



# GHS CRITERIA FOR PARTICULARLY HAZARDOUS AND HIGH RISK CHEMICALS

## WHAT IS A PARTICULARLY HAZARDOUS SUBSTANCE?

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. Duke also considers some reactive materials to be particularly hazardous and has identified some extremely hazardous chemicals as "high risk".

## HOW DO I DETERMINE IF MY CHEMICALS ARE PARTICULARLY HAZARDOUS OR HIGH RISK?

Labs at Duke should evaluate GHS-compliant Safety Data Sheets, the [GHS Lookup Tool](#), and [other chemical information](#) and should treat chemicals as particularly hazardous if they have one or more hazard classifications indicated below. **If the chemical has a hazard classification shown in red, it is also considered "high risk".**

NOTE: Most investigational drugs are treated as particularly hazardous (unless suspected of being high risk) due to typically limited safety information. If there is an SDS for the drug, it can be used to determine if it meets these criteria.

### ⇒ **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:**

- **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
- Strong Hydrogen Fluoride releaser
- Corrosive to the respiratory tract

### ⇒ **Reactive & explosive chemicals considered Particularly Hazardous (and High Risk) include the following GHS and European classifications.** (Note that some SDSs may not show the European classifications.)

- **In contact with water liberates toxic gas**
- **Reacts violently with water**
- **Pyrophoric liquid or solid—Category 1, or Pyrophoric Gas**
- **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**
- **Self-heating category 1**
- Oxidizing liquid or solid, category 1
- In contact with water releases flammable gas — Category 1 or 2
- In contact with acids liberates (very) toxic gas
- Self-reactive or Organic peroxides—Type B

## If my lab is using particularly hazardous chemicals, what do we need to do?

- ⇒ Maintain an accurate and up-to-date inventory of your particularly hazardous and high risk chemicals.
- ⇒ Prepare and implement written, lab-customized [Standard Operating Procedures \(SOPs\)](#).

- Use of "High Risk" chemicals requires PI approval and PI-approved SOP. OESO approval is also needed for SOPs for acutely toxic high risk materials. In some cases, departmental approval may be required.