UQ Health Surveillance and Management of Laboratory Animal Allergy and Asthma

1 Laboratory Animal Allergy (LAA) and asthma

Regular exposure to small laboratory animals (rodents, insects and birds) in the workplace can cause development of allergic symptoms in some individuals, some studies estimate between 11-44% of those working with small lab animals will report work related allergic symptoms. The most common symptoms reported, involve irritation of the nose, eyes and skin. These symptoms occur as a result of becoming allergic to something (usually an animal protein) in the workplace. Reducing workplace exposure to the allergen is the most important aspect of preventing an allergy developing. Approximately 10% of individuals with allergic symptoms will develop asthma. This type of asthma is referred to as 'occupational asthma'.

It is important to prevent occupational asthma because once a person becomes sensitised (allergic) to a protein (allergen) in the workplace, subsequent exposures to even minute amounts of allergen can provoke asthma symptoms. Occupational asthma is therefore difficult to manage if the person remains exposed to an allergen in the workplace, even with the correct use of Personal Protective Equipment (PPE).

Preventing further workplace exposure to the allergen is the most important aspect of managing occupational asthma. Early removal from exposure to the allergen in the workplace can reduce the occurrence of symptoms and also reverse the development of occupational asthma. If regular work exposure to the allergen continues, the condition can become chronic and is unlikely to disappear once exposure to the allergen has ceased.

In addition, persons with pre-existing asthma due to factors unrelated to work, commonly find their asthma symptoms are aggravated, by working in animal facilities.

The aims of these guidelines are as follows:

- To reduce the incidence of sensitisation (developing an allergic response) to laboratory animals;
- To monitor the health of workers who work with laboratory animals to prevent significant or serious allergies and asthma.
- To assist in reducing overall exposure of workers to animal allergen and animal related dust.

2 Responsibilities

The Manager for the unit will be responsible for:

- Performing a risk assessment which looks at the risk of LAA and asthma in the workplace;
- Ensuring that workers are given sufficient information, instruction and supervision to enable them to work safely;
- Ensuring that staff and others wear PPE (where required) as well as receiving advice and training in its selection and use;
- Identification of staff requiring health surveillance as part of the workplace risk assessment and pre-placement policy and procedures.

  http://ppl.app.uq.edu.au/content/5.30.16-pre-placement-medical-assessments
  http://www.uq.edu.au/ohs/SYS/OHS-NewWorkerInduction.pdf

- Identification of research personnel and students requiring health surveillance as part of the risk assessment;
- Notifying the Occupational Health Nurse Adviser (OHNA) of persons requiring health surveillance;
- Notification to staff and others that compliance with health surveillance including medical assessment, if indicated is a job requirement. This requirement needs to be included in the OHS section of the job description;
- Consideration and implementation of any work restrictions resulting from health surveillance.
- Ensuring that procedures to evacuate staff from animal houses are mandatory if electrical powered ventilations systems fail, that is, unless there are back-up generators which power the ventilation systems and the back-up generators will immediately be switched on during a power outage. Remaining in an animal facility without ventilation creates a substantially increased risk of allergen exposure.

The OHNA will be responsible for:

- Carrying out appropriate health surveillance
- Investigation and referral of persons showing evidence of animal allergy
- Providing the management of the Unit with feedback about the implications of the results of health surveillance for the worker and the workplace (e.g. recommending a higher protective level of PPE be used or redeployment of a symptomatic worker)
- Pre-placement screening of employees to identify individuals with increased risk of developing occupational asthma.

The Occupational Health and Safety Unit will be responsible for liaison with Workplace Health and Safety Queensland including the official reporting of occupational illness.

3 Definitions

Animal Worker:
All persons (including staff, researchers and students) identified in the risk assessment as requiring health surveillance for work with small laboratory animals, insects and birds

Allergen:
A substance capable of producing an allergic reaction.

Asthma:
Asthma is chronic inflammation of the airways characterized by widespread airflow limitation that is reversible, either spontaneously or with treatment over short periods of time. This inflammation results in hyper-responsiveness of the airways to stimuli such as cold air, cigarette smoke and exercise resulting in symptoms including wheeze, cough, shortness of breath and chest tightness. These symptoms are often worse at night or in the early morning.

Atopy:
A condition where there is an increased tendency to developing allergic reactions and to acquire allergic diseases such as hay fever, allergic conjunctivitis and asthma. There is a strong hereditary component to atopy.

Occupational Asthma:
Asthma is "work-related" when there is an association between symptoms and work. Work-related asthma includes two distinct categories:

- **Occupational asthma**
  Adult asthma caused by workplace exposure and not by factors outside of the workplace. Occupational asthma can occur in workers with or without prior asthma. Occupational asthma is unique in that it is the only type of asthma that is readily preventable. Prevention depends on the effective control of exposure to respiratory sensitisers in the workplace

- **Work aggravated asthma**,
  pre-existing or coincidental new onset adult asthma which is made worse by non-specific factors in the workplace.

Risk Assessment:
The assessment of the risk of LAA / occupational asthma carried out in accordance with the 'How to manage risks in the workplace' Code of Practice 2011, the Work, Health and Safety Act 2011, and the Work, Health and Safety Regulations 2011. Risk assessments are recorded on the UQ risk assessment database at: http://www.uq.edu.au/ohs/index.html?page=29960 A risk assessment will help to identify those for whom health surveillance is required.

Sensitisation:
The process of becoming hypersensitive (or allergic) to a substance (allergen.)

4 Routine Health Surveillance

There are three levels of health surveillance:

1. **LOW:**
   This is appropriate for employees who may need to enter the animal areas very occasionally as visitors or to carry out maintenance or cleaning work. It will consist of a questionnaire to be filled out at induction and an instruction to report any symptoms immediately to the OHNA.

2. **MEDIUM:**
   This is appropriate for researchers, and others who work directly but intermittently with animals for limited periods will consist of a questionnaire to be done annually, and sent to the OHNA and an instruction to report any symptoms immediately to their supervisor and / or the OHNA.

3. **HIGH:**
   This is appropriate for animal technicians and others with potentially high levels or frequent exposure to animal allergens. It is also appropriate for other people who regularly enter and work in the animal areas and/or have existing proven animal allergy. It will consist of a questionnaire (Q), respiratory function testing (RFT) carried out at pre-employment, three months (Q), at six months (Q and RFT), and then both at twelve months and annually thereafter.

4.1 Employees working in Animal Facilities

The requirement for health surveillance is a condition of employment as an animal worker

Animal workers will undergo health surveillance at Level 3 (HIGH). More frequent surveillance may be necessary if allergy develops. In certain cases further testing will be required.

Health surveillance will consist of a questionnaire, assessment of lung function and if appropriate a test for sensitivity to animal allergens such as a skin prick test or blood (IgE) test)
Pre-placement health surveillance for animal workers employed by UQ Biological Resources includes a referral by the OHNA to a specialist respiratory function laboratory and if further investigation is required, a referral to a respiratory or immunology specialist.

The University will have the right to require a medical assessment of any person who in the opinion of management is showing signs of allergy or any other significant medical problem which seems to be related to or significantly aggravated by the working environment.

4.2 Pre-employment/ pre-placement controls for animal workers

The purpose of pre-employment health screening is to:

- Identify those who have a pre-existing allergy to laboratory animals and for whom special precautions may be necessary.
- Identify people who would be more vulnerable if they developed occupational sensitisation.
- Provide a baseline measurement for continuing periodic health surveillance.
- Raise awareness of occupational sensitization to laboratory animals and to provide information to individuals where to seek confidential medical advice should symptoms of sensitisation develop.

In the case of staff applying for posts involving working within an laboratory animal facility:
All prospective staff members should be referred to the OHNA for pre-placement assessment. This includes a specific questionnaire for animal workers, a baseline respiratory function test (RFT) and a referral to a Specialist Respiratory Clinic for further respiratory function tests and allergy testing if appropriate.

At the time of interview and it must be confirmed whether the candidate has any previous history of animal allergy. In cases where the prospective employee will have significant contact with laboratory animals and there is an existing history of animal allergy; further medical advice should be obtained prior to placing a person with pre-existing animal allergies in such a workplace.

4.3 Researchers and Post-Graduate Students

Health surveillance normally will be carried out at Level 2 (Medium) except where there is evidence of existing animal allergy where Level 3 is appropriate.

5 Information, Instruction and Training

All animal workers must be given an indication of their expected contact with laboratory animals.

- All animal workers must have the subject of Laboratory Animal Allergy and Occupational Asthma explained to them and be informed of University policies including, where appropriate, the requirements for health surveillance and medical examinations as part of their contractual commitment.
- All animal workers must be given suitable training for their tasks and additional training will be given to those working directly in contact with laboratory animals concerning ways of minimising exposure to animal allergens and other risks.
- The role of cigarette smoking is unclear for asthma due to exposure to laboratory animals. Some studies have shown an increased risk of laboratory animal asthma in smokers whereas others have shown no effect. All smokers are however, strongly encouraged to stop smoking as part of a general health promotion measure.

6 Workers with Suspected Animal Allergy

- Animal allergy may be suspected as a result of the animal worker reporting symptoms, either spontaneously or at routine health surveillance.
- Animal allergy will be confirmed by the history, medical examination and investigations including blood (IgE) or skin tests as appropriate.

- Where asthma is suspected, the animal worker will be referred for specialist investigation and further testing as appropriate.

6.1 Management of Established Cases

In all cases where symptoms are reported or suspected, the animal worker will be referred to the OHNA for review. Subsequent action will be taken by workplace management after medical recommendations are received.

Medical recommendations may include:-

- Further investigation to define the nature and severity of the person's condition
- Increasing the frequency of medical surveillance to ensure the condition does not worsen and to ensure the condition is managed appropriately

Workplace remedial action may include:-

- Limiting the exposure using the hierarchy of control risk reduction process. An occupational hygienist may need to be consulted for advice
- Options for controlling risk may include removing the worker from the area, reducing the amount of airborne allergen through engineering controls, modifying work practices, job or task rotation initiatives, and to review personal respiratory protection equipment to enhance comfort and practicability for the worker.

6.2 Employees

Staff will be offered redeployment where there is evidence of an allergic reaction to laboratory animals or occupational asthma, and it is impossible to adequately control the risk in the workplace.

6.3 Researchers and Students

The researcher/student will be advised of the risk to their health and the precautions necessary for their protection. The university will take advice about its liability and options if the researcher/student were to ignore the recommended course of action to protect their health and well-being or if it is impossible to adequately control the risk.

7 Classification of animal workers

In order to determine what action should be taken to manage workers found to have laboratory animal allergy, a classification system is used. This classification is used as a general guide and not as a prescriptive document to inform the decision about the level of protection needed and the types of work that can be made available for the affected worker. The level of protection indicated is the minimum to protect against animal allergy. Higher standards may sometimes be required to protect against the effects of the pharmaceutical or chemical agents being tested.

1. No problems
2. Atopic - no evidence of animal allergy
3. Antibodies to laboratory animals - no symptoms
4. Animal allergy - upper respiratory symptoms only
5. Animal allergy - there is clear evidence of asthma linked to exposure to laboratory animals

or

Significant asthma is present and aggravated substantially at work but it is not due to allergens specific to the workplace.

8 Contact for Additional Information

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Appendix 1

What is laboratory animal allergy (LAA)?

Allergic reactions to laboratory animals (LAA) can be described as an allergic response or hypersensitivity which may develop as a result of exposure to allergens, specifically in this case in response to exposure to animals. Allergic reactions are more likely after a substantial or repeated exposure

In animal handling units, common allergens derived from animals and insects are found in the proteins of body tissues and the excretions and secretions of most animals including urine, hair, fur, dander, saliva and serum.

Although the specific nature of allergens are the subject of constant research it would appear that in some instances, rats for example, the male of the species are more "allergenic" than females.

How do I get LAA?

The allergenic proteins can be found on any item the animal or insect comes into contact with, including the bedding, the food and the animal's fur and skin. When it dries, allergenic dust particles may become airborne as the animal moves about or is handled.

The inhalation of these dust particles, or direct contact with unprotected skin can cause sensitisation or produce symptoms among people who are already sensitised.

What are the symptoms?

LAA is characterised by:

- Rhinitis (sneezing / running nose).
- Conjunctivitis (itchy, red, watery eyes)
- Skin rashes which may develop into:
  Urticaria (pink bumpy rash on the skin)
  Weals on the skin around bites and scratches
- Asthma (tightness of the chest, coughing and wheezing)

These symptoms may be present on their own or in any combination.

They can start at any time. It is believed that between 15 -30% of those exposed to laboratory animals will be affected by LAA to some degree.

How can I prevent it?

Prevention of disease can be achieved by good design, maintenance and training on animal handling procedures within animal units. Correct design and good effective airflow can reduce contact to the airborne allergens to a minimum.

Effective systems of work, for example the use of vacuums with special exhaust filters to clean cages, in combination with the correct use of personal protective equipment such as outer clothing, gloves and respiratory protection will also reduce the contact with the allergens in these areas.

Strict compliance with local procedures limiting access and adherence to laboratory protocols for hygiene is required by all staff and students working within these areas.

Reporting Symptoms

To avoid any long term adverse health effects, it is important to report any symptoms of LAA as soon as possible. Anyone with concerns about LAA or asthma should contact the OHNA on 54883.

Appendix 2

Pre-Employment Questionnaire - Animal Laboratory Workers

Name: Date:

Employment Record

Dates of Employment	***Dates of Employment***
1.	2.
3.	4.
5.	6.

Have you ever held any job involving contact with animals? YES/ NO

If **YES**, please give species and dates overleaf***.***

Have you ever kept pets? YES/ NO

If **YES,** please give species and dates overleaf.

Do you suffer, or have you ever suffered, any of the following symptoms?

Asthma/tight chest/wheezing	*YES/ NO*
Bronchitis	*YES/ NO*
Sneezing/running nose (other than colds)	*YES/ NO*
Watery/Itching/Smarting eyes	*YES/ NO*
Skin rashes	*YES/ NO*
Hay Fever	*YES/ NO*
Eczema	*YES/ NO*
Rash (Urticaria)	*YES/ NO*

Did you experience any of the symptoms when in contact with animals *YES/NO*

If the answer to any of the questions is YES, please give details overleaf.

Has any close relative suffered from the following:

Asthma, bronchitis, eczema, hay fever, other allergic disease? YES/ NO

If the answer to any of the questions is YES, please give details overleaf.

Do you smoke? *YES/ NO How many / day For how long?*

Have you ever smoked? YES/ NO *If YES, give dates.*

I declare that the above is true and complete to the best of my knowledge.

Signed: ***Date:***

Appendix 3

Animal Worker Questionnaire

Which species of animals do you work with?	
How many hours a week do you spend in contact with animals?	
Indicate the frequency and level of your exposure to laboratory animals:	
Describe the nature of your contact with laboratory animals, for example;	
Animal handling	
Cage cleaning	
Exposure to animal bedding	
Exposure to animal waste	
Any activity undertaken in an animal facility	
Other (please specify)	

Indicate, by a tick, if you have any of the following symptoms:

Asthma /tight chest /wheezing	
Watery itching, smarting eyes	
Bronchitis	
Hay Fever	
Sneezing	
Eczema	
Running nose (apart from colds)	
Urticaria- (pink bumpy rash)	
Other rash?	
Weal or rash around animal scratch or bite	

Were these symptoms associated with work with animals? Yes/No

Appendix 4

IUAT BRONCHIAL SYMPTOMS QUESTIONNAIRE

TO ANSWER THE QUESTIONS, PLEASE CIRCLE THE APPROPRIATE ANSWER;
IF YOU ARE UNSURE OF THE ANSWER PLEASE SELECT NO.

Todays Date?		
Your Full Name		
Gender (Please circle)		**Male / Female**
Date of Birth		
Time in animal house:		
Do you have any personal or family history of allergy?		No / Yes Details….
Skin Rashes?		No / Yes Details
Nasal symptoms		No / Yes
Eye symptoms		No / Yes
Are you allergic to any animals? **(Domestic or laboratory?)**		No / Yes Details…
1	*Have you had wheezing or whistling in your chest, at any time in the last 12 months?*	*No / Yes*
2	*Have you woken up with a feeling of tightness in your chest first thing in the morning, at any time in the last 12 months?*	*No / Yes*
3	*Have you, at any time in the last 12 months, had an attack of shortness of breath that came on during the day when you were not doing anything strenuous?*	*No / Yes*
4	*Have you had an attack of shortness of breath that came on after you stopped exercising, at any time in the last 12 months?*	*No / Yes*
5	*Have you at any time in the last 12 months, been woken at night by an attack of shortness of breath?*	*No / Yes*
6	*Have you at any time in the last 12 months, been woken at night by an attack of coughing?*	*No / Yes*
7	*Do you usually cough first thing in the morning?*	*No / Yes*

8	*Do you usually bring up phlegm from your chest first thing in the morning?*	*No / Yes*
9	*Which of these statements best describes your breathing?* *(please tick)* →	*a) I never or rarely get trouble with my breathing* *b) I get regular trouble with my breathing, but it always gets completely better.* *c) My breathing is never quite right.*
10	*When you are in a dusty part of the house or with animals (for instance, dogs, cats or horses) or near feathers (including pillows, quilts and eiderdowns)* *Do you ever:* →	***Get a feeling of tightness in your chest?*** *No / Yes* ***Start to feel short of breath?*** *No / Yes*
11	*Have you ever had an attack of asthma?*	*No / Yes*
12	*Have you had an attack of asthma at any time in the last 12 months?*	*No / Yes*
13	*Are you currently taking any medicines, pills or inhalers for asthma?*	*No / Yes*
14	*Have you ever smoked for as long as a year? (This means at least one or more cigarettes a day (or one or more cigars a week or one or more ounces of pipe tobacco a month) for as long as a year).*	*No / Yes*
15	*Do you Now smoke?* *(Please circle)* →	*Not at all / Occasionally / Daily / Never smoked*
IF answered NEVER SMOKED →		*You have finished questionnaire. Thankyou.*
16	*IF answered NOT AT ALL go to question 17, otherwise:* *What do/did you usually smoke?* *(Please tick)*	*Manufactured cigarettes* *(Please give full brand name)* *Hand rolled cigarettes* *Pipe* *Cigar* *How many did/do you smoke per day? ----------*
17	*If you have given up smoking altogether, how long is it since you last gave up smoking?*	*Less than a month ago* *More than a month ago* *Time since giving up?------*

Thank you for completing this questionnaire.