

<b>University of Pittsburgh Safety Manual</b>	<b>EH&amp;S Guideline Number: 04-014</b>	
<b>Subject: CARBON MONOXIDE GAS USAGE IN LABORATORIES</b>	Effective Date: 03/01/2008 Review Date: 09/23/2019	Page 1 of 1

## **GUIDELINES FOR CARBON MONOXIDE GAS USAGE IN LABORATORIES**

Carbon monoxide (CO) is a colorless, odorless and tasteless toxic gas. CO gas is also produced when there is incomplete combustion of carbon containing fuels (e.g. coals, petroleum, peat, natural gas). CO gas has a health hazard rating of 3, which designates a serious health hazard. Inhalation of carbon monoxide can cause headache, dizziness, mental dullness, weakness, sleepiness, nausea, vomiting, unconsciousness and death. The storage and usage of carbon monoxide in a laboratory environment requires special handling procedures. Please use the following guidelines when storing and using carbon monoxide gas:

1. Carbon monoxide gas cylinder storage / usage
  - 1.1 International Fire Codes prohibit quantities greater than 20 cubic feet of highly toxic gases (such as CO) to be stored or used outside of exhausted gas cabinets or certified chemical fume hoods.
  - 1.2 Carbon monoxide should be purchased in quantities smaller than 20 cubic feet or in quantities that can be easily stored and used in a gas cabinet or chemical fume hood.
  - 1.3 Carbon monoxide gas cylinders should be secured with an approved chain, strap or floor bracket.
  - 1.4 Carbon monoxide gas cylinders (flammable gas) should be stored at least 20 feet from oxidizer gas cylinders (ex. Oxygen).
  
2. Carbon monoxide gas detectors
  - 2.1 At least one CO gas detector should be continually utilized in laboratory spaces where CO gas cylinders are stored and / or actively used.
  - 2.2 The operation of the detectors should be regularly checked (monthly) and batteries should be replaced every 6 months.
  - 2.3 If CO gas cylinders will be operated unattended (e.g. overnight test procedures) then CO gas detectors must be interconnected to the building emergency power source. The regulator should be linked to the building power source that would enable the regulator to shut the flow of gas off in the event of a power outage if the CO gas is run unattended.
  
3. Laboratory door signage
  - 3.1 Door signage should be placed outside of laboratories and storage rooms in which carbon monoxide gas cylinders are stored and / or used.
  - 3.2 Room entry requirements on the door signage should include the following:
    - 3.2.1 CARBON MONOXIDE (CO) gas storage. Toxic gas.
    - 3.2.2 Entry into the laboratory is prohibited upon activation of the carbon monoxide alarm, except by authorized or emergency personnel.
    - 3.2.3 University of Pittsburgh EH&S, emergency responders or other personnel equipped with CO gas detection equipment must conduct air quality measurements prior to entrance into the laboratory or CO storage site.
    - 3.2.4 Upon clearance, authorized personnel are permitted to enter laboratory space or storage room to facilitate necessary repairs to equipment or gas cylinders.