

# PEPPERDINE UNIVERSITY

## Occupational Health Program for Personnel with Minimal Laboratory Animal Contact

### Diseases Communicable From Animals to Humans-Zoonoses

Humans may be susceptible to infectious diseases harbored by animals. Infectious diseases transmitted from animals to humans are called zoonotic diseases or zoonoses. In many cases the animal shows little, if any, sign of illness. A bacterium from the normal flora of a healthy animal may cause a serious disorder in a person exposed to it. While the animals have developed a "tolerance" to these microorganisms, humans with no previous exposure to the agent may lack protective immunity. Therefore, one should always be aware of the possible consequences of working with animals and take appropriate precautions to minimize the risk of infection. In the event an individual becomes ill, it is important that a personal physician be informed of work with animals.

Examples of specific zoonotic diseases and the potential animal reservoirs are described elsewhere in this brochure. Some common sense steps can be taken to decrease the risk of infection. These include adherence to the Personal Protective Equipment Policies that recommend clothing and equipment to wear while working with animals under various conditions. Eating and drinking are not allowed in animal rooms.

### If You Work with Rodents (e.g., Guinea Pigs, Hamsters, Mice and/or Rats)

Contact with rodents or rodent tissue requires precautions against some diseases such as lymphocytic choriomeningitis (LCM). LCM is a rodent neural virus that

can be transmitted to humans by the bite from a mouse through their saliva. Symptoms of human infection include



fever, malaise, lack of appetite, muscle and head ache, nausea and vomiting. An additional concern for investigators coming in contact with wild rodents or their waste (urine, feces) is Hantavirus. Symptoms of

human exposure include fever, deep muscle aches, and severe shortness of breath. Also, attention should be paid to the possibility of allergic reactions to fur or dander (See below). A rodent bite should be thoroughly cleaned with 70- 95% ethanol and then washed with soap and water.

### If You Work with Other Mammals (e.g., Skunks, Raccoons, Bats, Feral Cats, Dogs, Foxes)

Rabies may be transmitted by the bite of an unvaccinated and infected mammal. There are 2 types of rabies infections. Signs of "furious" rabies include increased salivation and aggression. Signs of "dumb" infection include docile or tame appearance in a wild animal, rejection of food and paralysis of the lower jaw. Symptoms of human infection include irritability, fatigue, headache, fever and pain or itching at the exposure site. Untreated, the disease may lead to paralysis, seizures and death. Symptoms may occur in as little as a week or as long as nine years. If bitten by a wild mammal, the wound should be immediately washed with soap and warm water and medical attention sought. A rabies vaccine series begun before symptoms appear is highly effective in preventing disease. Left untreated, rabies is virtually always fatal.

<http://www.cdph.ca.gov/healthinfo/discond/pages/rabies.aspx>

Ringworm, caused by a skin fungus, may be acquired through direct contact with skin of an infected animal. Signs and symptoms are circular reddened rough skin lesions. Topical antifungal treatment will normally cure any infection.

There are several other diseases transmitted by microorganisms through the fecal to oral route of entry.

Common disorders maybe caused by a number of microbes including *Cryptosporidium*, *Giardia*, *Campylobacter* or *Salmonella*; all of these diseases can be contracted by simply coming into contact with the animal's feces (e.g., during cleaning of traps). Signs of infection in the animal may be non-existent. Symptoms in humans are acute gastrointestinal distress, diarrhea, nausea, fever, vomiting and abdominal pain. If you have these symptoms, please contact your physician for appropriate medical treatment, which may include antibiotics.

*Baylisascaris procyonis* is a round worm whose primary host is the raccoon, infecting over half of the population.



While the parasite does not cause serious disease in raccoons, it can cause serious damage to its intermediate hosts including humans, dogs and other mammals. The disease is transmitted to the humans

through ingestion of the eggs from raccoon feces. Larval worms damage organs and the central nervous system as they migrate throughout the human body.

Symptoms of disease include loss of coordination, lethargy and stupor that progresses to coma and death. There is currently no treatment for *B. procyonis* infection in humans. Care must be taken to wear gloves when cleaning traps and wash hands carefully after field work to avoid transmission.

<http://www.peteducation.com/article.cfm?c=2+2107+2255&aid=721>

<http://www.cdc.gov/ncidod/eid/vol8no4/01-0273.htm>

### If You Work with Birds or Reptiles and Amphibians



Birds can carry diseases such as psittacosis. Signs of infection in birds include sleepiness, shivering, weight loss, breathing difficulties and diarrhea. Birds can also have latent infections

where signs of disease may not manifest until a later date. Flu-like symptoms of Psittacosis (chills, fever) are common

in humans. The organism can be acquired even through indirect contact with birds, including inhalation of infected bird urine, respiratory secretions, dried feces or even bird bedding. Only inspected and properly quarantined birds should be used in research or teaching. Individuals can also be allergic to birds or avian feathers.



*Salmonella* is frequently harbored in turtles and other reptiles and amphibians. Symptoms in humans include diarrhea, abdominal cramps, fever, nausea,

and/or vomiting. Infections can be acquired by oral contact after handling the animals or their cages, and should be treated with appropriate antibiotics prescribed by your physician.

## Pregnant Women

Working with hazardous agents, in particular exposure to toxic chemicals and certain anesthetic vapors should be avoided during the first trimester of pregnancy. Your supervisor, the Department of Environmental Health and Safety, or relevant website may be consulted for Material Safety Data Sheets for all chemicals in the workplace.

Pregnant women should also avoid or minimize exposure to feline feces because feces may harbor infective oocysts of *Toxoplasma gondii*. If ingested or inhaled, these oocysts can cause toxoplasmosis which can be transmitted transplacentally to the fetus to cause a very serious, possibly life-threatening, infection.

All women who are considering pregnancy or are pregnant should inform their physician of their employment and agents of possible exposure.

<http://www.osha.gov/SLTC/reproductivehazards/index.html>

## Compromised Immune System

The immune system may become suppressed by underlying disease, treatments or infectious disease, putting an individual at greater risk of contracting

opportunistic disease from animal contact. Gloves and/or a face mask should be worn when performing tasks that may expose the individual to animal dander or wastes.

Individuals who have a suppressed immune system should inform their physician of their employment and possible exposures. For additional information, please see:

“For People at Extra Risk”

[http://www.cdc.gov/healthypets/extra\\_risk.htm](http://www.cdc.gov/healthypets/extra_risk.htm)

## Lab Animal Allergies

### Relative Risks

Various studies have shown that the incidence of animal allergies among people who work with animals ranges from 10% to 44%.

This means that most people who work with animals are not allergic to them. However, if you work with animals, your risk of allergy to them is as much as three times higher than people who don't work with animals. Allergy to animals is most likely in workers exposed to animals such as cats, rabbits, mice, rats, gerbils and guinea pigs.



The most important risk factor for the development of laboratory animal allergy is the level of exposure to animal allergens. Certain tasks such as cleaning cages and handling animals can cause the individual to be exposed to high levels of allergens, which may hasten the onset of allergic symptoms.

Other risk factors that may put you at greater risk for developing a new allergy include: a personal history of other allergies such as hay fever, a family history of developing allergies, and smoking.

### Why it's Important

When working with animals it is important to be aware of the risk of developing allergies to the animals you work with or even to your own pets. If you become allergic to the animals you work with, your job can become quite uncomfortable and even unhealthy. If you have asthma, working with animals to which you are allergic can be a significant health risk.

### Symptoms

Allergy symptoms can range from minor to severe. People who are having an allergic reaction can have symptoms such as:

- Runny nose, sneezing, or coughing
- Nose/head congestion, watery or itchy red eyes
- Hives
- In more severe cases - asthma attacks (chest tightness, shortness of breath and wheezing)
- Very severe cases- anaphylaxis (including life threatening swelling of the upper airways and shock).

These symptoms can occur in as little as 10-15 minutes or can be delayed for up to 8 hours after exposure.

Symptoms can develop anywhere from months to years after a person begins working with animals. A majority of the individuals who are going to develop symptoms will do so within the first year. It is extremely unusual to develop symptoms after more than two years of animal contact.

Allergens are unique to each animal species. That is why a person can be allergic to mice but not rats or cats but not dogs. It's also possible to be allergic to more than one species. In fact, if you are allergic to something (an animal species or anything else), you're more likely to become allergic to something new than a person who isn't allergic to anything.

### What to do if you think you are developing laboratory animal allergies

If you feel that you may be developing allergies to lab animals, it is important that you report this to your instructor or supervisor. Your supervisor will help you determine what steps are necessary to limit your exposure and can direct you to other resources available.

Preventing Asthma in Animal Handlers, January, 1998  
DHHS (NIOSH) Publication No. 97- 116.

<http://www.cdc.gov/niosh/animalrt.html>

Laboratory Animal Allergy, Bush, R.K.; Wood, R.A.; Eggleston, P. A., “Journal of Allergy and Clinical Immunology” 1998; 102:99-112.

<http://download.journals.elsevierhealth.com/pdfs/journals/0091-6749/PIIS0091674998700600.pdf>

## If You Work with Hazardous Agents

Hazardous biological, chemical, and physical agents may be encountered when working with animals or in the animal facilities. Training is available and should be

performed prior to working with these potentially hazardous agents. Individuals should be aware of, understand, and know how to protect themselves from hazards prior to working with these agents. Examples of biological agents include *E. coli* and *Salmonella*; chemical agents include disinfectants, pesticides, and feed or bedding contaminants; and physical agents include dangerously hot materials from the autoclave or cage wash machines.

Read and follow laboratory standard operating procedures (SOPs) or classroom instructions for working with any hazardous agents. SOPs should address safety measures that include the use of personal protective equipment, exhaust ventilation (i.e., fume hood and biological safety cabinet), and techniques for handling the hazardous agents as well as where to find hazard information about the agent (i.e., Material Safety Data Sheet).

Good personal hygiene practices are critical when working around hazardous agents and animals. Hand washing after removing gloves, handling chemicals, infectious materials, or animals, and before leaving the laboratory is critical. All work surfaces should be decontaminated regularly. All contaminated materials should be decontaminated by autoclaving or chemical disinfection before washing, reuse, or disposal.



- Wash your hands frequently. Avoid touching your hands to your face.
- Wear protective equipment such as masks, hair and shoe covers, gloves and long sleeved gowns when cleaning cages or handling animal byproducts.
- Don't wear your street clothes when working with animals. Wear a lab coat or scrubs, or even a disposable gown.
- Maintain a current tetanus vaccination booster.
- Seek medical attention promptly. Report even minor scratches, cuts or bites and any suspicious symptom. Minor cuts and abrasions should be immediately cleansed with warm water and antibacterial soap.
- Follow animal handling protocols and instructor directions carefully.
- Remember that indirect contact with animals or their waste, which can occur during trap or cage cleaning, can serve as an avenue for contracting diseases. The use of gloves and good hand washing is always recommended after contact with all animals, animal byproducts or animal wastes to prevent transmission of disease.

Adapted and used with permission from Dr. Berri Forman at the University of Wisconsin, Milwaukee and Eleanor Haynes at Georgia Southern University.

[http://www.ilo.org/public/english/protection/safework/cis/products/hdo/htm/handlr\\_animl.htm](http://www.ilo.org/public/english/protection/safework/cis/products/hdo/htm/handlr_animl.htm)

For further information on working with hazardous agents, contact your supervisor or the Natural Science Division at 310-506-4321.

## What to do to Minimize Risk Factors

The following are actions that you can take to decrease your exposure to zoonoses and hazardous agents:

- Do not eat or drink in areas where hazardous agents, animals or their bedding are handled.