

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, 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 852-6670 for assistance.

Select Carcinogens include the following GHS, IARC, NTP and OSHA carcinogens

- GHS Carcinogenicity Category 1A or 1B, or
- IARC Group 1, or NTP "Known to be Human Carcinogens" or OSHA-listed carcinogens, or
- GHS Category 2 AND IARC Group 2 (A or B), AND NTP "Reasonably Anticipated to be Human Carcinogens".

Reproductive toxins

- Include those listed as GHS Category 1A or 1B for reproductive toxicity.

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 the following GHS and European classifications. (Note that some SDSs may not show the European classifications.)

- Oxidizing liquid or solid, category 1
- In contact with water releases flammable gas — 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—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 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.