



GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

Department of Municipal and Provincial Affairs

Office of the Fire Commissioner

FIRE PROTECTION

GUIDELINES FOR

OUTDOOR TIRE

STORAGE YARDS

Office of the Fire Commissioner



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1.0 PRE-AMBLE

This document provides for property protection by requiring that certain fire protection measures be applied in the case of outdoor tire and storage yards.

The document contains guidelines based upon the 1995 Ontario Fire Code as outlined in Section 2 and is supplemented by an illustrated Commentary in Section 3, which is based upon information from the Office of the Ontario Fire Marshal.

1.1 Contact Information

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Local Fire Department

2.0 GUIDELINE

2.1 Vendor sites (ie. repair garages, etc.)

- (1) Vendor sites may store tires in a pile with a base area not exceeding 5 m² and a height of not more than 2 m.
- (2) There are no other requirements for piles limited to this size.
- (3) If a vendor site exceeds this storage amount, the requirements as outlined for piles up to 300 m³ shall apply.

2.2 Single storage pile up to and not exceeding 300 m³

- (1) Pile base shall not exceed 100 m².
- (2) Pile height shall not exceed 3 m.
- (3) There shall be a minimum of 15 m clearance to property lines.
- (4) There shall be a minimum of 15 m clearance to buildings or stored products.
- (5) There shall be a minimum of 30 m clearance to forested or brush areas.
- (6) There shall be a minimum of 6 m clearance to uncontrolled grass or weeds.
- (7) There shall be no storage in a 10M buffer area immediately beneath power lines. This can be established by centering the buffer on the power line and taking 5M left and right of the line.
- (8) There shall be no ignition sources (ie: torches or welding) within 15 m of the pile.
- (9) There shall be no smoking within 6 m of the pile.
- (10) Other storage exceeding the quantity addressed herein shall comply with the Provincial requirements for such.

2.3 Storage where bulk volume exceeds 300m³ (Storage Yards)

- (1) This Guideline, in its entirety, applies with respect to the outdoor storage of tires or shredded tires where the bulk volume of stored product exceeds 300 m³.
- (2) This Guideline does not apply where the stored tires or shredded tires are covered by a minimum depth of 150 mm of noncombustible material.

2.4 Prohibitions

- (1) Open air burning is prohibited in storage yards.
- (2) Cutting, welding or heating devices shall not be operated in storage yards.
- (3) Smoking is prohibited in storage yards except in areas where it does not present a fire hazard.
- (4) There shall be no storage in a 10M buffer area immediately beneath power lines. This can be established by centering the buffer on the power line and taking 5M left and right of the line.

2.5 Fire safety planning

- (1) Except as provided in Sentences (2) to (4), storage yards shall comply with the requirements of Section 2.8 of the National Fire Code.
- (2) The fire safety plan shall include provisions respecting access for water operations within the fire department access routes, if water operations are required in the circumstances of the storage yard.
- (3) At least one copy of the fire emergency procedures shall be prominently posted and maintained at the storage yard.
- (4) The telephone number of the fire department and location of the nearest telephone shall be posted conspicuously in attended locations.

2.6 Pile dimensions

Individual storage piles shall not be more than 3 m in height and 100 m² in area.

2.7 Pile separations

Storage piles shall be separated by a clear space of at least 6 m from piles of other stored product.

2.8 Pile clearance

- (1) Storage piles shall be located at least 15 m from property lines.
- (2) Storage piles shall be located at least 15 m from buildings.
- (3) Despite Sentence (2), the separation of storage piles from buildings may be determined in accordance with Appendix C, "Guidelines for Outdoor Storage of Scrap Tires," of NFPA 231D, "Storage of Rubber Tires," and NFPA-80A, "Protection of Buildings from Exterior Fire Exposures".
- (4) Individual storage piles shall be separated from other piles of salvage by a clear space of at least 6 m.

2.9 Clearances from vegetation

- (1) Storage yards shall be maintained free of combustible ground vegetation,
 - (a) over a distance of 6 m from the stored product to grass and weeds, and
 - (b) over a distance of 30 m from the stored product to brush and forested areas.

2.10 Fire breaks

- (1) Where the bulk volume of stored product is more than 4800 m³, fire breaks shall be provided around the perimeter of each group of storage piles in accordance with Sentences (2) and (3).
- (2) Individual storage piles shall be arranged so that there are not more than 16 individual storage piles per group.
- (3) Fire breaks shall be at least 22 m wide.

2.11 Alternative measures

Despite Articles 2.6 to 2.10, other pile arrangements that will prevent the spread of fire and that are approved may be used.

2.12 Fire department access

- (1) Each tire storage yard shall be provided with fire access routes.
- (2) The fire access routes shall:
 - (a) have a clear width of at least 6 m,
 - (b) be designed to support the loads imposed by fire fighting equipment,
 - (c) be surfaced with material designed to permit accessibility under all climatic conditions,
 - (d) be connected with a public thoroughfare in at least two places that are located as remotely as is possible in the circumstances from each other,
 - (e) be located within all pile clearances identified in Sentence 2.8 (1), (2) or (3) and within all fire breaks required in Article 2.10,
 - (f) be within 50 m of any point in the storage yard where storage piles are located,
 - (g) be at least 6 m from any storage pile, and
 - (h) be maintained accessible and unobstructed at all times.
- (3) Despite Sentences (1) and (2), alternate fire access routes may be provided if:
 - (a) the routes permit fire fighting vehicles and equipment access and permit the use of fire suppression techniques appropriate in the circumstances, and
 - (b) the routes are approved.

2.13 Fencing

- (1) Where the bulk volume of stored product is more than 300 m³, the storage yard shall be surrounded by a firmly anchored fence or other approved method of security that controls unauthorized access to the storage yard.
- (2) Where a fence is used, the fence shall be at least 1.8 m high and constructed to discourage entry.
- (3) The fence shall have gateways with a clear width of at least 3.5 m.
- (4) The gateways shall be high enough to permit the entry of fire department vehicles.
- (5) The gateways shall be kept clear of obstructions so that the gates may be opened fully at all times.
- (6) The gates shall be locked when the storage yard is not staffed.

2.14 Water supply

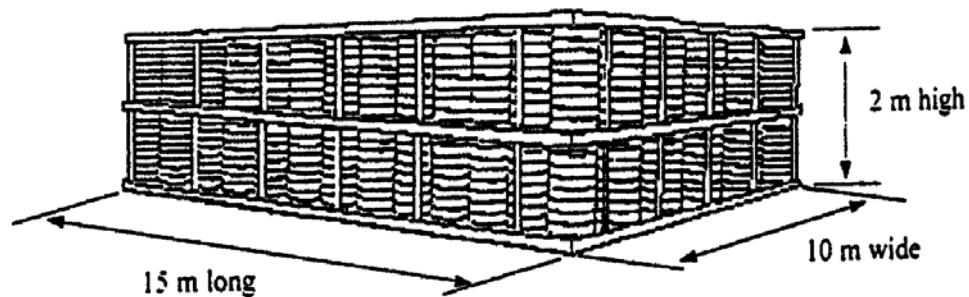
- (1) A public or private water supply shall be provided such that any part of the storage yard can be reached by using not more than 150 m of hose.
- (2) When the quantity of stored product is between 300 m³ and 1200 m³, the water supply system shall be capable of supplying 1860 L/min for 3 hours.
- (3) Where the quantity of stored product is 1200 m³ or more, the water supply system shall be capable of supplying 3780 L/min for 3 hours.
- (4) Where on-site reservoirs or other established water supplies are used as a fire department draft source to meet the requirements of Sentences (1), (2) and (3), they shall be equipped with dry hydrants in accordance with Appendix B of NFPA 1142, "Water Supplies for Suburban and Rural Fire Fighting".

2.15 Alternative measures

Despite Article 2.14, other water supply systems or other measures may be used if the systems or measures will provide sufficient fire suppression capability in the circumstances and if the systems or measures are approved.

2.16 Fire extinguishers

Fuel-fired vehicles operating in the storage yard shall be equipped with a 2A:10BC or higher rated portable extinguisher conforming to the requirements of the National Fire Code.



A tire storage pile of these dimensions is 300 m³ (these are sample measurements). Article 3.1 applies to volumes greater than illustrated.

3.0 COMMENTARY

3.1 Application

- (1) This Article applies with respect to the outdoor storage of tires or shredded tires where the bulk volume of stored product exceeds 300 m³.
- (2) This Article does not apply where the stored tires or shredded tires are covered by a minimum depth of 150 mm of noncombustible material.

Article 3.1 outlines requirements for outdoor storage of tires in excess of 300 m³. As an alternative to complying with Article 3.1., the tires or shredded tires may be covered by a minimum of 150 mm of noncombustible material, such as earth. Rubber tire storage exceeding 300 m³ in an outdoor area presents a significant fire/environmental hazard and deserves special consideration.



3.2 Prohibitions

- (1) Open air burning is prohibited in storage yards.
- (2) Cutting, welding or heating devices shall not be operated in storage yards.
- (3) Smoking is prohibited in storage yards, except in areas where it does not present a fire hazard.
- (4) Storage piles shall not be located beneath electrical power lines.

The intent of Article 3.2 is to eliminate all ignition sources such as welding and cutting from yards where rubber tire storage exceeds 300m³. Smoking is allowed only in approved areas where it does not present a fire hazard. Electrical power lines may be damaged in cases of fire, cutting off emergency fire systems. For this reason storage piles must not be located beneath power lines as described in Sentence (4).

3.3 Fire safety planning

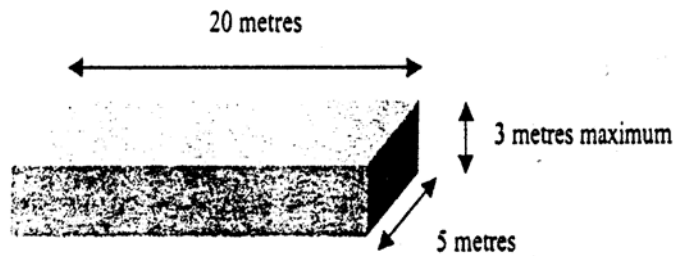
- (1) Except as provided in Sentences (2) to (4), storage yards shall comply with the requirements of Section 2.8 of the National Fire Code.
- (2) The fire safety plan shall include provisions respecting access for water operations within the **fire department** access routes, if water operations are required in the circumstances of the storage yard.
- (3) At least one copy of the fire emergency procedures shall be prominently posted and maintained at the storage yard.
- (4) The telephone number of the **fire department** and location of the nearest telephone shall be posted conspicuously in attended locations.

Section 2.8 of the National Fire Code details the requirements for emergency planning and fire safety plans. A fire safety plan must include: procedures for sounding the fire alarm, procedures for notifying the fire department, provisions for fire department access and training requirements for supervisory staff regarding their duties in the event of a fire. The requirements stated in Sentences (2) to (4) of Article 3.3., are specific to salvage operations. They are intended to increase effective response to fire emergencies and ensure that all employees of a salvage yard know and understand what to do in case of fire.

3.4 Pile dimensions

- (1) Individual storage piles shall not be more than 3 m in height and 100 m² in area.

Individual storage piles must not exceed the dimensions described in Sentence 3.4 (1). Tire storage piles that are larger make it more difficult to contain and extinguish fires. The intent of this article is to limit the amount of fuel that an individual storage pile contains.



(maximum pile area not to exceed 100 m²)

Illustration of storage pile dimensions (these are sample measurements) that comply with Sentence 3.4 (1).

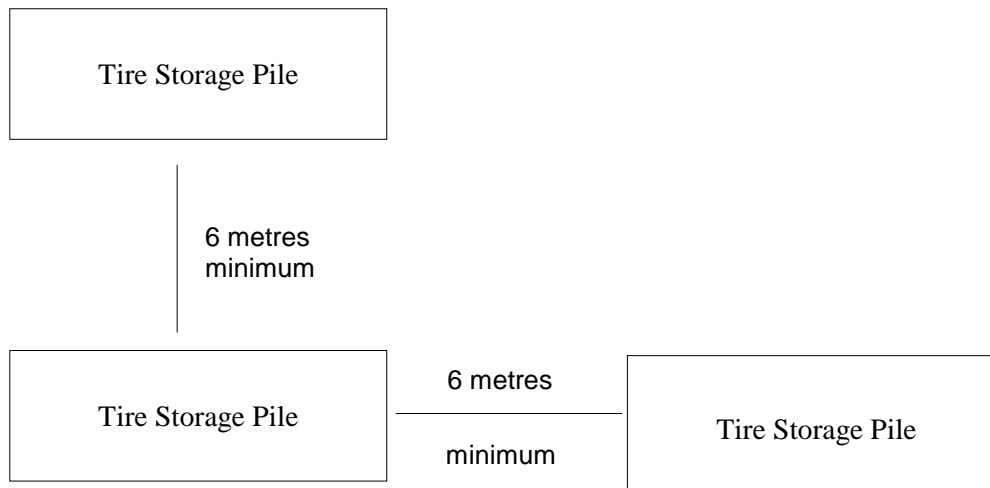
3.5 Pile separations

Storage piles shall be separated by a clear space of at least 6 m from piles of other stored product.

The purpose of this Article is to limit the possibility of a fire spreading from one pile to another.

The 6 metre clearance:

- *allows fire department vehicles and personnel access to all areas of a salvage yard*
- *helps prevent the spread of fire from one burning tire storage pile to another*



3.6 Pile clearance

- (1) Storage piles shall be located at least 15 m from property lines.
- (2) Storage piles shall be located at least 15 m from buildings.
- (3) Despite Sentence (2), the separation of storage piles from buildings may be determined in accordance with Appendix C, "Guidelines for Outdoor Storage of Scrap Tires", of NFPA 231D, "Storage of Rubber Tires", and NFPA-80A, "Protection of Buildings from Exterior Fire Exposures".
- (4) Individual storage piles shall be separated from other piles of salvage by a clear space of at least 6 m.

The intent of Article 3.6 is to protect both buildings on the property and adjoining properties from damage due to storage of rubber tires and to prevent the spread of fire from one storage pile to another by requiring:

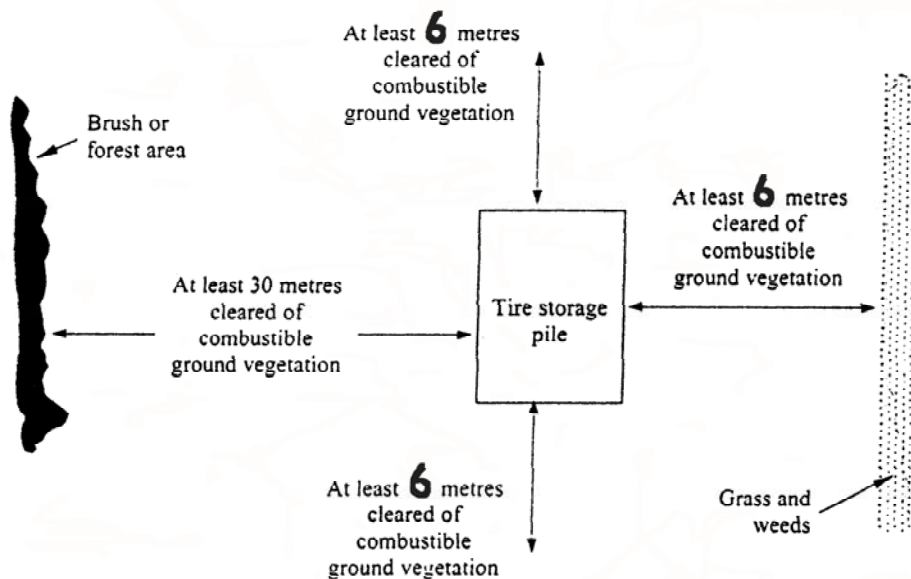
- *At least 15 metres of clear space between storage piles and property lines;*
- *At least 15 metres of clear space between storage piles and buildings;*
- *At least 6 metres of clear space between all storage piles.*

Under Sentence (3) the clearance between a storage pile and a building may be reduced, depending upon the construction features of the building. The standards referenced allow lesser clearances to be determined based upon the construction of the walls facing the storage piles.

3.7 Clearances from vegetation

- (1) Storage yards shall be maintained free of combustible ground vegetation,
 - (a) over a distance of 6 m from the stored product to grass and weeds, and
 - (b) over a distance of 30 m from the stored product to brush and forested areas.

The purpose of this Article is to prevent a fire spreading along ground vegetation and involving the stored product.



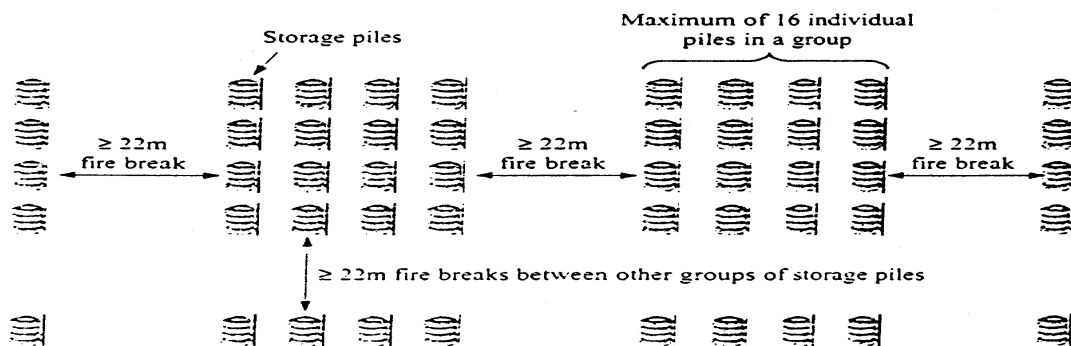
3.8 Fire breaks

- (1) Where the bulk volume of stored product is more than 4800 m³, fire breaks shall be provided around the perimeter of each group of storage piles in accordance with Sentences (2) and (3).
- (2) Individual storage piles shall be arranged so that there are not more than 16 individual storage piles per group.
- (3) Fire breaks shall be at least 22 m wide.

The individual storage piles described here must conform to the storage pile dimension requirements stated in Articles 3.4 and 3.5.

- *Not more than 3m in height and 100 square metres in area: 3 x 100m² = 300m³.*
- *Be separated from other piles of stored product by at least 6m.*

The intent of Article 3.8 is to limit the concentration of storage piles and ensure that an area, that is free of all other combustibles and at least 22m wide, is provided to allow access for fire department crews and vehicles, and to help prevent the spread of fire to other groups of stored tire piles.



3.9 Alternative measures

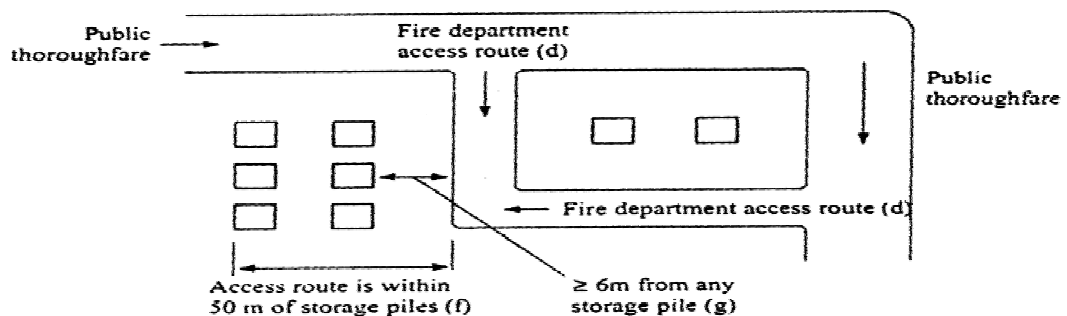
Despite Articles 3.5 to 3.8, other pile arrangements that will prevent the spread of fire and that are approved may be used.

This Article permits alternative pile arrangements to Articles 3.4 to 3.8 provided that fire spread is prevented and the arrangements are approved by the Chief Fire Official.

3.10 Fire Department Access

- (1) Each tire storage yard shall be provided with fire access routes.
- (2) The fire access routes shall:
 - (a) have a clear width of at least 6 m,
 - (b) be designed to support the loads imposed by fire fighting equipment,
 - (c) be surfaced with material designed to permit accessibility under all climatic conditions,
 - (d) be connected with a public thoroughfare in at least two places that are located as remotely as is possible in the circumstances from each other,
 - (e) be located within all pile clearances identified in Articles 3.6 (1), (2) or (3) and within all fire breaks required in Article 3..8,
 - (f) be within 50 m of any point in the storage yard where storage piles are located,
 - (g) be at least 6 m from any storage pile, and
 - (h) be maintained accessible and unobstructed at all times.

The intent of (1) and (2) of Article 3.10 is to ensure that firefighters have access for bringing their equipment into the yard, getting to the fire quickly thereby increasing the efficiency of fire fighting efforts.



3.10 Fire Department Access (cont'd)

- (3) Despite Article 3.10 (1) and (2), alternate fire access routes may be provided if:
 - (a) the routes permit fire fighting vehicles and equipment access and permit the use of fire suppression techniques appropriate in the circumstances, and
 - (b) the routes are approved.

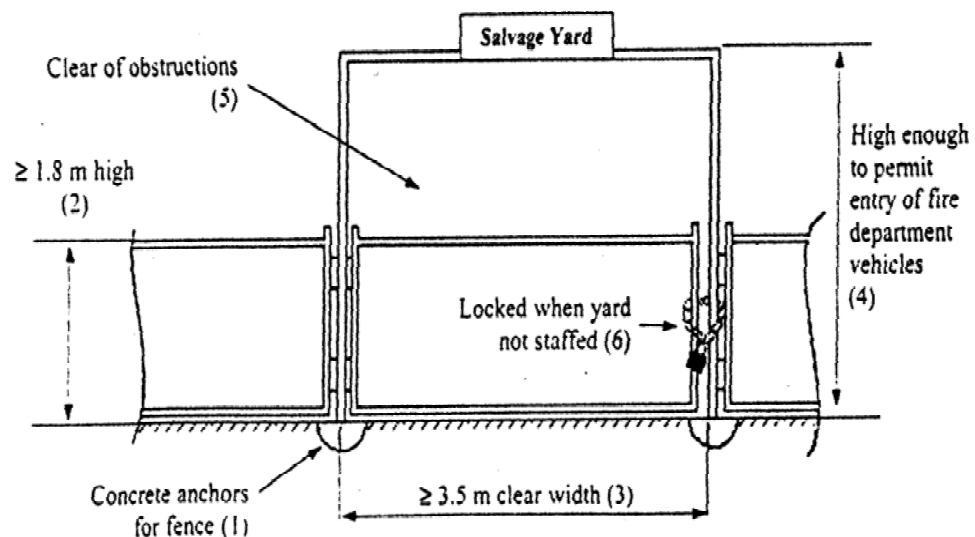
The intent of Article 3.10 (3) is to allow an alternate layout for Fire Department access in the yard.

Alternate fire routes may only be used where approved by the Chief Fire Official. The alternate access routes have to permit access for fire fighting vehicles and necessary equipment. These alternative fire access routes will permit the use of the fire suppression techniques that are appropriate for the respective yard.

3.11 Fencing

- (1) Where the bulk volume of stored product is more than 300 m³, the storage yard shall be surrounded by a firmly anchored fence or other approved method of security that controls unauthorized access to the storage yard.
- (2) Where a fence is used, the fence shall be at least 1.8 m high and constructed to discourage entry.
- (3) The fence shall have gateways with a clear width of at least 3.5 m.
- (4) The gateways shall be high enough to permit the entry of fire department vehicles.
- (5) The gateways shall be kept clear of obstructions so that the gates may be opened fully at all times.
- (6) The gates shall be locked when the storage yard is not staffed.

The intent of Article 3.11 is to ensure the security of salvage yards, prevent malicious acts (e.g. arson), and to ensure that gateways will allow access by fire department equipment to salvage yards. Fencing, gateways and security precautions must comply with the requirements set out in this article. Alternative security measures are permitted where approved.



3.12 Water supply

- (1) A public or private water supply shall be provided such that any part of the storage yard can be reached by using not more than 150 m of hose.
- (2) When the quantity of stored product is between 300 m³ and 1200 m³, the water supply system shall be capable of supplying 1860 L/min for 3 hours.
- (3) Where the quantity of stored product is 1200 m³ or more, the water supply system shall be capable of supplying 3780 L/min for 3 hours.

The intent of Article 3.12 is to ensure that an adequate public or private water supply is available for fire fighting.

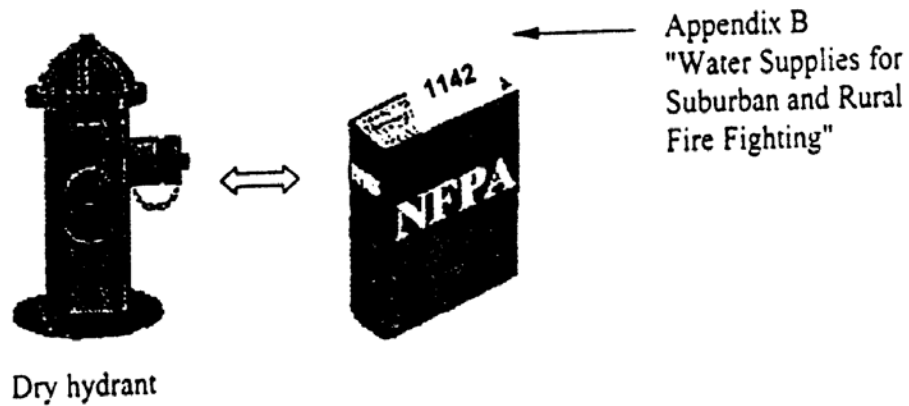
Where private or public fire hydrants are used, they must be situated such that any part of the salvage yard can be reached by using not more than 150 m of hose.

Quantity of stored product	Minimum water supply required
> 300 m³ and < 1200 m³	1860 L/min for 3 hours
1200 m³ and more	3780 L/min for 3 hours

3.12 Water supply (cont'd)

- (4) Where on-site reservoirs or other established water supplies are used as a fire department draft source to meet the requirements of Sentences (1), (2) and (3), they shall be equipped with dry hydrants in accordance with Appendix B of NFPA 1142, "Water Supplies for Suburban and Rural Fire Fighting".

The purpose of this Article is to ensure that on-site water supplies are readily accessible at all times by using dry hydrants that comply with Appendix B of NFPA 1142.



3.13 Alternative measures

Despite Article 3.12, other water supply systems or other measures may be used if the systems or measures will provide sufficient fire suppression capability in the circumstances and if the systems or measures are approved.

The intent of Article 3.13 is to allow the use of alternate water supply systems or, where water is not available, the use of other measures.

Alternative systems or measures may only be used where approved by the Chief Fire Official. These alternatives systems or measures must have sufficient fire protection capability given the circumstances before they can be approved.

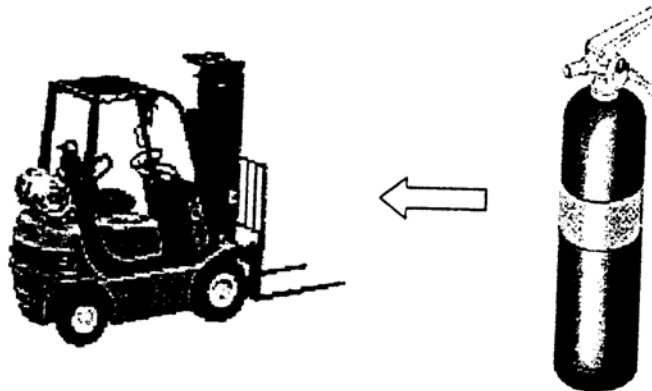
3.14 Fire extinguishers

Fuel-fired vehicles operating in the storage yard shall be equipped with a 2A:10BC or higher rated portable extinguisher conforming to the requirements of Section 6.2 of the National Fire Code.

This requirement specifies that each fuel-fired vehicle operating in the storage yard shall be equipped with a listed 2A:10BC or higher rated portable fire extinguisher mounted in brackets designed to accommodate the effects of jarring or vibration.

Fuel-fired vehicles can be an ignition source. Faulty electrical systems, hot engines or exhaust systems may create enough heat to ignite materials.

Placing a fire extinguisher on the vehicle, provides the operator with



immediate access to first aid fire fighting equipment.

4.0 QUESTIONS AND ANSWERS

- Q** Is smoking allowed in outdoor tire storage yards?
A *Smoking is prohibited in storage yards, except in areas where it does not present a fire hazard.*
- Q** What is the maximum height allowed for individual storage piles in a tire storage yard?
A *Individual tire piles may be no more than 3 m in height.*
- Q** Are cutting and welding operations allowed in tire storage yards?
A *Cutting, welding or heating devices shall not be operated in tire storage yards.*
- Q** What is the minimum clear space around each individual storage pile?
A *Each individual storage pile shall be separated by a clear space of at least 6 m.*
- Q** What is the minimum distance individual storage piles shall be from property lines?
A *Storage piles shall be 15 m from property lines.*
- Q** In tire storage yards what is the maximum volume allowed for individual storage piles?
A *Individual storage piles shall not be more than 300m³.*
- Q** What is the minimum required width for fire access routes in tire storage yards?
A *Fire access routes shall have a clear width of at least 6 m.*
- Q** When a fence is required around a tire storage yard what shall be the minimum height required?
A *When a fence is required it shall be at least 1.8 m high.*
- Q** What amount of water is required in a tire storage yard when the quantity of stored product is 1200m³ or more?
A *The water supply system shall be capable of supplying 3870 L/min for three hours.*
- Q** What rating must portable fire extinguishers carried by fuel-fired vehicles operating in outdoor tire storage yards have?
A *Extinguishers shall be 2A:10BC or higher rating.*
- Q** In tire storage yards where the volume of stored product exceeds 4800m³, what is the minimum required width of fire breaks?
A *Fire breaks shall be at least 22 m wide.*
- Q** Can individual storage piles be of different length, width and heights?
A *Individual storage piles can be of any length or width adding up to 100m², BUT they must not exceed 3 m in height.*
- Q** How far must stored product be from brush and forested areas?
A *Stored product shall be at least 30m from brush and forested areas.*