

Pregnancy Safety for Lab Workers

Exposure to reproductive hazards in the workplace is an increasing health concern. Reproductive hazards are substances or agents that may affect the reproductive health of women and men or the ability of couples to have children. These hazards may cause problems such as infertility, miscarriage, and birth defects.

By using prudent work practices, most laboratory workers who are planning pregnancy or are pregnant can work safely in research laboratories without harming the reproductive system or exposing a developing fetus to potentially harmful chemicals.

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Reproductive Hazards

Various chemicals are suspected or are known to have produced an adverse effect in humans based on epidemiological evidence to cause harm to fetuses, pregnant women, women planning to get pregnant, or the general reproductive health of women of childbearing age.

Reproductive toxins such as teratogens and mutagens can cause harm to the reproductive system via chromosomal damage and some can move across the placenta and cause damage to a fertilized egg or fetus.

The *first trimester* of pregnancy is a particularly important period in fetal development. During this period, organs and limbs are formed and the fetus is most susceptible to chemical exposure. Exposure to harmful hazards during this period can cause physical birth defects. Chemical exposure during the last two trimesters of pregnancy can affect brain development and slow fetal growth.

Utilizing safe work practices and collaborating with the appropriate safety authorities will ensure a safe work environment for pregnant lab workers.



Teratogens - chemicals agents that interfere with embryonic development. Teratogenic damage is most likely to occur during the first trimester (8 to 10 weeks) of pregnancy, when women often are unaware of the pregnancy.

Mutagens - chemicals that cause chromosomal damage that affect adults and fetuses. Mutagens can affect fetal development or damage eggs and sperm; therefore, preventing fertilization.

What do I need to know?

- Reproductive toxins affect reproductive capabilities of adults and cause direct harm to developing fetuses
- Affect MEN and WOMEN
- Consult your personal physician as soon as pregnancy is planned, known or SUSPECTED
- Review SDSs of chemicals you and your colleagues handle in the laboratory
- Substitute hazardous chemicals for other, safer, reagents
- Report to PI and EH&S to ensure your safety
- Use safe work practices

Hazard Communication

Globally Harmonized System (GHS) has 3 hazard categories for reproductive toxicity (plus an additional one for lactation effects).

- Categories 1a and 1b are assigned to substances known to have produced an adverse effect in humans based on epidemiological evidence (1a), or presumed to produce an adverse effect based on animal studies (1b). Both hazard categories carry the same hazard statement H360 "May damage fertility or the unborn child".
- H361, "Suspected of damaging fertility or the unborn child", is used for category 2, denoting that there is some evidence from humans or experimental animals of an adverse effect.

Chemical Hazards

Several points should be discussed when considering whether a chemical exposure will affect your baby:

- The specific chemical in question - for example, strong acids and bases as well as irritants are not likely to harm fetuses.
- The amount, frequency, and length of the exposure.
- The route of exposure - chemicals can enter the body via dermal absorption, inhalation, and accidental ingestion. If the chemical enters the bloodstream, it can pass from the mother's blood to the fetus through the placenta. Some chemicals, such as irritants, react first with the tissue they contact (ex; eyes, nose, throat, or skin). These chemicals are unlikely to enter the bloodstream.



Physical Hazards

Strenuous physical labor such as prolonged standing and heavy lifting can cause health effects late in pregnancy such as miscarriage and premature delivery.

Pregnancy also increases the risk of ergonomic injuries such as back pain and carpal tunnel. It is important to exercise proper ergonomic controls while pregnant in order to limit the risk of physical or fetal injury.

Consult the [EH&S Ergonomics](#) page for more information on ergonomic practices or contact the Office of Environmental Health & Safety to request a worksite evaluation.

When Consulting With Personal Physicians

When pregnancy is planned, known or suspected, consult with personal physicians and discuss the work performed in the lab.

Bring with you:

- the list of hazardous chemicals handled in the laboratory; hazardous materials handled by you AND your colleagues.
- Corresponding SDSs for hazardous materials handled in the lab
- Lab Safety Plans/ Standard Operating Procedures implemented in your laboratory

Reproductive Toxins Frequently Found in Laboratories

- | | |
|---|------------------------------------|
| ▪ 1,3-butadiene | ▪ Ethylene thiourea |
| ▪ Arsenic | ▪ Fluorouracil (5-FU) |
| ▪ Benzene | ▪ Ionizing radiation |
| ▪ Cadmium | ▪ Lead |
| ▪ Carbon disulfide | ▪ Mercury compounds |
| ▪ Dibromochloropropane | ▪ Polychlorinated biphenols (PCBs) |
| ▪ Ethylene dibromide | ▪ Tamoxifen |
| ▪ Ethylene glycol monomethyl (and ethyl) ethers | ▪ Toluene |
| ▪ Ethylene oxide | ▪ Urethane |

Reducing the Risk of Chemical Exposure

- As soon as pregnancy is planned, known or suspected, discuss the work performed in the lab and the hazardous materials handled with personal physicians to determine what, if any, work restrictions are needed
- Any restrictions placed by the physician should be discussed with your PI or supervisor
- Review the SDS for chemicals you and your colleagues constantly work with in the lab to assess whether they pose a threat to your pregnancy
- Always utilize appropriate personal protective equipment when engaging in lab tasks
- Utilize safe work practices and strengthen engineering controls where feasible
- Review and amend standard operating procedures to accommodate for risks specific to pregnancy
- When possible, replace hazardous chemicals for other, safer, reagents for the duration of the pregnancy
- Ask your supervisor if the levels of chemicals present in your work area have been measured and request monitoring from EH&S if necessary
- Always wash hands with soap and water after handling chemicals and leaving the laboratory
- Contact EH&S for help in identifying potentially hazardous chemicals in the lab
- Specific federal regulations apply to pregnant worker's exposure to radiation. If you work with radiation-producing machines or radioactive materials, contact prospective health (744-2070).

Resources

- [NIOSH: Workplace Hazards & Female Reproductive Health](#)
- [Common Reproductive Toxins](#)
- [OSHA Reproductive Hazards](#)
- [ECU Pregnancy Related Information](#)
- [Reproductive Toxic Chemicals at Work](#)