CHAPTER 8

OCCUPATIONAL HEALTH AND SAFETY

Working with animals entails minimal risk to the careful person. However, certain hazards exist: animals may harbor viruses, bacteria and parasites which can infect humans. Therefore the animal care program has a brochure entitled: Occupational Health Program for Personnel with Laboratory Animal Contact. All individuals working with animals will receive this brochure which discusses the program in general, explains what to do in case of injury and how to report injuries, provides a section on animal bites or scratches and how to treat them and a section on working with hazardous agents. There is an additional brochure entitled, "Laboratory Animal Allergens" that is given to all individuals who come into contact with animals that may produce allergens. In addition to this, there is a mandatory Occupational Health Risk Assessment for individuals working with animals to complete. This questionnaire is reviewed by occupational health personnel and the information is held confidential.

There is a voluntary yearly follow-up to the risk assessment questionnaire. Individuals are advised to complete a new questionnaire whenever their inherent risks change. This allows people working with animals to have access to occupational health professionals at any point in time if they have any health concerns related to working with the animals.

I. Specific Zoonoses (Diseases that can transfer from animal to man)

A. Rat Bite Fever

The disease may be caused by *Streptobacillus moniliformis* or *Spirillum minus*. The usual source of infection is the bite of a rodent. RBF may occur in humans one day to six weeks following a bite. Signs include regional inflammation and lymphadenopathy, headache, fever, chills, and a macular rash. If untreated, further complications may ensue.

B. Lymphocytic Choriomeningitis

LCM occurs as a latent virus in the mouse which is easily transmitted from animals to humans. Mice and hamsters are asymptomatic carriers. Human infections have resulted from improper handling of infected tissues, e.g., directly from feces, urine or inhaling aerosolized dust from animal rooms. LCM often presents as a mild influenza like syndrome with or without central nervous system involvement.

C. Leptospirosis

Leptospira are found in a wide variety of mammals and reptiles. Hamsters, young guinea pigs and gerbils are especially susceptible. Rodents can shed leptospiras throughout their life without clinical signs. L. ballum is the most common serovar in rats, mice, and rabbits. All excrement and secretions of infected animal should be considered infective. Leptospirosis in humans may range from unapparent disease to death.

D. Tuberculosis

The natural reservoir hosts include *M. avian* (birds), *M. tuberculosis* (humans). Transmission from mammals occurs via aerosol from infected animals or by exposure to their dust bedding. Symptoms in man include anorexia, weight loss, fatigue, fever, chills and cachexia and other symptoms dependent upon the organ system involved.

Zebrafish may carry various species of Mycobacterium (*M. marinum, M.chelonae, M. haemophilum*) which may be transmitted by direct contact with fish or aquarium water through breaks in the skin. M. chelone is potentially zoonotic and can cause skin or soft tissue lesions in both immune-competent and immune-compromised hosts. M. haemophilum is potentially zoonotic and is a pathogen of children and immune-competent and immune-compromised adults. It causes skin, joint and pulmonary infections in immune-compromised hosts. M. marinum is potentially zoonotic in both immune-compromised as well as immune-competent individuals. It may cause granulomas or deep tissue infections of tendon and bone.

E. Chlamydiosis or Psittacosis

Avian species are the main reservoir of *C. psittaci* infection although the organism has a broad host range including rabbits, mice, guinea pigs, cats, lambs, calves, and frogs. Transmission may occur by aerosolization of dried fecal materials which contain organisms from enteric shedding. Control should be maintained by introduction of animals known to be free of the disease. Psittacosis in humans may occur acutely or have an insidious onset. Signs include fever, chills, anorexia, headache and a respiratory component. A toxic or septic form of the disease also exists.

F. Salmonella

Salmonella inhabits the intestinal tract of many animals. As many as 94% of all reptiles harbor *Salmonella sp.* Endemic salmonellosis in commercial raised guinea pigs has also been a source of infection. Environmental contamination, feeds of animal by-products and the house mouse all serve as reservoirs of infection. Both humans and animals are carriers and periodic shedders of salmonella. Clinically, salmonellosis in humans presents as gastroenteritis with sudden onset, diarrhea, nausea, abdominal pain and fever.

G. Dermatomycoses (Ringworm)

Trichophyton mentagrophytes is the organism most frequently isolated with rodent associated infections. It may be asymptomatic in rodents and only recognized when laboratory personnel become infected. Transmission occurs by direct or indirect contact with visible infected animals, asymptomatic carriers, bedding or fungi present in the air or dust. Control is by regular cleaning of cages and rooms. Clinically, the infection may manifest as skin lesions with erythema, scaling, and occasionally vesicles or as nail thickening and discoloration.

II. Prevention of Zoonotic Diseases

A. Proper Personal Hygiene

1. Wash hands before and after animal handling.
2. Do not eat or drink in the animal rooms.
3. Avoid any unnecessary work time in the animal rooms.
4. Wear laboratory coat or coveralls when handling animals.
5. Avoid handling sick animals or animals with lesions unless gloved, or unless other protective wear is utilized.
6. Wear a mask if you are allergic or if dust is present (note environment maintenance).
7. If you are sick, DO NOT enter lab animal facilities.
8. Routinely wear gloves when cleaning animal rooms.
9. Note progression of any illness and your current history relevant to animal work.
10. Inform physician of your animal related activities.

B. Environmental Maintenance

1. Keep animal rooms clean.
   a. Avoid urine and fecal build-up. Dry feces result in fecal dust which may be inhaled.
   b. Clean rooms have a lower likelihood of horizontal or zoonotic transfer.
   c. Proper ventilation protects the animal and workers. Use hood or cage filters when necessary.
   d. Clean litter from floors. Litter attracts vermin which may introduce a zoonotic disease into the facility.

C. Colony Maintenance

1. Observe animals for health status on a daily basis.
2. Report sick or dead animals.
   a. Note health problems.
   b. Take extra caution in cleaning, etc.
   c. Isolate affected animals.
   d. Record history or progression of animal disease.
   e. Bring only healthy animals with a known history into an existing colony.

III. Other potential zoonotic diseases

Pox Viruses
Contagious Ecthyma
Hemorrhagic Fever
Yellow Fever
Measles
Hepatitis
Herpesvirus B
Marburg Virus Disease
Shigellosis
Erysipeloid
Streptococci
Tularemia
Pseudomonas
Staphylococcus
Toxoplasmosis
Amebiasis

(African Hemorrhagic Fever)
Rabies
Q Fever
Rocky Mountain Spotted Fever
Murine Typhus
Brucellosis
Plague
Campylobacteriosis
Cat Scratch Disease
Balantidiasis
Giardiasis
Cryptosporidiosis
Helminths
Cestodiasis
Listeriosis