

**It's the Pits**

**Pit Gas Series #1: Hydrogen Sulfide**

As a manure system decomposes, it emits many different kinds of gases. The most harmful are hydrogen sulfide, methane, ammonia and carbon dioxide. Research shows that chronic exposure to these gases, even at low levels, can significantly reduce animal productivity and health. Furthermore, elevated concentration levels can potentially cause fatalities for both humans and animals. In order to provide a more in-depth view, ProfitPro will address these gases in series of newsletters.

**Pit Gases: HYDROGEN SULFIDE**

Hydrogen sulfide is hazardous because it reaches toxic levels rapidly during agitation. The levels of hydrogen sulfide can rise from 5 parts per million (ppm) to more than 500 ppm in seconds. When concentration levels rise above 600 ppm, it can be fatal for a person or animal after only one or two breaths. In this situation, a person will immediately fall to the ground and remain unconscious until death.

On a lesser level, lower amounts of hydrogen sulfide may cause severe illness, respiratory and eye issues. Other symptoms include nausea, stomach discomfort, belching, coughing, headache and dizziness.

Another dangerous aspect is that hydrogen sulfide is heavier than air so it accumulates above the liquid level of the pit. Therefore, animals or humans that walk near the pit can be negatively impacted.



**Pump-out Precautions**

Unfortunately, a majority of the fatalities (humans or animals) occur when producers are pumping out their pits. Regardless of the timing, everyone involved with the pit must presume that the manure storage area contains hazardous gases. Protective systems must be employed and followed to minimize the risk for those working around the pits.

Because of the proximity of the manure, toxic gases are usually detectable in low levels throughout the year. However, when producers use agitation for pumping, the rapid releasing gas from the manure increases the risk for livestock and humans.

**Table 1. Acute Effects of Swine Confinement Air Contaminants on Humans**

Gas	Exposure Level	Effect or Symptom
Hydrogen Sulfide	5 ppm	<b>RECOMMENDED MAXIMUM FOR HUMAN HEALTH</b>
	10 ppm	Eye irritation
	20 ppm for >20 minutes	Irritation to the eyes, nose and throat
	50 to 100 ppm	Vomiting, nausea, diarrhea
	200 ppm	Dizziness, nervous system depression, increased susceptibility to pneumonia, fluid in the lungs with prolonged exposure
	500 ppm for 30 minutes	Nausea, excitement, unconsciousness
	600 ppm and above	Rapid death

Source: <http://nasdonline.org/document/1298/d001097/beware-of-manure-pit-hazards.html>

**Solution**

ProfitPro® has a number of ways, as part of its Full-Circle Animal, Manure, and Soil-Plant System™, to remediate noxious manure gases. The technologies available, to be used alone or in combination, include probiotic feed additive, (swine, dairy, beef), water additive (WaterRite™) and manure bioaugmentation products. ProfitPro offers a **Manure Management Service** that monitors and adjustments treatment applications to achieve optimal results. Products are also available for individual application.

For more information on ProfitPro's **Manure Management Service** call **1-888-875-2425** or go to [www.profitproag.com](http://www.profitproag.com).

**ProfitPro's Summer Conference**  
Thurs., July 28 and Fri., July 29, 2011 and  
**Pre-Conference (animal & manure mgmt) Wed., July 27<sup>th</sup>**  
at ProfitPro's Headquarters, Albert Lea, MN

ProfitPro's Summer Conference speakers are:

- **Larry Acker** - Climatologist & Marketing Consultant,
- **Dr. Don Huber** - Professor Emeritus, Purdue University,
- **Dr. Jerry Hatfield** - Lab. Director of the USDA-ARS National Laboratory for Agriculture & the Environment - Ames, IA,
- **Dr. Michael McNeill** - Independent Crop Consultant;
- **Dr. Aubrie Starks** - Consulting Chemist
- **Charles Brown** - Brown Seed Genetics.

**Dr. Jim Ladlie** will be one of the speakers on the **FREE Manure Management Teleconference** scheduled for **June 2, 2011** from 8 to 9 pm CDT on **"Danger of Pit Gases and How to Effectively Manage Them"**

For more information, go to [manure.profitproag.com](http://manure.profitproag.com). Dial the toll free number 1-866-225-3498 just before 8 p.m. (CDT) and enter the security code 7159 # (pound key).

## Boy, does it smell like rotten eggs here, and there ain't no chickens around!

**Polly the Pig** reminds you to check out ProfitPro's Manure Management Service to help with these problems:

- ◆ Removes manure management burdens
- ◆ Reduces potential risk/insurance claims
- ◆ Reduces odors, flies, solids/sludge
- ◆ Reduces lethal gases during pump out
- ◆ Regains/maintains pit/lagoon capacity
- ◆ Reduces foaming
- ◆ Reduces salt levels

Check out ProfitPro's Manure Management Service at [www.profitproag.com](http://www.profitproag.com) or [manure.profitproag.com](http://manure.profitproag.com) or call your Manure Management Service Consultant (MMSC) (find names at [manure.profitproag.com/contactus.html](http://manure.profitproag.com/contactus.html))



### Up Coming Events

#### World Pork Expo, Des Moines, IA

June 8 - 10, 2011 . . .See us at Booth #2700 in the Cattle barn

#### North American Manure Expo, Norfolk, NE

July 20, 2011 . . .See us at Booth #TBD

#### ProfitPro's Summer Conference

July 28 - 29, 2011

**Pre-Conference** - July 27, 2011 - Animal & Manure Management

#### FarmFest, Redwood Falls, MN

August 2 - 4, 2011 . . .See us at Booth #904E

#### DakotaFest, Mitchell, SD

August 16 - 18, 2011 . . .See us at Booth #TBD

### Question & Answer

*Is it safe to enter a hog barn if you can't detect the "rotten egg smell?"*

Many hog producers believe that buildings are safe to enter if the rotten egg odor is not noticeable. However, this might not always hold true because when hydrogen sulfide reaches a certain level, it paralyzes the nerve cells of the nose, which essentially neutralizes the ability to smell odor.

Use a gas detector to determine what levels are. We found one at [www.allgasdetectors.com/products/hydrogen-sulfide-detector-177613.shtml](http://www.allgasdetectors.com/products/hydrogen-sulfide-detector-177613.shtml), but there are many others available as well.

Check-out **Manure Management Service** at [manure.profitproag.com](http://manure.profitproag.com).

**Attention:** to continue receiving the newsletters, please mail us your name, address, phone number(s) and e-mail address, to ProfitPro, LLC, attn: Becky, 408 S. 1st Ave, Albert Lea, MN 56007 or e-mail information to [bboone@profitproag.com](mailto:bboone@profitproag.com).



ProfitPro, LLC  
408 S. 1<sup>st</sup> Ave.  
Albert Lea, MN 56007  
1-888-875-2524