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RESPIRABLE DUST PROTECTION IN POULTRY HOUSING

Dennis J. Murphy
Professor of
Agricultural Engineering

A recent article in this column (Poultry Pointers, July 28, 1990) described research that measured high concentrations of respirable dust in poultry houses.

Respirable dust was identified as those dust particles with a diameter of five microns or less. Dust particles below this size may be breathed deeply into the lungs.

There are many sources of respirable dust in poultry houses, including feed grains, dry fecal

matter, animal dander, bits of feathers, bacteria, bacterial endotoxins, insect parts, and fungal spores.

Breathing in this type of dust in large quantities over a long period of time may lead to respiratory problems that include acute and chronic bronchitis, increased airways reactivity, occupational asthma, and toxic organic dust syndrome (TODS).

In a few extreme cases, if moldy grain or crop material is handled, "farmer's lung" may develop. Typical symptoms of these respiratory ailments includes throat irritation and a persistent cough that may or may not include sputum, wheezing, tightness in the chest, fever, and muscle ache. Some cases require extended days of bed rest or hospitalization.

The best protection against these dust diseases are management actions that minimize dust level generation, and limiting an individual's exposure to dust. Limiting exposure to the dust becomes particularly important once an individual starts showing persistent symptoms of lung disease.

Another method to reduce the harmful effects of dust exposure is to wear respiratory protection. There are several types of respirators that offer some protection against respirable dust; however, the type used by many farm workers offers no protection at all against respirable dusts.

This simplest type of respiratory protection is commonly called a nuisance dust mask. It is designed to only filter out dust particles 10 microns and larger; therefore, it doesn't filter out any of the respirable dust. The mask is constructed of a lightweight cloth-type material, and its thin, single elastic band results in a poor seal around the mouth and nose.

Disposable toxic dust masks, marked by only a slightly heavier cloth-type material, two elastic bands, and a government approval number, are designed to filter respirable dust but also seal poorly and provide only limited protection.

Cartridge-type respirators are

designed to filter respirable dust and normally have wide, adjustable elastic bands and a rubber face piece that seals substantially better around the mouth and nose. This cartridge-type respirator offers much better protection against dusts than the disposable cloth-type masks.

Cartridge respirators have replaceable filters and washable face pieces so a single respirator can last indefinitely. With a price range of approximately \$25 to \$50, it is a good investment for continued exposure to respirable poultry dust.

Still, there are a few limitations to be aware of with cartridge respirators. If a worker has facial hair, the hair may interfere with a good seal around the mouth and nose. Also, some cartridge respirators may be hot or otherwise uncomfortable to wear in some poultry house environments.

In addition, because the shape of a person's face often changes as a person works, additional leakage around the mouth and nose may occur. The act of breathing creates a negative air pressure inside the mask and allows dust to seep in if a perfect seal is not maintained. This leakage usually isn't a serious problem unless the worker has a chronic or permanent respiratory condition and has serious reactions to respirable dust exposures.

The best protection against respirable dust is a powered air helmet. It is several times more effective at filtering respirable dust than any of the respirator types mentioned so far.

As the name implies, a powered air helmet utilizes a helmet to enclose the head, and through the use of a battery pack, delivers a stream of filtered air to the person's breathing zone. The powered air helmet is designed to create positive air pressure inside the helmet, which negates the problems of a poor seal associated with facial hair, glasses, and movement.

Workers are often surprised at how light and comfortable powered air helmets feel. Powered air helmets range in cost from about \$250 to \$800. This may seem expensive until the price is compared to doctor and hospital bills. When respirable dust hazards are ignored for too long of time, this type of respiratory protection may be the only type that will offer the worker sufficient protection.

Respiratory protection devices are available from a number of sources that may be found by checking the yellow pages under "safety equipment," agricultural chemical supply companies, or by contacting your county extension office or the Pennsylvania Agricultural Safety Council.

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