

ADVISORY 5.0

REPRODUCTIVE HAZARDS

GUIDELINES FOR HANDLING REPRODUCTIVE RISKS IN THE WORKPLACE

A developing body of scientific evidence indicates that some exposures of humans to environmental factors such as personal lifestyle choices, drugs, certain chemicals, and physical agents such as ionizing radiation, can lead to reproductive effects in both males and females. These effects may result in infertility, miscarriages, embryotoxicity, birth defects, and changes in genetic material capable of being inherited. There is particular concern about exposures to the fetus, since it may be especially susceptible. To the effects of external agents at exposure levels which may have no effect on an adult. Moreover, an embryo often is most vulnerable to the effect of toxic substances during the period of its earliest development, perhaps even before the mother-to-be is aware of her pregnancy.

OSHA recognizes that reproductive hazards in the workplace is an issue of increasing health concern. A large number of workplace chemicals, physical and biological agents can damage the reproductive systems of both male and female workers. Occupational exposures can produce a wide range of effects on reproduction. The effects of parental exposure before conception occurs include reduced fertility, unsuccessful fertilization or implantation, an abnormal fetus, reduced libido, or menstrual dysfunction. Maternal exposure after conception may result in perinatal death, low birth weight, birth defects, developmental or behavioral disabilities, and cancer. Additional information is available at:

www.osha-slc.gov/SLTC/reproductivehazards/index.html.

Section V, Chapter 1, Appendix V:1-2 of the OSHA Technical Manual specifically mentions the following chemical agents because of the severity of their health effects. This list is by no means all-inclusive.

- Ethylene oxide
- Waste anesthetic gases such as nitrous oxide, Halothane, Enflurane
- Antineoplastic (cancer) drugs such as Vincristine, Dacarbazine, Mitomycin, Cytosine, Arabinoside, and Fluorouracil
- Methyl methacrylate
- Ribavirin
- Formaldehyde
- Toluene or xylene
- Acrylamide

In addition to the chemicals listed above, glycol ethers have been identified as a male reproductive hazard and epidemiological studies indicate that vinyl chloride is a reproductive hazard.

Additional information on the use or exposure and acute or chronic health effects of the above is available at:

www.osha-slc.gov/dts/osta/otm/otm_toc.html

Supervisors and employees involved in the preparation, administration, or disposal of cytotoxic (antineoplastic) drugs should refer to:

1. OSHA Directives, PUB 8-1.1 "Guidelines for Cytotoxic (Antineoplastic) Drugs. The full text of this publication as available at:

www.osha-slc.gov/OshDoc/Directive_data/PUB_8-1_1.html

2. OSHA Technical Manual, Section VI, Chapter 2 "Controlling Occupational Exposure to Hazardous Drugs" available at:

www.osha-slc.gov/dts/osta/otm/otm_toc.html

In accordance with the policy on Toxic and Hazardous Substances and in recognition of the University's obligation to provide healthful working conditions, the University's guidelines to reduce the potential of reproductive hazards in the workplace are outlined below:

- Supervisors shall review the operational and associated biological, chemical, and physical workplace environments to identify those that might have the potential to cause reproductive hazard exposures.
- Supervisors shall perform a self-assessment of each space where these agents are employed.
- Supervisors shall seek to control the exposure to such hazards to acceptable levels for all employees through the best combination of:
 - Process or equipment engineering designs.
 - Work practice arrangements to minimize the potential exposure time.
 - Personal protective equipment.
- Supervisors shall inform employees in writing of any hazards to the reproductive system from toxic substances to which there is a potential risk of exposure.
- Supervisors shall educate employees in the use of personal protective equipment and safe work practices. Call Environmental Health & Safety, 556-4968, for assistance.

When there is insufficient basis for the scientific definition of an exposure level with an acceptable reproductive risk, Environmental Health and Safety will designate an interim standard which incorporates an appreciable safety factor, and will seek the development of information required for a "permanent" standard.

- In cases where certain employees are particularly susceptible to the known toxicity of a specific agent, and where exposure cannot be controlled to acceptable levels, implement the indicated protective work assignment practices, including if necessary, total restriction from potential exposure.
- Seek on a continuing basis new information on the potential reproductive toxicity associated with manufacturing processes, laboratory techniques, materials production, use, transportation, transfer, and disposal of such substances within and by the University of Cincinnati.
- Phase out and terminate the manufacture or use of such toxic substances where it is not possible to prevent unacceptable risks to reproductive functions.

The National Toxicology Program (NTP) and the National Institute of Environmental Health Sciences (NIEHS) have established the NTP Center for the Evaluation of Risks to Human Reproduction. The goal of the Center is to bring together experts to evaluate data indicating that chemicals, or chemical mixtures, can impair human reproductive development.

The following factors led to the establishment of this Center:

- Between five and ten percent of couples cannot conceive;
- Approximately half of all pregnancies are not successfully completed—many fertilized fetuses disappear before the prospective mother is even aware of the pregnancy;

- Between three and five percent of newborns suffer from major birth defects; and,
- A decline in human sperm counts over recent decades has been reported, but not confirmed.

The Center will establish panels of ten to fifteen scientists with expertise in reproduction, toxicology, and related areas who will review information on the effects of a chemical or chemical mixture on reproduction and development. These panels will prepare consensus reports on the strength of scientific evidence that an exposure poses a hazard to reproduction and children's health. Panel reports will be published in the NIEHS' journal, *Environmental Health Perspectives*, and on a Center website linked to the:

NTP (<http://ntp-server.niehs.nih.gov/>)
and
NIEHS (<http://ehis.niehs.nih.gov/>) websites.

Nominations of chemicals or chemical mixtures to be reviewed, and of panel members should be sent to:

John Moore, DVM
Sciences International
1800 Diagonal Rd., Suite 500
Alexandria, VA 22134-2808