

ANIMAL FACILITY RISKS

CLASSIFICATION OF THE RISKS TO ANIMAL FACILITY WORKERS:

1) PHYSICAL RISKS:

- bites, scratches
- injuries from falling, lifting, stacking, pushing heavy loads

2) TOXIC CHEMICAL RISKS:

- use of cleaning agents, disinfectants, descalers
- use of drugs, toxic gases

3) ALLERGIC RISKS: to hair, dander, urine, feces, serum.

- ocular-respiratory type
- cutaneous type

4) BIOLOGICAL RISKS:

- risks associated with animals (as source or vehicle of pathogens for humans)
- risk of animals being inoculated with pathogens transmissible to humans

IDENTIFICATION OF RISKS:

1) PHYSICAL RISKS:

BITES and **SCRATCHES** can sometimes occur due to errors or negligence during handling and restraint of animals. Biological pathogens can be transmitted through bites and scratches (BIOLOGICAL RISKS).

Preventive measures:

- prior to handling animals, workers are required to put on: disposable labcoat (or cotton labcoat used only inside the Animal Facility), overshoes (or clogs used only inside the Animal Facility), cap, disposable gloves and/or protective gloves, mask [PPE= Personal Protective Equipment]
- direct contact with animals should be limited to the minimum necessary
- when compatible with experimental handling procedures, always use containment measures
- always use (species specific) correct handling techniques
- be knowledgeable of animal behavior to be able to recognize signs of aggressivity

PROCEDURES IN CASE OF BITES OR SCRATCHES:

- wash the injured area with soap and water

- disinfect the wound and contact the Emergency Room as soon as possible (the treating doctor must report the incident to the Public Hygiene Service of the Local Health Authority [ASL], which in turn communicates it to the Veterinary Service of the ASL)
- identify, isolate, and report the animal which caused the injury to the Animal Facility Manager (or preserve the carcass) along with its cage (the Consulting Veterinarian will inspect it to verify the absence of pathologies transmissible to humans—particularly rabies—and communicate the results of the health check to the Public Hygiene Service)
- immediately notify the Director of the relevant Department (who will make a formal injury report)

INJURIES FROM FALLING on slippery surfaces (e.g., wet floors), and **FROM HANDLING LOADS** (e.g., feed sacks, boxes, cage carts, animal carcasses).

Preventive measures:

- use appropriate carts to move feed sacks or other heavy loads
- always pay careful attention and, when possible, get assistance
- follow Title VI Section 1 of Legislative Decree 81/08 and subsequent amendments 106/09 (guidelines for “Manual Handling of Loads”)

PROCEDURES IN CASE OF ACCIDENTS:

- contact the Emergency Room
- notify the Animal Facility Manager and the Director of the relevant Department

2) TOXIC CHEMICAL RISKS from using:

CLEANING AGENTS, DISINFECTANTS, DESCALERS used for cleaning the rooms and cages. The danger may come through contact (burns) or inhalation (inflammation of the mucosas of the respiratory tract and ocular conjunctiva) or accidental ingestion. Particular attention should be given to products that cause toxic, carcinogenic, or teratogenic effects (e.g., formaldehyde R 23/24/25-34-39/23/24/25-40-43).

DRUGS AND TOXIC SUBSTANCES: (e.g., gaseous and liquid anesthetics for surgery) can be hepatotoxic, explosive, potentially carcinogenic.

Preventive measures:

- in the application of these safeguards, carefully follow the manufacturer’s use instructions (indicated in the material safety data sheet (MSDS)), perform correct dilutions, and do not mix different products
- use PPE
- provide adequate changes of air in the treatment area (to avoid the accumulation of heavy gases that may stagnate in the environment)

PROCEDURES IN CASE OF TOXIC CHEMICAL EXPOSURE:

- carefully follow the instructions found on the material safety data sheet
- contact the Emergency Room
- notify the Animal Facility Manager and the Director of the relevant Department

3) ALLERGIC RISKS:

For some people, working in an animal facility can lead to the onset of clinical allergies attributable to contact with and handling of laboratory animals.

Statistics report that this occupational disease affects between 11% and 44% of animal keepers (daily close contact with animals) and, to a lesser extent, experimental researchers.

Allergens: proteins in saliva, urine, feces, serum, hair, and skin derivatives.

Staff become sensitized by inhaling allergens suspended in the atmosphere, or as the result of abrasions, scratches, or bites. Clinical symptoms appear at least two weeks, and not later than 2 years, after exposure. Once the disease appears, it tends to worsen with time. Individual predisposition to the disease has been proven.

SYMPTOMS: rhinitis (with sneezing, runny nose), conjunctivitis (ocular discharge, photophobia, eyelid swelling), rash (eczema, intense itching, red and swollen skin areas). In more severe and protracted forms, bronchial asthma (intense breathing difficulty) or anaphylactic shock may occur.

Preventive measures:

- preliminary allergy tests to detect allergies or predisposition. Staff who are allergic should be removed from the animal facility and used for other tasks
- keep the number of staff working in the animal housing areas to the minimum necessary
- monitor the conditions of the areas in which staff spend time:
work areas must be clean, adequately ventilated (a set number of air changes, regular cleaning and replacement of air conditioner filters)
- proper removal of soiled dirty bedding and other animal waste (avoid raising dust as much as possible)
- use PPE
- change clothes (e.g., labcoat, overshoes, etc.) when entering and leaving the animal facility
- avoid touching your face while working with animals
- wash your hands frequently and whenever you leave the animal facility
- always use clean equipment
- avoid bringing non-necessary materials into the animal facility

PROCEDURES IN CASE OF ALLERGY:

- staff must report any allergic diseases to the competent doctor, the Director of the relevant Department, and the Animal Facility Manager. Their suitability for work involving the handling of animals and working in the housing areas will be evaluated.
- in case of allergies, direct contact with animals must be limited to the minimum necessary.

4) BIOLOGICAL RISKS:

A) ZOOZOSES

Zoonoses are pathologies which can be transmitted from animals to humans.

The primary routes of transmission for zoonoses are:

- oral: e.g., salmonellosis;
- respiratory: e.g., tuberculosis, psittacosis;
- ocular-conjunctival: e.g., leptospirosis, psittacosis;
- transcutaneous (through intact skin): e.g., tinea corporis, scabies, leptospirosis;
- through bites and scratches: e.g., rabies, pasteurellosis, rat bite fever.

The zoonoses most frequently transmitted to humans from laboratory animals (rodents and rabbits) are:

- ***Tinea corporis***: infection occurs through skin contact. The animal species most frequently involved are the rabbit and the cat. Animals show hairless areas in different parts of the body. Beware of asymptomatic carriers or recently healed animals which can disseminate infectious spores into the environment. In humans, there are itchy, target-shaped skin lesions located primarily on the hands and arms.

- ***Scabies/acariosis***: occurs less frequently. Characterized by crusty, itchy skin lesions in animals and atypical dermatitis in humans. There is possible contagion from rabbits suffering from parasitic otitis (head shaking, lowered ears, itchy ears). Treatment is antibiotic therapy.

- ***Pasteurellosis***: transmitted by rabbits and rodents through bites and scratches. *Pasteurella multocida* is often asymptotically present in the nasal cavity of animals and, following exposure to stress factors, can give rise to the disease. In rabbits, there are also respiratory and genital forms. In humans, it appears as festering sores (sometimes extensive), swollen lymph nodes, and, in severe cases, septicemia.

- ***Leptospirosis***: transmitted by contact with infected urine. It is important to combat rodent infestations (rodent control plan) which serve as leptospire reservoirs. In humans, it causes severe forms of septicemia characterized by hepatic and renal failure.

- ***Salmonellosis***: infection by fecal-oral route. Characterized by enteric symptoms in both animals and humans. There are many serotypes. Beware of healthy carriers and the use of contaminated feed (use pasteurized or sterilized diets).

- ***Rat bite fever***: caused by *Streptobacillus moniliformis* that often inhabits the nasopharynx of rats without causing significant diseases. It has also been reported in guinea pigs. It is transmitted to humans through bites and causes lymphadenitis to the point of lymph node suppuration.

In general, the list of zoonoses transmitted by rodents and rabbits include:

by virus:

- lymphocytic choriomeningitis
- encephalomyocarditis
- rabies

by bacteria:

- diplococci diseases
- rat-bite fever
- Haverhill fever
- Leptospirosis
- Pasteurellosis
- Pseudotuberculosis
- Salmonellosis
- Shigellosis
- tuberculosis

by fungus:

- dermatomycosis

by protozoa:

- toxoplasmosis

by helminths:

- hymenolepiasis

by artropoda:

- flea infestation
- demodectic mange
- sarcoptic mange
- *Cheyletiella parasitovorax* infections

List of zoonoses transmitted by birds:

- psittacosis/ornithosis
- Newcastle disease

Preventive measures:

- acquire animals from trusted breeders and suppliers which are furnished with health certificates, properly transported, and then housed properly in a clean environment
- use quarantines and clinical and laboratory examinations of animals to detect diseased animals or carriers of transmissible
- disinfect/decontaminate the environment (steam and bleach)

- recognize signs of disease or discomfort in animals (decreased intake of food and water, weight loss, matted fur, etc.) and reduce environmental stressors (overcrowding, environmental factors such as ventilation, temperature, humidity)
- gradually accustom newly arrived animals to the presence of humans and their new environment (consider not mixing groups of animals)
- use PPE
- use correct handling techniques (species specific) to prevent diseases transmitted by bites and scratches
- be careful to correctly use sharp instruments, such as syringes, needles, scalpel blades, and necropsy tools with which staff can injure themselves
- analyses of serum, sentinel animal stool and drinking water are required every 6 months

B) HANDLING PATHOGENS:

when carrying out experimental and biological diagnostic tests, it may be necessary to inoculate animals with pathogens (e.g., viruses, bacteria, protozoa, parasites, fungi, etc.). Current legislation classifies pathogens into 4 groups based on their pathogenic potential. Each group requires a different level of containment which determines the necessary precautionary measures (annex XLV of Legislative Decree 81/08 and subsequent amendments).

Preventive measures:

- Specify the biological material used for experimental handling procedures in the “Animal Facility Security Form”
- transport the material using sealed containers possibly equipped with devices for containing spills; properly label all containers, giving precise indication of the material they contain
- use PPE
- handle materials under a biological safety hood
- provide for the proper disposal of shipping containers and any contaminated sharps (to be disposed of in special containers with hard sides)
- carefully wash hands after handling activities
- avoid spreading biological materials on work surfaces (hoods and counters); in case of accidental contamination, perform adequate cleaning and disinfection, notifying the staff on duty at the Animal Facility

PROCEDURES IN CASE OF ACCIDENTAL EXPOSURE:

- wash and disinfect the areas which accidentally came in contact with biological materials
- contact the Emergency Room
- notify the Animal Facility Manager and the Director of the relevant Department

Animal keepers and other staff who work with animals must notify the competent physician of any pathological or physiological condition affecting their health that could be incompatible with work duties at the

Animal Facility. In this regard, it should be noted that **access to the Animal Facility is prohibited during pregnancy and for 7 months after childbirth**, pursuant to Legislative Decree 151/2001 and related regulations (workers must immediately terminate access to the Animal Facility as soon as they are aware of being pregnant. If a worker fails to declare her pregnancy and the Animal Facility Manager becomes aware of it, he/she is required to immediately suspend the employee's access).

PROCEDURES TO FOLLOW IN CASE OF INJURY OR SUSPECTED DAMAGE TO HEALTH CAUSED BY WORKING AT THE ANIMAL FACILITY

In case of injury occurring while on the job at the Animal Facility (either due to contact with animals, accidental contact with biological agents, chemicals, equipment or instruments, etc., or other causes), the worker must immediately notify their Department Head, who is required to file a National Institute for Insurance against Labor Accidents [INAIL] report within 48 hours and send it to the Personnel Office of their institution, INAIL, and the Municipal Police. This form must still be completed even if the injured person does not need to go to the Emergency Room (as a precaution, report that it does not involve missed work days). The injury report must be made for dependent staff as well as for others who are equivalent pursuant to Legislative Decree 81/08 and subsequent amendments, and related regulations (doctoral and post-graduate students, fellows, contractors, etc.).

If a worker becomes aware of a health problem which he/she thinks could be attributable to work performed at the Animal Facility, he/she must immediately notify their Department Head and the Animal Facility Director who will immediately notify the Health and Safety Department and the competent physician regarding any measures to be taken.

In particular, in case of:

allergies

if an Animal Facility worker shows clinical symptoms that could be due to an allergic reaction (redness and skin irritation, ocular-conjunctival irritation, difficulty breathing, etc.) caused by work at the Animal Facility, he/she must temporarily stop the suspect activity and promptly request a medical examination so that the competent physician can order any necessary measures.

zoonoses and infections

if an Animal Facility worker shows clinical symptoms that could be due to contact with animals or biological materials resulting from work at the Animal Facility, he/she must temporarily stop the suspect activity and promptly request a medical examination so that the competent physician can order any necessary measures.