MONASH University

Occupational Health and Safety
AS/NZS 4801, OHSAS 18001
OHS20309
SAI Global

PROCEDURES FOR PROTECTING UNBORN AND BREAST-FED CHILDREN FROM THE EFFECTS OF MATERNAL EXPOSURE TO CHEMICALS, BIOLOGICALS AND ANIMALS

November 2010

TABLE OF CONTENTS

1. PURPOSE

The Occupational Health and Safety Act, 2004 places an obligation on Monash University to provide for all staff and students a working environment that is "*so far as is reasonably practicable, safe and without risks to health*".

The purpose of these procedures is to:

- Protect the unborn children of women who may be exposed to chemicals, biologicals or animals in the course of working or studying at Monash University,
- Protect breast-fed children of women who may be exposed to chemicals, biologicals or animals in the course of working or studying at Monash University, and
- Encourage women who are pregnant or considering pregnancy to consider the risks of working or studying with chemicals, biologicals or animals and consult the Occupational Health team early in their pregnancy.

2. SCOPE

The procedures outlined in this document extend to unborn and breast-fed children of women on the Australian campuses of Monash University and for Monash controlled entities.

3. ABBREVIATIONS

MSDS	Material safety data sheet
OH&S	Occupational Health and Safety Branch
OHS	Occupational health and safety

4. DEFINITIONS

4.1 EMBRYO

An embryo is defined as an unborn child up to 8 weeks after conception.

4.2 FOETUS

A foetus is defined as unborn child from 8 weeks to birth.

4.3 HEAD OF ACADEMIC/ADMINISTRATIVE UNIT

Head of academic/administrative unit is used to denote the head of the area that is undertaking the activity. For academic areas, this term includes head of faculty, school, department, institute or centre. For administrative areas, the term includes head of division, branch, centre or unit.

4.4 MONASH CONTROLLED ENTITIES

Monash controlled entities (eg companies) include entities where Monash can control decision making, directly or indirectly, in relation to the financial and operating policies so as to enable the entity to operate with it in pursuing the objectives of Monash University.

For the remainder of this document, a Monash controlled entity will be referred to as a controlled entity.

4.5 TERATOGEN

Teratogens (from the Greek words *teras* or *teratos*, meaning monster) are agents that cause congenital malformations, growth retardation, functional disorder and sometimes death in the embryo or foetus.

As a general rule a substance is considered to be a teratogen if it has adverse effects on the unborn child at doses below where there are adverse effects on the mother.

It should be emphasised that most drugs and chemicals can be shown to cause adverse effects to the embryo or foetus (often the only data available is on animals), at high doses, under laboratory conditions. However, it does not follow that most drugs or chemicals are considered to be teratogens.

5. SPECIFIC RESPONSIBILITIES

A comprehensive list of OHS responsibilities is provided in the document *OHS management at Monash University: Structure, functions, roles and responsibilities* (http://www.adm.monash.edu.au/ohse/documents). A summary of responsibilities with respect to these procedures is provided below.

5.1 THE PREGNANT OR BREAST-FEEDING WOMAN

Women at Monash University who are either pregnant, considering pregnancy or breast-feeding are encouraged to: Read these procedures and seek out any other relevant information provided on the OH&S website or by OH&S staff such as the Occupational Health Physician or Occupational Nurse Consultants.

- Seek out and read information that may be supplied at academic/administrative unit/controlled entity level.
- Declare their pregnancy to their supervisor, safety officer, biosafety officer, OH&S consultant or head of academic/administrative unit/controlled entity at the earliest possible time, on the understanding that the matter will be kept as confidential as possible. The woman concerned is also strongly encouraged to seek advice from the Occupational Health team (nurses and physician) on 9905 1014 at the earliest possible time. Such consultations are strictly confidential.
- Minimise their exposure to chemical and biological materials and animals as much as possible by cooperating fully in any effort that is made to fairly and sensibly modify their duties in order to minimise these risks.
- Report immediately any suspected high exposures to their supervisor, safety officer, biosafety officer, OH&S Consultant or the Occupational Health team.

5.2 HEAD OF ACADEMIC/ADMINISTRATIVE UNIT/CONTROLLED ENTITY AND SUPERVISOR

The head of the academic/administrative unit/controlled entity and the supervisor must:

- Make a copy of this procedure (as part of managing OHS) available to all staff and students who may be exposed to chemicals, biologicals or animals and who begin work within their unit/entity.
- Keep the details of the pregnancy confidential to the greatest possible extent, if the woman concerned requests this.
- Make it clear to women who declare pregnancy that subject to meeting university OHS requirements, the woman may choose whether or not to:
  - work with chemicals, biologicals or animals during the pregnancy, and/or
  - work with chemicals, biologicals or animals during breast-feeding.

  without fear of this decision impacting on their career progression/continuation.
- Where the woman elects to continue working with:

- chemicals, biologicals or animals during pregnancy, or
- chemicals, biologicals or animals during breast-feeding,

review, in conjunction with OH&S, appropriate risk assessments and put in place control measures to reduce these risks to a negligible level (where no significant risk is foreseeable).

- Facilitate, in accordance with current workplace agreements, the modification of a woman's duties in accordance with special needs during pregnancy or breast-feeding.
- Create an environment where:
  - All people who work with chemicals, biologicals or animals, particularly women, understand the requirements of this procedure.
  - Women who work with chemicals, biologicals or animals feel comfortable to declare their pregnancy and/or breast-feeding.
  - There is no impediment to career progression or continuation due to pregnancy or breast-feeding.
  - Both male and female co-workers and supervisors understand the special needs of a pregnant woman's unborn child or breast-fed child in relation to chemical or biological safety or work with animals. Co-workers or supervisors need to be considerate in this regard and cooperate in reducing the risk to the pregnant or breast-feeding woman and her child.

6. OVERVIEW

There are many agents or factors that may have undesirable or toxic effects on unborn children. A brief summary of some of the responsible agents and their likelihood is presented below.

6.1 GENETIC DISORDERS

Genetic disorders of the parents or certain genes carried by the parents and chromosome aberrations that occur during the development of the embryo, may result in genetic diseases in the child such as Huntington's chorea, sickle cell anaemia, Down's syndrome and cystic fibrosis. It is estimated that genetic disorders are responsible for 25% of malformations in unborn children.

6.2 OTHER CAUSES

6.2.1 **Other causes include:**

- Chemicals, drugs, hormones and vitamins – for example alcohol consumption by the mother;
- Maternal conditions such as diabetes;
- Biological agents such as rubella;
- Ionising radiation;

6.2.2 It is estimated that other causes (as a whole) are responsible for about 10% of malformations in unborn children. This leaves the cause of 65% of malformations unaccounted for.

6.2.3 Only some of the agents that may have undesirable or toxic effects on unborn children are found in workplaces at Monash University.

This procedure will concentrate on some chemicals, biologicals and substances derived from animals that may be encountered at Monash University. Information about other agents is presented for interest and a wider perspective.

7. CHEMICALS

7.1 PREGNANCY

7.1.1 There are thousands of chemicals that have been identified as having reproductive effects (including teratogenicity) in animal studies. However, very few chemicals have been definitely identified as teratogens due to the following factors:

- A lack of test data for most chemicals.
- The fact that effects on the foetus seen in one animal species are often not the same as those seen in other animal species or in humans and often occur at different doses when comparing humans to animals.
- Effects vary in their nature and severity from minor reductions in birth-weight, to deformation or death of the embryo or foetus.
- Effects on the foetus may come into play at doses far below or far above doses that are toxic to the mother. In the latter case these effects are often not examined in research because it is assumed that toxic effects in the mother (usually in a workplace situation) will be at issue at lower doses. This means that the teratogenic potential of some chemicals has not been rigorously defined.

7.1.2 The risk of an ill-effect in an unborn child is related to the level of chemical exposure. i.e. As a general rule, the higher the exposure (due to high frequency and duration of contact), the greater the chance and severity of an undesirable outcome. Infrequent exposure to low levels of chemicals is less of a risk than frequent exposure to concentrated chemicals in poorly ventilated areas. The risk is also usually greater during the early stages of pregnancy.

7.1.3 At Monash University exposure by inhalation is the most likely route of exposure by which chemicals could enter the body and affect an unborn child.

Working in a fume cupboard which meets Australian Standard performance requirements or a local exhaust system will prevent exposure by inhalation. Note that biosafety cabinets will not protect against chemical exposure.

7.1.4 Skin absorption and ingestion are rarely significant routes of exposure into the body, provided safe work practices such as suitable gloves and washing hands regularly (particularly before eating) are observed. However, skin exposure may be significant for certain chemicals that are also teratogens. If you are pregnant or planning a pregnancy, you should consult the Occupational Physician, OH&S in relation to any chemicals that you may come into contact with.

7.2 BREAST-FEEDING

Concern over ill-effects for breast-fed children is related almost entirely to chemical exposure of the mother. This is because some chemicals may enter the mother's body after exposure and be excreted in the breast milk. There is very little information available for most chemicals. If you are pregnant or planning a

pregnancy, you should consult the Occupational Physician, OH&S in relation to any chemicals that you may come into contact with.

8. BIOLOGICAL AGENTS AND SUBSTANCES DERIVED FROM ANIMALS

There are some biological agents and substances derived from animals that have recognised potential to affect unborn children. As for chemicals, information is limited. If you are pregnant or planning a pregnancy, you should consult the Occupational Physician, OH&S in relation to any biological agents or substances derived from animals that you may come into contact with.

9. RISK MANAGEMENT

9.1 Risk management must be undertaken for all activities at the university where there is the potential for OHS risks. The information in this procedure and information that may be obtained from OH&S is intended to assist in the risk assessment process.

9.2 A range of tools has been developed for staff and students to undertake risk management at the university which are described in the document *OHS risk management at Monash University* (www.adm.monash.edu.au/ohse/documents).

9.3 Risk management must be completed:

- before activities commence;
- before the introduction of new equipment, procedures or processes; and
- when equipment, procedures or processes are modified.

9.4 The risk management process must cover the risks associated with:

- Equipment and machinery;
- Chemical use and storage;
- Biological hazards;
- Radiation use; and
- Manual handling tasks.

10. WHERE TO FIND FURTHER INFORMATION

10.1 Toxicological information for a chemical can be obtained from:

- the material safety data sheet (MSDS);
- the labels on chemical containers. These should contain statements which mention the 'unborn child' or 'pregnancy'.

10.2 Information on biological agents or substances derived from animals usually has to be sourced from elsewhere as MSDS may not be provided (eg. books, your attending doctor or the OH&S website).

10.3 The following terms, which indicate potential effects on the unborn child, may be used:

- Embryotoxic – meaning toxic to the embryo
- Fetotoxic/foetotoxic – meaning toxic to the foetus
- Teratogenic – meaning that it induces developmental abnormalities in the foetus

10.4 Information specifically on ionising radiation and chemicals may also be found on the OH&S website (www.adm.monash.edu.au/ohse).

11. HEALTH SURVEILLANCE AT MONASH UNIVERSITY

Details of the Monash University health surveillance program are outlined in the document *Health surveillance at Monash University*, which is available at the OH&S web site (www.adm.monash.edu.au/ohse/documents).

12. RECORDS

Record to be kept by	Records	To be kept for:
Academic/administrative unit/ controlled entity	Risk assessments	3 years
OH&S	Radiation monitoring results	30 years
OH&S health team (confidential files)	Medical consultation records	Indefinitely

13. REFERENCES

13.1 LEGISLATION

Occupational Health and Safety Act 2004 (Vic)
Occupational Health and Safety Regulations 2007 (Vic)

13.2 MONASH UNIVERSITY OHS DOCUMENTS

(www.adm.monash.edu.au/ohse/documents/#policies

Health surveillance at Monash University
Job Safety Analysis
OHS risk management at Monash University
Risk Control Program

13.3 AUSTRALIAN STANDARDS

AS/NZS 4801:2001 Occupational Health & Safety Management Systems – specifications with guidance for use.
OHSAS 18001:2007 Occupational Health & Safety Management Systems – requirements

13.4 ACKNOWLEDGEMENTS

The following documents were used as references in the development of these procedures:

- American Conference of Governmental Industrial Hygienists (ACGIH), *Documentation of the Threshold Limit Values and Biological Exposure Indices*, Sixth Edition, 1996.
- Barlow, S.M. and F.M. Sullivan, *Reproductive Hazards of Industrial Chemicals – An evaluation of animal and human data*, Academic Press, London, 1982.

- Casarett and Doull's Toxicology – *The Basic Science of Poisons*, Amdur, M.O., Doull, J. and C.D. Klaassen (eds), fourth edition, McGraw Hill, 1991.
- Lewis, R.J., *Reproductively Active Chemicals – A Reference Guide*, Van Nostrand Reinhold, New York, 1991.
- NIOSH, *The Effects of Workplace Hazards on Male Reproductive Health and The Effects of Workplace Hazards on Female Reproductive Health*, www.cdc.gov/niosh/.
- *Teratogens – Chemicals Which Cause Birth Defects, Studies in Environmental Science* 31, Meyers, V.K. (ed), Elsevier, New York, 1988.
- O'Rahilly, R. and F Muller, *Human Embryology and Teratology*, Wiley-Liss, New York, 2001.