Gas Hazards in 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 (H_2S)	2-20 ppm: nausea, headache, dizziness	100-300 ppm: altered breathing, fluid in lung	500-700 ppm: collapse, death
Methane (CH_4, LEL)	< 0.1% (1000 ppm): not harmful	< 1% (10,000 ppm): no known toxicity	5-15% (50,000 ppm): explosive
Ammonia (NH_3)	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 (CO_2)	600-2000 ppm: muscle stiffness, drowsiness, poor judgement	5000 ppm: 8-hr maximum	30,000 ppm (3%): increased pulse rate, nausea, mental 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 are at risk at lower CO concentrations. The concentrations are relevant only at "sea level."

Livestock Production

Manure Storage
Under slatted floor
Outside lagoon, pit, or tank

Manure Pumping
Under slatted floor
Outside lagoon, pit, or tank

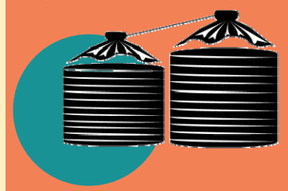
Foaming Manure
If foaming is present, significant methane risk (see additional materials)

Pressure Washing
Inside building

Animal
Exhaled breath

Gas-fired Heaters
Combustion byproducts

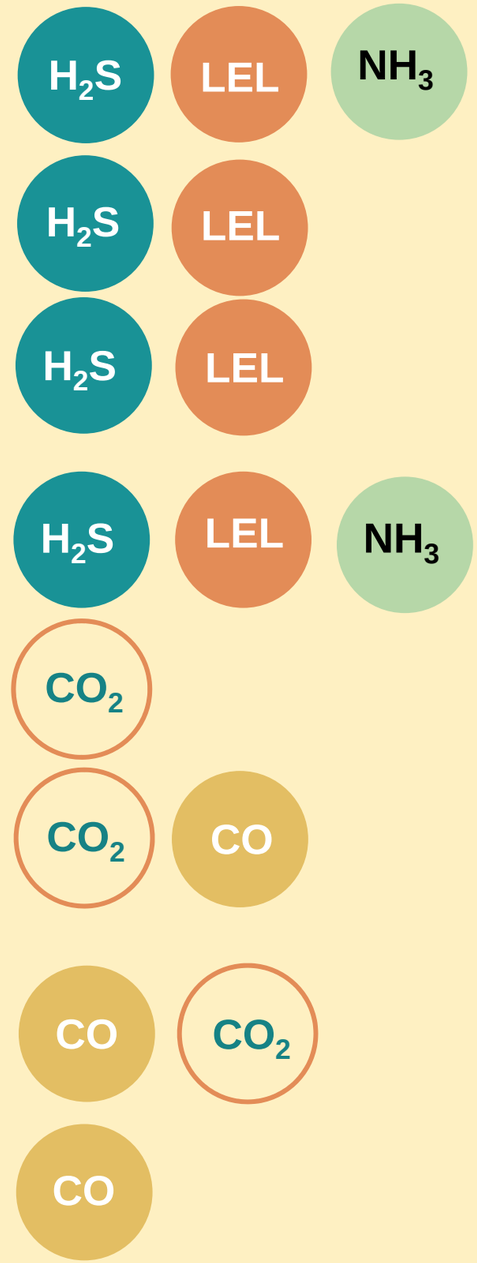
Grain Bins



Inside Bins
Out-of-condition grain
Gas-fired dryers

Equipment
Overheated equipment
Smoldering product

Sensor Types



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