UNIVERSITY OF TOLEDO

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

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-rá-té-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  Effective Date: 2/11/98

Review/Revision Date: 4/21/99
7/22/02
3/2/05
5/18/07
5/17/10
5/16/13
5/13/16
5/13/19
### Examples of Known Human Teratogenic Agents

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

<table>
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<th>Effects</th>
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<tr>
<td><strong>Medications</strong></td>
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<tr>
<td>Thalidomide</td>
<td>Limb reduction defects, ear anomalies</td>
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<tr>
<td>Diethylstilbestrol</td>
<td>Vaginal adenosis/adenocarcinoma, Cervical erosion and ridges</td>
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<tr>
<td>Warfarin</td>
<td>Nasal hypoplasia, stippled epiphyses, CNS defects</td>
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<td>Hydantoin</td>
<td>Dysmorphic facial features, hypoplastic nails, growth and developmental retardation</td>
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<td>Trimethadione</td>
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<tr>
<td>Aminopterin and methotrexate</td>
<td>Pregnancy loss, hydrocephalus, low birth weight, dysmorphic facial features</td>
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<tr>
<td>Streptomycin</td>
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<tr>
<td>Tetracycline</td>
<td>Stained teeth, enamel hypoplasia</td>
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<td>Valproic Acid</td>
<td>Neural tube defects, dysmorphic facial features</td>
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<tr>
<td>Isotretinoin</td>
<td>Pregnancy loss, hydrocephalus, other CNS defects, small or absent thymus, microtia/anotia, conotruncal heart defects</td>
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<td>Antithyroid drugs</td>
<td>Hypothyroidism, goiter</td>
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<td>Androgens and high doses of non-progesterones</td>
<td>Masculinization of external female genitalia</td>
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<td>Penicillamine</td>
<td>Cutis laxa</td>
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<td>ACE Inhibitors</td>
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<td>Carbamazepine</td>
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<td>Cocaine</td>
<td>Pregnancy loss, placental abruption, growth retardation, microcephaly</td>
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<td>Lithium</td>
<td>Ebstein anomaly</td>
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<td>Brain damage, neural effects</td>
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<tr>
<td>Toxoplasmosis</td>
<td>Hydrocephalus, blindness, mental retardation</td>
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<td>Varicella</td>
<td>Skin scarring, limb reduction defects, muscle atrophy, mental retardation</td>
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<tr>
<td>Venezuelan Equine Encephalitis</td>
<td>CNS damage, cataracts, pregnancy loss</td>
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<td>Syphilis</td>
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<td>Cytomegalovirus</td>
<td>Growth and developmental retardation, microcephaly, hearing loss, ocular abnormalities</td>
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<td>Herpes (Primary)</td>
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<td>Methylmercury</td>
<td>Cerebral atrophy, spasticity, mental retardation</td>
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<td>Lead</td>
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<td>Polychlorobiphenyls (PCBs - ingested)</td>
<td>Low birth weight, skin discoloration</td>
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<td>Insulin Dependent Diabetes Mellitus</td>
<td>Congenital heart defects, caudal deficiency, neural tube defects, limb defects, holoprosencephaly, pregnancy loss</td>
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<td>Hypo/Hyperthyroidism</td>
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<td>Phenylketonuria</td>
<td>Pregnancy loss, microcephaly, mental retardation, facial dysmorphism, congenital heart defects</td>
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<td>Hypertension</td>
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<td>Autoimmune Disorders</td>
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<tr>
<td>Cigarette Smoking</td>
<td>Pregnancy loss, low birth weight</td>
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<tr>
<td>Hyperthermia</td>
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<td>Growth and developmental retardation, microcephaly, craniofacial dysmorphism</td>
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<tr>
<td>Therapeutic Radiation</td>
<td>Growth and developmental retardation, microcephaly</td>
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