STANDARD OPERATING PROCEDURE
for
HEAVY METAL SALTS (selected)

Location(s): ___________________________________________________

Chemical(s): heavy metal salts: acetates, chlorides, sulfates, nitrates, anhydrides, oxides, hydroxides, etc., of arsenic, cadmium, chromium, cobalt, lead, mercury, osmium, silver, and uranium.

Specific Hazards: Harmful if swallowed, highly toxic, respiratory tract irritation, eye irritation, allergic reactions, cancer hazard (in humans). May damage immune system, kidneys, and lungs.

1. Purchasing: All purchases of this material must have written approval from the Principal Investigator or _______________________ before ordering. The user is responsible to ensure that a current Material Safety Data Sheet (MSDS) is obtained unless a current one is already available within the laboratory. Quantities of this material will be limited to ________________, or the smallest amount necessary to complete the experiment.

2. Storage: Materials will be stored according to compatibility and label recommendations in a designated area: _________________. Storage areas will be regularly inspected by _________________________________ to ensure safety. Periodic inventory reductions will be scheduled.

3. Authorized personnel: Use of this material requires prior written approval from the PI or ________________________. Title: _____________________. Use will be limited to the following personnel (check all that apply):

   Principal Investigator ____ Graduate students___
   Technical staff ____ Post doctoral employees____ Undergraduates ____
   Other (describe) _________________________

4. Training requirements: The user must demonstrate competency and familiarity regarding the safe handling and use of this material prior to purchase. Training should include the following:

   ___Review of current MSDS            ___Special training provided by the department/supervisor
   ___Review of the OSHA Lab Standard    ___Review of the departmental safety manual
   ___Review of the Chemical Hygiene Plan ___Safety meetings and seminars
   ___Laboratory safety training (EH&S)
5. **Use location:** Materials shall be used only in the following designated areas in room ____. Check all that apply:

- demarcated area in lab (describe) __________________________________________
- fume hood ___X__ glove box _____ other (describe) _______________________

6. **Personal protective equipment:** All personnel are required to wear the following personal protective equipment whenever handling this material (check all that apply):

   Safety goggles _____ Chemical safety goggles ___X___ Face shield _____
   Gloves (type/use):
   - *Incidental Contact:* nitrile gloves (8mil or heavier)
   - *Extended Contact:* double glove with 8mil nitrile gloves
   Lab coat __ X ____ Rubber apron _____ Tyvek clothing _____
   Respirator (type) _______________ Other (describe) ___________________

7. **Waste disposal:** The authorized person using this material is responsible for the safe collection, preparation and proper disposal of waste unless otherwise stated below. Waste shall be disposed of as soon as possible and in accordance with all laboratory and University procedures.

   Specific instructions: All solids and liquids containing heavy metals must be disposed of as hazardous wastes. Contaminated dry materials may be placed in the Vet. College Medical Waste Program. Call 253-3288 for information on this program.

8. **Decontamination:** Specific instructions: Call EHS for assistance.

9. **Exposures:** Emergency procedures to be followed (from MSDS):

   **Skin contact**
   - symptoms: irritation
   - first aid: wash area thoroughly

   **Eye contact**
   - symptoms: irritation
   - first aid: wash, seek medical attention if necessary.

   **Ingestion**
   - symptoms: irritation, stomach aches.
   - first aid: If the person is conscious and not convulsing, induce emesis by giving syrup of ipecac, followed by water. Perform gastric lavage cautiously. Get medical attention immediately.
**Inhalation**
symptoms: irritation.
first aid: leave area for fresh air

**10. Spills:** Spill cleanup materials to be used, location of materials, PPE to be used, disposal of cleanup materials, etc. Please be as complete as possible:
Wearing nitrile gloves and a dusk mask, carefully scoop up small spills with a sheet of paper or a file card. Avoid generating dust. Once most of the solid is cleaned up wipe down surfaces with damp paper towels or lab wipes. Bag the spill clean up materials in a plastic bag for pickup by EHS. If a large quantity of heavy metal salts is spilled (more than a few ounces) or if you don't feel comfortable cleaning up the spill, then call 911.

**11. Phone numbers:**
Cornell Campus Police 911 (accidents, spills)
Environmental Health and Safety 5-8200
Gannett Health Center 5-5155

**12. Other:** Special precautions, incompatible/reactive materials, usable shelf life, etc. Please be as specific as possible:
Some heavy metal salts have additional hazards, for example: Silver nitrate is a strong oxidizer and must be kept away from any combustible materials. Osmium tetroxide is a severe skin absorption and inhalation hazard. Mercuric chloride is a skin absorption hazard and very toxic. Read the MSDS for the compound(s) you are using to get additional information on their hazards.

Prepared by: ________________________________
Date: _____________
Reviewed/Revised: ______________