

## PART 503 - SAFETY

### SUBPART B – PUBLIC SAFETY AT STRUCTURE SITES

#### § WI 503.10 General.

Many NRCS-assisted waste management systems, by nature, may be hazardous to farm owners and workers.

#### § WI 503.11 Scope.

The decomposition of manure in storage or handling systems generates gases, some of which are toxic, explosive, and oxygen displacing. The most hazardous gases are hydrogen sulfide (H<sub>2</sub>S), ammonia (NH<sub>3</sub>), methane (CH<sub>4</sub>), and carbon dioxide (CO<sub>2</sub>). Dangerous levels of these gases can accumulate in and around manure management systems, particularly when manure is being agitated or otherwise disturbed.

(a) Hydrogen sulfide levels may increase a thousand-fold during agitation. This extremely toxic gas is the most dangerous manure gas as it is colorless, heavier than air, and may cause death in seconds at high concentrations. While Hydrogen sulfide is commonly known for its rotten egg odor, the odor isn't detectable by the human sense of smell at higher concentrations. It affects eyes, respiratory system and the central nervous system.

(b) Ammonia has a sharp pungent odor and is generally higher in poultry manure. It is lighter than air. Ammonia causes irritation of the eyes and respiratory tract. At higher concentrations, this gas may cause permanent lung damage.

(c) Methane is highly flammable. A spark from equipment, open flames, smoking materials, faulty wiring or welding could provide an ignition source for an explosion or fire. Methane is odorless, colorless and lighter than air. By displacing air at high concentrations, methane which is itself non-toxic, can become an asphyxiant and will cause rapid breathing, dizziness and fatigue.

(d) Carbon dioxide is heavier than air and will displace oxygen. Carbon dioxide exposure may result in headaches and dizziness. Death by asphyxiation is possible at high concentrations.

(e) While manure is the primary source for the hazardous gases, the decomposition of other organic material, such as milking center waste, waste feed, feed leachate, and any combination of these materials, may pose similar risks.

#### § WI 503.12 Safety Measures.

All designs for waste management systems shall comply with the following:

(a) All waste storage facilities, reception tanks, pump chambers and manholes shall be configured such that the ASABE EP470, Manure Safety, standard can be followed.

(b) Prohibit drive-in, covered storage tanks or transfer channels that cannot reasonably be expected to be operated in accordance with ASABE EP470 procedures.

(c) A safety assessment will be conducted by the designer of manure storage and transfer systems and a safety plan developed to address manure gas hazards.

(d) Sites of human entry into confined spaces (areas where manure gases could concentrate) will be identified and addressed within a detailed plan for safe entry procedures and safety features.

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### § WI 503.13 Employee Responsibilities.

Employees shall not provide technical assistance to:

- (a) Install new drive-in, covered storage tanks, or transfer channels.
- (b) Modify existing drive-in, covered storage tanks or transfer channels for continued use.
- (c) Install manure storage facilities that will be connected to drive-in covered storage tanks or transfer channels.
- (d) Partners or other service providers who support the installation or continued use of an unsafe system.