

COMMON NOXIOUS OR DANGEROUS GASES ENCOUNTERED IN SEWERS*

Name of Gas	Chemical Formula	Specific Gravity of Vapor Density** (Air=1)	Explosive Range (% by volume in air)		Common Properties (Percentages below are per cent in air by volume)	Most Common Sources in Sewers
			Lower Limit	Upper Limit		
Oxygen (In air)	O ₂	1.11	Not Flammable		Colorless, odorless, tasteless, non-poisonous gas. Supports combustion..	Oxygen depletion from poor ventilation and absorption or chemical consumption of available O ₂ .
Gasoline Vapor	C ₅ H ₁₂ to C ₉ H ₂₀	3.0 to 4.0	1.3	7.0	Colorless, odor noticeable in 0.03%. Flammable. Explosive.	Leaking storage tanks, discharges from automotive repair establishments, and commercial or home uses as a cleaning solvent.
Carbon Monoxide	CO	0.97	12.5	74.2	Colorless, odorless, tasteless, non-irritating. Flammable. Explosive.	Natural gas utility, gas mains, services, and other sources. Manufactured fuel gas. Products of combustion, motor exhausts, fires of any kind.
Hydrogen	H ₂	0.07	4.0	74.2	Colorless, odorless, tasteless, non-poisonous, flammable. Explosive. Propagates flame rapidly; very dangerous.	Natural gas utility, gas mains, services, and other sources. Sewer gas. Manufactured fuel gas.
Methane	CH ₄	0.55	5.0	15.0	Colorless, tasteless, odorless, non-poisonous. Flammable. Explosive.	Natural gas utility, gas mains, services, and other sources. Manufactured fuel gas. Sewer gas.
Hydrogen Sulfide	H ₂ S	1.19	4.3	46.0	Rotten egg odor in small concentrations but sense of smell rapidly impaired. Odor not evident at high concentrations. Colorless. Flammable. Explosive. Poisonous.	Petroleum fumes, sewer gas. Fumes from blasting under some conditions.
Carbon Dioxide	CO ₂	1.53	Not flammable.		Colorless, odorless, non-flammable. Not generally present in dangerous amounts unless there is already a deficiency of oxygen.	Products of combustion. Sewer gas.
Nitrogen	N ₂	0.97	Not flammable.		Colorless, tasteless, odorless. Non-flammable. Non-poisonous. Principal constituent of air (about 79%).	Sewer gas.
Ethane	C ₂ H ₆	1.05	3.1	15.0	Colorless, tasteless, odorless, non-poisonous. Flammable. Explosive.	Natural gas utility, gas mains, services, and other sources.

*From Manual of Instruction for Sewage Treatment Plant Operators and Safety in Wastewater Works, WPCF-1975.

**Gases with a specific gravity less than 1.0 are lighter than air; those more than 1.0 heavier than air.