

Submission to the Codes Canada Public Consultation

March 11, 2020



Submitted online through the federal Government Codes Canada portal

The following is Ontario Pork's submission to the Codes Canada public consultation.

Proposed change: 1416

Support: We do not support this proposed change for the reason(s) stated below.

Reason:

2.3.2.5 – [5] [5] --) Concrete used for liquid manure storage tanks shall conform to exposure class S-1 of CSA A23.

Comment: Concrete manure storage tanks are common on swine farms. Tanks historically, have been engineered and constructed to avoid cracking and leakage. Some believe that increasing the MPa of the concrete (although it is good for sulfate resistance) may actually cause more shrinkage cracking, thus defeating the primary goal of liquid manure storage design (to prevent leaks).

Also, Manure storage tanks constructed with the past 20 – 30 years do not generally leak as per the summary of a study below.

A RECONNAISSANCE Site Characterization of 50 Hog Manure Storage Systems was completed by Komex International in 2009 for the Ontario Pork Producers

The results:

“Fifty liquid manure storage systems were investigated in southwestern Ontario, approximately a 1% sample of the pork producers in southwestern Ontario. Eight of the 50 study sites (UU, I, B, E, M, and DD) appear to have leaky manure storage systems. Two of the eight leaky study sites (GG and II) have geophysical anomalies, but no proven impact to the uppermost water bearing zone. The remaining 42 sites appear not to have any impact directly from the liquid manure storage systems. The results from this study do not raise serious regional concerns of acute groundwater impacts of the liquid manure storage systems investigated here.”

Suggested Modification: Allow Professional Engineers to use accepted design principles when designing manure storage tanks

[2.3.3.] -- Loads Due to Snow

Article 2.3.1.1. Provides general requirements for the structural design of farm buildings.

The proposed removal of the permission to use a modified lumber system factor will have a significant cost implication for conventionally built farm buildings. The current normal practice is to design and install wood roof trusses at 1 220 mm on centre. The proposed change would most likely result in a shift to installing trusses at 610 mm on centre (a spacing more typical in commercial and industrial construction), effectively doubling the quantity of trusses installed. However, the net cost would not double as the load resisted by each truss would be lower. It is estimated that the cost for installed wood trusses would increase by 50–75%. The benefits of the change include improved design consistency among different building types.

Comment: We will accept this change, although we believe there haven't been a large number of roof collapses caused by under designed roof trusses in the past. Anecdotally, we believe most roof collapses have been caused by deteriorated steel and wooden gusset plates and/or rusting of galvanized nails used to fasten wooden gusset plates.

Proposed change: 1417

Support: We do not support this proposed change for the reason(s) stated below.

Reason: High-hazard agricultural occupancies

Group G, Division 1

Animal housing facilities with a below-floor storage area for liquid manure.

Comment: A High-Hazard space is normally considered to involve production or storage of very flammable or toxic materials, and includes places handling explosives and/or highly toxic materials (such as fireworks, hydrogen peroxide, and cyanide).

Although manure in storage is not flammable or particularly toxic, it can produce methane and hydrogen sulphide gas. Low occupancy farm building with below floor manure storage are constantly ventilated either with mechanical exhaust fans, or by natural ventilation to control buildup of these gasses. The goal of every livestock and poultry producer is to provide an optimum environment in the barn to maximize the animal's wellbeing and productivity. Good ventilation is a key component of this goal.

We believe that agricultural buildings containing livestock should not be labeled 'high hazard' buildings, and should not be associated with:

- Feed mills
- Grain elevators
- Rooms for the bulk storage of dangerous goods classified as flammable gases or compressed gases
- Rooms for the bulk storage of flammable liquids
- Rooms for the bulk storage of reactive materials

Suggested modification: We believe livestock barns should fall under Group G Division 2.

Proposed change: 1418

Support: We do not support this proposed change for the reason(s) stated below.

Reason: 2.2.1.9 (5) a room in which farm machinery is repaired shall be separated from the remainder of the farm building by a fire separation

Comments: Machinery is needed to be repaired 'in-situ' in many buildings on a farm. It would be impractical to construct fire walls between rooms in many of these buildings. Most farms are equipped with a machinery

storage and farm shop. There may be a reason to construct a 1 hour fire wall between the machinery storage and the farm shop.

Suggested Modification: Adding the word 'dedicated' to the sentence 'a room in which farm machinery is repaired' would avoid having to construct fire walls in each building on a farm

[2.2.4.1.] --- Fire Department Access to Buildings

[1] --) Access for fire department equipment shall be provided to each farm building by means of street, private roadway or yard. The design and location of such roadway or yard shall take into account connection with public thoroughfares, weight of firefighting equipment, width of roadway, radius of curves, overhead clearance, location of fire hydrants, location of fire department connections and vehicular parking.

Comment: We support this clause

[2.2.6.2.] --- Egress Doorways A minimum of 2 egress doorways located in a floor area that is not sprinklered throughout and contains a Group G, Division 1 major occupancy with a below-floor storage area for liquid manure or a Group G, Division 2 or 3 major occupancy, where

[i] --) the area of the room is more than 200m² (or [ii] --) the travel distance within the room to the nearest egress doorway is more than 15 m.

Comments: Most swine buildings are built in 100 foot (31.25 M) increments. Providing egress doors every 15 m will cause disruptions to ventilation systems and standard building designs.

Suggested modification: Increase egress travel distance from 15m to 31.25m (100 feet) to accommodate standard hog barns designs.

2.2.6.6 [2] A door that opens into a facility providing access to an exit from a room that is used for a Group G, Division 1 major occupancy without a below-floor storage area for liquid manure shall swing on a vertical axis in the direction of travel to the exit.

Comments: Often, snow can accumulate around the outside of a farm building making it difficult to open emergency exit doors. Also, in a low occupancy farm building, there is no danger of many people jamming the exit.

Suggested modification: Perimeter doors should be allowed to swing inwards in a low occupancy farm building.

[2.2.8.3.] --- Below-Floor Storage Areas for Liquid Manure

[1] --) Farm buildings with a below-floor storage area for liquid manure shall be provided with ventilation system conforming to Subsection 2.4.2.

[2] --) Where the ventilation system required by Sentence (1) relies on electrical power for normal operation, it shall be provided with an emergency power supply conforming to Sentence (3).

[3] --) the emergency power supply required by Sentence (2) shall be

[a] --) supplied from a generator, batteries or a combination thereof,

[b] --) equipped with audible and visual trouble indicators,

[c] --) capable of operating the trouble indicators for not less than 24 h,

[d] --) capable of operating the ventilation system under full load for not less than 2 h, and

[e] --) designed so that, in the event of a failure of the normal power source to the farm building, there is an immediate automatic transfer to emergency power.

Comments: A majority of farmers provide their farms with portable standby power with on-site farm tractors and PTO driven generators. Personnel working in a barn will be immediately aware of a power outage due to lack of lights and the shutdown of barn equipment. The occupants of farm buildings are typically familiar with the building layout and will leave the building quickly and ensure emergency power is connected to supply livestock with suitable air flow. Vulnerable occupants are typically not in farm buildings. Members of the public are typically not in farm buildings

Suggested modification: Automatic transfer equipment is unnecessary, and portable standby power is quite adequate for low human occupancy farm buildings

[2.2.8.5.] --- Liquid Manure Storage Tanks and Piping Systems

2.2.8.5 [5] Liquid manure storage tanks without a cover that are located outdoors shall be surrounded by a permanent safety fence or wall that

1--) extends not less than 1.5 m above adjacent ground level,

2--) is adequately secured at ground level, and [c] --) has gates with latches.

Comments: Many manure storage tanks are poured with walls extending a standard 4 feet above ground, which should be adequate to protect against small children and livestock from entering the tank.

Suggested modification: Allow above ground open manure storages to be constructed 1.25 m in height.

[2.2.8.6.] --- Gas Traps or Valves

(See Note A-2.2.8.6.)

[1] --) where storage tanks for liquids capable of releasing hazardous gases or vapours are connected to a farm building by a piping system, a gas trap or valve shall be installed in the piping system to prevent such gases or vapours from entering the farm building.

Comments: Manure from under slatted manure pits in swine barns is commonly pumped with vacuum pumps directly into field application equipment or into another outside storage.

Swine barns with shallow gutters < than 4 feet deep, commonly use a hairpin (racetrack) configuration with double pull plugs to empty the gutters. Two outlet pipes, each fitted with a rubber plug, are separated by a baffle wall, with an opening at the opposite end. Plugs are alternately pulled to drain the holding tank at the end of each holding cycle. This flow reversal reduces solids build-up in the system, while at the same time eliminates

back flow of gasses from storage tanks. Manure must exit these systems quickly to avoid solids settling out and gas traps will slow manure down and eventually cause the system to plug. These pull plugs or in some cases, guillotine gates will avoid the problem of gasses back flowing from a storage

We support the above clause.

Proposed change: 1419

Support: We do not support this proposed change for the reason(s) stated below.

Reason:

[2.4.2.4.] --- Silos and Grain Storage Bins

[1] --) Where an enclosed tower silo, horizontal silo, or grain storage bin is connected to an adjacent feed room, mechanical exhaust ventilation shall be provided to remove air from the lowest floor level of the feed room to the outdoors at a rate not less than 3 air changes per hour.

[2] --) The ventilation system of the farm building in which the feed room referred to in Sentence

(1) is located shall be designed to prevent airflow from the feed room to any other part of the floor area of the farm building.

Comments: We believe this clause is primarily to protect personnel from silo gas. Typically, in swine barns, only tower silos are connected directly to a feed room.

Suggested modifications These feed rooms connected to a vertical silo should include a provision for mechanical ventilation at a rate of 3 air changes per hour, and also a provision for natural ventilation, using panels or windows.

Comments: Feed rooms in swine barns are typically connected to feed bins with enclosed augers, and do not pose a gas transfer problem; however, dust can accumulate in a feed room while preparing feed.

Suggested modification: Adequate ventilation should be provided during feed preparation, although airflow needn't be restricted from other rooms.

Comments: Horizontal silos are normally not connected to a feed room, as they are loaded and unloaded using farm tractor loaders.

[2.4.2.5.] --- Below-Floor Storage Areas for Liquid Manure

(See Note A-2.4.2.5.)

[1] --) Farm buildings with a below-floor storage area for liquid manure shall be provided with a ventilation system that supplies outdoor air at a rate that is not less than 2 air changes per hour.

[a] --) sufficient to limit the concentrations of dangerous goods classified as flammable gases to not more than 25% of their lower explosive limit,

[b] --) sufficient to limit the concentrations of dangerous goods classified as toxic gases to those permitted in the applicable provincial or territorial regulations or municipal bylaws or, in the absence of such regulations or bylaws, in the ACGIH's "Industrial Ventilation: A Manual of Recommended Practice for Design," and

(See Note A-2.4.2.5.(1).)

[2] --) The ventilation system required by Sentence (1) shall extend through all parts of the floor area of the farm building, including those parts that do not contain a below-floor storage area for liquid manure.

Comments: This clause is confusing. If the floor area in question, is in a separate room not over a below floor storage sealed from the remainder of the barn it need not be ventilated.

2.4.2.5 [2] should apply only to rooms/areas where the gases are open to the floor area.

2.2.2.4 [2] – Smaller cleanout/transfer gutters should not considered to be 'manure storage'

Suggested modification: Should add a definition for small cleanout/ transfer gutters as below:

Manure gutters designed to be emptied every 2 – 3 days or shallow <1 foot deep gutters or gutters scraped with an alley scraper or stable cleaner, gutters equipped with belt manure removal systems or gutters flushed every 2 – 3 days or normally empty transfer gutters or pipes should not be considered manure storage gutters.

Proposed change: 1420

Support: We do not support this proposed change for the reason(s) stated below.

Reason:

[2.14.1.1.] --- Electrical Systems

Comments: Farmers and insurance companies are aware of the potential fire hazards in livestock buildings. More and more insurance companies have ridged inspection protocols. Historically, electrical equipment in non-livestock barns has not been identified as an issue.

Suggested modifications:

We believe it would be appropriate to change inspection protocols from 12 months to 2 years for buildings containing livestock and 3 years to 5 years for all other farm buildings

2 .14.1.2.] --- Mechanical Equipment

Comments: Inspecting mechanical equipment in livestock barns including automatic feeders, sorters, and waterers may be redundant. These pieces of equipment are generally low voltage and do not constitute a fire hazard, and could be inspected by the barn operator. Electrical equipment such as feed augers, ventilation fans, heat lamps/pads, room heaters do constitute a fire hazard, but will be checked by qualified personnel during the electrical inspection.

Suggested modification: Mechanical equipment in livestock barns be exempt from professional inspections

[2.14.3.2.] --- Below-Floor Storage Areas for Liquid Manure

Note A-2.14.3.2.(2) Below-Floor Storage Areas for Liquid Manure.

Comments: We endorse the following statement: A farm building with a below-floor storage area for liquid manure may occasionally be taken out of service for a period of time, such as between production cycles or during a market downturn. Over this time period, any manure in the storage area will continue to decompose and produce dangerous gases. The quantity of gas produced is generally proportional to the volume of manure.

Provided the farm building is not occupied and the manure has been removed from the storage area, a supply of outdoor air sufficient to limit the concentrations of flammable or explosive gases to not more than 25% of their lower explosive limit is deemed acceptable for life safety. Special care must be exercised when the building is brought back into service to minimize the risks of fire and injury associated with manure gases.