

Gas Monitors for Agriculture

Direct-reading gas monitors can alert farmers to life-threatening concentrations of gases on the farm.

These monitors are relatively inexpensive and easy to use.

Below are guidelines to identify hazards and select sensor types based on potential hazards in your farming operation.



Gas

Health Effects

Low

Medium

High

Hydrogen Sulfide (H₂S)

2-20 ppm: nausea, headache, dizziness

100-300 ppm: altered breathing, fluid in lung

500-700 ppm: collapse, death

Methane (CH₄, LEL)

< 0.1% (1000 ppm): Not harmful

< 1% (10,000 ppm): No known toxicity

< 5% (50,000 ppm): Explosive

Ammonia (NH₃)

5-20 ppm: odor, eye irritation

20-50 ppm: Moderate eye and upper respiratory tract irritation

2500 ppm: chemical pneumonitis, edema, cyanosis, death

Carbon Dioxide (CO₂)

600-1000 ppm: odor, muscle stiffness

1000-2500 ppm: general drowsiness; 5000 ppm: 8-hr maximum

30,000 ppm (3%): increased pulse rate, nausea, impairment

Carbon Monoxide (CO)

<9 ppm: comfortable living concentration (35 ppm = 8-hr allowable)

200 ppm: headache, dizziness, nausea in 2 hours

400 ppm: life threatening in 3 hours

Children, elderly, pregnant women, etc. are at risk at lower CO concentrations. The concentrations are relevant only at "sea level."

Gas Sources in Livestock Production



Manure Storage

Under slatted floor
Outside lagoon, pit, or tank

Manure Pumping

Under slatted floor
Outside lagoon, pit, or tank

Foaming Manure

If foaming is present, significant methane risk (see additional materials)

Pressure Washing

Inside building

Animal

Exhaled breath

Gas-fired Heaters

Combustion byproducts

Hydrogen Sulfide (H₂S)

Methane (CH₄, LEL)

Ammonia (NH₃)

Carbon Dioxide (CO₂)

Carbon Monoxide (CO)

Gas Sources in Grain Bins



Inside Bins

Out-of-condition grain
Gas-fired dryers

Equipment

Overheated equipment
Smoldering product

Non-gas hazards include dust and endotoxin exposures and other animal handling risks.

Non-gas hazards include dust explosions and engulfment in grain.

animal handling risks, exposures and other

engulfment in grain, dust explosions and

See additional information in the "Farmers Using Monitors" series for guidance on use and maintenance of gas monitors in agriculture.

To learn more, visit

GPCAH.org



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