

DEHS OSHA LAB PHS & HIGH RISK CHEMICAL GUIDE

What Is A Particularly Hazardous Substance (PHS)?

The Occupational Safety and Health Administration's (OSHA's) Hazardous Chemicals in Laboratories Standard (29 CFR 1910.1450) defines particularly hazardous substances as including select carcinogens, reproductive toxins (includes mutagens), and chemicals with high acute toxicity. UofL DEHS also considers reactive materials and compressed gas cylinders to be particularly hazardous and has identified as "high risk".

How Do I Determine If My Chemical Is Particularly Hazardous Substance (PHS) or High Risk?

Labs should evaluate GHS-compliant Safety Data Sheets and other chemical information and should treat chemicals as particularly hazardous or high risk if they have one or more hazard classification indicated below. If not sure, contact DEHS at 502-852-6670 for assistance.

Carcinogens and Mutagens include any one of the following:

- ☐ GHS Carcinogenicity Category 1A, 1B, or 2 (see SDS Section 2)
- ☐ IARC Group 1, or NTP "Known to be Human Carcinogens" or OSHA-listed carcinogens (see SDS Section 11)
- ☐ IARC Group 2 (A or B), AND NTP "Reasonably Anticipated to be Human Carcinogens". (see SDS Section 11)
- ☐ GHS Germ Cell Mutagenicity Category 1A or 1B, or 2 (see SDS Section 2)

Reproductive toxins

- ☐ Include chemical classified as GHS Reproductive Toxicity Category 1A, 1B, or 2 (see SDS Section 2)

Chemicals having high acute toxicity* include the following GHS classifications (highly toxic or toxic which may be fatal or cause damage to target organs as a result of a single exposure or exposures of short duration)

- ☐ Acute Toxicity by Inhalation or Dermal exposure — Category 1 or 2
- ☐ Acute Toxicity by Oral exposure — Category 1
- ☐ Specific Target Organ Toxicity—Single Exposure — Category 1
- ☐ Skin or Respiratory Sensitizer—Category 1A

*Substances of this hazard class are assigned to Category 1 or 2 on the basis of LD50 (oral, dermal) or LC50 (inhalation):

Category 1

LD50 ≤ 5 mg/kg bodyweight (oral)
LD50 ≤ 50 mg/kg bodyweight (skin/dermal)
LC50 ≤ 100 ppm (gas)
LC50 ≤ 0.5 (mg/l) (vapour)
LC50 ≤ 0.05 (mg/l) (dust, mist)

Category 2

LD50 > 5 and < 50 mg/kg bodyweight (oral)
LD50 > 50 and < 200 mg/kg bodyweight (skin/dermal)
LD50 > 100 and < 500 ppm (gas)
LC50 > 0.5 and < 2.0 (mg/l) (vapour)
LC50 > 0.05 and < 0.5 (mg/l) (dust, mist)

Reactive & Explosive Chemicals considered PHS and/or High Risk include any of the following (see SDS Section 2) :

- ☐ Oxidizing liquid or solid, GHS category 1)
- ☐ In contact with water releases flammable gas — GHS Category 1 or 2
- ☐ In contact with water liberates toxic gas
- ☐ In contact with acids liberates (very) toxic gas
- ☐ Reacts violently with water
- ☐ Pyrophoric liquid or solid—GHS Category 1
- ☐ Explosives—Unstable or Divisions 1.1—1.3
- ☐ Explosive when dry, or Explosive with or without air contact
- ☐ Self-reactive or Organic peroxides—Type A or B
- ☐ Self-heating GHS category 1

Compressed Gas Cylinders Any compressed gas cylinder larger than lecture bottle size that does not meet above PHS criteria, shall be reviewed by DEHS on a case-by-case basis.