

Farm work, like all work, has dangers. Most are recognized and can be prevented. Our hurry to "get the job done" may cause unnecessary risks to be taken, with tragic results. Be a safe operator—avoid shortcuts—and reduce injuries. Remember, **you** are the most important asset on your farm.

The Bassett Farm Safety & Health Project is a non-profit scientific research and education effort. Based at The Mary Imogene Bassett Hospital in Cooperstown, the project was begun in 1980. Current research involves lung diseases and a broad epidemiologic study based on 250 farms in Otsego County. Tax deductible contributions to support this work are encouraged and appreciated.



Production of this pamphlet was funded by New York State Department of Labor, Division of Occupational Safety and Health.

For further information contact:

Bassett Farm Safety & Health Project  
Mary Imogene Bassett Hospital  
Cooperstown, New York 13326  
Phone: (607) 547-3283 or ~~2971~~ **6023**

David S. Pratt, M.D., Director  
John J. May, M.D., Director  
Janet F. Ivory, Program Coordinator  
Laura H. Marvel, R.N., Research Assistant  
Dominic P. Coppolo, R.R.T., Safety Instructor



Resource ID#: 195

Respiratory Hazards in the Farm Environment

## Bassett Farm Safety & Health Project

# Respiratory Hazards in the Farm Environment



The Bassett Farm Safety and Health Project is a non-profit research and education effort under the directorship of David S. Pratt, M.D., and John J. May, M.D.



## Breathing Hazards in Farming

Farming, like almost all work, involves some jobs which expose farmers to danger. Breathing (lung) hazards on the farm include poison gases, dusts, chemicals, molds, exhaust fumes and allergens (allergy causing materials).

The lung is particularly sensitive to environmental dangers. Because of its unique structure, it exposes a very great surface to the outside world. The many openings (called alveoli) in the lung cover the same surface area as a tennis court. Thus, dusts and gases have a real chance to harm us when we draw them into our lungs. The nose and throat protect us from some dangers, but others get deep into our chest.

## Silo Gas and Silo Filler's Disease

When a silo is filled, the forage begins to "work." This process is technically acidic fermentation and denitrification. Within hours of filling a silo, the oxides of nitrogen begin to build up (silo gas). This dense, usually reddish-brown gas, is at its peak in four days, but is generally gone in one week. Some of the poison gas is colorless and odorless. If silo gas is breathed in large amounts, it can cause sudden death. Smaller amounts burn the lung and make farmers very ill. Sometimes farmers breathe the gas and have no symptoms for two to three weeks, then they have coughing and fever. These simple operating rules would prevent **all** silo filler's injury. If a silo must be entered do so immediately after filling with the blower going. Do not enter again for two weeks. At two weeks a silo can be entered, but the blower should have run for 30-45 minutes before the silo is entered. This should clear the head space and the chute of any remaining poison gases. Beyond 14 days all non-airtight silos are safe to enter if the blower has run before entering.

## No Air to Breathe: Suffocation Hazards

Oxygen limited silos are quite popular. They are usually covered by warning signs about the dangers associated with entering an oxygen limited system. Nonetheless, farmers occasionally can't wait for a repairman and try to enter the silo to correct a problem. This can be a deadly mistake. Any closed space on the farm can be very dangerous. This includes underground manure tanks, bulk tanks, oxygen limited silos and cisterns. Here, too, a simple rule holds. **Never** enter a closed space unless the air supply is fresh and clean—this may mean using ventilating fans or self-contained breathing gear. If someone is overcome in a closed space, never attempt a rescue alone. Many people have died going into a hole after a relative or co-worker.

## Allergy Danger: Farmer's Lung

Farmer's Lung Disease is an allergic reaction to inhaled heat-loving molds which grow in baled hay and in silage. It generally occurs in the wintertime when farmers are using bales of straw and hay. Often the bales have some mold in them. When an allergic farmer breathes in the mold, troubles begin. Although the farmer experiences no symptoms when he breathes the mold, within the next four to eight hours there is a sudden onset of fever, chills, shortness of breath, chest discomfort, headache and muscle aches and pains. This can be mistaken for "walking pneumonia" by doctors because it often produces an abnormal-appearing chest x-ray. Many doctors fail to recognize the relationship between the mold and the fever and abnormal x-ray. Repeated episodes of farmer's lung can produce permanent scarring changes in the lungs, with long-term shortness of breath, sometimes causing the farmer to leave the farm.

## Thick Farm Dust: Organic Dust Toxicity Syndrome or Silo-Unloaders' Syndrome

When farmers prepare a silo for mechanical unloading the top of the forage is often rotted and moldy. When this is shoveled off, the workers are exposed to a terrific amount of complex dust.

The illness associated with this dust begins after the rotted material is cleared. Usually the farmer feels good for several hours. Later (usually 4-12 hours), there is the onset of fatigue, fever, chills, headache, muscle aches and pains, cough and shortness of breath. **Unlike** farmer's lung, this illness generally does not produce an abnormal chest x-ray nor does it seem to result in permanent scarring changes in the lungs. The illness itself (complete with fever, aches and pains) may last for two to five days following the exposure. Very little is known about this illness which is called organic dust toxicity syndrome (ODTS) or silo unloader's syndrome. Many doctors are unaware of it and call it farmer's lung. This powerful reaction to dust does not require hospitalization and can usually be treated with aspirin. It can be prevented by using dust masks that are approved by NIOSH or MSHA for mists and dusts. Such masks may well protect against farmer's lung, too.

## General Tips for Preventing Breathing Troubles

- Avoid cigarettes—and encourage co-workers to quit.
- Stay out of freshly filled silos for two weeks.
- Always run the blower before entering a recently-filled silo.
- Keep forage and straw dry in the barn.
- Use a dust mask (NIOSH or MSHA approved) when working in dusty situations.
- Keep ventilation fans running in the barn.
- If you use a bedding chopper, always wear a mask.
- Never attempt a rescue into a gas-filled situation. Always get help.
- Avoidance of breathing hazards may save a life.