



Procedure: Safety in animal houses

The purpose of this procedure is to outline minimum requirements for the safety of students working in animal houses and/or at the Australian National University (ANU) and to ensure compliance with the *Animal Welfare Act 1992* (ACT), the *Work Health and Safety Act 2011* (Cth), the *Work Health and Safety Regulations 2011* (Cth) and the University Work Health & Safety (WHS) Management System. The Safety in animal houses procedure is linked to the Australian National University's Work health and safety policy and is one of the Safe Work Procedures within the WHS Management System.

Definitions

Anti-spasmodics is a medication that relieves, prevents, or lowers the incidence of muscle spasms, especially those of smooth muscle such as in the bowel wall.

Immunosuppressant refers to an agent that can suppress or prevent the immune response. Immunosuppressants are used to prevent rejection of a transplanted organ and to treat autoimmune diseases such as psoriasis, rheumatoid arthritis, and Crohn's disease.

Local Area refers to a College, Research School or Service Division.

A **Worker** is defined as anyone who carries out work for the University. A worker includes staff, volunteers, contractor, students and visitors at the University.

Zoonoses is defined as a disease which can be transmitted to humans from animals.

Procedure

Scope

1. This procedure is intended for all University workers who routinely have contact with laboratory animals in the course of their work. The principles outlined in this procedure are equally applicable to the prevention of insect and plant protein allergies.
2. This procedure must be read in conjunction with local area procedures. Individuals must not access animal houses at the University without an appointment, an induction or a local area escort.
3. This procedure provides general information and is applicable across the University. Each local area which has an animal house(s) must have local area procedures, safe work instructions and security systems to ensure the safety of workers entering the facility and the animals living in the facility.

4. For any clarification of this procedure, access to local area procedures, safe work instructions, hazard assessments or any safety information, contact should be made with local area supervision, or the local area escort or the Work Environment Group (WEG).

Responsibilities

5. College Deans, Research School and Service Division Directors are responsible for implementing and maintaining work health and safety standards and practices in the animal houses in their local areas. To maintain health and safety, they should ensure that:

- laboratories and equipment provided for research and teaching are safe and suitable for the types of work carried out;
- resources are available for health and safety equipment and materials, as well as the maintenance of WHS standards; and
- there is compliance with relevant legislation and other conditions (e.g. radiation licence conditions, quarantine permit conditions).

6. Supervisors are responsible for:

- providing a safe and healthy workplace for staff, students, visitors and contractors;
- ensuring the staff, students and contractors are provided appropriate induction, training, advice and supervision;
- providing documented safe work procedures and ensuring the staff, students and contractors they supervise understand and comply with the procedures;
- complying with relevant legislation and other conditions (e.g. radiation licence conditions, quarantine permit conditions);
- reporting any incidents, exposures, hazards via online incident reporting;
- resources are available for health and safety equipment and materials, as well as the maintenance of WHS standards; and

7. Work, Health and Safety (WHS) Officers shall monitor the following:

- the hazard assessment process, including controls to be implemented
- safe work practices are developed and maintained at all times;
- there is compliance with relevant legislation and other conditions (e.g. radiation licence conditions, quarantine permit conditions);
- regular safety inspections are conducted and documented suitable for work carried out; and
- reporting any incidents, exposures, hazards or WHS concerns within their jurisdiction to the WEG.

8. Staff, students, visitors and contractors (workers) must take personal responsibility for ensuring their own safety and the safety of others by:

- taking the necessary action(s) to eliminate or minimise the risks of hazards over which they have control;
- complying with safety instructions, policies and procedures, including local area safety rules, manuals and documented hazard assessments;
- completing an appropriate local laboratory and animal house safety induction and training;
- making proper use of all safety devices and appropriate personal protective clothing and equipment as required;
- complying with the instructions given by emergency response personnel such as emergency wardens and first aid officers in an event of emergency;
- seeking information or advice where necessary before carrying out new or unfamiliar work;
- maintaining dress standards appropriate for the work being done i.e. appropriate personal protective clothing, footwear and equipment must be worn and used at all times;
- only consuming or storing food and drink in designated areas outside the laboratory;
- being familiar with emergency (suitable for work being carried out) and evacuation procedures;
- reporting all incidents, injuries, hazards via online incident reporting;
- reporting any WHS concerns or matters to their supervisor or local area WHS officer; and
- complying with relevant legislation and other conditions (e.g. radiation licence conditions, quarantine permit conditions).

Requirements

9. Entry to animal houses requires a local area induction and a facility escort. An appointment with animal house staff is recommended prior to visiting/attending.

10. Animal houses will have security access and permission must be given prior to entry for all visitors by an approved staff member of the facility.

11. Staff will be given security access upon completion of local area inductions, specialised training identified in the local area training matrix and with approval from local area supervision.

12. Local area safety procedures and operating instructions will be accessible on request from supervision and available on the local area's web page. Visitors will be provided with basic safety information following permission to enter.
13. The University Safety rules for all laboratories also apply to animal houses – refer to [Laboratory safety procedure <add link>](#). Each local area with an animal house has specific rules for laboratories and for their respective animal houses.
14. All animal houses at the University should have:
- local area procedures for safety in animal houses specific to the hazards present and identified at the local area;
 - clear demarcation of restricted areas, including signposting, with controlled (security) access to these restricted areas;
 - emergency evacuation procedures. A trained first aid attendant available during working hours;
 - an induction program to show new staff and students correct animal handling techniques. Where possible, an animal technician who is experienced with the appropriate species should assist in all experimental procedures involving animals. Only when the research worker demonstrates ability to work with animals without damage or stress to the animal or self, should they be left alone;
 - prohibition of smoking, eating, drinking or the application of cosmetics in the animal house;
 - waste removal and decontamination procedures;
 - regular training in manual handling techniques;
 - training and monitoring programs for cleaners to ensure compliance with regulations and safe working practice;
 - effective supervision of instituted protective measures, such as the wearing of protective clothing;
 - systems of work that allow for the separation of clean/dirty or dangerous procedures. Standard Operating Procedures (SOP) should be compiled for each area and these explained to all newcomers. These SOPs should be written in consultation with other relevant officers such as the Radiation Safety Officer and the [Animal Ethics Committee](#);
 - a program for the regular maintenance of equipment. Separation between general work areas (such as desks or laboratory benches) and animal handling or animal rooms; and

- staff and students should be directed to leave the animal area to take extensive notes or to conduct activities which are not related to the animals.

Design of animal houses

Ergonomics

15. Animal house work requires consistent manual handling effort and, therefore all attempts should be made to reduce the risk of musculoskeletal injury.
16. Feed bags, cages and other items requiring repeated lifting should be stored at a height of 40-50 cm above the floor, to reduce extremes of effort.
17. The height of cage stacks should not exceed 1.6 m, so that overhead work and the drift of animal residues onto workers' faces is minimised.
18. Where the provision of ergonomic solutions is not practical, staff must follow the training and procedures they have been provided and the use of two people instead of one for certain procedures is required.

Ventilation

19. A well designed ventilation system will provide sufficient air movement to supply oxygen and remove the products of respiration, dusts and fibres, thereby reducing the risk of allergy.
20. The ventilation should be designed in accordance with Australian Standard (AS) 1668.2 2012. The use of mechanical ventilation and air conditioning in buildings.
21. Animal houses require 100% exhaust of room air and at least 10-15 air changes per hour. Air movement should be evenly distributed throughout each room without draughts or dead spots. Noise levels should be minimal.
22. Where practicable, exhaust ducts should be at floor level where the concentration of animal residue is highest. The ducts must be made rodent-proof.
23. For most species, a relative humidity of 55+/-15% at 21+/-1°C is optimum. This level of humidity will also serve to reduce dust levels.
24. Work with animals involving volatile anaesthetics, should be done using an appropriate anaesthetic rig including waste anaesthetic gas scavenging either through exhaust duct, fume cupboard or the use of a closed system with activated charcoal scavenge.

Avoidance of zoonoses

25. Animals are susceptible to some of the infectious diseases experienced by humans. This susceptibility poses some problems for those working with animals. Workers need to be protected against these diseases.

26. Animals can carry infectious agents without showing overt illness. Although the risk from purpose-bred colonies is low, care needs to be taken as some conditions can be activated by stress in the animals or the colony can be contaminated (by wild rodents, bedding material) or human infections can be passed onto the animal and then returned.

27. University and Local quarantine procedures must be followed for all animals caught in the wild. These animals are potentially hazardous in respect to Zoonoses. The University **Biological safety Procedure** <add link> outlines the minimum quarantine requirements.

Safe working practices

28. Local area procedures and safe work procedures and practices can be accessed through local area supervision or on local area websites. Alternately, the area WHS officer identified on the Local Area WHS Noticeboard or the WEG can be contacted.

29. Medical or veterinary advice should be available to all persons handling animals upon request to immediate supervision or as identified in local area procedures or safe work instructions. Alternately, contact can be made with the University Health Service.

30. All those in contact with non-specific pathogen free (SPF) animals should be immunised against tetanus and other vaccinations as per position description and requirements.

31. It is the responsibility of all workers who are immunocompromised or who become pregnant to immediately inform their supervisor. A hazard assessment will be conducted and controls will be put in place, before work may begin for that individual. Following the hazard assessment, if the individual is able to work in the lab environment, the supervisor will ensure appropriate controls including specific Personal Protective Equipment (PPE) are provided. For example, some infectious animals may transmit zoonotic diseases that immunocompromised individuals are susceptible to and anaesthetic equipment and chemicals may be a hazard to pregnant women.

32. All staff and students will wear the required personal protective clothing identified by safety signage at the entrance to each facility. The minimum requirements have been determined by the hazard assessment process and reflect the necessary controls to minimise the risks to As Low as Reasonably Practicable. The hazard assessment can be accessed by contacting a supervisor or referring to the local area Hazard Register.

33. The minimum Personal Protective Equipment worn by a worker or a visitor in an animal house will be fully enclosed footwear, gloves (preferably Nitrile) and a gown, or overalls. Masks must be available at all times and worn based on a local area risk assessment. Safety boots with steel caps should be worn when dealing with larger animals (sheep).

34. Safety glasses shall be worn in the infectious area suite, with all other areas exempt from this requirement unless required by a local area hazard assessment. The correct safety signage indicating the requirement will be located at the entrance of the infectious area or suite.
35. All protective clothing should be removed before leaving the animal house and laundered or disposed of in a manner suited to the type of contamination and clothing as identified in local area procedures.
36. Specific Personal Protective Equipment may be identified by the local area following a Hazard Assessment and individual's allergies (see below PPE specific to Lab Animal Allergies LAA).
37. Precautions should be taken by the local area and workers in handling blood, tissues, and dead animals. Animal carcasses, dressings and organs that accrue from research work involving human pathogens should be securely packed and then handled as per the local area's specific Standard Operating Procedures (SOP) which are dependent on requirements from the Institutional Biosafety Committee (IBC) and available in the University's [Biological safety procedure <add link>](#). Staff with cuts or broken skin, which could permit entry of foreign material, must ensure that they are adequately covered and protected.
38. Local area procedures will identify the treatment of wounds inflicted by bites or scratches. Unless otherwise indicated in a local area procedure the treatment is to scrub the wound with copious soap and water and if possible induce bleeding. An antiseptic such as Cetrimide or 1% Cetavlon is to be applied and the wound covered by a sterile dressing. Medical advice may need to be sought in the case of a severe wound after first aid has been administered. The person bitten may need to be observed for three weeks by their medical practitioner if the animal is thought to be contaminated.

Quarantine

39. It is generally necessary to quarantine incoming animal stock, and to screen them for disease before combining with existing animal stock. Animals trapped in the wild should routinely be quarantined, pending a clinical and microbiological assessment. Additional information is provided in the University [Biological safety procedure <add Link>](#).

Health surveillance of laboratory animals

40. In research programs where animal health is critical (e.g. viral immunology) regular monitoring of animals for subclinical infection should occur. In physiological research, preventive veterinary programs should be implemented to ensure animals have a health status consistent with research needs and occupational health and safety requirements.

41. All animals dying unexpectedly should be autopsied by experienced and appropriately trained personnel. Animal sickness should be reported as per the ANU Ethic Committee requirements and the legislative requirements under the [Australian code for the care and use of animals for scientific purposes \(2013\)](#).

Species associated zoonoses

42. Table 1 lists species that have been identified as being susceptible to Zoonoses:

Table 1

Species	Susceptible Zoonoses
Rodents and Rabbits	<ul style="list-style-type: none"> • Salmonella • Lymphocytic choriomeningitis virus • Ringworm and dwarf tapeworm • Various forms of fungi • Sendai virus • Pseudotuberculosis • Leptospirosis • Giardia muris • Vaccinia (from experimental use)
Avians	<ul style="list-style-type: none"> • Psittacosis • Salmonella • Newcastle disease virus • Aspergillus • Candida
Sheep	<ul style="list-style-type: none"> • Q fever • Salmonella • Anthrax

Avoidance of laboratory animal allergies

Distribution

43. Workers in contact with laboratory animals have frequent exposures to allergens in the form of hair, dander, urinary proteins, faeces and ectoparasites. In susceptible individuals this can lead to various degrees of Laboratory Animal Allergy (LAA), otherwise known as Hypersensitivity to Laboratory Animals (HLA).

44. LAA may lead to Occupational Asthma (OA) if the primary symptoms are ignored.

45. The development of OA is related primarily to the length of exposure. However it has been observed that those who have intermittent exposure to animals for short periods of time can develop severe symptoms quite rapidly. It is important for personnel to wear full protective clothing even during short period exposure.

Symptoms of LAA

46. Workers may exhibit one or several of the following symptoms:

- Rhinitis (runny nose)
- Conjunctival symptoms (itchy, red eyes)
- Urticaria (itchy, raised skin rash)
- Bronchial asthma
- Other diffuse respiratory symptoms

Sources of LAA

47. After detailed studies it has now become clear that the major allergen causing LAA is urinary protein. The condition may be precipitated by urinary proteins and exacerbated by exposure to other allergens, such as hair, saliva, epithelia, serum, faeces and dander. Therefore, the need to control all sources is vital. Allergens are frequently transmitted on the hands (or gloves) Rubbing or scratching with unwashed or gloved hands seems to be a common way of applying allergens to the eyes, nose and skin.

Smoking and LAA

48. No relationship between smoking and the development of LAA has been established. Studies of smoking in allergic and non-allergic workers have not revealed differences in incidence and/or extent of LAA; however, smoking is not allowed for hygiene purposes in the workplace at the ANU as identified in the Australian National University Smoke-free Policy.

Prevention of LAA

49. It is virtually impossible to completely prevent the incidence of LAA, as some individuals may be highly sensitive. However the provision of the following should have a marked impact on the incidence and severity of LAA:

- High standards of accommodation and ventilation;
- Suitable protective clothing;
- Training and supervision;
- Medical surveillance; and
- High standards of cleanliness and cleaning.

50. The prescription of stocking densities for animal houses has been somewhat controversial, since many factors, including cage size and method of husbandry, will determine acceptable limits. Other relevant factors are the efficiency of air exchanges, behavioural characteristics of the animals and their need for space, as well as the schedule for cleaning and management of animal house hygiene.

Protective PPE specific to LAA

51. Local area procedures and safe work instructions must be followed. Supervision should be contacted immediately if a worker has WHS concerns regarding the PPE required, fit or performance.

52. Long sleeve gloves, overalls, protective waterproof aprons, and waterproof footwear should be worn while washing cages. At other times gowns/overalls are a minimum requirement. When using gowns in animal houses attention should be given to the importance and necessity to adequately cover underlying clothing.

53. Eye wear and masks should always be available for worker use and worn if identified in a risk assessment or in local area operating procedures. Masks (particularly those that are charcoal impregnated and effective against respirable dust) offer some degree of protection to the intolerant person, but may be inadequate if the challenge is high or the person has become sensitised.

54. Air-fed helmets may be indicated for severe cases of LAA, or where ventilation is inadequate. These helmets are valuable when the allergic person is unable or unwilling to seek redeployment, as the helmet with its filtered air, may allow the symptoms to abate to a controllable level.

55. All protective apparel should be supplied on the basis of long term personal loan and sufficient sets should be provided to allow daily laundering.

56. It is to be remembered that protective apparel is only a supplement to good environmental control and should not be used as an alternative.

Cleaning procedures

57. Ideally, cleaning should be done using suitable industrial vacuum cleaners. Other methods include emptying of cages into bulk collection chutes and bins. The cage should always be emptied in close proximity to the chute or bin to minimise circulation of dust and animal debris.

Medical surveillance

58. The University will provide regular surveillance of staff who work with laboratory animals to monitor for progression of LAA.

59. Staff who are at risk of LAA may wish to undertake further appropriate diagnostic tests although these are not always predictive of the degree of reaction.

60. Positive responses to the above tests should alert both the examining medical officer and supervisor to the need for diligence in the use of precautionary measures and for close medical surveillance.

61. Early reporting of symptoms is to be encouraged and referral to a suitably qualified medical practitioner should be considered. If in doubt contact the WEG.

Wet handling methods

62. In order to reduce the amount of airborne dust, a fine water mist should be used to dampen the bottoms of cages if the bedding is particularly dusty or is likely to contain hazardous materials (e.g. bedding from animals treated with chemotherapeutic drugs), prior to removal for cleaning purposes. This method is not to be used routinely for dust suppression as the damp encourages mould.

Management of LAA symptoms

63. If a worker displays symptoms of LAA, temporary removal from the work area is recommended immediately. Following medical advice, redeployment may be recommended as a temporary measure, until symptoms recede. If redeployment is impractical, scrupulous attention needs to be given to the wearing of air fed helmets, full protective clothing, and to personal hygiene. To prevent relapse, these measures need to be instituted when the affected worker re-enters the animal house after redeployment.

64. In cases where asthma has become a feature of LAA, medical advice is mandatory. The person may need to be treated with anti-spasmodics and/or immunosuppressants. Research indicates, however, that this form of treatment is not uniformly successful.

Incident reporting

65. All workers shall report incidents, injuries and hazards immediately to their Supervisor and via the Workplace safety incident and hazard reporting tool as per the [WHS incident management procedure](#).

Training and supervision

66. There is no specific training for this procedure. Area specific training is recommended for all work in animal houses.

Sources

Legal and other requirements
<i>Work Health and Safety Act 2011 (Cth)</i>
<i>Work Health and Safety Regulations 2011 (Cth)</i>
<i>Safety, Rehabilitation and Compensation Act 1988 (Cth)</i>
<u>Australian code for the care and use of animals for scientific purposes, 2013 (8th Edition)</u>
Australian Standard AS 1668.2 2012, The use of mechanical ventilation and air conditioning in buildings

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