

# UNIVERSITY OF TOLEDO

SUBJECT: TERATOGENS SAFE WORK PRACTICES  
(Embryotoxins/Agents Detrimental to Unborn Fetuses)

Procedure No: HM-08-028

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## PROCEDURE STATEMENT

The use of teratogens at the University of Toledo shall be handled in such a manner to ensure the safety and health of all faculty, staff and students.

## PURPOSE OF PROCEDURE

To provide guidance to faculty, staff and students, working in areas where teratogens are in use, for the development of standard operating procedures as required by OSHA/PERRP. To ensure a safe working environment for all personnel of child bearing age.

## PROCEDURE

### Hazards and Physical Properties

1. A teratogen (te-ràt'e-jen) is an agent, such as a virus, chemical, drug, or radiation, that can cause malformation of an embryo or a fetus.
2. These effects may include death of the fertilized egg, embryo, or the fetus; malformations, retarded growth, and postnatal functional deficits.
3. Physical, chemical and biologic (microbial) agents classified as teratogens, or embryotoxins can be found throughout the University of Toledo, in the form of solids, liquids and gases.

### Recommended Work Practice Controls

1. Employees should review and be familiar with the product and its Safety Data Sheets (SDSs).
2. Develop Standard Operating Procedures (SOP) as required by OSHA/PERRP. Fill in blanks can be found at <http://www.utoledo.edu/depts/safety/docs/HM-08-026%20Appendix%20C.pdf>
3. Store these materials only in small quantities within fully covered containers to minimize the accidental release of the material.
4. Use of these materials should be strictly controlled. Procedures involving these materials should only be performed under the proper engineering, administrative and personal protective equipment controls.
5. Containers housing teratogens should be labeled in a clear and appropriate manner in compliance with the revised Global Harmonization Standard as specified by OSHA's Hazard Communication Standard 29 CFR 1910.1200. Some of the labeling requirements include pictograms and GHS08 Health hazard information and may include the following information:
  - Name of Agent
  - Caution: Teratogen, or Embryotoxin, other health hazards
  - Manufacturers Name, Address and Phone #, and
  - Target Organs at risk from exposure
6. Each employee has a responsibility to report any occupational health and safety concerns to their immediate supervisor, manager, lab director, or directly to the Environmental Health and Radiation Safety Department at (419) 530-3600. Consult Environmental Health and Radiation Safety Policy #S-08-030 (Reporting Safety & Health Concerns).

7. Pregnant women, or those staff of child bearing age should take great care to determine if an agent they are working with is a teratogen. Please contact the Environmental Health and Radiation Safety Department (419) 530-3600 with any questions or assistance in the identification and handling of these materials. Males may also experience adverse reproductive effects and should evaluate their potential exposures completely (see attached list).
8. Individuals who are pregnant and working around radiation sources or radioactive materials should refer to Environmental Health and Radiation Safety policy HM-08-008, and contact the Environmental Health and Radiation Safety Department.
9. Any spills or inadvertent exposures should be immediately reported to a supervisor and an Injury/Illness report should be completed.

Source: Safety & Health Committee

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7/22/02

3/2/05

5/18/07

5/17/10

5/16/13

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## Examples of Known Human Teratogenic Agents

Note: This is not an exhaustive list of teratogenic agents.

<b>Medications</b>	
Note: The internalization of these medications pose potential teratogenic effects, not merely being in the presence of them.	
Thalidomide	Limb reduction defects, ear anomalies
Diethylstilbestrol	Vaginal adenosis/adenocarcinoma Cervical erosion and ridges
Warfarin	Nasal hypoplasia, stippled epiphyses, CNS defects
Hydantoin	Dysmorphic facial features, hypoplastic nails, growth and developmental retardation
Trimethadione	Developmental retardation, dysmorphic facial features
Aminopterin and methotrexate	Pregnancy loss, hydrocephalus, low birth weight, dysmorphic facial features
Streptomycin	Hearing loss
Tetracycline	Stained teeth, enamel hypoplasia
Valproic Acid	Neural tube defects, dysmorphic facial features
Isotretinoin	Pregnancy loss, hydrocephalus, other CNS defects, small or absent thymus, microtia/anotia, conotruncal heart defects
Antithyroid drugs	Hypothyroidism, goiter
Androgens and high doses of nor-progesterones	Masculinization of external female genitalia
Penicillamine	Cutis laxa
ACE Inhibitors	Renal dysgenesis, oligohydramnios sequence, skull ossification defects
Carbamazepine	Neural tube defects
Cocaine	Pregnancy loss, placental abruption, growth retardation, microcephaly
Lithium	Ebstein anomaly
<b>Maternal Infections</b>	
Note: Maternal infections do play a role in the promotion of teratogenic effects, however, please be advised that the institution of Standard (Universal) Precautions and proper vaccination greatly reduces the potential for teratogenic effects.	
Rubella	Brain damage, neural effects
Toxoplasmosis	Hydrocephalus, blindness, mental retardation
Varicella	Skin scarring, limb reduction defects, muscle atrophy, mental retardation
Venezuelan Equine Encephalitis	CNS damage, cataracts, pregnancy loss
Syphilis	Abnormal teeth and bones, mental retardation
Cytomegalovirus	Growth and developmental retardation, microcephaly, hearing loss, ocular abnormalities
Herpes (Primary)	Pregnancy loss, growth retardation, eye abnormalities
Herpes (Active)	Vertical transmission at delivery

<b>Chemicals</b>	
Methylmercury	Cerebral atrophy, spasticity, mental retardation
Lead	Pregnancy loss, CNS damage
Polychlorobiphenyls (PCBs - ingested)	Low birth weight, skin discoloration
<b>Maternal Disorders</b>	
Insulin Dependent Diabetes Mellitus	Congenital heart defects, caudal deficiency, neural tube defects, limb defects, holoprosencephaly, pregnancy loss
Hypo/Hyperthyroidism	Goiter, growth and developmental retardation
Phenylketonuria	Pregnancy loss, microcephaly, mental retardation, facial dysmorphism, congenital heart defects
Hypertension	Intrauterine growth retardation
Autoimmune Disorders	Congenital heart block, pregnancy loss
<b>Reproductive Toxins</b>	
Cigarette Smoking	Pregnancy loss, low birth weight
Hyperthermia	Neural tube defects
Chronic Alcoholism	Growth and developmental retardation, microcephaly, craniofacial dysmorphism
Therapeutic Radiation	Growth and developmental retardation, microcephaly