

Female Reproductive Toxins

Because of the limited knowledge that is available about reproductive hazards in the workplace, employees and students should also take the following steps to help ensure their own safety:

- ◆ If you are a student in a laboratory class and believe you are or intend to become pregnant refer to the "[Chemicals and Pregnancy](#)" document on the UT Chemical Safety Website for additional compliance procedures.
- Store chemicals in sealed containers when they are not in use.
- ◆ Wash hands after contact with hazardous substances and before eating, drinking, or smoking.
- ◆ Avoid skin contact with chemicals.
- ◆ If chemicals contact the skin, follow the directions for washing in the material safety data sheet (MSDS). Employers are required to have copies of MSDSs for all hazardous materials used in their workplaces and to provide them to personnel upon request.
- ◆ Become familiar with the MSDSs sheets of chemicals used in your work space. If you are concerned about reproductive hazards in the workplace, consult your doctor or health care provider.
- ◆ Participate in safety programs offered by your employer.
- ◆ Learn about proper work practices and engineering controls appropriate for your field of research.
- ◆ Use personal protective equipment (gloves, respirators, and personal protective clothing) to reduce exposures to workplace hazards.
- ◆ Follow the best practices and procedures to minimize/prevent exposure to reproductive hazards.
- ◆ Prevent home contamination with the following steps:
 - Change out of contaminated clothing and wash with soap and water before going home.
 - Store street clothes in a separate area of the workplace to prevent contamination.
 - Wash work clothing separately from other laundry (at work if possible).
 - Avoid bringing contaminated clothing or other objects home. If work clothes must be brought home, transport them in a sealed plastic bag.

What Additional Information is Available ?

NIOSH has published the following documents that contain information about reproductive hazards in the workplace:

National Occupational Research Agenda- DHHS (NIOSH) [Publication No. 96-115](#)

A reproductive hazard could cause one or more health effects, depending on when the woman is exposed. For example, exposure to harmful substances during the first 3 months of pregnancy might cause a birth defect or a miscarriage. During the last 6 months of pregnancy, exposure to reproductive hazards could slow the growth of the fetus, affect the development of its brain, or cause premature labor. Reproductive hazards may not affect every worker or every pregnancy.

Table 1 lists chemical and physical reproductive hazards for women in the workplace as listed on the NIOSH website. The list is not complete and is constantly being revised. Therefore, do not assume that a substance is safe if it is missing from the list.

Table 1. Chemical and physical agents that are reproductive hazards for women in the workplace		
Agent	Observed effects	Potentially exposed workers
Cancer treatment drugs (e.g., methotrexate)	Infertility, miscarriage, birth defects, low birth weight	Health care workers, pharmacists
Certain ethylene glycol ethers such as 2-ethoxyethanol (2EE) and 2-methoxyethanol (2ME)	Miscarriages	Electronic and semiconductor workers
Carbon disulfide (CS ₂)	Menstrual cycle changes	Viscose rayon workers
Lead	Infertility, miscarriage, low birth weight, developmental disorders	Battery makers, solderers, welders, radiator repairers, bridge repainters, firing range workers, home remodelers
Ionizing radiation (e.g., X-rays and gamma rays)	Infertility, miscarriage, birth defects, low birth weight, developmental disorders, childhood cancers	Health care workers, dental personnel, atomic workers
Strenuous physical labor (e.g., prolonged standing, heavy lifting)	Miscarriage late in pregnancy, premature delivery	Many types of workers

Source: [NIOSH Publication 99-104](#)

Follow Link to Check for Any Updates Since the Publication of this UT Document

Male Reproductive Toxins

[DHHS \(NIOSH\) Publication No. 96-132](#)

What Are Reproductive Hazards?

Substances that affect the ability to have healthy children are called reproductive hazards.

Radiation, many chemicals, drugs (legal and illegal), cigarettes, and heat are examples of reproductive hazards.

What Reproductive Hazards Exist in the Workplace?

A number of workplace substances such as lead and radiation have been identified as reproductive hazards for men (see Table 1). However, there is no complete list of reproductive hazards in the workplace. Scientists are just beginning to understand how these hazards affect the male reproductive system. Although more than 1,000 workplace chemicals have been shown to have reproductive effects on animals, most have not been studied in humans. In addition, most of the 4 million other chemical mixtures in commercial use remain untested.

Although studies have found that workplace exposures affect the reproductive system in some men, these effects do not necessarily occur in every worker. Whether individuals are affected depends on how much of the hazard they are exposed to, how long they are exposed, how they are exposed, and other personal factors.

How Are Workers Exposed?

Harmful substances can enter the body by inhalation, contact with the skin, or ingestion (if workers do not properly wash their hands before eating, drinking, or smoking).

Can A Worker Expose His Family To These Hazards?

Workplace substances that affect male workers may also indirectly cause harm to their families. Certain substances unintentionally brought home by a worker may affect a woman's reproductive system or the health of an unborn child. For example, lead brought home from the workplace on a worker's skin, hair, clothes, shoes, tool box, or car can cause severe lead poisoning among family members and can cause neurobehavioral and growth effects in a fetus.

Table 1. Male Reproductive Hazards*

Type of Exposure	Observed effects			
	Lowered number of sperm	Abnormal sperm shape	Altered sperm transfer	Altered hormones/sexual performance
Lead	X	X	X	X
Dibromochloropropane	X			
Carbaryl (Sevin)		X		
Toluenediamine and dinitrotoluene	X			
Ethylene dibromide	X	X	X	
Plastic production (styrene and acetone)		X		
Ethylene glycol monoethyl ether	X			
Welding		X	X	
Perchloroethylene			X	
Mercury vapor				X
Heat	X		X	
Military radar	X			
Kepone**			X	
Bromine vapor**	X	X	X	
Radiation** (Chernobyl)	X	X	X	X
Carbon disulfide				X



Reproductive Toxins

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2,4-Dichlorophenoxy acetic acid (2,4-D)	X	X
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*Studies to date show that some men experience the health effects listed here from workplace exposures. However, these effects may not occur in every worker. The amount of time a worker is exposed, the amount of hazard to which he is exposed, and other personal factors may all determine whether an individual is affected.

**Workers were exposed to high levels as a result of a workplace accident.

Source: [NIOSH Male Reproductive Toxins](#)
