

Chemicals of High Acute Toxicity or Chronic Toxicity, Including Carcinogens

Certain chemicals have been identified as causing acute health effects or long-term chronic health effects. Substances of high acute toxicity cause immediate health effects at very low concentrations. (Prudent Practices in the Laboratory – Chapter 3 refers to the following definition of toxicity for ingested chemicals: Moderately toxic LD50 of 500-5,000 mg/kg; very toxic LD50 of 50-500 mg/kg, extremely toxic LD50 of 5-50mg/kg and supertoxic LD50 <5mg/kg). Examples of chemicals with high acute toxicity include hydrogen cyanide, phosgene or arsine. Research with supertoxic hazardous chemicals should receive prior approval from EH&S.

Substances that have high chronic toxicity cause damage after repeated exposure over a period of time. These may include [carcinogens](#) (or search the [NIH report on carcinogens](#)) reproductive toxins, mutagens, teratogens and sensitizers (see [Reproductive Hazards, Teratogenic Agents and Pregnancy](#) for other resources). Laboratory personnel (male and female), especially those of childbearing age, should be notified of any reproductive toxins being used in the laboratory. Any employee who is pregnant or planning to become pregnant should contact EH&S and a personal physician to assess potential exposures.

Procedures for Handling Highly Toxic & Carcinogenic Chemicals

Because chemicals with high acute toxicity and those with high chronic toxicity are hazardous at very low concentrations, the following practices must be observed:

- Notify all employees of the particular hazards associated with this work.
- Minimize contact with these chemicals by any route of exposure (inhalation, skin contact, mucous membrane contact or injection).
- Work only in a properly operating chemical fume hood or glove box.
- Decontaminate work surfaces after completing procedures.
- Remove all protective clothing before leaving the area and decontaminate it or if disposable, place it in a plastic bag, label and secure it. Call EH&S for disposal.
- Wash hands and any exposed skin before exiting the work area.
- Establish an emergency plan for procedures involving highly toxic chemicals.
- Do not conduct normal laboratory work in the designated area until decontaminated.