APPENDIX O: SPECIAL HEALTH HAZARDS PRECAUTION FOR TO INCLUDE IN SITE-SPECIFIC SOPS

MODEL WRITTEN SOP -- The OSHA Laboratory Standard explicitly requires "standard operating procedures relevant to safety and health considerations to be followed when laboratory work involves the use of hazardous chemicals." If the model SOPs in this "Special Precautions" section do not fulfill this requirement, you must amend and append in some manner so as to comply.

Special Precautions for Working with Allergens

The term allergens describes a wide variety of substances that can produce skin and lung hypersensitivity. Examples include diazomethane, chromium, nickel bichromates, formaldehyde, isocyanates, and certain phenols. Wear suitable gloves to prevent hand contact with allergens or substances of unknown allergenic activity. Conduct aerosol producing procedures in a fume hood.

Special Precautions for Working with Embryotoxins and Reproductive Toxins

Substances that act during pregnancy to cause adverse effects on the fetus are referred to as embryotoxins. These effects include embryolethality (death of the fertilized egg, the embryo, or the fetus), malformation (teratologic effects), retard growth, and postnatal functional deficits. Examples include organo-mercurials, lead compounds, and formamide. Because the period of greatest susceptibility to embryotoxins is the first 8-12 weeks of pregnancy, which includes a period when a woman may not know she is pregnant, women of child-bearing potential should take care to avoid skin contact with all chemicals. The term "reproductive toxins" is used to describe substances which cause harmful effects on the male or female reproductive system or the developing embryo and fetus. These effects include but are not limited to menstrual irregularity, lowered fertility, testicular atrophy, and birth defects.

1. Review each use of embryotoxins with the research supervisor and EH&S. Review continuing uses annually or whenever a procedural change is made.
2. Label embryotoxins as follows: EMBRYOTOXIN: READ SPECIFIC PROCEDURES FOR USE.
3. Store embryotoxins and reproductive toxins in unbreakable containers or unbreakable secondary containers in a well-ventilated area.
4. Guard against spills and splashes. Appropriate safety apparel, especially gloves, should be worn. All hoods, glove boxes, or other essential engineering controls should be known to be operating properly before work is started.
5. Notify your supervisor and EH&S of all incidents of exposure or spills. EH&S will arrange for a medical consultation.
**Special Precautions for Working with Chemicals of Moderate Chronic or High Acute Toxicity**

See Appendix E of this manual for definition and discussion of the meanings of chronic and acute toxicity. Examples of chemicals of moderate chronic toxicity or high acute toxicity include hydrofluoric acid and hydrogen cyanide.

1. Consult one of the standard compilations that list toxic properties of known substances and learn what is known about the substance that will be used. Follow the specific precautions and procedures for the chemical.
2. Use and store these substances only in designated (restricted access) areas placarded with appropriate warning signs.
3. Use a hood or other containment device for procedures which may result in the generation of aerosols or vapors; trap released vapors to prevent their discharge with fume hood exhaust.
4. Avoid skin contact by use of gloves and long sleeves and other protective apparel as appropriate.
5. Maintain records of the amounts of materials on hand, amounts used, and the names of the workers involved.
6. Be prepared for accidents and spills. At least two people should be present at all times if compounds in use are highly toxic or of unknown toxicity.
7. Store breakable containers in chemically resistant trays; also work and mount apparatus above such trays or cover work and storage surfaces with removable, absorbent, plastic backed paper.
8. If a major spill occurs outside the hood, evacuate the area and call for assistance (See cover page).
9. Thoroughly decontaminate or dispose of contaminated clothing or shoes. If possible, chemically decontaminate by chemical conversion to a less toxic product.
10. Store contaminated waste in closed, suitably labeled, impervious containers.

**Special Precautions for Working with Chemicals of High Chronic Toxicity**

See Appendix E of this manual for definition and discussion of the meanings of chronic and acute toxicity. Examples of chemicals exhibiting high chronic toxicity include dimethylmercury, nickel carbonyl, benzo-a-pyrene, N-nitrosodiethylamine, and other human carcinogens or substances with high carcinogenic potency in animals.

1. Conduct all transfers and work in designated (restricted access) areas: a restricted access hood, glove box, or portion of a lab, designated for use of highly toxic substances, for which all persons with access are aware of the substances being used and necessary precautions.
2. Protect vacuum pumps against contamination with scrubbers or HEPA filters and vent effluent into the hood.
3. Decontaminate vacuum pumps or other contaminated equipment, including glassware, before removing them from the designated area. Decontaminate the designated area before normal work is resumed there.

4. On leaving the area, remove protective apparel (placing it in an appropriate, labeled container) and thoroughly wash hands, forearms, face, and neck.

5. Use a wet mop or a vacuum cleaner equipped with a HEPA filter to decontaminate surfaces. DO NOT DRY SWEEP SPILLED POWDERS.

6. If using toxicologically significant quantities of a substance on a regular basis (in quantities above a few milligrams to a few grams, depending on the substance, 3 or more times per week), contact EH&S. EH&S will arrange for a medical consultation, if appropriate.

7. Keep accurate records of the amounts of these substances stored and used, the dates of use, and names of users.

8. The designated area must be conspicuously marked with warning and restricted access signs and all containers should be appropriately labeled with identity and warning labels (e.g., CANCER-SUSPECT AGENT).

9. Ensure that contingency plans, equipment, and materials to minimize exposures of people and property in case of accident are available.

10. For a negative pressure glove box, ventilation rate must be at least 2 volume changes/hour and at a pressure of at least 0.5 inches of water gauge. For a positive pressure glove box, thoroughly test for leaks before each use. In either case, trap the exit gases or filter them through a HEPA filter and then release them into a fume hood.

11. Use chemical decontamination whenever possible; ensure that containers of contaminated wasted are transferred from the designated area under the supervision of authorized personnel.