
Silo Gas

Posted on May 31, 2024 by Christine O'Reilly, OMAFRA Forage & Grazing Specialist

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Farmers exposed to silo gas (nitrogen dioxide, NO₂) are at risk of severe respiratory distress, permanent damage to lungs, and even sudden death. It is difficult to predict when silo gas will be produced, so always take precautions following harvest.

Weather conditions and agronomic practices affect the amount of nitrates in plant material, which set the stage for the production of NO₂ in the silo. For example, a dry period during the growing season followed by abundant rainfall will encourage a corn crop to take up high levels of dissolved nitrates. If the corn is harvested before the nitrates can be converted to proteins, nitrogen dioxide is produced.

Silo gas is produced almost immediately after filling a silo. The greatest risk is the first 12 to 60 hours after filling the silo, and then risk declines for approximately 4 – 6 weeks when silage fermentation is complete. Silo gas has a bleach-like odour and may be visible as a reddish-brown haze. However, it is not always visible.

Nitrogen dioxide is heavier than air, therefore it tends to be located just above the silage surface. It may flow down silo chutes and into feed rooms. Tower silos are at greater risk because the silo gas is contained at the silage

surface level, and operators often enter the silo after filling to level silage and set up the unloader.

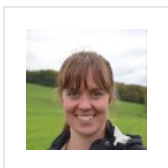
When inhaled, nitrogen dioxide mixes with body moisture to form nitric acid which causes severe burning of the lungs and the rest of the respiratory system. Pulmonary edema results. Victims often collapse. Other people attempting a rescue can also be overcome. Farmers exposed to silo gas should get immediate medical attention.

Do not enter a silo during the risk period without wearing an appropriate self-contained breathing apparatus. Before entering the silo, ventilate it by running the forage blower for 30 minutes and leave it running while inside. Also ventilate the silo room and chute. Post appropriate warning signs, and keep people and animals away.

For more information on preventing injury or death from silo gas, refer to:

- Workplace Safety & Prevention Services: [Silo Safety](#)
- International Silo Association: [Silo Safety – Silo Gas](#)
- Ohio State University Extension: [Training Module – Silo Safety](#)
- Farm Safety Association: [Silo Gas Dangers](#)

Farmers with concerns about silo gas should contact the Workplace Safety and Prevention Services, (formerly the Ontario Farm Safety Association) at 1-877-494-9777.



About Christine O'Reilly, OMAFRA Forage & Grazing Specialist

Areas of Focus: - Production and storage strategies to improve the productivity and profitability of forages - Benefits of forages and grazing within cropping systems - Forage production and grazing systems in northern Ontario

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