

Section 4.9. Process Plants

4.9.1. Scope

4.9.1.1. Application

- 1) Except as provided in Sentence (2), this Section applies to *process plants*, including *refineries*, that contain industrial processes involving *flammable liquids* or *combustible liquids*.
- 2) This Section does not apply to *distilleries* covered in Section 4.10.

4.9.2. Outdoor Processing Equipment

4.9.2.1. Location

- 1) The location of outdoor processing equipment in *process plants* shall be based on its *flammable liquid* or *combustible liquid* capacity as described in Sentences (2) to (4).
- 2) Except as provided in Sentence (4), outdoor processing equipment having emergency relief venting and a working pressure of not more than 17 kPa (gauge) shall be separated from property lines and *buildings* on the same property by distances
 - a) equal to those in Table 4.3.2.1. for stable liquids, and
 - b) 2.5 times those in Table 4.3.2.1. for *unstable liquids*.
- 3) Except as provided in Sentence (4), outdoor processing equipment having emergency relief venting and a working pressure more than 17 kPa (gauge) shall be separated from property lines and *buildings* on the same property by distances
 - a) 1.5 times those in Table 4.3.2.1. for stable liquids, and
 - b) 4 times those in Table 4.3.2.1. for *unstable liquids*.
- 4) Where protection is not provided against fires or explosions in processing equipment, the distances in Sentences (2) and (3) shall be doubled. (See Sentence 4.3.2.5.(2).)

4.9.3. Processing Buildings

4.9.3.1. Explosion Venting

- 1) Except as provided in Article 4.9.4.2., where Class IA liquids or *unstable liquids* are processed within a room or a *building*, the room or *building* shall be designed to prevent critical structural and mechanical damage from an internal explosion in conformance with NFPA 68, "Explosion Protection by Deflagration Venting." (See Note A-3.2.8.2.(1)(d).)

4.9.3.2. Fire Separations

- 1) Areas where *unstable liquids* are handled or where small scale unit chemical processes occur shall conform to Article 3.3.6.8. of Division B of the British Columbia Building Code.

4.9.3.3. Basements and Pits

- 1) *Process plants* where Class I and II liquids are handled shall not have *basements* or covered pits.

4.9.3.4. Ventilation

- 1) Equipment used in a *building* and the ventilation of the *building* shall be designed so as to limit flammable vapour-air mixtures under normal operating conditions to the interior of equipment, and to not more than 1.5 m from such equipment. (See Note A-4.9.3.4.(1).)

4.9.4. Fire Prevention and Protection

4.9.4.1. Spill and Vapour Control

- 1) Processing equipment shall be designed and arranged to
 - a) prevent the unintentional escape of liquids and vapours, and
 - b) minimize the quantity escaping in the event of accidental release.

4.9.4.2. Explosion Protection

- 1) Processing equipment where an explosion hazard is present shall be
 - a) designed to withstand the explosion pressure without damage to the equipment,
 - b) provided with explosion venting in conformance with NFPA 68, “Explosion Protection by Deflagration Venting,” or
 - c) provided with an explosion prevention system in conformance with NFPA 69, “Explosion Prevention Systems.”

4.9.4.3. Fire Protection

- 1) The risks of fire and explosion at *process plants* shall be evaluated based on
 - a) material properties,
 - b) material quantities,
 - c) operating conditions,
 - d) arrangement of stored materials,
 - e) transportation of materials,
 - f) process design, and
 - g) operating and maintenance procedures.
- 2) Based on the evaluation required in Sentence (1), measures to minimize the occurrence of fires and explosions and to mitigate their effects shall be identified.
- 3) Where the process warrants protection, *process plants* shall be supplied with
 - a) water supplies of adequate pressure and quantity to meet the probable fire demands,
 - b) hydrants,
 - c) hoses connected to a permanent water supply and located so that all equipment containing *flammable liquids* or *combustible liquids*, including pumps, can be reached with at least one hose stream, and
 - d) fire protection systems conforming to Part 2.
- 4) The fire protection systems required by Sentence (3) shall be installed in conformance with Subsection 2.1.3.

4.9.4.4. Emergency Procedures

- 1) Emergency procedures conforming to Article 4.1.5.5. shall be established for *refineries* and *process plants*.