

Reproductive Hazards at Work for Men and Women

What are Reproductive Hazards?

Reproductive hazards can affect your ability to have a healthy child. They can affect:

- your sexual drive or potency
- your ability to conceive or bear a child
- the health of your future children

Reproductive hazards include:

- **Chemicals hazards**, such as organic solvents (benzene), metals dusts and fumes (lead, mercury, manganese and cadmium), and certain pesticides.

- **Physical hazards**, such as extreme heat, noise, stress, radiation, heavy lifting, and standing all day.
- **Diseases**, such as Hepatitis B, syphilis, and German measles.

Reproductive Hazards affect both women and men!



How Can Reproductive Hazards Affect Your Ability to Have Normal, Healthy Children

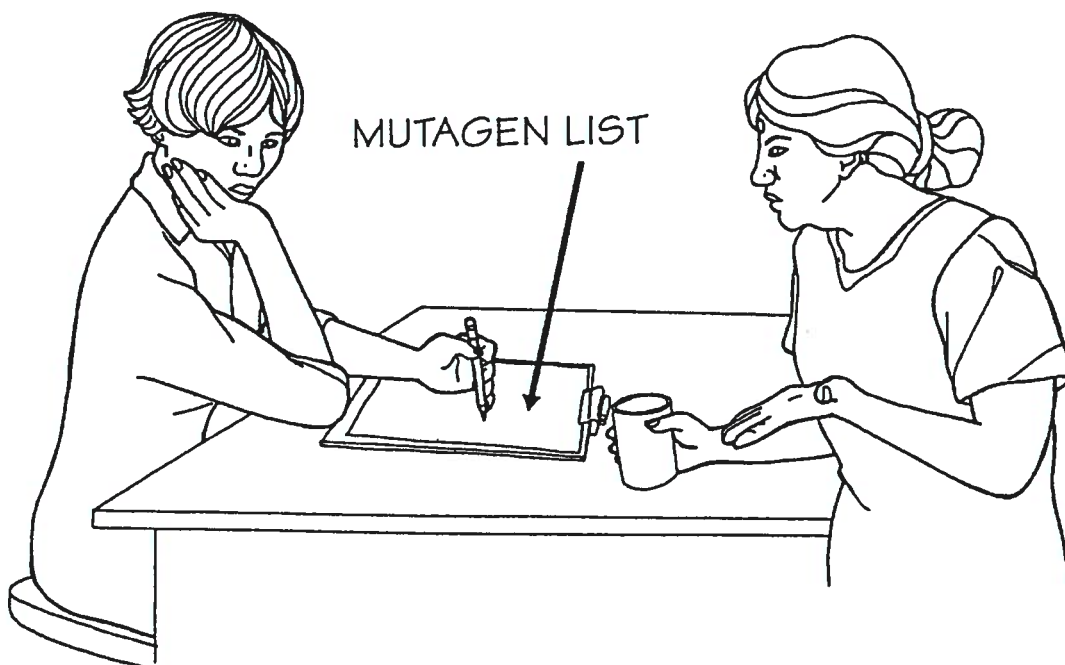
How the hazard affects you depends on many things, including how long you were exposed, how much you were exposed to, and the way in which you were exposed. Occupational exposure of men and women can cause damage at all stages of reproduction.

Before Conception

Some workplace exposures can prevent conception by causing:

- **Changes in sex drive**, in either men or women. Exposure to some chemicals or to stressful conditions can affect a person's hormones or nervous system, or cause cancer in reproductive organs, which may lead to impotency or lack of sexual desire. Certain hazards, such as rotating shifts (working some days and some nights) can cause menstrual problems, which may prevent ovulation from taking place. Also, some organic solvents can cause menstrual problems.
- **Damage to the egg or sperm**. Both male and female workers can become sterile or experience decreased fertility from exposure to radiation or certain chemicals. Damage to sperm can cause them to be abnormal. It can also reduce the number of sperm that are produced to a level below the minimum necessary for fertilization to be likely.

- **Changes in the genetic material carried by the eggs and sperm, called mutations.** Mutations in genetic material can be passed on to future generations, This is because the genetic materials determine the characteristics that children will inherit from their parents. Genetic mutations can result in birth defects, stillbirth, or miscarriage, depending on the type of damage caused. A substance that causes changes in genetic material is called a **mutagen**.
- **Cancer and other diseases.** Some mutagenic substances are also known to cause cancer in humans. Substances that cause cancer are called carcinogens. Reproductive organs, such as the ovaries, breast, vagina, and uterus of a woman, and the penis and testes of a man, can become diseased or function abnormally as a result of exposure to certain hazardous substances.



During Pregnancy

Once a woman is pregnant, some harmful substances can pass through the mother to the developing embryo or fetus. The fetus is generally thought to be at greatest risk during the first 14 to 60 days of the pregnancy, the time when the major organs are being formed. However, depending on the exposure, a fetus can be harmed at any time during the pregnancy. A substance that prevents the normal development of a fetus is called a **teratogen**.

There are a number of chemicals, diseases, and other agents that are known to cause **birth defects**. Birth defects can include a wide range of physical abnormalities, such as bone or organ deformities, and behavioral or learning problems such as mental retardation.

In some cases, factors that cause stress, such as repetitive work, lack of breaks and constant demands on pregnant workers, can be directly related to premature births.

After Birth

Occupational exposures can also harm a developing child even after it is born. The breast milk of nursing mothers exposed to certain chemicals can become contaminated. Infants can then take in those substances while breast-feeding. Chemicals brought home on their parents' work clothes, hair or skin can also affect children.

How Reproductive Hazards Affect Your Ability to Have Normal, Healthy Children

Before Conception

Reproductive hazards may lead to impotency or lack of sexual desire.

- Women:
- menstrual disorders
 - damage to uterus
 - miscarriage or still birth
- Women and Men:
- impotency or lack of sexual desire
 - decreases ability to produce healthy eggs or sperm
 - genetic damage to eggs or sperm which can be passed on to children and result in birth defects
 - interference with ability of sperm to fertilize egg

During Pregnancy

Certain viruses, chemicals and drugs can cross the placenta and damage the fetus or embryo. Heavy lifting can cause miscarriage.

Problems include:

- miscarriage or stillbirth
- cancer or other disease in child
- birth defects in child
- low birth weight

After Birth

Nursing babies can be affected by contaminated milk. Chemicals brought home on work clothes, hair or skin can affect children.

Problems include:

- Illness or disease caused by chemicals
- Problems with healthy development of children

How Do Reproductive Hazards Affect the Male Reproductive System?

Number of Sperm

Some reproductive hazards can stop or slow the actual production of sperm. This means that there will be fewer sperm present to fertilize an egg; if no sperm are produced, the man is sterile. If the hazard prevents sperm from being made, sterility is permanent.

Sperm Shape

Reproductive hazards may cause the shape of sperm cells to be different. These sperm often have trouble swimming or lack the ability to fertilize the egg.

Sperm Transfer

Hazardous chemicals may collect in the epididymis, seminal vesicles, or prostate. These chemicals may kill the sperm, change the way in which they swim, or attach to the sperm and be carried to the egg or the unborn child.

Sexual Performance

Changes in amounts of hormones can affect sexual performance. Some chemicals, like alcohol, may also affect the ability to achieve erections, whereas others may affect the sex drive. Several drugs (both legal and illegal) have effects on sexual performance, but little is known about the effects of workplace hazards.

Sperm Chromosomes

Reproductive hazards can affect the chromosomes found in sperm. The sperm and egg each contribute 23 chromosomes at fertilization. The DNA stored in these chromosomes determines what we will look like and how our bodies will function. Radiation or chemicals may cause changes or breaks in the DNA. If the sperm's DNA is damaged, it may not be able to fertilize an egg; or if it does fertilize an egg, it may affect the development of the fetus. Some cancer treatment drugs are known

to cause such damage. However, little is known about the effects of workplace hazards on sperm chromosomes.

Pregnancy

If a damaged sperm does fertilize an egg, the egg might not develop properly, causing a miscarriage or a possible health problem in the baby. If a reproductive hazard is carried in the semen, the fetus might be exposed within the uterus, possibly leading to problems with the pregnancy or with the health of the baby after it is born.

How Can Exposure Be Prevented?

Employers are responsible for training and protecting their workers. Employees are responsible for learning about the hazards in their workplace, using personal protective equipment, and following proper work practices. Since little is known about reproductive hazards in the workplace, workers should also take the following steps to ensure their own safety:

- 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) or chemical safety data sheet (CSDS) for all hazardous materials used in their workplaces and to provide them to workers upon request.
- Review all MSDSs or CSDSs to become familiar with any reproductive hazards used in your workplace. If you are concerned about reproductive hazards in the workplace, consult your doctor or health care provider.

- Participate in all safety and health education, training, and monitoring programs offered by your employer.
- Learn about proper work practices and engineering controls (such as improved ventilation).
- Use personal protective equipment (gloves, respirators, and personal protective clothing) to reduce exposures to workplace hazards.
- Follow your employer's safety and health work practices and procedures to prevent exposures 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.

Chinese Labor Laws affecting Reproduction

Certain Chinese Labor Laws and regulations provide some benefits for working women who are pregnant or nursing. The list below summarizes some of these benefits:

1. Protection during menstrual period: work units shall not arrange for female staff to engage in work involving high altitudes, low temperatures, cold water or state regulated Grade Three intensity labor.
2. Protection during pregnancy: female staff shall not engage in work with state regulated Grade Three physical intensity and other prohibited work during while they are pregnant. Female staff shall not work overtime or at night when they are seven or more months pregnant.
3. Protection during maternity period: female staff will have no less than 90 days maternity leave including 15 days before and 75 days after the birth, and 15 additional days in cases of difficult labor. An extra 15 day leave shall be given for each baby in case of multiple births. Female staff whom medical departments have certified as having an abortion shall be given a specified length of leave. Full wages shall be paid to female staff during maternity leave.
4. Protection during breast-feeding period: female staff shall be given 30 minutes to breast- or bottle-feed babies under one year of age twice every working shift. An extra 30 minutes shall be given for each baby in case of multiple births. The twice feed-leave in a working shift may be used for one time. Feeding time and necessary traveling time shall be reckoned as working time.

Companies with a significant number of female workers should provide nurseries and clinics for women.

This information taken from "Handbook of Chinese Labor Law," October, 1999; Editors Jingyi Ye, Changzheng Zhou, Zhiyong Lu.

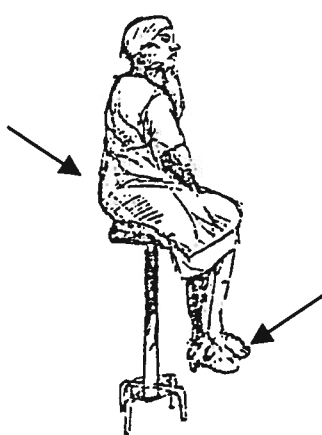
What Can Be Done to Prevent or Control Reproductive Hazards?

Know what you work with: Find out the names of the chemicals at your work. Work with your union or other health and safety resources to find out if any are suspected reproductive hazards.

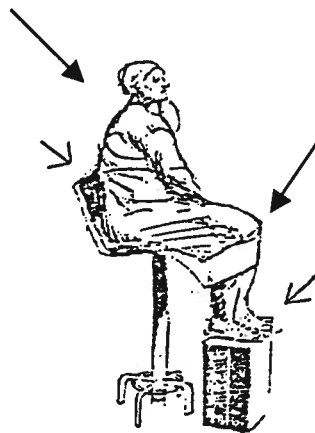
If you are pregnant: Think about other tasks that you do that may be risky, especially in your last few months of pregnancy.

Find ways to avoid:

- Physically strenuous work
- Work requiring balance
- Heavy lifting
- Loud noise
- Shift work
- Long working hours
- Prolonged sitting or standing



Avoid this position



Better position



Better position

When you are pregnant, try not to sit for long periods. When you sit, your back should be supported. You need a chair with a backrest. If your feet don't touch the ground, you need a footrest.

Work with your union or employer to find ways to reduce exposure to toxic chemicals. Find safer chemicals, improve ventilation, and if necessary, wear protective equipment such as gloves or respirators. Some employers may allow workers to transfer to a different job while pregnant or while planning a child. However, such policies should be accompanied by guarantees of pay or seniority retention. Transfer policies should ensure that certain groups of workers will not be discriminated against in hiring or job transfer practices.

Women's reproductive rights are at risk in some countries. Companies in some countries have abused the rights of their women workers by preventing them from having children. For example, garment workers in Saipan have been forced to undergo abortions, and workers in El Salvador have submitted to mandatory pregnancy testing and contraception. Article 11 of the United Nations Convention of the Elimination of all forms of Discrimination Against Women (CEDAW) ensures, "the right to protection of health and safety in working conditions, including the safeguarding of the function of reproduction", and explicitly prohibits pregnancy discrimination.

What can you do: If this is a problem in your workplace

- Talk to your union if there is one.
- Find out about and talk to groups in your community that are active in promoting women's health and women's rights.

Reproductive Hazards		
Hazard	Workers Affected/Workplace	Reproductive Effects
<i>Chemical</i>		
Benzene	Dry cleaners; paint removal; rubber cement; degreasing artists	<i>Male:</i> chromosome damage; cancer <i>Female:</i> menstrual disorders, cancer <i>Baby:</i> birth defects
Ethyl alcohol	Used in many industries as a solvent	<i>Female:</i> miscarriage <i>Baby:</i> birth defects; developmental problems
Glycol ethers	Metal working; semiconductor	<i>Male:</i> damage to sperm and testes <i>Female:</i> miscarriages <i>Animal Studies:</i> birth defects from exposed mothers
Lead	Miners; pigment productions; pottery industry; printing industry; rubber industry; solderers; storage battery industry; welders, painters	<i>Male:</i> decreased fertility <i>Female:</i> menstrual disorders; miscarriage <i>Baby:</i> birth defects, low birth weight, developmental disorders, childhood cancers
Common chemicals unlikely to harm fetus or fertility: ammonia; chlorine; hydrochloric acid; nitric acid; potassium hydroxide; sodium hydroxide; sodium hypochlorite (bleach); sulfuric acid.		

Reproductive Hazards		
Hazard	Workers Affected/Workplace	Reproductive Effects
Methyl chloride Chloroform	Methylating reactions; plastic foams; refrigeration	<i>Male:</i> decreased fertility; testicular pain <i>Female:</i> menstrual disorders, cancer
Polychlorinated biphenyls	Capacitor and transformer industries; casting process; used as a hydraulic and heat exchange fluid	<i>Baby:</i> birth defects from either parents <i>Animal Studies:</i> menstrual irregularities; decreased sperm count
Toluene	Painting; benzene manufacture; used widely as a solvent	<i>Male:</i> miscarriage in partners <i>Female:</i> menstrual irregularities; cancer <i>Baby:</i> birth defects
Trichloroethylene (TCE)	Used widely as a solvent	<i>Animal Studies:</i> birth defects; impaired growth
Vinyl chloride	Plastics production; vinyl chloride and polyvinyl chloride production	<i>Male:</i> cancer; abnormal sperm <i>Female:</i> cancer; miscarriage; stillbirth <i>Baby:</i> birth defects
Carbon Disulfide	Viscose Rayon Workers	<i>Female:</i> menstrual cycle changes
Ethylene Oxide (sterilization units)	Health Care workers	<i>Female:</i> spontaneous abortion

Reproductive Hazards		
Hazard	Workers Affected/Workplace	Reproductive Effects
<i>Biological</i>		
Mumps virus	Health care workers	Male: decreased fertility
Rubella virus	Health care workers	Female: miscarriage; still birth Baby: low birth weight; birth defects
Syphilis	Health care workers	Male: impotence; abnormal/reduced sperm; decreased fertility Female: decreased fertility; miscarriage; stillbirth Baby: birth defects; low birth weight
<i>Physical</i>		
Extreme heat	Auto workers; bakeries; laundries; shoe workers; steel workers; textile workers	Male: decreased sperm count, potency
Strenuous physical labor (heavy lifting, prolonged standing)	Many occupations	Female: miscarriage, premature birth Baby: low birth weight

Reproductive Hazards		
Hazard	Workers Affected/Workplace	Reproductive Effects
Ionizing radiation	X-ray technicians and inspectors	<i>Male:</i> abnormal/reduced sperm; decreased fertility <i>Female:</i> menstrual irregularities; decreased fertility, miscarriage <i>Baby:</i> birth defects, low birth weight, developmental disorders, childhood cancers
Microwaves	X-ray technicians and inspectors	<i>Animal Studies:</i> decreased fertility in males
Standing most of day	Many Occupations	<i>Baby:</i> low birth weight
Video display terminals	Office workers	<i>Females:</i> miscarriage

Reproductive Hazards Index and Synonyms

Acetylene trichloride – see Trichloroethylene
Anhydrol – see Ethyl alcohol
Arochlor 1242 – see Polychlorinated biphenyls
Benzene
Benzol – see Benzene
Chlorodiphenyl, 42% chlorine – see Polychlorinated biphenyls
Chloroethene – see Vinyl chloride
Chloroethylene – Vinyl chloride
Chloromethane – Methyl chloride
Cyclohexatriene – see Benzene
1,1-Dichloro-2-chloroethylene – see Trichloroethylene
Ethanol – see Ethyl alcohol
Ethyl alcohol
Ethylene monochloride – see Vinyl chloride
Ethylene trichloride – see Trichloroethylene
Ethyl hydrate - see Ethyl alcohol
Ethyl hydroxide - see Ethyl alcohol
Glycol ethers
Lead
Methyl benzene – see Toluene
Methyl chloride
Monochloromethane – see Methyl chloride
PCBs – see Polychlorinated biphenyls
Phenylmethane – see Toluene
Polychlorinated biphenyls
TCE – see Trichloroethylene
Toluene
Toluol – see Toluene
Trichloroethylene
Vinyl chloride

