Silo Gas

What you know about silo gas could save a life. Here are answers to some of the most commonly asked questions about this dangerous substance.
What is silo gas?
Silo gas is actually nitrogen dioxide, an extremely toxic, yellowish-brown gas with a bleach-like odor. During the fermentation process, oxygen combines with nitrates in plant materials resulting in the production of nitric oxide gas. This combines with oxygen in the environment to produce nitrogen dioxide.

When and where is silo gas present?
The gas can form from a few hours to three weeks after materials are put in the silo. It is heavier than air, so it settles at low points in the enclosure.

Why is silo gas dangerous?
When nitrogen dioxide is inhaled and comes in contact with the moisture in your lungs, it actually forms nitric acid. This acid causes chemical burns of the airway and lungs, and sometimes complete asphyxiation. Silo gas acts very fast – many people inhale it and never regain consciousness. Those who do survive often have permanent disability because of scarring of the lung tissue.

What are the symptoms of silo gas exposure?
Coughing, burning in the throat, shortness of breath, chills, fever, headaches, nausea, or vomiting can occur from 3 – 30 hours after even a mild exposure. Fluid build-up that occurs in the lungs after the exposure can be fatal. If you know someone that has been exposed to silo gas, have them see a doctor immediately. Early treatment can improve a person’s chance of survival.

What can I do to prevent exposure to silo gas?
The only sure way to prevent exposure to silo gas is to stay out of the silo during the first three to four weeks after filling, or to use a self contained breathing apparatus (also called SCBA) and approved confined space entry procedures to protect yourself. If you don’t have specific training in confined space entry, get the help of your local fire department or emergency trainers.

Many different techniques have been suggested to reduce levels of the gas in recently filled silos. Running a blower and opening doors is helpful in reducing gas levels and in some cases may remove all the gas, but this method is not foolproof during the first critical weeks when most fermentation is occurring. The fact remains that some farmers have taken these precautions and still been seriously injured.

If it is necessary to enter a silo after the initial dangerous period has passed, the farmer should open all doors and vents and run the blower for at least 30 minutes as an extra precaution. During the filling and post filling period, it is also important to ventilate any structures that connect the silo with areas that house animals and workers.

Remember, silo gas is heavier than air, quick and deadly – by the time you see it or smell it, it may be too late.