

Occupational Health - Fact Sheet

Agricultural Worker Respiratory Hazards

Farmer's Lung and Pulmonary Mycotoxicosis are occupational diseases caused by inhaling airborne mold spores that can affect agricultural workers. Silo Unloaders Syndrome is another name for Pulmonary Mycotoxicosis because the condition often occurs during the unloading or uncapping of silos. Similar diseases associated with other agricultural occupations have been termed Bird Fanciers' Lung, Mushroom Workers' Lung, Wood Pulp Workers' Disease, and Toxic Organic Dust Syndrome (TODS).

Mold spores are produced by microorganisms growing in baled hay, stored grain, or silage with a high moisture content (30 percent). They become active when temperatures reach 70 degrees Fahrenheit in poorly ventilated areas. Agricultural workers most often suffer from these diseases in winter and early spring because the molds have had time to develop in closed storage areas.

Heavy concentrations of mold spores appear as a dry, white, or gray powder in grain or forage. When the feed is moved, billions of these microscopic sized particles become airborne and attach themselves to dust. These particles pass through the body's natural filtering mechanisms (nose, hair, and throat mucous) and accumulate in the lungs where they can cause an allergic type of pneumonia. Repeated attacks can lead to scarring of lung tissue, which impairs its function. Such tissue damage is permanent.

Pulmonary Mycotoxicosis and Farmer's Lung are closely related diseases; they are similar in routes of entry and in the symptoms they cause. Farmer's Lung symptoms usually reoccur, and a person can become sensitized to the mold. This means it usually takes less exposure for a severe reaction with each succeeding incident.

The symptoms of Farmer's Lung and Pulmonary Mycotoxicosis are often striking, yet the diseases go unrecognized by many victims and misdiagnosed by physicians not familiar with agricultural health hazards. Victims and doctors alike often confuse Farmer's Lung and Pulmonary Mycotoxicosis with asthma attacks, pneumonia, or flu because the symptoms are similar.

Exposure to mold spores may produce the following symptoms: first, there is a delayed reaction of 3 to 8 hours during which the patient may develop shortness of breath; tightness in the chest; fatigue; a dry, unproductive cough; muscle ache, headache, chills, and fever. The most serious stage of the reaction may last approximately 12 to 48 hours, but some effects are likely to linger for up to two weeks. Acute exposure symptoms eventually disappear with no apparent lasting effect, particularly with first time or mild exposures. While Pulmonary Mycotoxicosis is not thought to cause permanent lung damage, repeated episodes of Farmer's Lung may. Since knowing which disease will attack is impossible to predict, both diseases must be considered serious hazards.

There are several management practices that can either help prevent the growth of mold spores or limit the damage they can cause:

- Be aware of the health effects of breathing toxic dust. Symptoms occur 4 to 12 hours after exposure and may include general weakness, head and body aches, chills, cough, and shortness of breath.
- Inform your doctor about recent dust exposures when seeking treatment for respiratory illness.
- Carefully store agricultural products to minimize spoilage.
- Use automated equipment to move decayed material.
- Use engineering controls such as source containment, local exhaust ventilation, and wet methods of dust suppression to minimize exposure to organic dusts.

Respiratory protection is a critical element in the defense against Farmer's Lung and Pulmonary Mycotoxicosis. Respirators that protect against mold spores are available. These are approved for protection against dust, such as asbestos and they provide inexpensive protection against mold spores. More expensive and sophisticated respiratory devices may be required if situations dictate their use. Some types of respirators may require a pulmonary or lung function test to be sure that you can tolerate their use. Commonly available disposable respirators for nuisance dusts are not effective against the tiny mold spores.

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Respiratory hazards in barns, manure pits, machinery, and silos range from acute to chronic air contaminants. Farmworkers' most common respiratory hazards are bioaerosols, such as organic dusts, microorganisms, endotoxins, and chemical toxicants from the breakdown of grain and animal waste. Inorganic dust, from silicates in harvesting and tiling, is prevalent but less significant. Changes to farming mechanisms have both improved working conditions and increased exposure to respiratory hazards, mainly due to the increased density in animal confinement. Control of aerosols might include the enclosure and ventilation of tractors, applying moisture to friable material, and respirators.