, and Newcastle disease, caused by a paramyxovirus, both pose a potential hazard, although both diseases are more closely associated with chickens and wild birds.

- Transmission: contact or inhalation of infective aerosols. As in other species, *Salmonella*, and other enteric pathogens can cause disease in humans.

## ALLERGIES

Various bird proteins have been identified as sources of antigens involved in both allergic reactions and hypersensitivity pneumonitis. Hypersensitivity pneumonitis is a lung condition with symptoms that mimic pneumonia. Symptoms develop after repeated exposure to a specific antigen found in birds.

Signs of an allergic reaction after exposure to birds are rhinitis and asthma symptoms. Signs and symptoms of both allergic reactions and hypersensitivity pneumonitis usually occur several hours after exposure.



Occupational Health and Safety for Staff with  
Substantial contact with  
**CATS**

LABORATORY ANIMAL RESOURCE CENTER

In the research setting, exposure to cats can pose potential health risks to humans such as infection from bites and scratches, allergic responses, and contraction of pathogenic enteric organisms through fecal/oral contact. Although there are risks working with experimental cats, these risks are no greater than the risk you encounter from handling a pet cat.

Cats are generally social animals and respond well to frequent, gentle human contact; however any cat can become fractious when being restrained for procedures. To avoid serious injury from a bite or scratch, training of all personnel working with cats is essential.

#### RECOMMENDED PREVENTIVE MEASURES

- Only trained personnel should handle cats. Handling and restraint training can be scheduled through LARC;
- Gloves and long sleeved apparel should be worn at all times when working with cats;
- Wash hands after handling animals.

To reduce the risk of exposure to allergens, staff are advised to adhere to the following practices:

- Dust masks should be worn at all times when working with cats; whenever there is a risk of aerosol transmission of a zoonotic agent, approved respirator masks (e.g., Type N95 by 3M), should be worn instead of dust masks.
- Minimize wearing protective clothing such as labcoats outside of animal areas and laboratories;
- Keep transport carriers out of labs/offices/public areas;
- Use disposable supplies whenever possible;
- Sanitize lab/surgical areas after animal work.

#### RESPONSE TO INJURY



Cats may inflict serious bite and scratch wounds; prompt first-aid is particularly important. Due to the penetrating nature of bites from cats:

- 1. Wash any injured site with soap and water for at least 15 minutes;**
2. Control bleeding by applying direct pressure with a sterile gauze or bandage;
3. Cover wound with clean bandage (do not apply ointment or spray);
- 4. Seek advice from emergency room physician.**

## INFECTIOUS DISEASES

**Cat scratch disease:** Caused by the scratch or bite of a cat infected with the rickettsial *Bartonella henselae*.

- Reservoir/source of infection: cats;
- Transmission: bite or scratch;
- Disease in people: Swelling, regional lymphadenitis, pain. More severe disease (bacillary angiomatosis) in immuno-compromised people.

***Pasteurella multocida*:** has been associated with infected bites and scratches.

### Protozoal Diseases

***Toxoplasma*:** A protozoan, *Toxoplasma gondii* has its complete life cycle only in cats, which are the only source of infective oocysts. Other mammals (including people) may become intermediate hosts, but the life cycle is not completed. The only real risk to lab animal staff is contact with infective oocysts in the feces of cats. Eating undercooked meat and handling soil are also common causes of infection.

- Reservoir/source of infection: Fecal/oral - contact with oocysts in feces of cats. It takes at least 24 hours for oocysts shed in the feces to become infective, so removal of fresh feces daily reduces the risk of acquiring infection;
- Disease in People: Mild flu-like symptoms unless immune suppressed (in whom it may cause ocular and neurologic disease). **Infection in a previously uninfected pregnant woman can result in prenatal infection of the developing fetus, which can result in birth defects.**

### ***Cryptosporidia*:**

- Reservoir/source of infection: Many mammals;
- Transmission: Fecal/oral;
- Disease in people: Self-limiting diarrhea except in immuno-compromised people where it can be quite severe. No treatment.

### ***Giardia*:**

- Reservoir/source: Cats, dogs, non-human primates, other mammals;
- Transmission: Fecal/oral;
- Disease in people: Diarrhea +/- other systemic signs.

### ***Campylobacter*:**

- Reservoir/source of infection to people: pet and laboratory animals;
- Transmission: the organism is transmitted via fecal/oral route;
- Disease in People: Acute gastrointestinal illness; diarrhea, nausea, vomiting, abdominal pain and fever. Clinical signs are generally brief and self-limiting. Usually responds to specific antimicrobial therapy.

**Ringworm:** Dermatophyte infection (most commonly *Microsporum* spp. and *Trichophyton* spp.) is commonly known as ringworm because of the characteristic circular lesion often associated with it. Dermatophytes are classified as fungi; may be inapparent in lab animals.

- Reservoir/source to people: Cats, dogs, wild rodents, humans.
- Transmission: Direct contact with infected animal.

- Disease in people: Ringworm is usually self-limiting, often circular with reddened rough skin. Responsive to prescription topical therapy.

## **ALLERGIES**

Allergies to cat fur and dander are well documented. The major allergen in a cat is a protein (Fel d 1) that is produced in the sebaceous glands of the skin and coats the hair shafts. This protein is also found in saliva of cats.



UNIVERSITY OF CALIFORNIA, SAN FRANCISCO



Occupational Health and Safety for Staff with  
Substantial Contact with

## DOGS AND PIGS

LABORATORY ANIMAL RESOURCE CENTER

In the research setting, exposure to dogs and pigs can pose potential health risks to humans, such as infection from dog bites and scratches, allergic responses, and contraction of pathogenic enteric organisms through accidental fecal/oral contact. There are many organisms that may not produce symptoms in dogs and pigs that cause disease in people. The most common of these disease causing organisms are discussed below.

### RECOMMENDED PREVENTIVE MEASURES

- Only trained personnel should handle dogs or pigs. Handling and restraint training can be scheduled through LARC;
- Gloves, water resistant shoe covers, and long sleeved apparel should be worn at all times when working with dogs and pigs;
- Wash hands after handling animals;
- When seeking medical advice for any illness, inform your physician that you work with dogs and/or pigs.

To reduce the risk of exposure to allergens from dogs and pigs transported to laboratories, staff are advised to adhere to the following practices:

- Minimize wearing protective clothing such as lab coats outside of animal areas and laboratories;
- Remove transport carts from labs;
- Use disposable supplies whenever possible;
- Sanitize lab/surgical areas after animal work;
- Dust masks should be worn at all times when working with dogs and pigs; whenever there is a risk of aerosol transmission of a zoonotic agent, approved respirator masks (e.g., Type N95 by 3M company) respirators should be worn instead of dust masks.

### RESPONSE TO INJURY

Dogs may inflict serious bite and scratch wounds.



**Prompt first-aid is particularly important due to the penetrating nature of bites inflicted by dogs.**

1. **Wash any injured site with soap and water for at least 15 minutes;**
2. Control bleeding by applying direct pressure with a sterile gauze or bandage;

3. Cover wound with clean bandage (do not apply ointment or spray);
4. **Seek advice from emergency room physician.**

## INFECTIOUS DISEASES

**Rabies:** Rabies virus (rhabdovirus) can infect almost any mammal; however it is very rare in the research environment because dogs are purchased from high quality sources with excellent vaccination and disease control programs

- Reservoir/source: The source of infection to people is an infected animal. Dogs shed virus in their saliva 1-14 days before developing clinical signs. Any random-source (animal with an unknown clinical history) or wild animal exhibiting central nervous system signs that are progressive should be considered suspect for rabies.
- Transmission: Contact with saliva, mucus membranes, or blood, e.g. bite, or saliva on an open wound;
- Disease in people: Never reported in a research facility. Contracted from wild or unvaccinated animals, rabies in unvaccinated people is almost invariably fatal.

**Brucellosis:** The bacterial organism, *Brucella canis*, is found in dogs; *B. suis*, is the species found in swine.

- Reservoir/source of infection to people: Can infect dog and swine breeding colonies where it will be manifested by abortions, infertility, testicular abnormalities and poor semen quality;
- Transmission: The mode of transmission of *B. canis* to people is not clear but is probably oral or transcutaneous contact with organism-infected blood or other tissues;
- Disease in people: Flu-like symptoms that may recur are seen in humans

**Pasteurella multocida:** Has been associated with bites and scratches sustained from infected dogs.

**Capnocytophaga canimorsus:** Also has been associated with dog bites. It can cause serious systemic illness.

**Cryptosporidia:** Cryptosporidiosis (a protozoan infection) associated with many mammals.

- Reservoir/source of infection: Many mammals, including dogs and pigs;
- Transmission: Fecal/oral;
- Disease in people: Self-limiting diarrhea except in immune compromised people where it can be quite severe. No treatment.

### **Giardia:**

- Reservoir/source: Dogs, non-human primates, other mammals;
- Transmission: Fecal/oral;
- Disease in people: Diarrhea +/- other systemic signs. Usually responds to treatment.

**Balantidium coli**, a ciliated protozoan, is another enteric pathogen common in domestic pigs.

**Bacteria:** There are several bacterial pathogens, including *Salmonella* spp., and *Campylobacter* spp., that are frequently associated with diarrhea in dogs and pigs and may also cause disease in people.

- Reservoir/source to people: Symptomatic or asymptomatic animals;
- Transmission: Oral/fecal;
- Disease in people: Diarrhea, dysentery. Most bacterial pathogens are responsive to symptomatic and /or antimicrobial therapy.

**Enteric Helminths:** (such as Roundworms, Tapeworms)

**Ringworm:** This dermatophyte infection (most commonly *Microsporum* spp. and *Trichophyton* spp.) is commonly known as ringworm because of the characteristic circular lesion often associated with it. Dermatophytes are classified as fungi.

- Reservoir/source to people: Many species of lab animals may be unapparent;
- Transmission: Direct contact with infected animal;
- Disease in people: Ringworm is usually self-limiting, often circular with reddened rough skin. Responsive to prescription topical therapy.

**Leptospirosis:** *Leptospira* spp. are bacteria found in many animals but are most commonly associated with livestock and dogs. Transmission from laboratory rodents to people has been reported.

- Reservoir/source of infection to people: Rats, mice, voles, hedgehogs, gerbils, squirrels, rabbits, hamsters, reptiles, dogs, sheep, goats, horses, standing water.
- Transmission: Leptospire are shed in the urine of infected animals. Direct contact with urine or tissues via skin abrasions or contact with mucous membranes has been reported. Transmission can also occur through inhalation of infectious droplet aerosols and by ingestion;
- Disease in people: Flu-like symptoms, mild to severe. Death has been reported.

## ALLERGIES

Individuals who have been previously sensitized to dogs outside of the work place may be at greater risk of developing allergies to dogs. Exposure to dog allergens is via saliva, hair and skin.





## GUINEA PIGS

### LABORATORY ANIMAL RESOURCE CENTER

Guinea pigs are docile rodents that rarely, if ever, inflict injuries. There are no significant zoonotic diseases associated with guinea pigs. The major disease potential of guinea pigs is allergy. However, many individuals working with guinea pigs develop serious symptoms related to allergic responses. Strict attention should be paid to the protective clothing recommendations discussed below.

#### RECOMMENDED PREVENTIVE MEASURES

- Whenever possible, assign work involving direct animal contact to personnel without pre-existing allergies or respiratory conditions;
- Dust masks, gloves and long sleeved apparel should be worn at all times when working with guinea pigs; whenever there is a risk of aerosol transmission of an infectious agent, approved respirator masks (e.g., Type N95 by 3M company) should be worn instead of dust masks;
- Wash hands after handling animals;
- When seeking medical advice for any illness, inform your physician that you work with guinea pigs.

To reduce the risk of exposure to allergens when guinea pigs are transported to or used in laboratories, staff are advised to adhere to the following practices:

- Perform procedures in a laminar flow hood whenever possible;
- Do not wear protective clothing such as lab coats outside of animal areas and laboratories;
- Keep transport carriers out of labs/offices/public areas;
- Use disposable supplies whenever possible;
- Sanitize lab/surgical areas after animal work.

#### RESPONSE TO INJURY

Guinea Pigs are docile animals. Bites and scratches are rare. If injury does occur:

1. Wash any injured site with soap and water for at least 15 minutes;
2. Control bleeding by applying direct pressure with a sterile gauze or bandage;
3. Cover wound with clean bandage (do not apply ointment or spray);
4. **Seek advice from emergency room physician.**



## **ALLERGIES**

**Allergies to guinea pigs are common.** Exposure to guinea pigs has frequently been associated with occupational asthma. About 10% of allergen activity is found on particles small enough to penetrate into the lower respiratory tract. Guinea pig urine appears to be the major source of allergen. Other allergenic components are found in dander, fur and saliva.



**NOTE:**

- 1) Due to the serious zoonotic potential of Herpes B-virus, all macaque users (*Macaca fascicularis/cynomolgus* monkeys, *Macaca mulatta/rhesus* monkeys) must attend a first aid workshop prior to working with these animals.
- 2) All personnel working with non-human primates **MUST** have proof of annual TB testing.

**LARC RECOMMENDATIONS FOR INVESTIGATOR PERSONNEL  
WHEN WORKING AROUND OR HANDLING MACAQUE MONKEYS**

**1) PROTECTIVE CLOTHING APPROPRIATE FOR ENTERING OLD WORLD PRIMATE HOUSING ROOMS**

*PROTECTIVE CLOTHING THAT MUST BE PUT ON BEFORE ENTERING PRIMATE ROOM*

- Disposable head bonnet
- Disposable or UCSF-laundered moisture resistant gown or labcoat
- Disposable moisture resistant shoe covers
- Moisture-proof gloves (Equipment handlers may also be required to wear leather or fabric protective overgloves)
- Face mask with goggles containing peripheral protection *or*
- Faceshield with chinguard

**NOTE:**

**Personnel that do not have a documented negative TB test within the last 12 months are required to wear both a surgical mask and a faceshield.**

*THE ABOVE PROTECTIVE CLOTHING IS TO BE REMOVED AND DISPOSED OF IN THE ROOM BEFORE EXITING.*



IF A MONKEY IS BEING TRANSPORTED OUTSIDE OF THE ANIMAL HOUSING AREA, THEN PROTECTIVE CLOTHING IS TO BE CHANGED IMMEDIATELY OUTSIDE OF THE ANIMAL ROOM IN PREPARATION FOR ENTERING A PUBLIC HALLWAY e.g., ANY AREA THAT IS OUTSIDE OF THE LOCKED ANIMAL FACILITY. THIS PROTECTIVE CLOTHING SHOULD REMAIN ON WHILE WORKING WITH OR AROUND THE ANIMAL.

**2) PROTECTIVE CLOTHING APPROPRIATE FOR LABORATORY PROCEDURES AND ACUTE & SURVIVAL SURGERIES (INCLUDES EUTHANASIA & PERFUSION PROCEDURES).**

*PROTECTIVE CLOTHING THAT MUST BE WORN BEFORE ENTERING SURGICAL AREA\**

- Surgical scrub suit\*\*
- Disposable head bonnet
- Disposable or UCSF-laundered moisture resistant gown or labcoat
- Moisture resistant shoe covers
- Disposable Gloves\*\*\*
- Surgical mask and goggles containing peripheral vision protection or
- Faceshield with chinguard

**NOTE:**

**Personnel that do not have a documented negative TB test within the last 12 months are required to wear both a surgical mask and a faceshield**

\* *ALL PERSONNEL OBSERVING SURGICAL EXPERIMENTS MUST WEAR FULL PROTECTIVE CLOTHING - RESTRICT OBSERVERS TO NECESSARY PERSONNEL.*

\*\* *IT IS RECOMMENDED THAT DISPOSABLE SURGICAL DRAPES AND SURGICAL TOWELS ARE USED, OR ALL SOILED CLOTH MATERIAL MUST BE SENT OUT TO THE UCSF LAUNDRY SERVICE FOR LAUNDERING. SOILED LAB COATS AND SUITS SHOULD BE PLACED IN THE LAUNDRY RECEPTACLES; ITEMS TO BE TREATED BY COMMERCIAL LAUNDERING SERVICE ARE HANDLED AS BSL II CONTAMINATED ARTICLES.*

\*\*\* *DOUBLE GLOVING IS REQUIRED FOR PERSONNEL PERFORMING ANY PROCEDURAL OR SURGICAL MANIPULATIONS.*

**RESPONSE TO INJURY**

*Any potential exposure to macaque blood/saliva/urine/feces/tissue is considered an injury and must be treated as follows. This includes cuts or scratches from a cage inside a macaque room, needle sticks, bites, splashes, etc. IF IN DOUBT, TREAT IT AS AN EXPOSURE.*

*“Bite/Scratch” emergency kits are located outside all rooms housing macaques. Staff must be familiar with the location of the kits. All are square white medical cabinets with bright orange signs that say “Monkey Bite Scratch Emergency Kit”; dimensions are approximately 20” x 20”.*

<b>Site</b>	<b>Area</b>	<b>Location</b>
Animal Tower	2nd Floor/Washroom	On left wall of clean side
Animal Tower	5th Floor Primate Area	In hallway between animal rooms
Animal Tower	8th Floor Primate Area	In hallway between animal rooms
Animal Tower	Room 991 Anteroom	On back wall of anteroom
MR II	Room 314/ Research Support Laboratory	Near front door under exit sign, by fire extinguisher and light switch
MR II	Room 511	Outside of room to left of door (on wall)

1. **SCRUB OR IRRIGATE WOUND IMMEDIATELY** with a mixture of soap and irrigation solution. You must do this within **2–3 MINUTES** of exposure. Since the B-virus may **enter the body within MINUTES** of exposure, this is the only way to keep it from entering the wound and becoming an infection.
2. **SCRUB OR IRRIGATE** the wound for **15 to 20 MINUTES**.
  - For exposures of the **EYES, NOSE, MUCOUS MEMBRANES**: irrigate with the **sterile eye solution** in first aid kit immediately and then find an eye wash station to continue rinsing your eyes for **15 to 20 minutes**. **NEVER** use a bleach solution in your eyes;
  - For **BITES, LACERATIONS OR NEEDLESTICKS**: Soak and scrub the wound with the soap mixture. Deep wounds can be gently massaged to increase contact with the mixture. Keep scrubbing for **15 to 20 minutes**;
  - **Wash all of the soap mixture out of the wound** after you are done scrubbing.
3. After scrubbing, **CALL THE EXPOSURE HOTLINE at 415-719-3898**. Your injury will be assessed by the Hotline staff. You will be told to go to Employee Health Services or to the Emergency Department for a wound culture, a blood sample and other immediate care.
4. Bring the bag labeled **EMPLOYEE HEALTH / EMERGENCY DEPARTMENT** from the first aid kit with you. This should include sterile swabs, culture and serum tubes, a protocol for further evaluation, a *Signs and Symptoms of Infection* sheet and form from Georgia State University Viral Immunology Center.
5. **Notify a veterinarian**: Call 502-8687, then press '1' to receive the pager number for the on-call veterinarian.

## INFECTIOUS DISEASES

***Cercopithicine herpesvirus 1 (CHV1, Herpesvirus simiae, monkey B virus)***. This disease is quite rare in people but is either fatal or causes permanent neurological disease. Most macaques are asymptomatic carriers or display only mild oral lesions that are difficult to detect. Therefore, all macaques should be presumed to be shedding B-virus.

- Reservoir/source of infection to people. **Macaques are the major source of infection**; although other old world primates may be infected;
- Transmission: Transmission occurs via bites, scratches, splashes (any body fluid or secretion, feces) needlesticks and any direct contact with macaque tissue;
- Disease in people: The disease in people is associated with a rapidly ascending encephalomyelitis leading to death in 50% of the cases. Permanent neurological deficits are present in survivors.



## MICE, RATS, HAMSTERS AND OTHER RODENTS

### LABORATORY ANIMAL RESOURCE CENTER

Someone working in a facility with rodents could potentially be exposed to any zoonotic disease agent affecting wild rodents. In practice, however, these conditions are very rare. Modern laboratory animal facilities pay particular attention to vermin control, thereby reducing the likelihood of infection of laboratory mice by their wild counterparts. However, there is always the potential for breaks to occur.

The major health risk to individuals working with rodents is the development of an allergy. Conditioned, colony-born rodents are generally docile, but may occasionally inflict injury such as a bite or scratch. Staff assigned to rodent areas should be trained in handling techniques and protective clothing requirements prior to beginning hands-on work.

#### RECOMMENDED PREVENTIVE MEASURES

- Training on proper rodent handling techniques is available through LARC;
- Follow any posted Personal Protective Clothing requirements;
- Wash hands after handling animals or related equipment;
- When seeking medical advice for any illness, inform your physician that you work with rodents.

Conventional Rodent Areas: To reduce the risk of exposure to allergens when rodents are transported to or used in laboratories, staff are advised to adhere to the following practices;

- Dust masks should be worn at all times when working with rodents; whenever there is a risk of aerosol transmission of a zoonotic agent, approved respirator masks (e.g., Type N95 by 3M company) should be worn instead of dust masks;
- Perform procedures in a laminar flow hood whenever possible;
- Minimize wearing protective clothing such as lab coats outside of animal areas;
- Use disposable supplies whenever possible;
- Sanitize lab work areas after animal work.

#### RESPONSE TO INJURY



For all incurred injuries incurred when working with rodents:

1. Wash any injured site with soap and water for at least 5 minutes;
2. Control bleeding by applying direct pressure with a sterile gauze or bandage;
3. Cover wound with clean bandage (do not apply ointment or spray);
4. **Seek advice from emergency room physician.**

## INFECTIOUS DISEASES

**Lymphocytic choriomeningitis:** LCM is an arenavirus commonly associated with hamsters, but does infect mice. In 1965, during an outbreak in hamsters, 23 human cases were recorded. Now rare in laboratory animal facilities, LCM has been eliminated from most vendors through breeding and viral screening of their colonies.

- Reservoir/source of infection to people: Wild mice worldwide are the reservoir of infection to laboratory and pet rodents. Mice and hamsters are the only animals known to develop latent infection; **experimentally transplanted tumors are the other source of infection to mice;**
- Transmission: Contact with tissues including tumor, feces, urine, and aerosolization of all of the above;
- Disease in people: Flu-like symptoms, mild to severe.

**Leptospirosis:** *Leptospira* spp. are bacteria found in many animals but are most commonly associated with livestock and dogs. Transmission from laboratory rodents to people has been reported.

- Reservoir/source of infection to people: Rats, mice, voles, hedgehogs, gerbils, squirrels, rabbits, hamsters, reptiles, dogs, sheep, goats, horses, standing water.
- Transmission: Leptospire are shed in the urine of infected animals. Direct contact with urine or tissues via skin abrasions or contact with mucous membranes has been reported. Transmission can also occur through inhalation of infectious droplet aerosols and by ingestion;
- Disease in people: Flu-like symptoms, mild to severe. Death has been reported.

**Rat bite fever:** This is caused by the bite of a rat infected with *Streptobacillus moniliformis* or *Spirillum minus*.

- Reservoir/source of infection: Rats are asymptomatic carriers. Bacteria are normal flora in oral pharynx of rats;
- Transmission: Bite of infected rat;
- Disease in people: Fever, lymphadenopathy, swelling at site of wound. Incubation period usually 1-3 days but may be up to 6 weeks. May cause arthritis in untreated patients but is easily treated with penicillin.

**Hantavirus Infection:** Hantaviruses occur among wild rodent populations.

- Reservoir/source of infection: Rats and mice have been implicated in outbreaks of the disease. Hantavirus infection from rats has occurred in laboratory animal facility workers. Rodents shed the virus in their respiratory secretions, saliva, urine and feces;
- Transmission: Via inhalation of infectious aerosols – brief exposures of even 5 minutes have resulted in human infection;
- Disease in people: The form of the disease that has been documented after laboratory-animal exposure is characterized by fever, headache, myalgia and petechiae and other hemorrhagic symptoms, including anemia, gastrointestinal bleeding etc.

There are several bacterial pathogens, including *Salmonella* spp. and *Campylobacter* spp., that are frequently associated with diarrhea in rodents and may also cause disease in people.

- Reservoir/source: Symptomatic or asymptomatic rodents;
- Transmission: Fecal/oral;
- Disease in people: Diarrhea, dysentery

## ALLERGIES

### All Rodent Areas:

Conventional and barrier rodent environments have allergens present, such as dust from bedding and animal dander.

Specific allergy-producing exposures are associated with urine and saliva.

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Occupational Health and Safety for Staff with  
Substantial Contact with



**NON-HUMAN PRIMATES  
(OTHER THAN OLD WORLD PRIMATES)**

LABORATORY ANIMAL RESOURCE CENTER

In the laboratory setting, non-human primates pose a real potential for exposure of personnel to zoonotic diseases. Although transmission of zoonotic diseases from non-human primates to humans is rare, laboratory personnel and animal care staff are at risk due to animal exposure. Serious injury from bites and scratches can occur. These types of injuries/exposures can be avoided if personnel are properly trained prior to beginning any type of work with non-human primates. Staff working with non-human primate tissue should also receive first-aid training in the event of a needlestick or injury from a surgical/procedural instrument.

**Non-human primates are highly susceptible to human diseases, such as** influenza, measles and tuberculosis. Personnel working with primates must be TB tested prior to working with non-human primates and re-tested annually. Any individual who is experiencing cold/flu symptoms or has active herpes simplex lesions (e.g. cold sore ) should avoid going into non-human primate areas until their symptoms have resolved.

**RECOMMENDED PREVENTIVE MEASURES**

- **Require a TB test annually for all staff working with non-human primates;**
- Only trained personnel should handle monkeys. Handling and restraint training can be scheduled through LARC;
- Follow posted Personal Protective Clothing requirements;
- Wash hands after handling animals or related equipment;
- Never wear protective clothing outside the animal areas;
  
- When seeking medical advice for any illness, inform your physician that you work with non-human primates.
- Soiled lab coats and suits should be placed in the laundry receptacles; items to be treated by commercial laundering service are handled as BSL 2 contaminated articles.

**RESPONSE TO INJURY**

**For any injury sustained from a macaque, (rhesus or cynomolgus monkeys) or related equipment follow the *Post-exposure to B-virus First Aid* protocol attached.**



For all other injuries from other species of monkeys:

1. Wash any injured site with soap and water for at least 15 minutes;
2. Control bleeding by applying direct pressure with a sterile gauze or bandage;



3. Cover wound with clean bandage (do not apply ointment or spray);
4. **Seek advice from emergency room physician.**

## INFECTIOUS DISEASES

**Cercopithicine herpesvirus type 1: See handout entitled *Occupational Health and Safety Information for Staff With Substantial Contact With Macaques.***

***Tuberculosis:*** This disease may be transmitted to people through contact with birds, livestock, and non-human primates. Routine TB testing is performed on all UCSF non-human primates.

- Reservoir/source of infection to people: *Mycobacterium* spp. may be transmitted to non-human primates (old world primates are particularly susceptible) from humans which can be a source of infection to other people and monkeys;
- Transmission: Tuberculosis is usually transmitted by the aerosolization of infective bacilli which can be found in the sputum as well as other body fluids. Contact with body fluids during necropsy may be a major mode of transmission to humans;
- Disease in people: Pulmonary tuberculosis is the most common type but other organs may also be involved.

***Shigellosis:*** This is a relatively common zoonotic disease that must be differentiated from salmonellosis, campylobacteriosis and other enteric diseases.

- Reservoir/source of infection to people: Humans are the main reservoir of disease but like tuberculosis, infected monkeys can be a source of infection. Any non-human primate may harbor *Shigella* bacteria, and clinical signs may not be apparent;
- Transmission: fecal/oral;
- Disease in people: Diarrhea, may be with blood or mucus.

### ***Salmonella:***

- Reservoir/source to people: Non-human primates, dogs, cats, birds, reptiles (especially iguanas and turtles), and wild rodents;
- Transmission: fecal/oral;
- Disease in people: Gastrointestinal disease, can be febrile with septicemia.

***Cryptosporidium:*** Protozoal organism that is common in mammals, particularly younger animals.

- Reservoir/source of infection: Many mammals;
- Transmission: Fecal/oral;
- Disease in people: Self-limiting diarrhea except in immune compromised people where it can be quite severe. No treatment.

***Giardia:*** This protozoan is found in many mammals.

- Reservoir/source: non-human primates, other mammals, standing water;
- Transmission: Fecal/oral;
- Disease in people: Diarrhea +/- other systemic signs such as severe cramping and nausea/vomiting.

There are several viruses associated with non-human primates that can cause significant disease in people. These include the *Hemorrhagic Fever Viruses*, *Filoviruses* and *Monkey Pox Viruses*. These are usually associated with recently imported, wild-caught animals in quarantine, but are very rare in domestically bred animals. These viruses can cause fatal diseases in people.

## ALLERGIES

General animal related allergies are common. Although there are no known allergens associated with monkeys, the non-human primate environment may have common allergens present such as dust from bedding.

Note:

There are numerous viruses associated with primates which have unknown or uncertain pathogenic potential. Examples include:

- SIV and STLV – simian counterparts to HIV, HTLV
- Foamy agent and various other simian viruses, e.g., SV5, SV40, etc.
- *Herpesviruses saimiri* (squirrels), *tamarinus* (tamarinds), etc.

These may be progenitors of human viruses and their role in human illness is unknown at this time.

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Substantial Contact with  
**RABBITS**



LABORATORY ANIMAL RESOURCE CENTER

Rabbits are usually docile animals that are easy to handle and pose few health risks to laboratory personnel and animal care staff. The primary concern when working with rabbits is developing allergies. Staff assigned to rabbit areas should be trained in handling techniques and protective clothing requirements prior to beginning hands-on work.

**RECOMMENDED PREVENTIVE MEASURES**

- Only trained personnel should handle rabbits. Handling and restraint training can be scheduled through LARC;
- Gloves and long sleeved apparel should be worn at all times when working with rabbits;
- Wash hands after handling animals;
- When seeking medical advice for any illness, inform your physician that you work with rabbits.

To reduce the risk of exposure to allergens when rabbits are transported to or used in laboratories, staff are advised to adhere to the following practices:

- Dust masks should be worn at all times when working with rabbits; whenever there is a risk of aerosol transmission of a zoonotic agent, approved respirator masks (e.g., Type N95 by 3M company) should be worn instead of dust masks;
- Minimize wearing protective clothing such as lab coats outside of animal areas and laboratories;
- Remove transport carriers from labs/offices/public areas;
- Use disposable supplies whenever possible;
- Sanitize lab/surgical work areas after animal work.

**RESPONSE TO INJURY**

Rabbits may scratch handlers, particularly when they are improperly restrained. Bites are rare and usually minor.



1. Wash any injured site with soap and water for at least 15 minutes;
2. Control bleeding by applying direct pressure with a sterile gauze or bandage;
3. Cover wound with clean bandage (do not apply ointment or spray);
4. **Seek advice from emergency room physician.**

## INFECTIOUS DISEASES

***Pasteurella multocida***: *Pasteurella multocida* is a serious pathogen of rabbits and has been associated with infected bites and scratches sustained from rabbits.

***Cryptosporidium***: Protozoal organism that is common in mammals, particularly younger animals.

- Reservoir/source of infection: Many mammals;
- Transmission: Fecal/oral;
- Disease in people: Self-limiting diarrhea except in immune compromised people where it can be quite severe. No treatment.

## ALLERGIES

Allergies to rabbit fur and dander are well documented. A major glycoprotein allergen has been described that appears to occur in the fur of rabbits, and minor allergenic components found in rabbit saliva and urine have been identified.



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Occupational Health and Safety for Staff with  
Substantial Contact with

**SHEEP OR GOATS**

LABORATORY ANIMAL RESOURCE CENTER



**NOTE:**

*Due to CAL-OSHA Special Orders for use of sheep at UCSF, all sheep users must receive BSL Level 3 training prior to working with these animals.*

Sheep at UCSF are housed in an animal Biosafety Level 3 (BSL 3) containment facility due to the fact that sheep are carriers of an airborne agent called *Coxiella burnetti*, which causes the disease, commonly known as “Q-fever”, that is highly contagious to humans.

**RECOMMENDED PREVENTIVE MEASURES**

- A blood sample for a Q-fever titer check must be collected from all staff prior to entering the Sheep Containment Facility. Individuals that have a negative titer (have produced no antibodies to Q-fever) must be fitted for approved respirator masks (e.g., Type N95 by 3M company) which is worn while working with sheep. The fit testing is done by appointment through Environmental Health and Safety. Blood must be redrawn for titer check annually. Individuals that develop a positive titer to Q-fever are considered protected and are no longer required to wear the respirator;
- Follow posted Personal Protective Clothing requirements at all times;
- Only trained personnel should handle sheep. Handling and restraint training can be scheduled through LARC;
- Wash hands after handling animals;
- Never wear protective clothing outside the animal areas;
- When seeking medical advice for any illness, inform your physician that you work with sheep;
- Ergonomic injuries such as back strain can occur from handling and restraining sheep due to their size and strength; therefore individuals with pre-existing back or joint problems may need assistance when working with sheep, or may be precluded from working with the species altogether;
- Soiled lab coats and suits should be placed in the laundry receptacles; items to be treated by commercial laundering service are handled as BSL 2 contaminated articles.

**RESPONSE TO INJURY**

In case of injury:

1. Wash any injured site with soap and water for at least 15 minutes;
2. Control bleeding by applying direct pressure with a sterile gauze or bandage;
3. Cover wound with clean bandage (do not apply ointment or spray);
4. **Seek advice from emergency room physician.**



Sheep are large animals and may kick or trample. If a serious injury occurs, seek medical attention immediately.

## INFECTIOUS DISEASES

**Q Fever:** This rickettsial disease, caused by *Coxiella burnetii*, is most commonly associated with sheep, although goats, cattle and other mammals can be sources of infection. Infected ruminants are usually asymptomatic.

- Reservoir/source of infection to people: The rickettsia are shed in the urine, feces, milk and, most importantly, birth products (placenta, amniotic fluid, blood and soiled bedding) of infected animals;
- Transmission: Q-fever is spread by aerosolization of infected body fluids. Disease transmission can be reduced by careful disposal of birth products;
- Disease in people: In most cases Q -fever is manifested by flu-like symptoms that usually resolve within 2 weeks – Q-fever is sometimes misdiagnosed as a flu. Q fever can be severe, especially in elderly patients where it can cause hepatitis and/or endocarditis, or in immunosuppressed people.

**Contagious Ecthyma (Orf)** This poxviral disease is known as contagious ecthyma or soremouth in sheep and goats, and orf in people. In ruminants, it is evidenced by exudative lesions found on the muzzle, eyelids, oral cavity, feet or external genitalia. It is more common in younger animals. The disease in ruminants is highly contagious to humans and other animals.

- Reservoir/source of infection to people: Infected sheep or goats are the source of infection to people;
- Transmission: Transmission can be by direct contact with lesions or indirectly by contaminated fomites (hair, clothing);
- Disease in people: The self-limiting infection, which is usually found on the hands, consists of painful nodules, cutaneous ulcerative lesions, and usually lasts 1-2 months. No treatment.

## ALLERGIES

Animal related allergies are common. Although there are no known sheep allergens, the sheep containment environment may have allergens present such as hay and dust. Contact dermatitis can occur.

# UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

## Occupational Health and Safety for QUICK GUIDE

### LABORATORY ANIMAL RESOURCE CENTER

#### PHONE NUMBERS

<b>Blood &amp; Body Substance Exposure (Needlestick) Hotline</b>	<b>719-3898</b>
Employee Health Services	885-7580
Student Health Services	476-1281
Biological Safety Officer	476-2097
LARC Veterinary Staff (On-Call Veterinarian)	502-8687
Emergencies (UCPD)	9-911

#### EMERGENCY MEDICAL CARE

Parnassus Campus - Moffitt Hospital	Go To Emergency Room
San Francisco General Hospital (SFGH)/ Mission Center Building (MCB)	SFGH Trauma Center/ Emergency Room
Mount Zion / Laurel Heights	Mount Zion Emergency Room
Other Sites	Nearest Emergency Center

**Always ask the Physician to call the Veterinarian On Call**

#### BITE / SCRATCH KIT LOCATION

Site	Area	Location
Animal Tower	2nd Floor/Washroom	On left wall of clean side
Animal Tower	5th Floor Primate Area	In hallway between animal rooms
Animal Tower	8th Floor Primate Area	In hallway between animal rooms
Animal Tower	Room 991 Anteroom	On back wall of anteroom
MRII	Room 314/Research Support Laboratory	Near front door under exit sign, by fire extinguisher and light switch
MRII	Room 511	Outside of room to left of door (on wall)

#### GENERAL SAFETY GUIDELINES

- Only work with animals for which you have adequate training in safe handling techniques.
- Read and follow all safety signs and instructions in all animal areas.
- Use appropriate protective clothing (masks or respirators, gloves, gowns, shoe covers, eyes protection, etc.) when working with animals.
- Remove gloves and wash hands before leaving animal area.
- Make sure you have read and understood potential health and safety hazards presented by the study.
- Limit use of animals to authorized locations only.
- Do not leave empty cages, water bottles, bedding, etc., in public hallways.
- Use designated carts placed for such items.
  - Use appropriate transport carts/cages for moving animals.
  - Contain operations that generate hazardous aerosols in approved biological safety cabinets or other ventilated enclosures. This includes use of gaseous anesthetic agents.
  - Follow all appropriate biological, chemical, and radiation safety requirements at all times.
  - Promptly decontaminate work surface after spills of viable materials and when procedures are completed.
  - Take extreme care when using a needle and syringe for inoculating research animals or when using sharps during necropsy procedures.
  - Keep hands away from mouth, nose, and eyes.

