

Farm Respiratory Hazards Increase In Winter Months

UNIVERSITY PARK, (Centre Co.) — As winter approaches, farmers need to be more aware of respiratory hazards on the farm, said a safety expert in Penn State's College of Agricultural Sciences.

"Dust particles, toxic gases, chemical vapors and fumes pose a serious threat to farmers' health, and can be particularly threatening in fall and winter," said Dr. Dennis Murphy, professor of agricultural engineering. "Dust and fume levels can rise significantly inside silos, barns and other buildings."

In fall, many farmers make silage to feed their livestock, which can increase gas hazards. "Gases formed by the natural fermentation of chopped silage shortly after it is placed in a silo will continue to be a very real hazard for as long as silage remains a common livestock feed," Murphy

warns. "After a silo is filled, dangerous levels of gas may persist for two to three weeks.

"These gases can cause unconsciousness, injury and death, especially in the first 48 to 60 hours after filling," Murphy said. "If you don't have a self-contained breathing respirator—one with its own air supply—stay out of the silo for at least 60 hours."

After 60 hours, use the blower to ventilate the silo before entering without a self-contained breathing apparatus, Murphy said. "Open all doors, run the blower fan for 20 minutes and leave it running while you're in the silo. Enter only after you have put on a respirator for toxic dust and have a second person standing by to assist in an emergency."

Children should be of special concern, because the silage operation often is a fun event for them.

"Do whatever is necessary to keep kids from straying into silo areas during filling or for the two weeks when dangerous gases are present," Murphy said. "This may mean padlocking doors or even placing fences or barricades in needed locations."

As the weather gets colder, farm buildings often are closed to protect farm animals. "But closing farm buildings also reduces air quality by limiting circulation, sometimes allowing dust and other particles to reach more hazardous concentrations," Murphy said.

Organic dust toxic syndrome, or ODTs, is a farm-related respiratory illness that causes flu-like symptoms such as fever, headache and muscular pains. Less common but more serious is farmer's lung, an allergic reaction caused by inhaling dust from moldy hay,

grain or straw that can cause permanent lung damage.

Toxic gases also may be present in poorly ventilated buildings, particularly those adjacent to or over manure pits.

"These gases include hydrogen sulfide, which has a rotten egg smell at low concentrations and is extremely lethal at higher concentrations," Murphy said. "Ammonia has a very offensive odor that usually causes workers to leave the area. Methane is a very explosive gas at higher concentrations, and carbon dioxide cuts the oxygen in the air. Even low levels of hydrogen sulfide and ammonia will produce eye and lung irritations, headaches, dizziness and drowsiness."

All farmers and farm workers should use personal protective equipment when working in dusty buildings or around potentially hazardous gases. Use respirators approved by the National Institute of Occupational Safety and Health in dusty environments. "Respirator prices vary considerably

depending on the type needed, but it's smart to invest in the right kind of equipment for the hazards on your farm," Murphy said. "Disposable mechanical filter respirators can be bought for under \$10. Many nondisposable models are less than \$50."

People who must enter manure pits during maintenance, repair or rescue operations should wear a self-contained breathing apparatus, or SCBA. "But using a SCBA effectively is not easy and many units cost around \$1,000," Murphy said. "Farmers who must enter manure pits without a SCBA should have a powered, continuous fresh air, explosion-proof ventilation system. They must wear a safety harness or belt with a lifeline attached to a mechanical lifting device, and have someone within seeing or hearing range who can operate the lifting device in an emergency. Testing the pit atmosphere for toxic gases or oxygen deficiency before maintenance and repair also is a good idea."

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