

# Agricultural Respiratory Illnesses

NE/CS-CASH Ag Med Core course

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# The Big Take Home Message

- ❑ Respiratory = #1 Health problem in ag
- ❑ Organic Dust #1 hazardous exposure
- ❑ Inflammation (not allergy) of airways = #1 pathology of organic dusts
- ❑ Organic Dust Toxic Syndrome (ODTS) = #1 acute problem of organic dust exposure
- ❑ Chronic problems include bronchitis, and non-allergic asthma
- ❑ The gases Hydrogen Sulfide and Nitrogen oxides (NOx) can also cause respiratory illnesses



# Respiratory Illnesses in Agricultural Populations

Credit the North Carolina Agromedicine Institute, 2020, Donham, KJ, Grafft, L., Tutor, R

□ [http://present.aheconnect.com/agromed5/story\\_html5.html](http://present.aheconnect.com/agromed5/story_html5.html)

# Case Examples of Farmers with Respiratory problems



# Work in Enclosed Livestock and Poultry Buildings

- This woman has worked in a pig production unit for 7 years
  - Sx, of cough, tightness of chest associated with work in building
  - What are the exposures?
  - What is it, what should be done?



- This worker herded the birds into crates for transport to market
  - SX 6 hrs after work. Fever, muscle aches, cough, Flu-like.
  - What are the exposure
  - What are the exposures?
  - What is it, what should be done?





# Pumping manure under slatted floor

- What was the hazard here?
- What caused this event?
- How should the farmer be treated?
- How to prevent this?



# HYDROGEN SULFIDE (H<sub>2</sub>S)

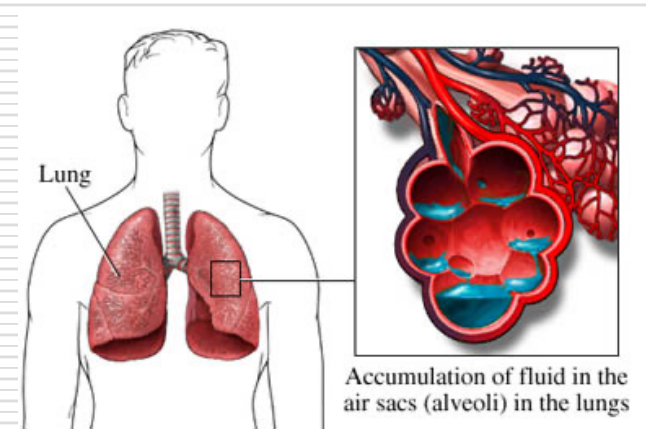
## Near fatal incident – of 2 boys



- 9/2012. Boys 2 and 4 found unconscious near manure tank
- Pump was on.
- Boys revived by EMT on site. Released later that day from the hospital
- Increased risk with Gypsum dairy bedding & DDGS in feed.
- Fatal event of a similar exposure in Northern Iowa

# Hydrogen Sulfide Exposure

- Liquid manure
- Anaerobic (> 3 feet down)
- Agitation
- Confined space
- Cellular toxin
- Extreme irritant
- Predilection for CNS
- Paralyze sense of smell
- Sudden unconsciousness
- Respiratory cessation
- Pulmonary edema





# How are a bottle of champagne and liquid manure alike?



- ❑ Agitation results in rapid release of gas from the liquid
- ❑ Harmless carbon dioxide comes from champagne (or beer or pop)
- ❑ Hazardous hydrogen sulfide comes from liquid manure

# Manure Pit Under Building (Methane – explosion – Fire Hazard)



Foaming manure pit.





**CAUTION**

FILL ONLY WITH SHELLED CORN  
OR OTHER WHOLE GRAIN.

DO NOT FILL WITH FORAGE  
FEEDS SUCH AS HAYLAGE OR SILAGE.

FOR MAXIMUM PRESERVATION OF  
FEED NUTRIENTS, CLOSE AUGER  
TUBE COVER AFTER EACH USE, AND  
KEEP ALL ACCESS OPENINGS AIRTIGHT.

**DANGER**

DO NOT ENTER  
NOT ENOUGH OXYGEN  
TO SUPPORT LIFE

 FPM

HARVESTORE PRODUCTS INC.

ARLINGTON HEIGHTS, ILLINOIS


MADE IN U.S.A.



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**I just thought this was a little dust cough. I wish my doctor had said something.**

**If only I knew then what I know now! No more cigars, dust mask in the barn and when handling moldy hay**

**The End**

# Post - Quiz

# What is Organic Dust Toxic Syndrome (ODTS)?

1. Farmer's Lung
2. Bronchitis
3. Asthma
4. Acute airway inflammation with influenza-like symptoms
5. Don't know



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What is the principle respiratory inflammatory substance in organic dust?

1. Tannic acid
2. Pollen
3. Endotoxin
4. Mold spores
5. Don't know

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Atopic/allergic Asthma is the major cause of respiratory problems in farmers and their families.

1. True

2. False

3. Don't know



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Which one is not caused by agricultural dusts?

1. Silo Filler's Disease
2. Bronchitis
3. Non-allergic asthma
4. Mucous membrane irritation
5. Don't know

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This silo can cause Silo Filler's Disease (nitrogen oxide poisoning)

1. True
2. False
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The primary hazardous toxic gas released from liquid manure when agitated is?

- Ammonia
- Carbon Monoxide
- Methane
- Hydrogen Sulfide



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Exposures to which one(s) of the following gas exposures in agriculture could lead to delayed acute respiratory distress syndrome?

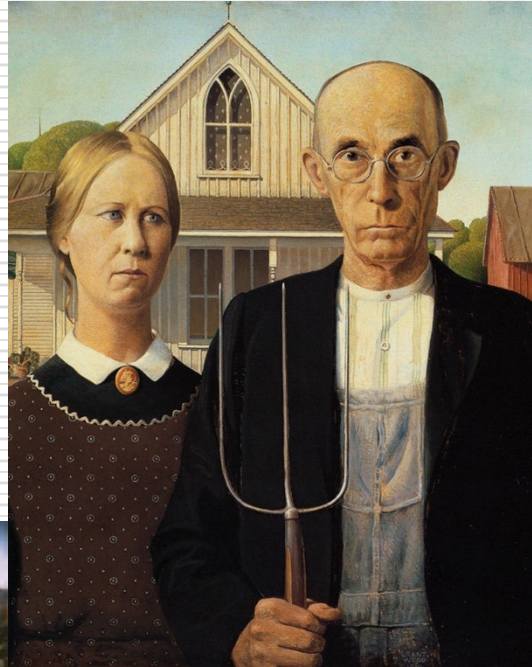
- Methane
- Hydrogen Sulfide
- Silo Gas
- Nitrogen Oxides

Exposures to which one(s) of the following gas exposures in agriculture could lead to delayed acute respiratory distress syndrome?

- Methane
- Hydrogen Sulfide
- Silo Gas
- Nitrogen Oxides

# Finally – Who is this artist?

On display Chicago Museum of Art



# Grant Wood





# THANKS FOR YOUR ATTENTION AND

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Thanks for all you do and will do!

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