

## Campus Toxic Gas Program

The Campus Toxic Gas Program specifies minimum requirements for safe storage, use, and handling of toxic gas on the UC Berkeley Campus. This program has been approved by the Laboratory Operations and Safety Committee and defines toxic gases as gases that cause significant acute health effects at low concentrations, have a National Fire Protection Association (NFPA) health rating of 3 or 4, have low occupational exposure limits, or are pyrophoric. The most common toxic gases ordered at UC Berkeley are ammonia and carbon monoxide. Examples of some common toxic gases are listed below, (there may be others). If you are unsure if it is a toxic gas, please contact EH&S at 642-3073.

allene	chloromethane	hydrogen sulfide
allyl chloride	dichlorosilane	nitric oxide
ammonia	ethylene oxide	nitrogen dioxide
arsine	fluorine (and gas mixtures with any fluorine)	nitrogen trifluoride
1, 3 butadiene	germane	phosphine
boron trichloride	hydrogen bromide	silicon tetrachloride
boron trifluoride	hydrogen chloride	silane
carbon monoxide	hydrogen fluoride	sulfur dioxide
carbonyl sulfide	hydrogen iodide	vinyl chloride
chlorine	hydrogen selenide	

The Office of Environment, Health & Safety (EH&S) assists the campus community in following this program by performing evaluations of toxic gas usage and offering technical advice on the requirements of this program. The evaluations will also address California Fire Code (CFC) requirements for CFC toxic and highly toxic gases. If you are planning to use a toxic gas or a mixture that contains a toxic gas, and are unsure whether it is hazardous enough to be governed by the Toxic Gas Program, do not order the gas, and contact EH&S at 642-3073. When preparing to use a toxic gas, one or more of the following requirements may apply to your laboratory:

- Exhausted cabinets or enclosures for storing toxic gas cylinders and manifolds
- Air flow monitors or alarms on exhausted enclosures
- Toxic gas sensors and alarms for the laboratory
- Gas distribution equipment that uses compatible materials and design
- Restrictive flow orifices that limit the flow rate of gas
- Documented safety procedures and training of lab personnel
- Modeling of “worst case” gas release scenario
- Secure storage



The Laboratory Operations & Safety Committee requires that EH&S review and approve each proposed toxic gas use before the gas is obtained for that use. EH&S will determine which of the above safety measures is required on a case-by-case basis after an evaluation of the planned research and experimental setup. In general, more stringent precautions will be applied to large quantities, continuous flow (as opposed to batch) uses of toxic gases, and to gases with poor physiological warning properties or gases that are highly toxic. If you have questions about Toxic Gas Program requirements, contact EH&S at 642-3073. To read a full description of the program, go to the [Toxic Gas Program](#) on the EH&S website.

