

COMMON TOXIC GASES AS DEFINED BY THE TOXIC GAS ORDINANCE AND CFC

For Use By All Jurisdictions, Cities and County, Within the Limits of Santa Clara County.

Authority Cited: California Fire Code (CFC); California Building Code (CBC); Toxic Gas Ordinance (TGO)

GAS & FORMULA	CAS No./ UN No.	CBC/CFC CLASS ¹	TGO CLASS ²	IDLH ³	LC ₅₀ ⁴	LOC	MAX TQ	PEL ⁵
Ammonia - NH ₃	7664-41-7 UN1005	Corrosive ^{6,7} Flammable	III	300 ppm	4,000 ppm	30 ppm	8,000 lbs.	50 ppm
Arsine - AsH ₃	7784-42-1 UN2188	Highly Toxic Flammable	I	3 ppm	20 ppm	0.3 ppm	N/A	0.05 ppm
Boron Tribromide - BBr ₃	10294-33-4 UN2692	Toxic WR-2	II	50 ppm	380 ppm	5 ppm	760 lbs.	1 ppm ©
Boron Trichloride - BCl ₃	10294-34-5 UN1741	Corrosive ⁶ WR-1	II	25 ppm ⁸	2,541 ppm	2.5 ppm	5,082 lbs.	5 ppm
Boron Trifluoride - BF ₃	7637-07-2 UN1008	Toxic WR-1	II	25 ppm	806 ppm	2.5 ppm	1,612 lbs.	1 ppm ©
Bromine - Br ₂	7726-95-6 UN1744	Highly Toxic Corrosive Oxidizer	I	3 ppm	113 ppm	0.3 ppm	N/A	0.1 ppm
Carbon Monoxide - CO	630-08-0 UN1016	Flammable ⁶	III	1,200 ppm	3,760 ppm	120 ppm	7,520 lbs.	50 ppm
Chlorine - Cl ₂	7782-50-5 UN1017	Toxic Corrosive Oxidizer	II	10 ppm	293 ppm	1 ppm	586 lbs.	1 ppm ©
Chlorine Dioxide - ClO ₂	10049-04-4 NA9191	Toxic UR-3 Oxidizer WR-1	II	5 ppm	250 ppm	0.5 ppm	500 lbs.	0.1 ppm
Chlorine Trifluoride - ClF ₃	7790-91-2 UN1749	Toxic Oxidizer WR-3	II	20 ppm	299 ppm	2 ppm	598 lbs.	0.1 ppm ©
Diborane - B ₂ H ₆	19278-45-7 UN1911	Highly Toxic Flammable WR-2	I	15 ppm	80 ppm	1.5 ppm	N/A	0.1 ppm

Common Toxic Gases as Defined by the Toxic Gas Ordinance and CFC – Page 2 of 4

GAS & FORMULA	CAS No./ UN No.	CBC/CFC CLASS ¹	TGO CLASS ²	IDLH ³	LC ₅₀ ⁴	LOC	MAX TQ	PEL ⁵
Dichlorosilane - SiH ₂ Cl ₂ (HCl)	4109-96-0 UN2189	Toxic Corrosive Flammable	II	50 ppm	314 ppm	5 ppm	628 lbs.	5 ppm ©
Ethylene Oxide - C ₂ H ₄ O	75-21-8 UN1040	Flammable ⁶ UR-3	III	800 ppm	4,350 ppm	80 ppm	8,700 lbs.	1 ppm
Fluorine - F ₂	7782-41-4 UN1045	Highly Toxic Oxidizer	I	25 ppm	185 ppm	2.5 ppm	N/A	0.1 ppm
Germane - GeH ₄	7782-65-2 UN2192	UR-3 Toxic Flammable	II	6 ppm ⁸	622 ppm	0.6 ppm	1,244 lbs.	0.2 ppm ⁹
Hydrogen Bromide - HBr	10035-10-6 UN1048	Corrosive ⁶	II	30 ppm	2,860 ppm	3 ppm	5,720 lbs.	3 ppm
Hydrogen Chloride - HCl	7647-01-0 UN1050	Corrosive ⁶	II	50 ppm	2,810 ppm	5 ppm	5,620 lbs.	5 ppm ©
Hydrogen Cyanide - HCN	74-90-8 UN1051	Highly Toxic Flammable	I	50 ppm	40 ppm	5 ppm	N/A	10 ppm
Hydrogen Fluoride - HF	7664-39-3 UN1052	Toxic	II	30 ppm	1,300 ppm	3 ppm	2,600 lbs.	3 ppm
Hydrogen Selenide - H ₂ Se	7783-07-5 UN2202	Highly Toxic Flammable	I	1 ppm	2 ppm	0.1 ppm	N/A	0.05 ppm
Hydrogen Sulfide - H ₂ S	7783-06-4 UN1053	Toxic Flammable	II	100 ppm	712 ppm	10 ppm	1,424 lbs.	20 ppm
Methyl Bromide - CH ₃ Br	74-83-9 UN1062	Toxic Flammable	II	250 ppm	1,007 ppm	25 ppm	2,014 lbs.	20 ppm ©
Methylisocyanate - CH ₃ NCO	624-83-9 UN2480	Highly Toxic Flammable WR-2	I	3 ppm	22 ppm	0.3 ppm	N/A	0.02 ppm

Common Toxic Gases as Defined by the Toxic Gas Ordinance and CFC – Page 3 of 4

GAS & FORMULA	CAS No./ UN No.	CBC/CFC CLASS ¹	TGO CLASS ²	IDLH ³	LC ₅₀ ⁴	LOC	MAX TQ	PEL ⁵
Methyl Mercaptan - CH ₃ SH	74-93-1 UN1064	Toxic Flammable	II	150 ppm	1,350 ppm	15 ppm	2,700 lbs.	10 ppm ©
Nickel Carbonyl - Ni(CO) ₄	13463-39-3 UN1259	Highly Toxic UR-3 Flammable WR-1	I	2 ppm	18 ppm	0.2 ppm	N/A	0.001 ppm
Nitric Oxide - NO	10102-43-9 UN1660	Highly Toxic Oxidizer	I	100 ppm	115 ppm	10 ppm	N/A	25 ppm
Nitrogen Dioxide - NO ₂	10102-44-0 UN1067	Highly Toxic Oxidizer WR-1	I	20 ppm	115 ppm	2 ppm	N/A	5 ppm ©
Phosgene - COCl ₂	75-44-5 UN1076	Highly Toxic WR-1	I	2 ppm	5 ppm	0.2 ppm	N/A	0.1 ppm
Phosphine - PH ₃	7803-51-2 UN2199	Highly Toxic Pyrophoric	I	50 ppm	20 ppm	5 ppm	N/A	0.3 ppm
Phosphorus Oxychloride - POCl ₃	10025-87-3 UN1810	Highly Toxic WR-2	I	0.96 ppm ⁸	96 ppm	0.096 ppm	N/A	0.1 ppm ^{8,9}
Phosphorus Pentafluoride - PF ₅	7647-19-0 UN2198	Toxic Oxidizer WR-1	II	2.6 ppm ⁸	260 ppm	0.26 ppm	520 lbs.	3 ppm
Phosphorus Trichloride - PCl ₃	7719-12-2 UN1809	Toxic UR-2 WR-2 Oxidizer	II	25 ppm	208 ppm	2.5 ppm	416 lbs.	0.5 ppm
Selenium Hexafluoride - SeF ₆	7783-79-1 UN2194	Highly Toxic	I	2 ppm	50 ppm	0.2 ppm	N/A	0.05 ppm (as Se)
Silicon Tetrachloride - SiCl ₄ (HCl)	10026-04-7 UN1818	Toxic Corrosive	II	50 ppm	750 ppm	5 ppm	1,500 lbs.	5 ppm ©
Silicon Tetrafluoride - SiF ₄ (HF)	7783-61-1 UN1859	Toxic WR-2	II	30 ppm	450 ppm	3 ppm	900 lbs.	0.1 ppm

Common Toxic Gases as Defined by the Toxic Gas Ordinance and CFC – Page 4 of 4

GAS & FORMULA	CAS No./ UN No.	CBC/CFC CLASS ¹	TGO CLASS ²	IDLH ³	LC ₅₀ ⁴	LOC	MAX TQ	PEL ⁵
Stibine - SbH ₃	7803-52-3 UN2676	Highly Toxic Flammable	I	5 ppm	20 ppm	0.5 ppm	N/A	0.1 ppm
Sulfur Dioxide - SO ₂	7446-09-5 UN1079	Corrosive ⁶	II	100 ppm	2,520 ppm	10 ppm	5,040 lbs.	5 ppm
Sulfuryl Fluoride - SO ₂ F ₂	2699-79-8 UN2191	Corrosive ⁶	III	200 ppm	3,020 ppm	20 ppm	6,040 lbs.	5 ppm
Tellurium Hexafluoride - TeF ₆	7783-80-4 UN2195	Highly Toxic	I	1 ppm	25 ppm	0.1 ppm	N/A	0.02 ppm (as Te)
Titanium Tetrachloride - TiCl ₄	7550-45-0 UN1838	Highly Toxic Corrosive WR-2	I	1.3 ppm	119 ppm	0.13 ppm	N/A	
Tungsten Hexafluoride - WF ₆ (HF)	7783-82-6 UN2196	Toxic Corrosive WR-2	II	30 ppm	217 ppm	3 ppm	434 lbs.	0.1 ppm

Notes:

- ¹ Class as defined in CFC: 1.) Health Hazards per Chapter 27: Highly Toxic = < 200 LC₅₀, Toxic = 200 - 2,000 LC₅₀. 2.) Physical Hazards per CFC Chapter 27 and NFPA 704.
- ² TGO Class Defined As: Class I = < 200 LC₅₀, Class II = 200 – 3,000 LC₅₀, Class III = 3,001 – 5,000 LC₅₀
- ³ IDLH values published in 1994 by the National Institute for Occupational Safety and Health (NIOSH).
- ⁴ LC₅₀ data: Lowest reported value, 1 hour adjusted, taken from DOT, CGA, RTECS.
- ⁵ PEL values published by OSHA (29 CFR, part 1910.1000, Table Z-1) dated 7/1/95. OSHA values used if available, otherwise Threshold Limit Value (TLV) from American Conference of Governmental Industrial Hygienists (ACGIH) (1994-1995) or Cal OSHA values used. © = Ceiling Limit.
- ⁶ Moderately toxic as adopted by the cities of San Jose, Santa Clara, and Milpitas: LC50 = 2,000 – 5,000.
- ⁷ When used as a refrigerant, CBC Class does not apply. See TGO consensus guidelines for additional information regarding ammonia refrigeration systems.
- ⁸ IDLH determined by 0.01 of LC₅₀.
- ⁹ Cal OSHA PEL, Title 8, Section 5155, 9/1/95.