

## Several Distinctive Odors Explained

### Hydrogen sulfides Gas

This is the by-product of anaerobic activity. This anaerobic activity survives very well in low oxygen levels or no oxygen levels of the sewer water or the sewer transmission lines. This is the main reason to try and remove this type of bacteria from the sewer lines being in the water or the line. These levels can even become dangerous to personnel working and living around the area.

#### Low levels

Hydrogen sulfide has a very strong odor and can be smelled at levels as low as 0.005 - 0.02 parts per million (ppm). Higher levels may cause an offensive, rotten-egg odor, and can irritate eyes, nose, and throat. The lungs and nasal passages may also become inflamed. Eyes may become sore and watery. Your throat may itch, and you may start to cough. Long-term health effects of low-level hydrogen sulfide exposure are unknown.

#### High levels

At levels above **100 ppm**, hydrogen sulfide is very dangerous. The gas loses its odor by overpowering the sense of smell and begins to affect the whole body.

At 250 ppm, a person may quickly lose consciousness. They may experience powerful stinging of the eyes, throat, and suffer from severe lung inflammation.

At 500 ppm and higher, people can have convulsions, respiratory arrest, and heart failure. High exposure levels may also cause permanent brain damage. According to the National Institute for Occupational Safety and Health (NIOSH), hydrogen sulfide is a leading cause of sudden death from workplace chemical exposure. At very high levels, hydrogen sulfide can be explosive.

### Ammonia Gas

Ammonia is a corrosive, colorless gas with a sharp odor. Some liquids release ammonia gas. Humans and animals release ammonia in urine. Ammonia is recognized as one of the primary irritants to humans and concentrations of **25 ppm** in air have been recommended as threshold limit value for human exposure

#### Methane Gas

Anaerobic bacteria decomposition of plant and animal matter, such as occurs under water, produces marsh gas, which is also methane. Methane is combustible, and mixtures of about 5 to 15 percent in air are explosive. Methane is not toxic when inhaled, but it can produce suffocation by reducing the concentration of oxygen inhaled.

#### Sewer Gas

Complex mixture of toxic and non-toxic gases that can be present at varying levels depending upon the source. It is formed during the decay of household and industrial waste. Highly toxic components of sewer gas include hydrogen sulfide and ammonia. Sewer gas also contains methane, carbon dioxide, sulfur dioxide, and nitrous oxides. In addition, chlorine bleaches; industrial solvents and gasoline are frequently present in municipal and privately owned- sewage treatment systems.

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