VIRGINIA FIRE SERVICES BOARD

Codes and Standards Subcommittee

Thursday, July 18, 2019

A regular meeting of the Codes and Standards Subcommittee was held at VDFP HQ at 10am on Friday, June 21, 2019. Code Subcommittee Chair, Andrew Milliken facilitated this meeting.

COMMITTEE MEMBERS PRESENT
Andrew C. Milliken, Chair
Steven Sites
Garrett Dyer
Linda Haile
Ernie Little
Mike Perdue
Maurice Wilson

COMMITTEE MEMBERS ABSENT
Keith Johnson
Perry Weller
Elain B. Gall
Henry Rosenbaum
Kris Bridges
Andrew Friedman (BHCD)
VACANT, State Fire Marshal

GUESTS PRESENT
N/A

AGENCY MEMBERS PRESENT

Mohamed G. Abbamin

UNFINISHED BUSINESS

A. Chapters 50, 51, 53, 54, 55, and 56 (motion approved)
B. Chapters - 56, 57, 59, 60, 62,63, 64, 65, 66, 67 – attempt to complete

NEW BUSINESS

N/A

COMMENTS FROM FIRE PREVENTION AND CONTROL CHAIRMAN

Andrew Milliken welcomed attendees.

UNFINISHED BUSINESS

Topic Discussion: Edits made to the chapters below are in the form of VFSB Code Subcommittee Recommendations;

Chapter 50

- **Section 5001.3.3** - provides performance based alternatives, not standard maintenance or prescriptive code requirements. Therefore, reference to maintaining in accordance with the building code would not be appropriate
- **Section 5001.3.3** provides performance based alternatives, not standard maintenance or prescriptive code requirements. Therefore, reference to maintaining in accordance with the building code would not be appropriate.
- 5003.1.3
- **5003.1.4** Quantities exceeding the maximum allowable quantity per control area. The storage and use of hazardous materials in quantities exceeding the maximum allowable quantity per control area indicated in Tables 5003.1.1(1) through 5003.1.1(4) shall be approved by the Building Code Official in accordance with the applicable building code.
- **5003.2** Systems, equipment and processes. Systems, equipment and processes utilized for storage, dispensing, use or handling of hazardous materials shall be in accordance with Sections 5003.2.1 through 5003.2.8
- **(N)5003.2.1** Design and construction of containers, cylinders and tanks. Portable containers and cylinders shall be designed and constructed in accordance with approved standards. Containers, cylinders, and other means used for

containment of hazardous materials shall be of an approved type. Pressure vessels not meeting U.S. Department of Transportation requirements for transportation shall comply with the ASME Boiler and Pressure Vessel Code. Tanks shall be maintained as approved in accordance with the applicable building code.

- **(N)5003.2.2** Piping, tubing, valves and fittings. Piping, tubing, valves, and fittings conveying hazardous materials shall be maintained in accordance with ASMEB31 or other approved standards in accordance with the applicable building code
- **5003.2.3** Equipment, machinery and alarms. Equipment, machinery and detection and alarm systems associated with the use, storage or handling of hazardous materials shall be listed or approved.
- **5003.2.4.1** Underground tanks. Underground tanks used for the storage of liquid hazardous materials shall maintain secondary containment. In lieu of secondary containment for an underground tank, an above-ground tank in an underground vault complying with the applicable building code and Section 5704.2.8 shall be permitted.
- **5003.2.4.2** Above-ground tanks. Above-ground stationary tanks used for the storage of hazardous materials shall be maintained in accordance with the requirements for outdoor storage of the particular material involved. Exception: Above-ground tanks that are installed in vaults complying with the applicable building code and maintained in accordance with Section 5303.16 or 5704.2.8 shall not be required to comply with location and protection requirements for outdoor storage.
- **5003.2.7** Liquid-level limit control. Atmospheric tanks having a capacity greater than 500 gallons (1893 L) and which contain hazardous material liquids shall maintain a liquid-level limit control or other approved means to prevent overfilling of the tank in accordance with the applicable building code.
- **5003.8** Construction requirements. Buildings, control areas, enclosures and cabinets for hazardous materials shall be in accordance with Sections 5003.8.1 through 5003.8.6.3.
- **5003.8.2** Detached buildings. Group H occupancies containing quantities of hazardous materials in excess of those set forth in Table 5003.8.2 shall be located as required by the applicable building code.
- **5003.8.3** Control areas. Control areas shall comply with Sections 5003.8.3.1 through 5003.8.3.5. Exception: Higher education laboratories in accordance with Chapter 38 and the applicable building code.
- **5003.8.3.1** Control Areas. Control areas separated from each other by fire barriers shall maintain those fire barriers in accordance with Chapter 7.
- **5003.8.3.2** Percentage of maximum allowable quantities. The percentage of maximum allowable quantities of hazardous materials per control area allowed at each floor level within a building shall be maintained in accordance with this chapter and the applicable building code. Quantities exceeding those listed in Table 5003.8.3.2 shall be approved by the Building Official in accordance with the applicable building code.

- **5003.8.3.4** Fire-resistance-rating requirements. The required fire-resistance rating for control areas shall be maintained in accordance with Chapter 7, this Chapter and the applicable building code.
- **5003.8.3.5** Hazardous material in Group M display and storage areas and in Group S storage areas. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed within a single control area of a Group M display and storage area or a Group S storage area shall comply with this chapter and the applicable building code.The aggregate quantity is allowed to exceed the maximum allowable quantities per control area specified in Tables 5003.1.1(1) and 5003.1.1(2), without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with Section 5003.11 and the applicable building code.
- **5003.8.4** Gas rooms. Where a gas room is provided it shall be maintained in accordance with the provisions of Chapter 60, this chapter, and the applicable building code.
- **5003.8.4.1** Protection. Gas rooms shall maintain fire protection systems and separation from the remainder of the building in accordance with the applicable building code.
- **5003.8.4.2** Ventilation system. The ventilation system for gas rooms shall be maintained in accordance with this chapter, Chapter 60, and the applicable building code.
- **5003.8.5** Exhausted enclosures. Where an exhausted enclosure is used to increase maximum allowable quantity per control area, the exhausted enclosure shall be maintained in accordance with this chapter, Chapter 60, and the applicable building code
- **5003.8.5.1** Construction. Exhausted enclosures shall remain as and be maintained with noncombustible materials unless otherwise approved by the applicable building code.
- **5003.8.5.2 Ventilation.** The ventilation system for exhausted enclosures shall be maintained in accordance with this chapter, Chapter 60, and approved by the applicable building code.
- **5003.8.5.3** Fire-extinguishing system. Fire-extinguishing systems required for exhaust enclosures shall be maintained in accordance with Chapter 9 and the applicable building code.
- **5003.8.6.2** Ventilation. The ventilation system for gas cabinets shall be maintained in accordance with this chapter, Chapter 60, and approved by the applicable building code.
- **5003.9.9 Shelf storage**. Shelving shall be of substantial construction, comply with the requirements of this chapter and NFPA 30, and shall be braced and anchored in accordance with the seismic design requirements of the appicable Building Code. Shelving shall be treated, coated or constructed of materials that are compatible with the hazardous materials stored. Shelves shall be provided with a lip or guard when used for the storage of individual containers.
- **5003.11.1** Maximum allowable quantity per control area in Group M or S occupancies. The aggregate amount of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a

single control area of a Group M occupancy or stored in a single control area of a Group S occupancy shall not exceed the amounts set forth in the applicable building code. Quantities exceeding those listed in Table *5003.11.1* shall be approved by the Building Official in accordance with the applicable building code.5003.8.3.3 Number. The maximum number of control areas per floor within a building shall be maintained in accordance with this chapter and the applicable building code.

- **5003.11.2** Maximum allowable quantity per outdoor control area in Group M or S occupancies. The aggregate amount of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single outdoor control area of a Group M occupancy shall not exceed the amounts set forth in the applicable building code. Quantities exceeding those listed in Table 5003.11.1 shall be approved by the Building Official in accordance with the applicable building code.
- **5003.11.3** Storage and display. Storage and display shall be in accordance with Sections 5003.11.3.1 through 5003.11.3.10.
- **5003.11.3.1** Density. Storage and display of solids shall not exceed 200 pounds per square foot (976 kg/m2) of floor area actually occupied by solid merchandise. Storage and display of liquids shall not exceed 20 gallons per square foot (0.50 L/m2) of floor area actually occupied by liquid merchandise.
- **5003.11.3.2** Storage and display height.
- Display height shall not exceed 6 feet (1829 mm) above the finished floor in display areas of Group M occupancies. Storage height shall not exceed 8 feet (2438 mm) above the finished floor in storage areas of Group M and Group S occupancies.
- **5003.11.3.4** Racks and shelves.
- Racks and shelves used for storage or display shall be maintained in accordance with Section 5003.9.9.
- **5003.11.3.8** Floors. Floors shall be maintained in accordance with section 5004.12 unless otherwise approved by the applicable building code.
- **5004.1 Scope**. Storage of hazardous materials in amounts exceeding the maximum allowable quantity per control area shall be maintained in Sections 5001, 5003 and 5004 and the applicable building code. Storage of hazardous materials in amounts not exceeding the maximum allowable quantity per control area shall be in accordance with Sections 5001 and 5003 and the applicable building code. Retail and wholesale storage and display of nonflammable solid and nonflammable and noncombustible liquid hazardous materials in Group M occupancies and Group S storage shall be maintained in accordance with section 5003.11 and the applicable building code.
- **5004.2** Spill control and secondary containment for liquid and solid hazardous materials. Spill control and secondary containment for rooms, buildings or areas used for the storage of liquid or solid hazardous materials shall be

maintained in accordance with this Chapter the applicable building code. Exception: Outdoor storage of containers on approved containment pallets in accordance with Section 5004.2.3.

- **5004.2.1** Spill control for hazardous material liquids.
- Unless otherwise required by the applicable building code, rooms, buildings or areas used for the storage of hazardous material liquids in individual vessels having a capacity of more than 55 gallons (208 L), or in which the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L), shall maintain spill control to prevent the flow of liquids to adjoining areas in accordance with the applicable building code.
- **5004.2.2** Secondary containment for hazardous material liquids and solids.
- Unless otherwise required by the applicable building code, buildings, rooms or areas used for the storage of hazardous materials liquids or solids shall maintain secondary containment in accordance with the applicable building code and this section when the capacity of an individual vessel or the aggregate capacity of multiple vessels exceeds the following: Liquids: Capacity of an individual vessel exceeds 55 gallons (208 L) or the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L); and Solids: Capacity of an individual vessel exceeds 550 pounds (250 kg) or the aggregate capacity of multiple vessels exceeds 10,000 pounds (4540 kg).
- **5004.2.2.1** Containment and drainage methods. Facilities, equipment, and method used for containment and drainage of hazardous materials and fire protection water shall be maintained in accordance with this Chapter and the applicable building code.
- **5004.2.2.5 Monitoring.** An approved monitoring method shall be provided to detect hazardous materials in the secondary containment system. The monitoring method is allowed to be visual inspection of the primary or secondary containment, or other approved means. Where secondary containment is subject to the intrusion of water, a monitoring method for detecting water shall be provided. Where monitoring devices are provided, they shall remain connected to approved visual or audible alarms in accordance with the applicable building code.
- **5004.2.2.6** Drainage system design. Drainage systems shall be maintained in accordance with this Chapter and the applicable building code.
- **5004.3 Ventilation.** Indoor storage areas and storage buildings shall maintain ventilation in accordance with the applicable building code and it shall be operated and maintained in accordance with this Chapter. Exception: Storage areas for flammable solids complying with Chapter 59.
- **5004.5** Automatic sprinkler systems. Automatic sprinkler systems for the storage of hazardous materials shall be maintained in accordance with this Chapter, chapter 9 and the applicable building code.
- **(N)5004.6** Explosion control. Explosion control for storage rooms, areas and buildings shall be maintained in accordance with this chapter, chapter 9 and the applicable building code.

- **5004.7** Standby or emergency power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required to have emergency or standby power systems in accordance with the applicable building code, those power systems shall be operated and maintained in accordance with NFPA 70, Section 604, and this Chapter.
- **5004.8 Limit controls.** Limit controls shall be maintained in accordance with Sections 5004.8.1 and 5004.8.2.
- **5004.8.1** Temperature control. Where materials that must be kept at temperatures other than normal ambient temperatures to prevent a hazardous reaction shall maintain a means to maintain the temperature within a safe range method in accordance with this Chapter and the applicable building code.
- **5004.8.2** Pressure control. Stationary tanks and equipment containing hazardous material liquids that can generate pressures exceeding design limits because of exposure fires or internal reaction shall maintain an approved means that will relieve excessive internal pressure in accordance with the applicable building code.
- **5004.9** Emergency alarm. Where provided, an approved manual emergency alarm system shall be maintained in buildings, rooms or areas used for storage of hazardous materials in accordance with Chapter 9 and the applicable building code.
- **5004.10** Supervision and monitoring. Where emergency alarm, detection and automatic fire-extinguishing systems are required by the applicable building code to be electrically supervised they shall maintain monitoring by an approved supervising station, or when approved, sound an audible and visual signal at a constantly attended on-site location.
- **5004.12** Noncombustible Floors. Except for surfacing, floors of storage areas shall remain non-combustible where required by the applicable building code.
- **5005.1** General. Use, dispensing and handling of hazardous materials in amounts exceeding the maximum allowable quantity per control area shall be maintained in accordance with Sections 5001, 5003 and 5005 and the applicable building code. Use, dispensing and handling of hazardous materials in amounts not exceeding the maximum allowable quantity per control area set forth in Section 5003.1 shall be maintained in accordance with Sections 5001 and 5003 and the applicable building code.
- **5005.1.2** Noncombustible floor. Except for surfacing, floors of areas where liquid or solid hazardous materials are dispensed or used in open systems shall be maintained as noncombustible, and liquid-tight where required by the applicable building code.
- **5005.1.3** Spill control and secondary containment for hazardous material liquids. Where required by the applicable building code, spill control and secondary containment shall be maintained in accordance with section 5004.2 and the applicable building code.
- **5005.1.4** Limit controls. Limit controls shall be maintained in accordance with Sections 5005.1.4.1 through 5005.1.4.4.

- **5005.1.4.1** High-liquid-level control. Where required by the applicable building code, open tanks in which liquid hazardous materials are used shall maintain a liquid-level limit control or other means to prevent overfilling of the tank.
- **5005.1.4.2** Low-liquid-level control. Where required by the applicable building code, approved safeguards shall be maintained to prevent a low-liquid level in a tank from creating a hazardous condition, including but not limited to, overheating of a tank or its contents.
- **5005.1.4.3** Temperature control. Where required by the applicable building code, temperature controls shall be maintained in accordance with Section 5004.8.1.
- **5005.1.4.4** Pressure control. Where pressure controls are required by the applicable building code they shall be maintained in accordance with section 5004.8.2.
- **5005.1.5** Standby or emergency power.
- Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required to have emergency or standby power systems in accordance with the applicable building code, those power systems shall be operated and maintained in accordance with NFPA 70, Section 604, and this Chapter.
- **5005.1.6** Supervision and monitoring. Where emergency alarm, detection and automatic fire-extinguishing systems are required by the applicable building code to be electrically supervised they shall maintain monitoring by an approved supervising station, or when approved, sound an audible and visual signal at a constantly attended on-site location.
- **5005.1.7** Lighting. Natural or artificial lighting provided for use, dispensing and handling of hazardous materials shall be maintained in accordance with this Chapter, Chapter 6, and the applicable building code.
- **5005.1.8** Fire-extinguishing systems. Where Fire-extinguishing systems for rooms or areas in which hazardous materials are dispensed or used are required by the applicable building code they shall be maintained in accordance with this Chapter, Chapter 9, and the applicable building code
- **5005.1.9** Ventilation. Indoor dispensing and use areas shall be operated and maintained with exhaust ventilation in
- accordance with the applicable building code and Section 5004.3. Ventilation is not required for dispensing and use of flammable solids other than finely divided particles.
- **5005.2.1.3 Spill** control for hazardous material liquids. Buildings, rooms, or areas where hazardous material liquids are dispensed into vessels exceeding a 1.3-gallon (5 L) capacity or used in open systems exceeding a 5.3-gallon (20 L) capacity shall be maintained with spill control in accordance with Section 5004.2.1 and the applicable building code.
- **5005.2.1.4** Secondary containment for hazardous material liquids. Where required by the applicable building code and Table 5005.2.1.4, buildings, rooms or areas where hazardous material liquids are dispensed or used in open systems shall maintain secondary containment in accordance with Section 5004.2.2 when the capacity of an individual vessel or

system or the capacity of multiple vessels or systems exceeds the following: Individual vessel or system: greater than 1.3 gallons (5 L). Multiple vessels or systems: greater than 5.3 gallons (20 L).

- **5005.2.2.1** Ventilation. Where closed systems are designed to be opened as part of normal operations, ventilation required by the applicable building code shall be maintained in accordance with Section 5005.2.1.1.
- **5005.2.2.2** Explosion control. Where required by the applicable building code, explosion control shall be maintained in accordance with Section 5004.6 where an explosive environment exists because of the hazardous materials dispensed or used, or as a result of the dispensing or use process. Exception: Where process vessels are designed to contain fully the worst-case explosion anticipated within the vessel under process conditions based on the most likely failure.
- **5005.2.2.3** Spill control for hazardous material liquids. Where required by the applicable buildind code, spill control for buildings, rooms or areas where hazardous material liquids are used in individual vessels exceeding a 55-gallon (208 L) capacity shall be provided with spill control in accordance with Section 5004.2.
- **5005.2.2.4** Secondary containment for hazardous material liquids. Where required by the applicable buildilng code and Table 5005.2.1.4, buildings, rooms or areas where hazardous material liquids are used in vessels or systems shall maintain secondary containment in accordance with Section 5004.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following: Individual vessel or system: greater than 55 gallons (208 L) and Multiple vessels or systems: greater than 1,000 gallons (3785 L).
- **5005.3.4** Spill control for hazardous material liquids in open systems. Outdoor areas where hazardous material liquids are dispensed in vessels exceeding a 1.3-gallon (5 L) capacity or used in open systems exceeding a 5.3-gallon (20 L) capacity shall be provided with spill control in accordance with Section 5004.2.1 and the applicable building code. Where required by the applicable building code and Table 5005.2.1.4, outdoor areas where hazardous material liquids are dispensed or used in open systems shall maintain secondary containment in accordance with Section 5004.2.2 when the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following: Individual vessel or system: greater than 1.3 gallons (5 L). Multiple vessels or systems: greater than 5.3 gallons (20 L).
- **5005.3.6** Spill control for hazardous material liquids in closed systems. Outdoor areas where hazardous material liquids are used in closed systems exceeding 55 gallons (208 L) shall maintain spill control in accordance with Section 5004.2.1 and the applicable building code.
- **5005.3.7** Secondary containment for hazardous material liquids in closed systems. Where required, outdoor areas where hazardous material liquids are dispensed or used in closed systems shall maintain secondary containment in accordance with the applicable building code and section 5004.2.2 where the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following: 1. Individual vessel or system greater than 55 gallons (208 L). 2. Multiple vessels or systems greater than 1,000 gallons (3785 L).

- **5005.4 Handling.** Handling of hazardous materials shall be in accordance with Sections 5005.4.1 through 5005.4.4.
- **5005.4.1** Quantities exceeding the maximum allowable quantity per control area. Handling of hazardous materials in indoor and outdoor locations in amounts exceeding the maximum allowable quantity per control area indicated in Tables 5003.1.1(1) through 5003.1.1(4) and the applicable building code shall be in accordance with Sections 5001, 5003, 5005.1 and 5005.4.
- **5005.4.2** Quantities not exceeding the maximum allowable quantity per control area. Handling of hazardous materials in indoor locations in amounts not exceeding the maximum allowable quantity per control area indicated in Tables 5003.1.1(1) and 5003.1.1(2) and the applicable building code shall be in accordance with Sections 5001 and 5003 and 5005.1. Handling of hazardous materials in outdoor locations in amounts not exceeding the maximum allowable quantity per control area indicated Table 5003.1.1(3) and 5003.1.1(4) and the applicable building code shall be in accordance with Sections 5001 and 5003.
- **5005.4.4** Dispensing, use and handling. Unless otherwise permitted by the applicable building code, hazardous materials having a hazard ranking of 3 or 4 in accordance with NFPA 704 should not be transported through corridors, interior exit stairways or ramps or exit passageways, unless such areas maintain an emergency telephone system, a local manual alarm station or an approved alarm-initiating device throughout the transport route. Where required by the applicable building code, the signal shall be relayed to an approved central, proprietary or remote station service or constantly attended on-site location and shall also initiate a local audible alarm.

Chapter 51

- **5104.1** General. The inside storage of Levels 2 and 3 aerosol products shall be maintained in accordance with section 5104.2 through 5104.7, NFPA 30B, and remain in accordance with the applicable building code.
- **5104.3** Storage in general purpose warehouses.
- Aerosol storage in general purpose warehouses utilized only for warehousing-type operations involving mixed commodities shall be maintained in accordance with Section 5104.3.1 or 5104.3.2 and remain in accordance with the applicable building code.
- **5104.3.1** Nonsegregated storage.
- Unless otherwise approved by the applicable building code, storage consisting of solid pile, palletized or rack storage of Level 2 and 3 aerosol products not segregated into areas utilized exclusively for the storage of aerosols shall comply with Table 5104.3.1.
- **5104.3.2** Segregated storage.

- Unless otherwise approved by the applicable building code, storage of Level 2 and 3 aerosol products segregated into areas utilized exclusively for the storage of aerosols shall comply with Table 5104.3.2 and Sections 5104.3.2.1 and 5104.3.2.2. Keep table - operational storage limits
- **5104.3.2.1** Chain-link fence enclosures. Unless otherwise approved by the applicable building code, chain-link fence enclosures required by Table 5104.3.2 shall be maintained in accordance with the following: The fence shall not be less than No. 9 gage steel wire, woven into a maximum 2-inch (51 mm) diamond mesh. 2.The fence shall be maintained from the floor to the underside of the roof or ceiling above. 3.Class IV and high-hazard commodities shall be stored outside of the aerosol storage area and a minimum of 8 feet (2438 mm) from the fence. 4.Access openings in the fence shall be maintained with either self- or automatic-closing devices or a labyrinth opening arrangement preventing aerosol containers from rocketing through the access openings. 5.Not less than two means of egress shall be maintained from the fenced enclosure.
- **5104.3.2.2** Aisles. The minimum aisle requirements for segregated storage in general purpose warehouses shall be maintained in accordance with Table 5104.3.2.2 and remain in accordance with the applicable building code. Keep table - operational storage limits
- **5104.4** Storage in aerosol warehouses. The total quantity of Level 2 and 3 aerosol products in a warehouse utilized for the storage, shipping and receiving of aerosol products shall not be restricted in structures complying with Sections 5104.4.1 through 5104.4.4.
- **5104.4.1** Automatic sprinkler system capability. Aerosol warehouses protected by an approved wet-pipe automatic sprinkler system in accordance with NFPA 30B and the applicable building code shall be maintained in accordance with Chapter 9. The highest classification level of aerosol product present shall not exceed the capability of the approved sprinkler system.
- **5104.4.2** Pile and palletized storage aisles.
- Solid pile and palletized storage shall be arranged so the maximum travel distance to an aisle is 25 feet (7620 mm). Aisles shall have a minimum width of 4 feet (1219 mm). 5104.4.3 Rack storage aisles. Rack
- storage shall be maintained in accordance with Chapter 32 and remain in accordance with the applicable building code.
- **5104.4.4** Combustible commodities. Combustible commodities other than flammable and combustible liquids shall be permitted to be stored in an aerosol warehouse. Exception: Flammable and combustible liquids in 1-quart (946 mL) metal containers and smaller shall be permitted to be stored in an aerosol warehouse.
- **5104.5** Storage in inside flammable liquid storage rooms.
- Inside flammable liquid storage rooms shall be maintained in accordance with Section 5704.3.7 unless otherwise approved by the applicable building code. The maximum quantities of aerosol products shall be maintained in accordance with Section 5104.5.1 or 5104.5.2.

- **5104.5.1** Storage rooms of 500 square feet or less. The storage of aerosol products in flammable liquid storage rooms less than or equal to 500 square feet (46 m2) in area shall not exceed the following quantities: 1.A net weight of 1,000 pounds (454 kg) of Level 2 aerosol products. 2.A net weight of 500 pounds (227 kg) of Level 3 aerosol products. 3.A combined net weight of 1,000 pounds (454 kg) of Level 2 and 3 aerosol products.
- **5104.5.2** Storage rooms greater than 500 square feet.
- The storage of aerosol products in flammable liquid storage rooms greater than 500 square feet (46 m2) in area shall not exceed the following quantities: 1.A net weight of 2,500 pounds (1135 kg) of Level 2 aerosol products. 2.A net weight of 1,000 pounds (454 kg) of Level 3 aerosol products. 3.A combined net weight of 2,500 pounds (1135 kg) of Level 2 and 3 aerosol products. The maximum aggregate storage quantity of Level 2 and 3 aerosol products permitted in separate inside storage rooms protected by an approved automatic sprinkler system in accordance with NFPA 30B shall be 5,000 pounds (2270 kg).
- **5104.6** Storage in liquid warehouses. The storage of Level 2 and 3 aerosol products in liquid warehouses shall be maintained in accordance with NFPA 30B. Unless otherwise approved by the applicable building code, the storage shall be maintained within segregated storage areas in accordance with Section 5104.3.2 and Sections 5104.6.1 through 5104.6.3.
- **5104.6.1** Containment. Where provided, spill control or drainage shall be maintained to prevent the flow of liquid to within 8 feet (2438 mm) of the segregated storage area.
- **5104.6.2** Sprinkler system.
- Sprinkler protection shall be maintained in accordance with Chapter 9.
- **5104.6.3** Opening protection into segregated storage areas.
- Fire doors or gates opening into the segregated storage area shall be maintained in accordance with Chapter 7 and remain in accordance with the applicable building code.
- **5104.7** Storage in Group M occupancies. Storage of Level 2 and 3 aerosol products in occupancies in Group M shall be maintained in accordance with Table **5104.7** unless otherwise approved in accordance with the applicable building code. Retail display shall be maintained in accordance with Section 5106. Keep table - operational storage limits
- **5106.1** General.
- This section shall apply to the retail display of 500 pounds (227 kg) or more of Level 2 and 3 aerosol products.
- **5106.2** Aerosol display and normal merchandising not exceeding 8 feet (2438 mm) high.
- Aerosol display and normal merchandising not exceeding 8 feet (2438 mm) in height shall be maintained in accordance with Sections 5106.2.1 through 5106.2.4.
- **5106.2.1** Maximum quantities in retail display areas. Aerosol products in retail display areas shall not exceed quantities needed for display and normal merchandising and shall not exceed the quantities in Table 5106.2.1.

- **5106.2.2** Display of containers. Level 2 and 3 aerosol containers shall not be stacked more than 6 feet (1829 mm) high from the base of the aerosol array to the top of the aerosol array unless the containers are placed on fixed shelving or otherwise secured in an approved manner. When storage or retail display is on shelves, the height of such storage or retail display to the top of aerosol containers shall not exceed 8 feet (2438 mm).
- **5106.2.3** Combustible cartons. Aerosol products located in retail display areas shall be removed from combustible cartons. Exceptions: 1.Display areas that use a portion of combustible cartons that consist of only the bottom panel and not more than 2 inches (51 mm) of the side panel are allowed. 2.When the display area is protected in accordance with Tables 6.3.2.7(a) through 6.3.2.7(l) of NFPA 30B, storage of aerosol products in combustible cartons is allowed 5106.2.4 Retail display automatic sprinkler system. When an automatic sprinkler system is required for the protected retail display of aerosol products, the wet-pipe automatic sprinkler system shall be maintained in accordance with Chapter 9 and remain in accordance with NFPA 13 of the applicable building code. 5106.3 Aerosol display and normal merchandising exceeding 8 feet (2438 mm) high. Aerosol display and merchandising exceeding 8 feet in height shall be maintained in accordance with Sections 5106.3.1 through 5106.3.3.
- **5106.3.**1 Maximum quantities in retail display areas. Aerosol products in retail display areas shall not exceed quantities needed for display and normal merchandising and shall not exceed the quantities in Table 5106.2.1, with fire protection in accordance with Section 5106.3.2.
- **5106.3.2** Automatic sprinkler protection. Aerosol display and merchandising areas shall be protected by an automatic sprinkler system based on the requirements set forth in Tables 6.3.2.7(a) through 6.3.2.7(l) of NFPA 30B and the following:
- 1.Protection shall be based on the highest level of aerosol product in the array and the packaging method of the storage located more than 6 feet (1829 mm) above the finished floor. 2.When using the cartoned aerosol tables of NFPA 30B, uncartoned or display-cut Level 2 and 3 aerosols shall be permitted not more than 6 feet (1829 mm) above the finished floor.
- 3.The design area for Level 2 and 3 aerosols shall extend not less than 20 feet (6096 mm) beyond the Level 2 and 3 aerosol display and merchandising areas. 4.Where ordinary and high-temperature ceiling sprinkler systems are adjacent to each other, noncombustible draft curtains shall be maintained at the interface.
- **5106.3.3** Separation of Level 2 and 3 aerosol areas.
- Separation of Level 2 and 3 aerosol areas shall comply with the following:
- 1.Level 2 and 3 aerosol display and merchandising areas shall be separated from each other by not less than 25 feet (7620 mm). Also see Table 5106.2.1. 2.Level 2 and 3 aerosol display and merchandising areas shall be separated from flammable and combustible liquids storage and display areas by one or a combination of the following: 2.1.Segregating areas from each other by horizontal distance of not less than 25 feet (7620 mm). 2.2.Isolating areas from each other by

a noncombustible partition extending not less than 18 inches (457 mm) above the merchandise. 2.3.In accordance with Section 5106.5. 3.When Item 2.2 above is used to separate Level 2 or 3 aerosols from flammable or combustible liquids, and the aerosol products are located within 25 feet (7620 mm) of flammable or combustible liquids, the area below the noncombustible partition shall be liquid tight at the floor to prevent spilled liquids from flowing beneath the aerosol products.

- **5106.4 Maximum quantities in storage areas.** Aerosol products in storage areas adjacent to retail display areas shall not exceed the quantities in Table 5106.4.
- Keep table - operational storage limits
- **5106.5** Special protection design for Level 2 and 3 aerosols adjacent to flammable and combustible liquids in double-row racks. The display and merchandising of Level 2 and 3 aerosols adjacent to flammable and combustible liquids in double-row racks shall be maintained in accordance with Sections 5106.5.1 through 5106.5.8 or Section 5106.3.3.
- **5106.5.1 Fire protection.** Fire protection for the display and merchandising of Level 2 and 3 aerosols in double-row racks shall be maintained in accordance with Chapter 9, NFPA 30B and remain in accordance with the applicable building code. 5106.5.2Cartoned products. Level 2 and 3 aerosols displayed or merchandised more than 8 feet (2438 mm) above the finished floor shall be in cartons.
- 5106.5.3 Shelving. Unless otherwise approved by the applicable building code, shelving in racks shall be maintained as wire mesh shelving having uniform openings not more than 6 inches (152 mm) apart, with the openings comprising at least 50 percent of the overall shelf area.
- **5106.5.4 Aisles.** Racks shall be maintained so that aisles not less than 71/2 feet (2286 mm) wide are maintained between rows of racks and adjacent solid-piled or palletized merchandise.
- **5106.5.5 Flue spaces.** Flue spaces in racks shall comply with the following: 1.Transverse flue spaces—Nominal 3-inch (76 mm) transverse flue spaces shall be maintained between merchandise and rack uprights. 2.Longitudinal flue spaces—Nominal 6-inch (152 mm) longitudinal flue spaces shall be maintained.
- **5106.5.6** Horizontal barriers. Horizontal barriers of minimum 3/8-inch-thick (10 mm) plywood or minimum 0.034-inch (0.086 mm) (No. 22 gage) sheet metal shall be maintained in accordance with NFPA 30B when in-rack sprinklers are installed.
- **5106.5.7 Class I, II, III, IV and plastic commodities.**
- Class I, II, III, IV and plastic commodities located adjacent to Level 2 and 3 aerosols shall maintain protection from an approved NFPA 13 sprinkler system where required in accordance with the applicable building code.
- **5106.5.8 Flammable and combustible liquids.** Unless otherwise approved in accordance with the applicable building code, Class I, II, III A and III B Liquids shall be allowed to be maintained adjacent to Level 2 and 3 aerosol products when the following conditions are met: 1.Class I, II, IIIA and IIIB liquid containers: Containers for Class I, II, IIIA and IIIB

liquids shall be limited to 1.06-gallon (4 L) metal-relieving and nonbelieving style containers and 5.3-gallon (20 L) metal-relieving style containers, and 2.Fire protection for Class I, II, IIIA and IIIB Liquids: Automatic sprinkler protection for Class I, II, IIIA and IIIB liquids shall be in accordance with Chapter 57.

- **(N)5107.1** General. Manufacturing facilities shall be maintained in accordance with NFPA30B and remain in accordance with the applicable building code.

Chapter 53

- **5301.1** Scope. Storage, use and handling of compressed gases in compressed gas containers, cylinders, tanks and systems shall remain in accordance with the applicable building code and be maintained in accordance with this chapter, and the use and handling provisions of NFPA 55, including those gases regulated elsewhere in this code.
- **5305.5** Venting. Venting shall be maintained and operated in accordance with this chapter and remain in accordance with the applicable building code.

Chapter 54

- **5403.1** Quantities not exceeding the maximum allowable quantity per control area. The storage and use of corrosive materials in amounts not exceeding the maximum allowable quantity per control area shall be maintained in accordance with Sections 5001, 5003 and 5401.
- **5403.2** Quantities exceeding the maximum allowable quantity per control area. The storage and use of corrosive materials in amounts exceeding the maximum allowable quantity per control area shall be maintained in accordance with this chapter, chapter 50 and remain in accordance with the applicable building code for a high-hazard, group H occupancy.
- **5404.1.1** Liquid-tight floor. In addition to the provisions of Section 5004.12, floors in storage areas for corrosive liquids shall remain as liquid-tight construction in accordance with the applicable building code.
- 5404.2.1 Above-ground outside storage tanks. Where secondary containment is provided for above-ground outside storage tanks of corrosive liquids, it shall be maintained in accordance with Section 5004.2.2.
- **5405.1.2** Ventilation. Where required, mechanical exhaust ventilation shall be maintained and used in accordance with the applicable building code.

Chapter 55

- **5503.6** Electrical wiring and equipment. Electrical wiring and equipment shall be maintained in accordance with NFPA 70 and Sections 5503.7.1 and 5503.7.2.

- **5504.**2.1 Stationary containers. Stationary containers shall remain in accordance with the applicable building code and comply with the maintenance provisions of this section and those applicable to the type of fluid stored.
- **5504.2.1.2** Indoor storage areas. Cryogenic fluids in stationary containers stored indoors shall be stored in buildings, rooms or areas constructed for this use in accordance with the applicable building code.
- **5504.2.1.3** Ventilation. Storage areas for stationary containers shall be ventilated in accordance with the applicable building code.
- **5504.2.2.2** Indoor storage areas. Cryogenic fluids in portable containers stored indoors shall only be stored in buildings, rooms or areas constructed for this use in accordance with the applicable building code.
- **5504.2.2.3** Ventilation. Storage areas for portable containers shall be ventilated in accordance with the applicable building code.
- **5505.4.1.1** Ventilation. Ventilation required by the applicable building code shall be maintained and operated in areas where cryogenic fluids are dispensed. Exception: Cryogenic fluids that can be demonstrated not to create harmful vapors.

Chapter 56

- **5601.8.1.1** Mass-detonating explosives (Division 1.1, 1.2 or 1.5). The total net explosive weight of mass-detonating explosives (Division 1.1, 1.2 or 1.5) shall be used. See Table 5604.5.2(1) or Table 5605.3 as appropriate**.** Exception: When the TNT equivalence of the explosive material has been determined, the equivalence is allowed to be used to establish the net explosive weight.
- **5601.8.1.3** Combinations of mass-detonating and nonmass-detonating explosives (excluding Division 1.4). Combination of mass-detonating and nonmass-detonating explosives (excluding Division 1.4) shall be as follows: 1.When Division 1.1 and 1.2 explosives are located in the same site, determine the distance for the total quantity considered first as 1.1 and then as 1.2. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalence of the 1.2 is known, the TNT equivalent weight of the 1.2 items shall be allowed to be added to the total explosive weight of Division 1.1 items to determine the net explosive weight for Division 1.1 distance determination. See Table 5604.5.2(2) or Table 5605.3 as appropriate. 2.When Division 1.1 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as 1.1 and then as 1.3. The required distance is the greater of the two. When the Division 1.1 requirements are controlling and the TNT equivalence of the 1.3 is known, the TNT equivalent weight of the 1.3 items shall be allowed to be added to the total explosive weight of Division 1.1 items to determine the net explosive weight for Division 1.1 distance determination. See Table 5604.5.2(1), 5604.5.2(2) or 5605.3, as appropriate. 3.When Division 1.1, 1.2 and 1.3

explosives are located in the same site, determine the distances for the total quantity considered first as 1.1, next as 1.2 and finally as 1.3. The required distance is the greatest of the three. As allowed by paragraphs 1 and 2 above, TNT equivalent weights for 1.2 and 1.3 items are allowed to be used to determine the net weight of explosives for Division 1.1 distance determination. Table 5604.5.2(1) or 5605.3 shall be used when TNT equivalency is used to establish the net explosive weight. 4.For composite pyrotechnic items Division 1.1 and Division 1.3, the sum of the net weights of the pyrotechnic composition and the explosives involved shall be used. See Tables 5604.5.2(1) and 5604.5.2(2).

- **5605.6.4.1** Magazines. Magazines used for storage in processing areas shall be in accordance with the requirements of Section 5604.5.1. All explosive materials shall be removed to appropriate storage magazines for unattended storage at the end of the work day. The contents of indoor magazines shall be added to the quantity of explosives contained at individual workstations and the total quantity of material stored, processed or used shall be utilized to establish the intraplant separation distances indicated by Table 5605.3 or 5604.5.2(3), as appropriate.

Vote: Unanimous

Motion Action: Motion Carries

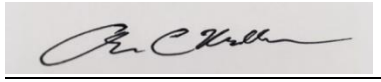
Topic: Scheduling of next meetings

Motion: N/A
Topic Discussion: Next meetings will be Thursday, September 25 @ 10am.

Vote: N/A

Motion Action: N/A

REVIEWED BY:



Andrew Milliken, Committee Chair — July 18, 2019 Date

Virginia Fire Services Board

MOTION

Committee (check one): ☐Fire Education & Training ☑Fire Prevention & Control Codes or Standards Comm.
☐Finance ☐Administration & Policy ☐Virginia Fire Services Board

Date: 7/18/19

Motion made by: ☐Committee or name: Ernie Little

Second (if required): Mike Perdue

Signature of presenter of motion: Ernest L Little

MOTION TO:

Approve the committee's recommendations to Chapters 50, 51, 53, 54, 55 and 56 of the 2018 Virginia Statewide Fire Prevention Code. These changes will be submitted to the 2018 Code Development process for consideration at the workgroup session

Amended: (y/n)

Motion Carried: ✓		Vote: Unanimous:	✓
		Majority:	
Motion Failed:		Abstentions:	