



OCCUPATIONAL
HEALTH PROGRAM
FOR PERSONNEL WITH
SUBSTANTIAL
LABORATORY ANIMAL
CONTACT

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I. PURPOSE

The purpose of the Occupational Health Program for Personnel with Substantial Laboratory Animal Contact is to protect the health of both personnel and laboratory animals. The information provided in this document will be beneficial in assessing your own risk and avoiding potential health problems associated with working with laboratory animals. The requirements of this program are based on guidelines found in the Guide for the Care and Use of Laboratory Animals.

A. Who is included?

Personnel having substantial animal contact, defined as contact with animals or animal tissue more than once a month, are included in this program. Specifically, this includes all Animal Facility staff, investigators and laboratory assistants, and students involved in the direct care of animals and their living quarters as well as those individuals who have direct contact with animals (live or dead), their viable tissues, body fluids, or wastes. However, all persons, including Facilities Management, Housekeeping and visitors to animal facilities, who may have contact with laboratory animals or animal tissue should be aware of the personal protective procedures presented in this program.

B. What is included?

Prior to working with animals, personnel having substantial animal contact ***must*** undergo a general physical examination, including a current tetanus vaccination.

Rabies pre-exposure immunization is available for personnel working with dogs, cats, or ferrets, if desired.

Toxoplasma serum titer checks are offered for women of childbearing age having contact with cats.

Medical monitoring, as provided under this program, will be performed by St. Joseph's Occupational Health Clinic (SJOHC) and is available at no cost to TU employees. Costs incurred for student medical monitoring (immunizations, titer checks, etc.) are the responsibility of the department. Appointments should be made with SJOHC by contacting TU's Department of Environmental Health and Safety (EHS) at (410) 704-2949 or via e-mail at safety@towson.edu.

C. In the Event of Injury

If you are bitten or scratched by an animal, receive a cut or scratch on an animal cage, or if you are experiencing unusual disease symptoms, advise your supervisor and seek medical attention immediately. Contact the TU Police Department (x4-2133) if it is an emergency. Employees should also file a First Report of Injury with Human Resources.

II. Risk for Those Who Handle Animals and Their Tissues

The hazards associated with handling animals can be loosely placed into three (3) categories. First, ***physical injuries*** occur from bites and scratches (rodents, rabbits, dogs, cats, ferrets, swine and others). The key to prevention of these types of injuries is proper training of research personnel by the animal care staff or other qualified individuals. Second, there are serious ***allergic hazards*** associated with breathing or contacting animal dander or urine allergens (among others). The safest policy is to reduce exposure by wearing protective clothing (such as face masks, gloves, and a lab coat) when handling animals. Personal Protective Equipment (PPE) such as gloves, masks, and goggles can be obtained by contacting EHS (410) 704-2949. Third, the possibility of ***zoonotic diseases*** must always be considered. Zoonotic diseases are those that can be transmitted from animals to humans. Although zoonotic diseases are not common, the prevention, detection, and eradication of zoonotic diseases from the animal facility is a primary concern of the entire animal care staff. It is important to remember that zoonotic diseases can be transmitted not only by the animal, but by animal tissues as well.

III. Zoonotic Diseases

Humans usually are not susceptible to infectious diseases suffered by animals and the potential for zoonotic disease has been greatly reduced in modern times due to the high quality of animals (excluding wild rodents) presently available through suppliers. However, there are some important exceptions. Infections of animals may, on some occasions, produce significant diseases in humans even when the animals themselves show little if any sign of illness. A bacterium in the normal flora of a healthy animal may cause a serious disorder in a person exposed to it because the animal has developed a “resistance” to these microorganisms, whereas humans with no previous exposure to the agent lack this protective immunity.

Therefore, personnel should always be aware of possible consequences when working with each species of animals, and take appropriate precautions to minimize the risk of infection. In the event that you do become ill with a fever or some other sign of infection, it is important to advise your physician that you work with animals.

Some of the specific diseases and the animals associated with those disorders are described in this document. There are general precautions that can be taken to lessen the risk of infection. These include not eating, drinking, or applying cosmetics or contact lenses around animals or animal care areas, wearing gloves when handling animals or their tissues, taking care not to accidentally rub your face with contaminated hands or gloves, and hand washing after each animal and/or animal tissue contact even if gloves are worn. Research personnel can protect themselves against accidental self-inoculation by wearing gloves, substituting manually operated pipettes for needles and syringes, taking enough time to give injections properly, anesthetizing animals prior to inoculation with infectious agents, and using a two-person team to inoculate animals. ***Do not recap needles!*** Instead, discard them promptly in a biohazard “sharps” container. Containers can be obtained by contacting EHS (410) 704-2949. For procedures such as necropsies, bedding changes, and tissue and fluid samplings, physical containment devices such as biological safety cabinets, full-face respirators or other personal safety gear should be used as indicated.

The scope of possible zoonotic infections is quite large, and only a few examples will be described here. However, all personnel should be aware that laboratory animals are sources of potent allergens to sensitized persons.

IV. Things You Should Know

A. If you are PREGNANT

Toxoplasma is an infectious agent found primarily in cat feces. It can infect the unborn baby in women exposed during pregnancy who do not already have immunity to the agent. Asymptomatic toxoplasma infection is common before childbearing years, and many women have elevated antibody levels indicative of immunity. To help assess your level of immunity against this agent, serum samples can be tested prior to pregnancy. Cat feces should be avoided and gloves should be worn when working in areas potentially contaminated with cat feces. Thorough hand washing after handling any potential source of infection is also necessary.

Working with hazardous agents in general and toxic chemicals in particular is discouraged during the first trimester of pregnancy.

Consultation with your private physician is highly recommended.

B. If you work with REPTILES or AMPHIBIANS (including wild species)

Salmonella is frequently harbored in turtles, other reptiles and amphibians and is transmitted through fecal material (oral route).

Leptospirosis is transmitted through nonintact skin and mucous membranes and is often related to direct contact with urine or tissues of infected animals. Inhalation and ingestion may be possible routes.

Psittacosis is transmitted by direct contact or inhalation of infectious materials from exudates, secretions or desiccated feces.

Other possible zoonotic diseases associated with many wild animals species include cryptosporidiosis (fecal-oral route), tularemia (direct contact of skin with blood or tissues of infected animals, bite from an infected ectoparasite or animal, ingestion of contaminated meat or water, campylobacteriosis (fecal-oral route), dermatomycosis (direct skin-to-skin contact with infected animals or indirect contact with contaminated equipment or materials), giardiasis (fecal-oral route), pastuerellosis (animal bite or scratch, inhalation, non-intact skin contamination from infected materials, and ingestion), and tuberculosis (aerosols from infected animals or tissues, ingestion or wound contamination).

Transmission can be avoided by the use of protective clothing, mask and good hygiene.

The skin glands of some amphibians (dendrobatid frogs and salamanders) produce toxic secretions. Most amphibian skin toxins are complex nitrogenous compounds that affect the victim in different ways. Some can cause local irritation only; others provoke hallucinations or act as vasoconstrictors, ones that contract blood vessels. There are also neurotoxins, which affect the nervous system. Batrachotoxin, in particular, is a nerve poison and one of the strongest toxins in the animal world. Only a drop of this substance that has entered the victim's body can block transmission of nerve impulses and the heart may stop functioning.

The salamander (*salamandra salamandra* species) also secretes poison through the skin like amphibians. The animal secretes the defensive poisonous liquid which contains salamandrin and steroid alkaloids. Salamandrin is a strong neurotoxin so the poisoning is usually characterized by convulsions. The salamander cannot be dangerous for humans.

Finally, if you deal with venomous snakes, such as North American pit vipers (rattlesnake, moccasin and copperhead), make sure you have or know where to locate a supply of specific antivenom for the species you are involved with. If you come across any snakes in the field and don't know positively what it is or isn't, do not approach it, try and examine it or photograph it. Move away from it as expediently as possible.

If you work with venomous snakes in a public or private collection or in a museum or university laboratory, never open the cage or attempt to handle them without at least one trained companion present who is familiar with snakebite first-aid. A telephone should always be located in the room.

Appropriate skin protection (gloves, lab coats, etc.) must be worn when handling these reptiles and amphibians.

C. If you work with RABBITS OR RODENTS (including wild species)

Development of allergies to these species is probably the most common health hazard. Laboratory animal allergy (LAA) may develop when susceptible persons are exposed to allergens produced by laboratory animals. LAA is most associated with exposure to fur, saliva, and urine of rats, mice, guinea pigs, and rabbits. As a precaution, personal protective equipment (gloves, lab coat, coveralls, etc.) that completely covers your street clothes should be worn. This PPE should be removed when leaving an animal room and should be laundered or replaced before you wear it again.

Some of the potential zoonoses include salmonellosis, tapeworms, Lymphocytic Choriomeningitis (LCM) virus, plague, leptospirosis, dermatomycosis (ringworm), tropical rat mites, rat bite fever, campylobacteriosis, cryptosporidiosis, erysipiloidiosis, giardiasis, Hantavirus, pastuerellosis, psittacosis, rabies, tularemia, and tuberculosis. Modes of transmission include fecal-oral routes, bites or scratches, direct skin-to-skin contact with infected animals or indirect contact with contaminated equipment or materials, direct contact with pharyngeal or intestinal lymphoid tissue, lesions (especially skin), or contaminated fomites including soil, inhalation

of infectious aerosols, ingestion of contaminated meat or water, conjunctival contamination, non-intact skin and mucous membranes with direct contact with urine or tissues, parenteral inoculation, or direct contact of intact skin with blood or tissues of infected animals. Transmission can be avoided by the use of protective clothing, mask and good hygiene.

The occurrence of laboratory rodent transmitted diseases is rare but, nevertheless, it is recommended that gloves be worn.

D. If you work with Birds or Fish (including wild species)

Zoonotic agents of concerns include campylobacteriosis (fecal-oral route), cryptosporidiosis (fecal-oral route), erysipiloidiosis (direct contact with pharyngeal or intestinal lymphoid tissue, feces of carrier animals, lesions (especially skin), or contaminated fomites including soils), listeriosis (vertical transmission, either transplacental or milk borne (ingestion), or by direct contact), pastuerellosis (animal bite or scratch, inhalation, non-intact skin contamination from infected materials, and ingestion), psittacosis (direct contact or inhalation of infectious materials from exudates, secretions or desiccated feces), salmonellosis (fecal-oral route), tuberculosis (aerosols from infected animals or tissues, ingestion or wound contamination, tularemia (direct contact of skin with blood or tissues of infected animals, bite from an infected ectoparasite or animal, ingestion of contaminated meat or water, inhalation), vibriosis (ingestion of raw or undercooked fish, exposure to untreated water, and often associated with trauma such as penetrating fish spine), tetanus (through a puncture wound contaminated with soil, dust, or animal feces), west Nile virus (mosquito bite-blood meal from an infected bird; no evidence it is transmitted from handling live or dead infected birds), and histoplasmosis (fecal-inhalation or oral routes).

Transmission can be avoided by the use of protective clothing, mask and good hygiene.

E. If you work with DOGS, CATS or FERRETS* (including wild species)

The risk of exposure to rabies is very low because most dogs and cats used for research have been previously vaccinated or have unlikely exposure to rabies. However, rabies vaccination is available to personnel, if desired. The rabies risk with ferrets depends on their source and vaccination status.

Toxoplasma serum titer checks for all women of childbearing age having contact with cats are also recommended to assess the risk of complications that could result from exposure to toxoplasmosis during pregnancy.

Cat scratch disease is a zoonotic infection characterized by regional lymphadenitis that follows a scratch from a cat. While the prognosis is usually excellent and the disease in most cases is self-limiting, an examination by a physician is recommended.

Other diseases with zoonotic potential include dermatomycosis (ringworm), sarcoptic mange, visceral larval migrans from roundworms, campylobacteriosis, cryptosporidiosis, giardiasis, Hantavirus (cats may serve as a reservoir), orf, pastuerellosis, leptospirosis, psittacosis, salmonellosis, tularemia, and tuberculosis. Modes of transmission include fecal-oral routes, bites or scratches, direct skin-to-skin contact with infected animals or indirect contact with contaminated equipment or materials, direct contact with pharyngeal or intestinal lymphoid tissue, lesions (especially skin), or contaminated fomites including soil, inhalation of infectious aerosols, ingestion of contaminated meat or water, conjunctival contamination, non-intact skin and mucous membranes with direct contact with urine or tissues, parenteral inoculation, or direct contact of intact skin with blood or tissues of infected animals. Transmission can be avoided by the use of protective clothing, mask and good hygiene.

F. If you work with SHEEP*

Q fever, a potentially serious human disease caused by the rickettsia Coxiella burnetii was formerly quite common in those drinking unpasteurized milk and in slaughterhouse workers exposed to freshly slaughtered ruminants (cattle, sheep, and goats). The organism is shed abundantly from the placental membranes of sheep and this route of exposure has been the cause of recent Q fever pneumonia and other associated symptoms in laboratory workers. Personnel working where exposure is possible should take extra precautions. Gloves, masks, and protective clothing are recommended for individuals working with pregnant sheep and goats. Infected persons can be effectively treated.

Contagious ecthyma (“orf”) from the mouth of an infected sheep, goats or wild ungulates, can be transmitted to humans by direct contact with virus-laden lesion exudates, or by fomites, causing focal skin lesions on the hands, arm or face.

Transmission can be avoided by the use of protective clothing and good hygiene.

* ***Animal species currently not utilized for research at TU.***

F. If you work with HAZARDOUS AGENTS

Methods for monitoring and handling hazardous biological, chemical, radioactive and physical agents detailed in TU's ***Chemical Hygiene Plan*** and ***Radiation Protection Program*** should be adhered to. Protective equipment and other safety practices consistent with current guidelines should be utilized.

Hands should be washed after handling chemicals, radioactive materials, infectious materials, animals, and before leaving the laboratory even if gloves are worn. A biological safety cabinet should be used when handling infectious materials and a fume hood when handling toxic materials. All work surfaces and contaminated materials should be decontaminated daily by either sterilization (autoclave) or chemical disinfection prior to washing, reusing, or discarding.

If you are pregnant or planning to become pregnant, you should confer with your private physician prior to handling hazardous agents.

For additional information on working with hazardous agents, contact the Department of Environmental Health and Safety (410) 704-2949.