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Particularly Hazard Substances

**Reference lists have been included to assist in hazard identification, however the lists should not be considered all inclusive as substances not specifically listed may meet these criteria.**

1. **Carcinogens**

Carcinogens are chemicals or physical agents that cause cancer or tumor development, typically after repeated or chronic exposure. Their effects may only become evident after a long latency period. A select carcinogens meet one of the following criteria:

* GHS category 1 - Carcinogenicity
  + It is listed under Group 1 (“carcinogenic to humans”) or Group 2A (“probably carcinogenic to humans”) by the [International Agency for Research on Cancer monographs](http://monographs.iarc.fr/ENG/Classification/ClassificationsGroupOrder.pdf) (IARC); or
  + It is listed under the category, “Known to be Human Carcinogens” in the [Annual Report on Carcinogens](http://ntp.niehs.nih.gov/ntp/roc/twelfth/ListedSubstancesKnown.pdf) published by the National Toxicology Program (NTP);

Formalin and paraformaldehyde – send fact sheet only.

1. **Reproductive Toxins**

Reproductive toxins include substances that cause chromosomal damage (mutations) or lethal or malformation effects on fetuses (teratogensis). Many reproductive toxins cause damage after repeated low-level exposures. The [State of California EPA list of reproductive toxins](http://www.oehha.org/prop65/prop65_list/files/P65list020813.pdf) can serve as a reference guide.

* GHS Category 1 – Reproductive Toxicity

1. **Highly Toxic Chemicals**

Chemical agents that are classified as “highly toxic” are substances which have a high degree of acute toxicity. Many of these chemicals may also be characterized as a toxic gas, [CDC Select Agent Toxin](http://www.stanford.edu/dept/EHS/prod/researchlab/bio/docs/select_agent_list.pdf), or sensitizer. Such agents meet the following criteria:

* GHS Toxin classes 1, 2 – Acute Toxicity
  + Chemical has a median oral lethal dose (LD50) < 50 mg/kg in rats; or
  + Chemical has a median lethal dose (LD50) < 200 mg/kg by continuous dermal contact for 24 hours in rabbits; or
  + Chemical has a median lethal concentration (LC50) < 200 ppm in air by volume when administered by continuous inhalation for one to rats.

1. **Hazardous Drugs**

Hazardous drugs as defined by [NIOSH](http://www.cdc.gov/niosh/docs/2012-150/pdfs/2012-150.pdf) include those that exhibit one or more of the following six characteristics in humans or animals:

* Carcinogenicity
* Teratogenicity or other developmental toxicity
* Reproductive toxicity
* Organ toxicity at low doses
* Genotoxicity
* Structure and toxicity profiles of new drugs that mimic existing hazardous drugs.

1. **Poison Gases**

Gases that are known to be poisonous by inhalation listed under Class 2.3 of US DOT Hazardous Materials Table. (See – Laboratory Safety Plan, [Table 1 – Poisonous Gases](http://www.dehs.umn.edu/Docs/LSP_2012Final.docx))

1. **Pesticides**

A pesticide is defined as “any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest” by the Federal Insecticide, Fungicide, and Rodenticide Act. The U.S. Environmental Protection Agency oversees the regulation of pesticides and maintains a [searchable database of pesticides](http://iaspub.epa.gov/apex/pesticides/f?p=chemicalsearch:1).

1. **Pyrophoric or Water-Reactive Chemicals**

Pyrophoric chemical will ignite spontaneously in air at a temperature of 30 0F (54.4 0C) or below.

Water-reactive substances will spontaneously react with water. Notable examples include alkali metals sodium through cesium. Water-reactive substances are classified as R2 under the UN classification system and as Hazard 4.3 by the United States Department of Transportation. Some water-reactive substances are also pyrophoric.

1. **Explosive Chemicals**

An explosive is defined as “any chemical compound, mixture, or device which is designed to function by explosion that is substantially instantaneous with the release of gas and heat” by the U.S. Department of Transportation.