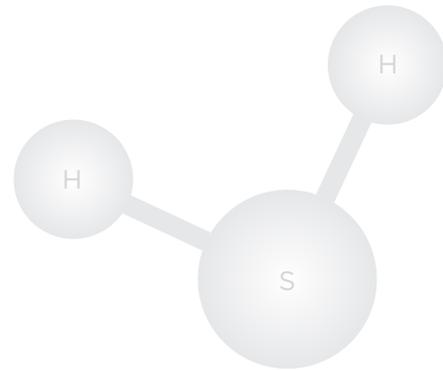


Harm and Foul

What You Should Know About Hydrogen Sulfide



Rotten egg smell souring your customer's business? That's just the tip of the nostril in your line of work. Hydrogen sulfide or H₂S is a toxic, corrosive gas that upsets the nervous system. It's unsafe at almost any level.

Immediate effects range from wheezing, conjunctivitis, headaches, and irritation to severe difficulty breathing, vomiting, dizziness, or convulsions – turning a service call into risky business. Long-term effects are still being determined but can also lead to various respiratory complications and, in worst cases, premature death.

The colorless, flammable gas typically gives off a rancid odor and is heavier than the air we breathe. At dangerously high concentrations, an individual may no longer be able to detect the scent. That's a disturbing fact to take in, especially since most of us rely on our senses every day.

Brewing Under the Surface

But how does hydrogen sulfide form in the first place? And where is it usually found? If it's not naturally occurring from deep beneath the earth, it's usually coming from poorly ventilated spaces or organic breakdown. Hydrogen sulfide manifests when anaerobic bacteria digests food solids.

Heat and moisture exacerbate H₂S formation, making sewer systems and grease interceptors hospitable environments. Corrugated interceptor systems or porous concrete interceptor systems house more bacteria for H₂S to thrive. Food solids build up within the crevices of interceptor systems with ridged bottoms or porous concrete surfaces. Even with routine cleaning and pump-outs, it's hard to remove what's embedded deep in between the creases or hiding in hard-to-reach corners. These same food solids are full of corrosive, foul bacteria that is constantly producing H₂S.

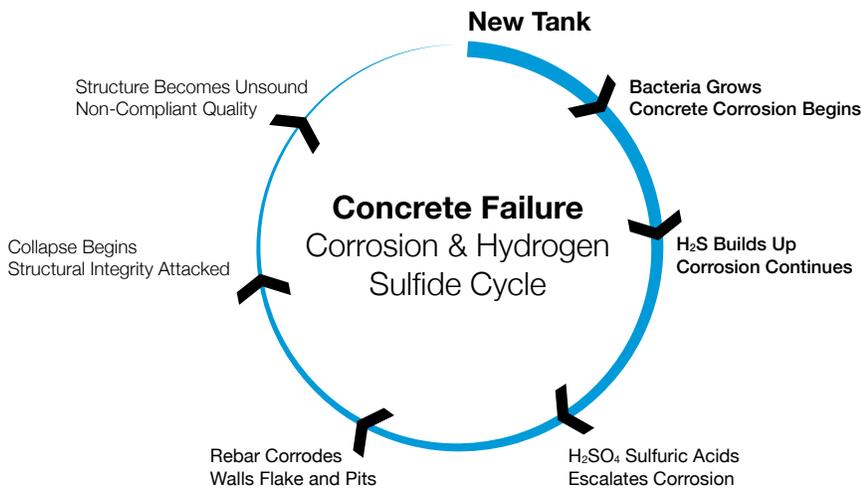
Breaking Down Materials

Clearly, flat, smooth walls eliminate places for the bacteria to breed, and clean better than systems with ridged bottoms, meaning less bacteria buildup and less H₂S generation. But what materials allow H₂S to escape once it's present? There are two big culprits: concrete and steel. Sulfuric acid can seep through and break down the composite material at alarming rates, leaving the surrounding groundwater and air vulnerable. Steel doesn't hold up to bacteria either. It will corrode and deteriorate over time for the same outcome as concrete.

Signs of a compromised system include rust or cracks present. If an interceptor has already failed, you'll smell the rotten egg odor as soon as you're on-premise. This can result in safety concerns for customers, employees, and the surrounding community. Businesses are hit hard by hefty costs, like soil remediation, fines, tainted reputations, downtime, and lost business.



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Hydrogen sulfide is not only harmful, it is a major contributor to untreated concrete and steel interceptor failure, as aerobic bacteria converts H₂S to sulfuric acid which is highly corrosive.

CONCENTRATION (PPM)	SYMPTOMS/EFFECTS
0.00011-0.00033	Typical background concentrations
0.01-1.5	Odor threshold (when rotten egg smell is first noticeable to some). Odor becomes more offensive at 3-5 ppm. Above 30 ppm, odor described as sweet or sickeningly sweet.
2-5	Prolonged exposure may cause nausea, tearing of the eyes, headaches or loss of sleep. Airway problems (bronchial constriction) in some asthma patients.
20	Possible fatigue, loss of appetite, headache, irritability, poor memory, dizziness.
50-100	Slight conjunctivitis (“gas eye”) and respiratory tract irritation after 1 hour. May cause digestive upset and loss of appetite.
100	Coughing, eye irritation, loss of smell after 2-15 minutes (olfactory fatigue). Altered breathing, drowsiness after 15-30 minutes. Throat irritation after 1 hour. Gradual increase in severity of symptoms over several hours. Death may occur after 48 hours.
100-150	Loss of smell (olfactory fatigue or paralysis).
200-300	Marked conjunctivitis and respiratory tract irritation after 1 hour. Pulmonary edema may occur from prolonged exposure.
500-700	Staggering, collapse in 5 minutes. Serious damage to the eyes in 30 minutes. Death after 30-60 minutes.
700-1000	Rapid unconsciousness, “knockdown” or immediate collapse within 1 to 2 breaths, breathing stops, death within minutes.
1000-2000	Nearly instant death.

Sources

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