Introduction

Reproductive toxins are defined by the OSHA Laboratory Standard as substances that cause chromosomal damage (mutagens) and substances with lethal or teratogenic (malformation) effects on fetuses. Reproductive toxins may affect the conceptus at any stage of its development, from fertilization to birth, although damage is most likely during the first 8 to 10 weeks of pregnancy. 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, carcinogenic, mutagenic and teratogenic chemicals should be considered as hazards to reproductive health. Even though OSHA has established exposure limits of hazardous materials, a developing fetus may be adversely affected by lower doses than those considered safe for adults. Thus, exposures must be kept as low as reasonably achievable to minimize reproductive health hazards. The North Carolina Regulations for Protection Against Radiation has established a radiation dose limit of 500 millirems for the conceptus during the entire gestation period.

This policy is developed to provide additional protection for the conceptus, and to establish specific procedures to protect pregnant employees. Control of employee exposures will be carried out 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 radiation and/or chemicals for the conceptus requires full cooperation of the employee with EHS. An employee should contact EHS as soon as pregnancy is contemplated or determined to implement this policy.

Examples of Reproductive Toxins:

- Dibromochloropropane
- Lead
- Arsenic
- Benzene
- Cadmium
- Ethylene glycol monomethyl (and ethyl) ethers
- Antimony
- Carbon disulfide
- Ethylene thiourea
- Ethylene oxide
- Mercury compounds
- Toluene
- Xylene
- Polychlorinated biphenols (PCBs)
- Nitrous oxide
- Formaldehyde
Declared Pregnancy

When an employee wishes NC A&T to be involved in protecting her fetus, and for radiation workers, keeping exposures to the fetus below the 500 millirems limit, she must declare her actual, suspected, or planned pregnancy to her supervisor and EHS in writing. NC A&T’s responsibility to protect the conceptus begins only when the employee provides written notice of her pregnancy, or intended pregnancy, to her supervisor and EHS. When an employee does declare her pregnancy status to EHS, the employee's supervisor must also be informed. The involvement of supervisors is an essential part of safety management. Every potentially pregnant employee is urged to consider her supervisor's safety responsibilities and freely involve the supervisor in all work-related situations.

Conceptus Protection Program

Following written notice of pregnancy, a conceptus protection program (CPP) will be instituted. The CPP consists of:

1. Confidential conferences with the supervisor, the Health and Safety Director, and NC A&T’s contract medical provider.
2. EHS review and inspection of safety in the work place
3. Exposure monitoring by EHS.

Confidential Conferences

Conference will be scheduled with the employee, her supervisor, and the Health and Safety Director. The employee will be provided a copy of this policy, The Special Considerations for The Pregnant Radiation Employee information booklet, and other pertinent literature on protecting pregnant employees from chemical exposures. During the conference, the employee and her supervisor will be asked to sign a statement confirming that this policy and other related information has been received, personnel monitoring has been established, and that supervision is involved. Adjustments should be made in work responsibilities, if practicable, to avoid higher risk operations. Past records of work involving hazardous materials and the current occupational potential for chemical exposure will be reviewed.

An interview with an occupational health nurse or physician will be offered. This interview allows the employee to express concerns and to ask questions about reproductive and developmental health. A review of occupational and reproductive health questionnaire will facilitate collection of employee-specific information, assist the employee in formulating concerns about chemical and physical hazards, and provide structure and focus for the interview. A preconception planning stage can also be provided. Obstetric specialists are available for consultation or referral for any specific concerns.
LABORATORY SAFETY
CHAPTER 5
REPRODUCTIVE HAZARDS AND THE PREGNANT EMPLOYEE

It is realized that employees may choose to maintain their pregnancy status as personally confidential for a time. Any employee may still receive safety information about pregnancy and chemical exposures at any time from EHS without declaring her pregnancy status.

EHS Office Review of Laboratory Safety

The EHS Office will conduct a review of the laboratory, or worksite, safety plan to ensure that it provides appropriate guidance to protect workers and prevent occupational exposures. The workplace will also be inspected 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. Employees have the responsibility of adhering to NC A&T’s safety procedures.

Radiation and Chemical Exposure Monitoring

EHS will monitor employee exposure levels for radiation and any chemicals of concern, especially those with evidence of reproductive toxicity. The employee and principal investigator, or supervisor, will receive a copy of the monitoring report. The goal is to keep all exposures as low as reasonably achievable.

The personnel radiation monitoring is provided by the EHS Office through the RSO (Radiation Safety Officer). The radiation employee will either be assigned a monthly radiation badge and/or placed on a monthly bioassay program.

Action Levels

Radiation Exposures: Current investigational radiation dose limit for declared pregnant or planned pregnancy employees will direct the evaluation of reported doses.

Action Level I: employees with exposures greater than 30 millirems in a month. A written description of the dose report statistics, including the dose history for the previous two monitoring periods, will be sent to the person involved with a copy to the Principal Investigator. The individual will be requested to review his or her radiation safety procedures and work habits in an effort to maintain all doses as low as reasonably achievable. Health physics reviews and consultation are offered.

Action Level II: greater than 40 millirems in a month. A direct investigation of the situation will be conducted, including an interview with the person involved. A written investigation report will be made, including trends over the past year (as available) for that person. The person involved is provided with a copy of the report for review and signature. Conclusions drawn from the investigation provide a basis for confirming or modifying the dose and for establishing corrective actions to be taken.
When the occupational radiation dose of a declared radiation employee exceeds 50 millirems in a month since declaration: The employee may request:

- Maternity leave (for those employees actually pregnant)
- Other paid leave
- Leave without pay
- Reassignment within their work unit
- Transfer

The supervisor should respond to requests in accordance with personnel policies.

Personnel monitoring badge doses reported will normally be accepted as an uncorrected guide to any conceptus dose. If personnel monitoring results indicate the possibility of a conceptus dose in excess of the 500 millirems limit, a special investigation will be conducted. The investigation will take into full consideration the type and energy of radiation involved, protective shielding that might have mitigated conceptus dose and shielding afforded by the mother's body. The investigation results will be discussed with the employee and a written report provided.

**Chemical Exposures:** As stated earlier, the goal for both radiation and chemicals is to keep all exposures as low as reasonably achievable. The action taken in response to a measured chemical exposure will depend upon 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.