

Reproductive Health Hazards Guidelines

Overview

Some work locations in the laboratory and research areas may, because of the nature of the work, pose a potential health risk to employees during their reproductive years. All employees -- both male and female -- must be made aware of the known risks and reproductive hazards in their workplaces. Employees whose work involves possible exposure to chemical, physical, and biological agents that are known to cause injury to the sperm, egg or fetus must be informed of the risks and how to minimize them. Clemson University is committed to minimizing these risks through engineering controls, administrative and work practice controls, personal protective equipment, and safety education.

Clemson University has established specific procedures and guidelines to protect pregnant employees. Control of employee exposures will occur without economic penalty or loss of job opportunity, including, if necessary, consideration for work assignment changes, consistent with University personnel policy. Assuring protection from exposures to chemicals or biological agents for the fetus requires full cooperation of the employee with their Supervisor, the occupational health nurse or physician, and Occupational and Environmental Safety (OES).

Information on the reproductive health policies and procedures for exposure to radiation can be found in the CU Radiation Safety Manual Section XIX. These guidelines do not supersede government regulations for radiation protection.

Declared Pregnancy

You can declare your actual, suspected, or planned pregnancy to your supervisor and/or OES. The involvement of supervisors is an essential part of the CU safety management. OES urges every potentially pregnant employee to consider her supervisor's safety responsibilities and freely involve the supervisor in all work-related situations.

OES understands that employees may choose to maintain their pregnancy status as confidential for a time. Any employee may receive safety information about pregnancy and chemical, biological, and radiological exposures at any time from OES without declaring pregnancy status.

Work Area and Job Activities Review

Following a notice of pregnancy or intended pregnancy, a review of the work area may be conducted.

Contacts list for notification

Title	Name	Phone	Email
Occupational Health Nurse	William Mayo	656-5529	wmayo@clemson.edu
OES Director	Jim Grieger	656-0987	jgrieger@clemson.edu
OES Industrial Hygiene Manager	Anne Kogut	656-2507	akogut@clemson.edu
Access & Equity	Priscilla Harrison	656-3553	priscih@clemson.edu
OES – Biological Safety Officer	Kerri Kwist	656-7686	kkwist@clemson.edu

Confidential Conferences and Information Gathering

Confidential conferences may be held to gather information about the work place and health concerns. These conference can include the employee, the supervisor, and/or OES. The employee is provided a copy of these guidelines and other pertinent information about protecting the reproductive health of employees from chemical, biological and radiological exposures.

Prior to or at the confidential conference, information should be submitted to OES and must include the following:

1. List of chemical and/or biological agents being used in work area
2. Activities being performed with the agents of concern
3. Amount of agents being used during in activity
4. Length of duration (hours/day) and frequency (days/week)
5. Engineering controls and/or PPE being used

Additional consultation is available with an occupational health nurse at the Sullivan Center. This consultation allows the employee to express concerns and to ask questions about reproductive and developmental health.

OES Review of Laboratory Safety

OES will conduct a review of the laboratory and Standard Operating Procedures (SOPs) to ensure that appropriate guidance is provided to protect workers and prevent occupational exposures. OES inspects the work place to ensure that adequate engineering controls, such as laboratory hoods, are provided, and that safe handling procedures and the use of personal protective equipment are in place.

Following the conference, work area evaluation and monitoring, OES will send an assessment report to the employee and supervisor relating findings and recommendations of work involving hazardous materials. In some cases, adjustments should be made in work responsibilities, if practicable, to avoid higher risk operations.

Employees have the responsibility of adhering to CU safety procedures described in the Laboratory Chemical Hygiene Plan, Laboratory Safety Manual, Biological Safety Manual and

lab specific SOPs. A re-evaluation of the work will be conducted when OES is notified of a change in work conditions or potential hazards.

Reproductive Toxins

Reproductive toxins are defined by the OSHA Laboratory Standard as substances that cause chromosomal damage (mutagens) and/or substances with lethal or teratogenic (malformation) effects on fetuses. Teratogens may affect the fetus at any stage of its development, from fertilization to birth, although damage is most likely during the first 8 to 10 weeks of pregnancy. Mutagens can also affect fetus development, or prevent fertilization entirely by damaging the egg or sperm. In addition, there are microbiological agents that can cause maternal morbidity, miscarriage, fetal death or birth defects.

Teratogens are chemical and physical agents that interfere with normal embryonic development. Teratogens differ from mutagens in that there must be a developing fetus. Reproductive toxins may produce congenital malformations or death of the fetus without inducing damage to the pregnant woman. In general, you should consider carcinogenic, mutagenic and teratogenic chemicals to be hazardous to reproductive health.

Reproductive toxins can be chemical or microbiological. Additional information can be found in the following Appendices

Appendix A – Chemical exposures and Reproductive Hazards

Appendix B – Microbiological exposures and Reproductive Hazards

Appendix A


Chemical Exposures and Reproductive Hazards

Chemical Exposure Monitoring

Based on the results of the workplace evaluation, OES may monitor employee exposures levels for any chemicals of concern, especially those with evidence of reproductive toxicity. The employee and principal investigator, or supervisor, shall receive a copy of the monitoring report. The goal is to keep all exposures as low as reasonably achievable. The actions taken in response to a measured chemical exposure depend on the specific circumstances and chemicals involved. However, as a general rule, if any exposure measurements exceed 10% of the threshold limit value (TLV) or permissible exposure limit (PEL) action will be taken to prevent further exposure by instituting engineering controls, improved work practices, personal protective equipment (PPE), or job reassignment.

Chemicals with Reproductive Hazards

Information on the reproductive health hazards of chemicals can be found on the Safety Data Sheets (SDSs) which can be accessed through the OES website at <https://www.clemson.edu/research/safety/SDS.html> . The SDS's describe the specific hazards, including any reproductive hazards, of each chemical and the work practices and/or protective equipment which are necessary to reduce the risk of exposure. Under the **Globally Harmonized System (GHS)** for labeling and classification of chemicals, SDS and label information on reproductive hazards can be identified by the signal word, hazard statement and pictogram in the below table:

Hazard category	Signal word	Hazard statement	
1A and 1B	Danger	May damage fertility or the unborn child	
2	Warning	Suspected of damaging fertility or the unborn child	
None	None	Lactation Hazard -May cause harm to breast-fed children	

Some examples of reproductive toxins commonly found in laboratories include:

- 1,3-Butadiene
- Ethylene thiourea
- Arsenic
- Fluorouracil
- Benzene
- Halothane
- Cadmium
- Ionizing radiation

- Carbon disulfide
- Lead
- Dibromochloropropane
- Mercury compounds
- Ethylene dibromide
- Polychlorinated biphenols (PCBs)
- Ethylene glycol monomethyl (and ethyl) ethers
- Toluene
- Ethylene oxide
- Urethane

A thorough list of known reproductive toxins can be found at http://www.oehha.ca.gov/prop65/prop65_list/files/P65single012315.pdf. This list includes agents that have been identified by the state of California to cause fetal developmental toxicity, damage the male/female reproductive cells, or other difficulty with conception.

Appendix B

Microbiological Exposures and Reproductive Hazards

Microbiological Exposures

There are no action levels for microbiological agents. Many of the agents listed below in the Microbiological Hazards sections can be safely handled at Biosafety Level 2 practices and containment). Biosafety Level 2 practices include wearing gloves, lab coats and eye protection, conducting any aerosol generating procedures inside of a biological safety cabinet, decontamination of surfaces, frequent hand washing, and no eating, drinking, smoking or handling contacts in areas where infectious materials are handled. Please refer to the CU Biological Safety Manual for more detailed information. These practices are required to protect the employee; however, some procedures conducted in the laboratory may be higher risk for pregnant employees and should be evaluated by OES. In addition, the risks to the fetus from exposure to these pathogens may warrant restriction from use during a pregnancy. RS in consultation with the employee and their supervisor will determine when restriction or additional personal protective equipment is necessary.

Microbiological Reproductive Hazards

Certain microbiological agents can cause miscarriages, fetal death and birth defects. Employees can be exposed to these agents via splashes or contact with mucous membranes, needle sticks or ingestion. Some agents known to be reproductive hazards include:

- **Cytomegalovirus (CMV)**. CMV is a known teratogen and congenital infection can cause mental retardation, cerebral palsy, epilepsy, vision and hearing problems especially during the first 20 weeks of fetal development.
- **Hepatitis A, B, C**. Prenatal infection can cause prematurity and psychomotor retardation.
- **Human Immunodeficiency Virus (HIV)**. HIV can affect fertility. HIV can also be transmitted to the fetus.
- **Human Parvovirus (Fifth Disease)**. Prenatal infection with human parvovirus can cause fetal edema and death. Intrauterine infection may cause fetal anemia.
- **Listeria monocytogenes**. This bacterium is found in a variety of animals including mammals and birds so is of special concern to employees handling animals. Perinatal infections occur transplacentally and can result in abortion, stillbirth, meningitis, endocarditis, or septicemia.
- **Rubella virus (German measles)**. Congenital rubella syndrome (CRS) may occur in infants born to women who had rubella during the first trimester. This can lead to fetal death, spontaneous abortions, congenital malformations of the eyes, ears and heart, mental retardation and/or poor childhood growth. The risk decreases with fetal development.
- **Toxoplasma gondii (toxoplasmosis)**. Congenital cases can result in abortion and stillbirth. Live births may result in central nervous system disorders, hydrocephaly, or mental retardation. Transplacental infection is least likely during the first trimester, but these cases are the most severe. Cats can carry this disease and employees conducting experiments with cats may need to take additional precautions.

- **Varicella virus (Chicken Pox)**. Congenital infection can cause limb atrophy, microcephaly, cortical atrophy, motor, sensory and eye problems. Infection during the first trimester can cause miscarriage, muscular atrophy, clubbed foot, CNS disease and cataracts in the fetus.
- **Treponema pallidum (causative agent of syphilis)**. can be spread through open lesions, congenital syphilis can result in abortion, stillbirth, prematurity and birth defects
- **Lymphocytic choriomeningitis virus (LCMV)**. can be shed in feces and urine of infected mice, has been associated with congenital hydrocephalus, chorioretinitis and mental retardation.

This list is not all-inclusive and the Biosafety Officer will evaluate work exposures to all infectious materials once an employee has declared her pregnancy.