

Stanford University

Background on Santa Clara County's Toxic Gas Ordinance

Purpose of the TGO:

In September 1990, Santa Clara County adopted the Toxic Gas Ordinance (TGO) to prevent, control and respond to potentially dangerous conditions related to toxic gases and to protect the public from acute exposure due to “accidental releases” of toxic gases.

Scope of the TGO:

The TGO governs the storage, use and manufacturing of regulated materials in greater than specified threshold quantities. In addition, it contains specific provisions mandating engineering controls, protective equipment, storage requirements, emergency response plans, warning systems and employee training based on the type and quantity of toxic gas used.

The TGO regulation is available at: http://www.sccgov.org/docs/health_and_environmental/Toxic_Gas_Ordinance.pdf

What are Toxic Gases?

Toxic gases are hazardous materials that can cause serious injury or death. Materials regulated by the TGO are those materials which meet the following criteria:

1. Defined as Class I, Class II, Class III:

- **Class I Material:** Has a medium Lethal Concentration (LC 50) in air of 200 parts per million or less by volume of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for an hour, or less if death occurs within one hour, to albino rats weighing between 200 and 300 grams each.
- **Class II Material:** Has a medium lethal concentration (LC 50) in air more than of 200 parts per million but not more than 3,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 30 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for an hour, or less if death occurs within one hour, to albino rats weighing between 200 and 300 grams each.
- **Class III Material:** Has a medium lethal concentration (LC 50) in air more than of 3,000 parts per million but not more than 5,000 parts per million by volume of gas or vapor, or more than 30 milligrams per liter but not more than 50 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for an hour, or less if death occurs within one hour, to albino rats weighing between 200 and 300 grams each.

And

2a. They are shipped in compressed gas cylinders and the material is or becomes or acts as a gas upon release at standard temperature and pressure;

Or

2b. The material is used or handled as a gas whether or not the material meets the definition of a compressed gas set forth in the Fire Code.

Levels of Regulation:

Santa Clara County's Toxic Gas Ordinance (TGO) establishes three levels of regulation regarding laboratory use of toxic gases:

1. **Full TGO Compliance:** Materials whose quantities and duration of use require operation within the full TGO and Uniform Fire Code (UFC). A permit and specific controls are required for operations involving Class I, Class II and Class III regulated materials. Activities involving these types of operations are conducted in selected facilities on the Stanford University campus. NOTE If minimum threshold quantities are in use, Minimum Threshold Quantity Controls apply per B11-384.
2. **TGO Limited-Use Laboratory:** Limited to laboratory and research experiments, which meet the TGO Standards for use of small quantities of gas in research for limited period of time (30 consecutive days). A notification and approval from the county is required, along with the implementation of specific controls. For additional details, see the document entitled, *Toxic Gas Ordinance: Laboratory and Research Facility Standard for Limited-Use* at <http://www.unidocs.org/hazmat/gases/un-037.pdf>.
3. **Exempt Quantities:** A regulated material is exempt from most of the provisions of the TGO if:

a) The material has an aggregate quantity of less than 2 lbs in a control area,

and

b) The quantity in a single vessel does not exceed:

- 1 pound; or
- A concentration below the Permissible Exposure Limit (PEL).

Flow-limiting devices and fire-extinguishing systems are required for Class I materials, regardless if exempt quantity is used. Also, exempt quantity operations must meet all other hazardous materials handling policies and regulations.

4. **Non-regulated Materials:** Consult Stanford University's Toxic Gas Table to determine when a toxic gas drops out as a regulated material due to its concentration: <http://www.stanford.edu/dept/EHS/prod/researchlab/lab/tgo/tgodata.html>. Operations involving non-regulated concentrations must meet all other hazardous materials handling policies and regulations.

➤ Refer to flow chart: Required Actions for Regulated, Exempt, and Non-Regulated Toxic Gases Operations: http://www.stanford.edu/dept/EHS/prod/researchlab/lab/tgo/tgo_flowchart.pdf