Fuels Safety Program	Ref. No.: FS-214-14-R2
ADVISORY	Date: June 20, 2017

Subject: **Unvented Heaters inside Livestock or Poultry Facilities (B149.1-15, clause 7.37)**
Distribution: Posted on TSSA website and sent to Natural Gas RRG and Natural Gas and Propane Advisory Council, CPA, Ontario Pork, MGCS, Ontario Chicken, Egg Farmers of Ontario, Christian Farmers, Hatching Egg Producers, Ontario Federation of Agriculture, Turkey Farmers of Ontario, Ontario Beef, Veal Farmers and Goat Farmers, Dairy Farmers, Ontario Sheep.

This advisory supersedes and replaces FS-214-14 R1 dated December 16, 2015.

The most recent amendment to the Gaseous Fuels Code Adoption Document (FS-225-17, dated April 10, 2017, effective July 1, 2017) includes specific requirements for natural gas or propane heating appliances installed in livestock and poultry barns that vent their products of combustion into the barn space (clause 7.37).

In general, these requirements mandate that unvented heaters are interlocked with the ventilation system or if not interlocked, a proper ventilation is confirmed by calculations (per clause 7.37.2) prominently displayed in the entrance area to each building housing livestock or poultry.

These calculations must be verified by a PEO licence holder issued by Professional Engineers Ontario (including licensed professional engineers, licensed engineering technologists and other limited licence holders, pursuant to the *Professional Engineers Act)*. A site visit to perform this work is at discretion of the individual PEO licence holder.

PEO licence holder must verify the following two calculations:

1) Minimum ventilation rate of the barn (mechanical or natural ventilation) when the heaters are operating is not less than 300 CFM / 100,000 BTUH (0.003 CFM/BTUH) of heaters input [clause 7.37.2(c)].

2) Maximum input of the heating appliances does not exceed 20 BTUH/FT^3 of the space in which the appliance is located [clause 7.37.2(d)].

The calculations summary must show at minimum the following information:

a) Barn address
b) Barn ID
c) Barn description
d) Barn dimensions in feet
e) Barn volume in cubic feet
f) Description of heaters
g) Heaters input in BTUH (total input of all heaters)
h) Description of ventilation equipment
i) Minimum ventilation rate in CFM
j) Ratio of minimum ventilation rate to heaters input [shall not be less than 300 CFM / 100,000 BTUH (0.003 CFM/BTUH) as per clause 7.36.1(c)]
k) Ratio of heaters input to barn volume [shall not exceed 20 BTUH/FT^3 as per clause 7.37.1(d)].

l) First/last name, PEO licence number, and company name of the licence holder that verified ventilation calculations
m) Date of verification

Notes:

- If additional unvented heaters are installed or removed the calculations required in items 1 & 2 must be updated to reflect the current status.
- All installed unvented heaters, whether operational or not must be included in the calculations.
- All heaters shall be approved.
- Attached are the following documents for your reference:
    - Ventilation Calculations Form
    - Ventilation Calculations Example

The Code Adoption Document specified in clause 7.37.4 that existing barn heaters (installed prior to October 1, 2014) must meet the following deadlines:

7.37.4
Heaters installed prior to October 1, 2014 shall comply with section 7.37 as follows:

(a) by July 1, 2019 when total building area housing livestock or poultry on the premise is over 25,000 square feet;
(b) by July 1, 2021 when total building area housing livestock or poultry on the premise is up to and including 25,000 square feet;

Heaters installed prior to October 1, 2014 are not required to comply with clauses 7.23.1, 7.23.2 and 8.24.5 and their predecessor clauses in prior codes relating to interlocking with the ventilation system or approval for indoor venting.

In order for farmers to continue to receive uninterrupted delivery of fuel, the requirements of section 7.37 must be met by the dates included in clause 7.37.4

TSSA will expect cooperation in informing all stakeholders and promoting compliance. We will organize interim assessment of all efforts with the first one taking place in the fall of 2017.

VENTILATION CALCULATIONS - CLAUSE 7.37.2 (FORM)

A) Barn address:_____

B) Barn ID: _____

C) Barn description: _____

D) Barn dimensions: _____**ft x** _____**ft x** _____**ft (high)**

E) Barn volume:_____**ft^3**

F) Description of heaters:_____

_____

G) Total heaters input in barn: _____**BTUH**

H) Description of ventilation equipment:

_____

_____

I) Minimum ventilation rate: _____**CFM**

J) Ratio of minimum ventilation rate to heaters input (I/G) [min. 0.003 CFM/BTUH]:

_____

K) Ratio of heaters input to barn volume (G/E) [max. 20 BTUH/ft^3]:

_____

L) Ventilation system verified by PEO licence holder (first/last name, PEO licence number, company name):

_____

M) Date of verification: _____

VENTILATION CALCULATIONS - CLAUSE 7.37.2 (EXAMPLE)

A) Barn address: 12345 Street Ave, Anytown

B) Barn ID: Turkey barn#2

C) Barn description: One storey brood/growoutbarn

D) Barn dimensions: 50 **ft x** 300 **ft x** 8.5 **ft (high)**

E) Barn volume: 127,500 **ft^3**

F) Description of heaters:

7 Radiant Tube heaters @ 100,000 BTUH each

G) Total heaters input in barn: 700, 000 **BTUH**

H) Description of ventilation equipment:

3 - 24 inch variable speed fans – Model XXY operating at 0.10 inch static pressure at 40% of BESS test

I) Minimum ventilation rate : 3600 **CFM**

J) Ratio of minimum ventilation rate to heaters input (I/G) [min. 0.003 CFM/BTUH]:

3600 CFM / 700,000 BTUH = 0.00514 (more than 0.003 CFM/BTUH)

K) Ratio of heaters input to barn volume (G/E) [max. 20 BTUH/ft^3]:

700,000 / 127,500 = 5.5 (less than 20 BTUH/ft^3)

L) Ventilation system verified by PEO licence holder (first/last name, PEO licence number, company name):

John Smith, Lic.# 123456789, ABC Ventilation Inc.

M) Date of verification: August 20, 2014