Fuels Safety Program	Ref. No.: **FS-259-21**
Fuel Oil Code Adoption Document Amendment	Date: **10-12-2021**

IN THE MATTER OF:

Technical Standards and Safety Act 2000, S.O. 2000, c. 16,
Ontario Regulation 223/01 (Codes and Standards Adopted by Reference), *and*
Ontario Regulation 213/01 (Fuel Oil)

The Director for the purposes of Ontario Regulation 213/01 (Fuel Oil), pursuant to section 5(1) of Ontario Regulation 223/01 (Codes and Standards Adopted by Reference), hereby provides notice that the FUEL OIL CODE ADOPTION DOCUMENT published by the Technical Standards and Safety Authority and dated June 1, 2001, as amended, is further amended as follows:

All sections of the Fuel Oil Code Adoption Document previously published are revoked and replaced with the following:

Background:

This amendment to the Fuel Oil Code Adoption Document (CAD) revokes and replaces the previous amendment (FS-219-16 dated April 4, 2016).

This CAD amendment adopts the new CSA-B139 Series:19, consisting of the following:

- B139.1.0-19, General requirements for large installations
- B139.1.1-19, General requirements for stationary engines
- B139.1.2-19, General requirements for special installations
- B139.2-19, Installation code for oil-burning equipment for residential and small commercial buildings

The remainder of this CAD amendment makes Ontario-specific revisions to the above codes. The major changes include:

1. The CSA Standard B139 Series-19 "Installation Code for Oil Burning Equipment" published in January 2019 by CSA Group is adopted with the following amendments:

1.1 Amendments to CSA B139.1.0-19, "General requirements for large installations" are as follows:

1.1.1 Clause 2 is amended by adding thereto the following:

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1.1.2 Clause 3 is amended by revoking the definitions of "Appliance", "Approved", "Authority having jurisdiction", and "Conform."

1.1.3 Clause 3 is amended by adding the following definitions:

Authority having jurisdiction — the Director designated for the purposes of O. Reg. 213/01 (Fuel Oil).

Manufacturer's Instructions – means the certified manufacturer's instructions.
Note: Where certified manufacturer's instructions are not available, follow the code. Manufacturer's instructions are recommendations if they have not been certified.

Background:

The definitions of "appliance" and "approved" are in the Fuel Oil regulation.

The definition of "conform" has been revoked.

Manufacturer's instructions that are not certified may be used as guidelines but are not mandatory.

Press-connect fitting —a type of fitting that is directly attached to tubing or pipe by mechanical deformation of the tube, pipe or fitting, or combination thereof, with a fitting manufacturer approved pressing tool creating a seal and a permanent restrained connection. These fittings typically include an elastomeric seal and may incorporate a corrosion resistant mechanical grip or bite ring.

Background:

The definition of "press-connect fitting" is added since such fittings are approved when installed as per this code.

1.1.4 Clause 4.1.1 is revoked and the following is substituted:

4.1.1
Oil-burning equipment, including appliances, accessories, equipment, components, tanks, and any other thing associated with the oil-burning equipment, shall meet the requirements of this Code, and shall be approved and installed for its intended use in accordance with the manufacturer's instructions and this Code.

Where there is a conflict between this Code and the manufacturer's instructions, whichever is more stringent shall apply.

1.1.5 Clause 4.1.2 is revoked and the following is substituted:

4.1.2
Appliances, except engines, shall be certified to the applicable CSA B140 Series of standards or approved.

1.1.6 Clause 4.15 is amended by adding the following:

4.15.3
An appliance or tank that has been exposed to fire, explosion, flood, or other damage shall not be offered for sale, installed, re-activated or reconnected to the supply, without:
(a) approval of the authority having jurisdiction if the appliance consumption is 7 US gallons per hour or more; or
(b) inspection and confirmation by a certified technician that it is fit for continued use if the appliance consumption is less than 7 US gallons per hour.

1.1.7 Clause 5.2.1.1 is amended by adding the following:

5.2.1.1.1
Where the codes referenced in section 5.2.1.1 refer to approval of the Owner, approval shall also be required from the Authority Having Jurisdiction.

5.2.1.1.2
Piping or tubing shall be submitted to TSSA for approval prior to use where
(a) the design pressure is greater than 690 kpa (100 psi); or
(b) the design temperature is greater than 38°C, and the design pressure is greater than 100 kpa (15 psi).

1.1.8 Clause 5.2.2.1 is revoked and the following is substituted:

5.2.2.1
Piping and tubing joints and connections shall be made in accordance with the following:
a) Joints and connections shall be made fuel oil-tight.
b) Joints and connections shall be made with standard pipe fittings or by welding. All standard threaded fittings shall be
i) malleable iron which shall comply with ANSI/ASME B16.3 or ANSI/ASME B16.39;
ii) cast brass or bronze which shall comply with ANSI/ASME B16.15; or
iii) stainless steel which shall comply with ANSI/ASME B16.11.
c) Welding of oil piping shall be performed by qualified pipe welders using welding procedures in accordance with applicable provincial or territorial legislation.
Note: All concealed piping joints should be welded, wherever possible (see Clause 5.2.3).
d) A joint in seamless copper, brass, or stainless steel tubing shall be
i) made by means of a flare joint or solder fitting; or
ii) brazed with a material having a melting point exceeding 538 °C (1000 °F).
e) Flare nuts shall be forged., and
f) Compression fittings shall not be used.
g) Press-connect fittings certified to ANSI/CAN/UL/ULC 180 shall have a yellow marking visible from a distance of 3 m (10 ft) when viewed from the floor or work surface.
h) Unions requiring gaskets or packing, right and left couplings, and solder or brazing materials having a melting point less than 538 °C (1000 °F) shall not be used in connecting fuel oil lines, fill lines, or vent lines.

1.1.9 Clause 5.2.3 is revoked and the following is substituted:

5.2.3 Concealed piping installation
Where piping is concealed,
a) pipe joints shall be welded, or threaded and seal welded; or

b) each threaded, press-connected or flanged pipe joint shall be accessible for inspection and maintenance without demolition of building elements.

1.1.10 Clause 5.4.4 is amended by adding the following:

5.4.4.6
Where the fuel line is located or partially located at a level below the maximum fuel level of the tank, the fuel line shall be protected with an approved anti-siphon device.

5.4.4.7
Where an anti-siphon valve is installed, a tee with a manual shut-off valve and cap shall be installed at the lowest level of the downstream piping.
Note: This is to allow for periodic testing of the operation of the anti-siphon valve.

1.1.11 Clause 6.2.1.4 is revoked and the following is substituted:

6.2.1.4
A tank may be reused or re-installed only if it is in good condition and the standard to which it was originally certified has not been updated. If a new standard has been published, the tank may not be reused or re-installed, unless approved by the authority having jurisdiction.

1.1.12 Clause 6.2.1 is amended by adding the following:

6.2.1.6
Steel tanks shall be provided with
(a) a double bottom tank construction consisting of the tank shell and double contained heads, with a minimum coverage of 50 mm above the bottom of the tank, and a visual interstitial monitoring device located above the highest level of the tank;
(b) non-combustible secondary containment; or
(c) a minimum 300° integral secondary containment with monitoring of the interstitial space.

1.1.13 Clause 8.3.1 is amended by adding the following:

8.3.1.1
Individual tanks in excess of 250,000 L shall be separated from the nearest building and property lines by at least 7.5 m.

1.1.14 Clause 8.4 is amended by adding the following:

8.4.4
A maximum of two supply tanks with a total capacity of 2500 L (550 gal) or less may be interconnected below the highest liquid level of the tanks.

1.1.15 Clause 10.1.3 is revoked and the following is substituted:

10.1.3
Fuel oil tanks shall be equipped with an overfill protection device that conforms to CAN/ULC-S661, “Standard for Overfill Protection Devices for Flammable and Combustible Liquid Storage Tanks”.

1.1.16 Clause 10.6.2.4 is revoked.

1.1.17 Clause 10.6.3.1 is revoked and the following is substituted:

10.6.3.1
Where an auxiliary supply tank is directly vented to the outdoors, the vent shall comply with Clause 10.5 and Clauses 10.6.3.2 to 10.6.3.5. The design of the installation shall be submitted to the authority having jurisdiction for approval prior to the tank installation.

1.1.18 Annex M is normative and a mandatory part of this code.

1.1.19 Clause M.4 is revoked the following is substituted:

M.4 Environmental responsibilities

4.1
Where a leak is suspected or where required by the Director, one or more of the following, as applicable, shall confirm whether a leak exists and determine the source of the leak:
(a) the owner of a facility;
(b) the authorization holder of a facility;
(c) the owner of the tank system(s);
(d) the authorization holder of the tank system(s);
(e) the owner of the property where the equipment is installed;
(f) the user of the equipment; or
(g) the driver of the tank vehicle.

4.2
In the event of a spill, where a leak is confirmed, where there is discovery of a petroleum product that has escaped to the environment or inside a building, or where required by the Director, one or more of the responsible individuals identified in Clause 4.1, as applicable, shall notify the Director and the responsible individual(s) shall further:
(a) forthwith notify the Director in the event of a fire or explosion and remove any potential for fire or explosion hazard;
(b) provide all information to the Director or an inspector, as required;
(c) cease using and empty products from any leaking part of the tank system(s);
(d) repair, replace, or remove all defective underground or aboveground tank system(s) or equipment; and
(e) take all practical measures to comply with the Environmental Management Protocol for Operating Fuel Handling Facilities in Ontario.

Note: To notify the Director, contact the Spills Action Centre of the Ontario Ministry of Environment at 1-800-268-6060.

4.3
Where an underground tank system is being removed or replaced and the property continues to maintain fuel storage equipment or tank systems, the owner of a facility, the operator of the facility, the owner of the tank system(s), the operator of the tank system(s), or the owner of the property where the equipment is installed, as applicable, shall submit an assessment report to TSSA that delineates the full extent of any petroleum product that has escaped to the environment both on-site and, where necessary and practical, off-site.

4.3.1
Where an underground storage tank system(s) is removed permanently and the site no longer maintains any fuel storage tank system(s), the owner or authorization holder of a facility, the owner or authorization holder of the storage tank system, or the owner of the property on which the equipment is installed, as the case may be, shall
(a) remove or make product-free the remainder of the system;

(b) provide written notification to the Director, the Ministry of Environment and the local municipality within 90 days of the removal of the equipment; and
(c) submit an assessment report to TSSA that delineates the full extent of any petroleum product that has escaped into the environment or inside a building both on site and, where necessary and practical, off site.

4.4
Where outside aboveground tank system(s) with a capacity greater than 5000 L (1100 gal) have been removed or replaced and the property continues to maintain fuel storage equipment or tank systems, the owner of the facility, the operator of the facility, the owner of the tank system(s), the operator of the tank system(s), or the owner of the property where the equipment is installed, as applicable, shall submit an assessment report to TSSA that delineates the full extent of any petroleum product.

4.5
Where aboveground tank system(s) with a capacity less than or equal to 5000 L (1100 gal) have been removed or replaced and the property continues to maintain fuel storage equipment or tank system(s), the owner of the facility, the operator of the facility, the owner of the tank system(s), the operator of the tank system(s), or the owner of the property where the equipment is installed, as applicable, shall
(a) submit an assessment report to TSSA that delineates the full extent of any petroleum product that has escaped to the environment if the physical installation does not allow for inspection of the complete surface of the tank; and
(b) if the physical installation allows for an inspection as outlined, submit an assessment only when a leak is suspected or where a spill has occurred and has not been properly remediated in accordance with the regulatory requirements.

4.6
Where aboveground tank system(s) with a capacity less than or equal to 5000 L (1100 gal) have been removed permanently and the property no longer maintains any fuel storage or tank system(s), the owner of the facility, the operator of the facility, the owner of the tank system(s), the operator of the tank system(s), or the owner of the property where the equipment is installed, as applicable, shall
(a) submit an assessment report to TSSA that delineates the full extent of any petroleum product that has escaped to the environment if the physical installation does not allow for inspection of the complete surface of the tank;
(b) if the physical installation allows for an inspection as outlined, submit an assessment report only when a leak is suspected or where a spill has occurred and has not been properly remediated in accordance with the regulatory requirements; the Ministry of Environment shall also forthwith be notified in accordance with the Environmental Protection Act, as amended, and the Ontario Water Resources Act, as amended.

4.7
Where aboveground tank system(s) with a capacity greater than 5000 L (1100 gal) have been removed permanently and the property no longer maintains any fuel storage or tank systems, the owner of the facility, the operator of the facility, the owner of the tank system(s), the operator of the tank system(s), or the owner of the property where the equipment is installed, as applicable, shall
(a) submit an assessment report to TSSA that delineates the full extent of any petroleum product that has escaped to the environment or inside a building both on-site and, where necessary and practical, off-site; and
(b) forthwith notify the Ministry of Environment in accordance with the Environmental Protection Act, as amended, and the Ontario Water Resources Act, as amended.

1.2 Amendments to CSA B139.1.1-19 "General requirements for stationary engines" are as follows:

1.2.1 Clause 4.4 is revoked and the following is substituted:

4.4 Portable Engines

4.4.1
A portable engine and tank installation system may comply with the CSA-B138.1-17, Portable oil-burning equipment – Packaged equipment requirements, and CSA-B138.2-17 Portable oil-burning equipment – Installation requirements.

Background:
Installations are required to comply with the B139, as adopted by this document. Alternatively, a portable engine installation may also be installed to comply with B138.

4.4.2 Approval of Portable Oil Burning Equipment

a) Portable Oil Burning Equipment manufactured on December 1st, 2026 and thereafter.

All portable oil burning equipment manufactured on December 1st, 2026, and thereafter, shall be approved. The approval may be through a designated testing organization recognized by the Director and the equipment shall bear the label or symbol of the testing agency confirming compliance with the CSA-B138.1-17.

As an alternative approval process, the fuel features of the portable oil burning equipment may be field approved by TSSA.

b) Portable Oil Burning Equipment manufactured prior to December 1st, 2026.

1. The fuel features of all portable oil burning equipment manufactured prior to December 1st, 2026, if not approved, shall comply with the CSA-B138.1-17 and be periodically inspected by a technician to demonstrate compliance. The equipment shall be inspected, at the earlier of
    i. Its tenth year of age; or
    ii. five years since its previous inspection.

2. The inspecting technician shall issue to the owner of the equipment a report of compliance to CSA-B138.1. The report shall itemize and describe how the fuel features of the equipment is compliant with all applicable clauses of B138.1-17.

3. A copy of the report shall be retained by the owner of the equipment and the contractor for the life of the equipment.

4. The inspecting technician shall issue a tag to be affixed to the equipment. The tag shall meet clause 10.2.1 of B138.1-17. The tag shall include the following information:
    i. Contractor's name
    ii. Contractor's registration number
    iii. Date of Inspection
    iv. Equipment Model Number
    v. Equipment Serial Number
    vi. Tank Size
    vii. Technician's name
    viii. Technician's certificate number and classification

ix. Statement: "DO NOT REMOVE"

Background:

There is existing portable equipment that were manufactured without certification or approval. This provides requirements by which unapproved equipment can continue to be used and how they can be approved.

1.2.2 Clause 5.2 is revoked and the following is substituted:

5.2 Stainless steel tubing and fittings
A double-ferrule compression fitting and tubing system of stainless construction may be used for piping between a supply tank and the engine to which it is connected.

1.2.3 Clause 6.2 is amended by adding the following:

6.2.4
An electrically powered overfill protection device supplying generators shall be provided with a power source that is either:

(a) an internal battery, that is provided with an alarm to indicate low battery power, and supplied by an alternate power source,
(b) fed directly from the generator battery, or
(c) fed from mains power which is supported by the generator, and includes an uninterruptable power supply (UPS) unit with a storage capacity of not less than 5 minutes at the maximum power demand of the overfill protection device.

1.2.4 Clause 6.6.3 is amended by adding the following:

6.6.3.1
Prior to installation, the design of a siphon protection system described in sections 6.6.3.1(b), (c), (d) and (e) shall be submitted to the authority having jurisdiction for approval.

1.2.5 Clause 8 is amended by adding the following:

8.3 Special requirements for skin-tight enclosures
8.3.1
Notwithstanding Clause 12.1.10 of B139.1.0 vertical discharge of combustion gases from skin-tight enclosures may terminate at the enclosure roof level under the following conditions:
a) where combustion gases discharge into a ventilation exhaust plenum,
i) the engine radiator fan shall be running while the engine is running;
ii) if motorized dampers are in the combustion exhaust air path, the damper shall be interlocked to prevent the engine from operating unless the dampers are fully open. A time delay of up to 30 s to allow starting of the engine is permitted; and
iii) a recirculation damper that would allow circulation of ventilation exhaust air back into the compartment is not permitted.
b) where all combustion vents discharge up through the roof, the vents shall be equipped with an exhaust pipe rain cap*;
c) where the skin-tight enclosure installed inside the building, it shall be provided in accordance with this Code;

d) when located outdoors, it shall comply with Clause 10.2.2 of B139.1.1, excluding items f), m), and n); and
e) there shall be no building overhang or structure that is within 3 m (10 ft) directly above the top of skin-tight enclosure, that allows for accumulation of exhaust gases.
**An exhaust pipe rain cap is also known as a diesel or exhaust flapper.*

8.3.2
Where combustion gases are vented through a side-wall of a skin-tight enclosure, the combustion vent shall comply with Clause 10.

1.3 Amendments to CSA B139.1.2-19 "General requirements for special installations" are as follows:

1.3.1 Section 5 is revoked and the following is substituted:

5. Field installation of burners
The site installation of burners including combustion control systems and fuel-oil control trains, other than those certified for the unit, shall be submitted to the authority having jurisdiction for Field Approval prior to use.

1.4 Amendments to CSA B139.2-19 "Installation code for oil-burning equipment for residential and small commercial buildings" are as follows:

1.4.1 Clause 4.2.1 is revoked and the following is substituted:

4.2.1
Oil-burning equipment, including appliances, accessories, equipment, components, tanks, and any other thing associated with the oil-burning equipment, shall meet the requirements of this Code, and shall be approved and installed for its intended use in accordance with the manufacturer's instructions and this Code.

Where there is a conflict between this Code and the manufacturer's instructions, whichever is more stringent shall apply.

1.4.2 Section 4.16 is amended by adding the following:

4.16.3
An appliance that has been exposed to fire, explosion, flood, or other damage shall not be offered for sale, installed, re-activated or reconnected to the supply, without:
(a) approval of the authority having jurisdiction; or
(b) inspection and written confirmation by an Oil Burner Technician I or II (as appropriate for the appliance input rating) that it is fit for continued use.

1.4.3 Clause 5.3 is revoked and the following is substituted:

5.3 Joints and connections
Piping and tubing joints and connections shall be made in accordance with the following:
a) Joints and connections shall be made fuel-oil-tight.
b) Joints and connections shall be made with standard pipe fittings. All standard threaded fittings shall be
i) malleable iron which shall comply with ANSI/ASME B16.3 or ANSI/ASME B16.39; or
ii) cast brass or bronze which shall comply with ANSI/ASME B16.15.

c) Brazed connections shall be made by qualified personnel in accordance with ASME Boiler and Pressure Vessel Code, Section or as otherwise required by the authority having jurisdiction.
Note: All concealed piping should be brazed, wherever possible.
d) A joint in seamless copper, or stainless steel tubing shall be
i) made by means of a flare joint or solder fitting; or
ii) brazed with a material having a melting point exceeding 538 °C (1000 °F).
e) Press-connect fittings certified to ANSI/CAN/UL/ULC 180 and shall have a yellow marking visible from a distance of 3 m (10 ft) when viewed from the floor or work surface.
f) Flare nuts shall be forged.
g) Compression fittings shall not be used.

1.4.4 Clause 6.2.1.2 is revoked and the following is substituted:

6.2.1.2
A tank may be reused or re-installed only if it is in good condition and the standard to which it was originally certified has not been updated. If a new standard has been published, the tank may not be reused or re-installed, unless approved by the authority having jurisdiction.

1.4.5 Clause 6.2.1 is amended by adding the following:

6.2.1.3
Steel tanks shall be provided with
(a) a double bottom tank construction consisting of the tank shell and double contained heads, with a minimum coverage of 50 mm above the bottom of the tank, and a visual interstitial monitoring device located above the highest level of the tank;
(b) non-combustible secondary containment; or
(c) a minimum 300° integral secondary containment with monitoring of the interstitial space.

2. The TSSA **Field Approval Code**, TSSA-FA-2020, is adopted for the approval of assembly or construction of an appliance.

This amendment is effective 12 December 2021.

DATED at Toronto this 12 day of October 2021

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Sam Sadeghi
Director, O. Reg. 213/01 (Fuel Oil)

Any person involved in an activity, process or procedure to which this document applies shall comply with this document.
This document was developed in consultation with the TSSA Liquid Fuels Advisory Council and Fuel Oil Risk Reduction Group