

Safety Issues and Manure Handling

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In addition to protecting the environment, a complete nutrient management plan must consider the health and safety of workers and visitors. Manure systems present various hazards, including asphyxiation (inability to breathe), poisoning, drowning, electric shock, and machinery entanglement or entrapment.

Hazardous Gases

Liquid manure storages, pump pits, sumps, and tanks can easily contain poisonous gases that will not be apparent until someone enters the tank and is overcome. Multiple deaths have occurred as a result of people failing to follow appropriate procedures for working in these confined spaces. *Do not enter manure sumps, pits, or storage tanks without appropriate safety apparatus and procedures.* No tool, pump part, or farm chore is worth a human life.

Concentrations of toxic gases above critical levels will kill or immobilize you regardless of the presence of oxygen. Other gases kill by displacing the oxygen from the air space above the manure. The following gases may be found in liquid manure storages, pump pits, sumps or other confined spaces that contain or have contained manure:

Hydrogen sulfide is the most dangerous manure gas. It is colorless, heavier than air, and at high concentrations can

cause death within seconds. The familiar "rotten egg smell" is detectable at low levels but at higher levels will quickly deaden the sense of smell.

You may not even realize hydrogen sulfide is present and then it's too late. Release of hydrogen sulfide can increase a thousand fold during agitation. Hydrogen sulfide easily accumulates in an enclosed manure tank, pump sump or enclosed building and is a deadly gas.

Carbon dioxide is a colorless and odorless nontoxic gas that is heavier than air. It replaces oxygen and causes death by asphyxiation. Carbon dioxide can only be detected by gas detection equipment.

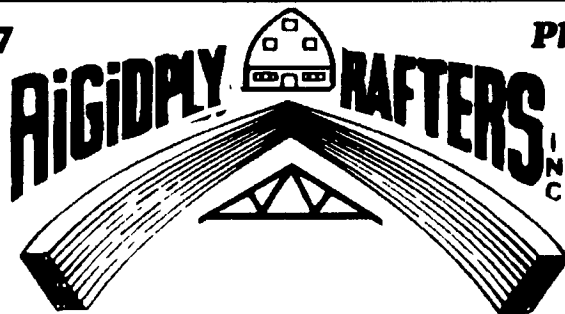
Ammonia is lighter than air and has a strong bleach smell. Because it is an irritant, people usually leave the area quickly. It can cause severe burns to the eyes, throat, and lungs. Ammonia is not suspected of causing death but continuous exposure to low levels can cause irritation of the respiratory system and difficulty with vision.

Methane is lighter than air, highly flammable, and explosive. It is odorless, colorless, and must be measured with a gas detector. Quickly rising methane can accumulate under roofs or at the top of enclosed rooms or buildings. An errant electric spark or lighted torch can cause an explosion.

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