



Tuesday e-Tech Alert
January 18, 2005

Recent NFSA Interpretations – Special Occupancy Criteria

Some recent informal interpretations by the NFSA Engineering staff on the subject of fire sprinkler criteria from standards other than NFPA 13:

Q: NFPA 850 – *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations*, calls for minimum density/area criteria of 0.25 gpm/sq. ft. over 2500 sq. ft. for coal-handling structures (See A.13.31.1 (3) in the 2002 edition of NFPA 13). Should the design area be increased for a dry pipe system or if the roof slope exceeds 2 in 12?

A: Yes. Like other NFPA documents, NFPA 850 references NFPA 13 as the appropriate standard for sprinkler system design and installation. Although NFPA 850 recommends basic design criteria, modifications such as the 30% area increases for sloped ceilings and dry systems are still applicable under the rules of NFPA 13.

Q: How should science classrooms in a high school be considered with regard to sprinkler hazard classification?

A: NFPA 45 – *Fire Protection for Laboratories Using Chemicals* is applicable to laboratories in which chemicals are handled or stored, and criteria from that standard is extracted into Section 13.8.1 of the 2002 edition of NFPA 13. NFPA 45 divides chemistry laboratories into four different classifications based on the quantities of flammable liquids that are kept in the lab. Class A has the most flammable liquids and Class D the least. NFPA 45 calls for Class A and B laboratories to be protected as Ordinary Hazard Group 2, with Class C and D laboratories protected as Ordinary Hazard Group 1.

NFPA 45 does not apply to physical, electronic, instrument, laser, or similar laboratories that use chemicals only for incidental purposes, or with less than 4 liters (1.1 gallons) of flammable or combustible liquids and less than 2.2 cubic meters of flammable gas.

Q: Does NFPA 30 (Flammable Liquids Code) contain information on protecting water miscible flammable liquids in plastic containers stored on multiple-row racks?

A: No. Table 6.8.2(g) in the 2003 edition of NFPA provides protection criteria for single and double-row rack protection of water-miscible liquids in plastic containers, but unlike

other tables does not address multiple-row rack storage. This means that there has either been a lack of testing on the storage of such products on this configuration, or that the testing has not led to successful sprinkler performance criteria. In such cases, specific testing or engineering analysis is needed. In the absence of protection criteria, NFPA 30 calls for the building to be considered “unprotected” and limits the quantities of materials that can be present (Table 6.4.4.1 in the 2003 edition).

Q: What is the commodity classification of record storage?

A: NFPA 232 - *Protection of Records* is not among the documents for which extract information is contained within NFPA 13, but Section 7.1.3.1.1 of the 2000 edition of that standard states a position consistent with NFPA 13: “Paper records shall be protected as a Class III commodity.”

The 1991 edition of NFPA 232 required that “records” stored in cardboard boxes be treated as a Class IV commodity, but the 1995 edition was changed to the present wording that allows “paper records” to be classified as Class III. Accompanying changes to the 1995 edition clarified that other (non-paper) media records should be classified as appropriate to their combustibility. This is also consistent with NFPA 13, which states (Section 5.6.3.3.2 in the 2002 edition) that a Class III commodity can contain only a limited amount of Group A or B plastics, no more than 5 percent by weight or volume.

Items such as VHS cassettes and CD/DVD jewel cases are generally made of polystyrene, a Group A plastic. Substantial amounts of Group A or B plastics will warrant Class IV protection. The Owner’s Certificate added to the 2002 edition of NFPA 13 can be used to clarify the type of records to be protected, and whether more hazardous records will be segregated such that appropriate protection levels can be provided.

NFPA 13 (Section 5.6.1.2.3 in the 2002 edition) allows up to 10 pallet loads of a higher hazard commodity to be present in an area not exceeding 40,000 sq. ft. provided these pallets are randomly dispersed, which gives an indication of the very limited amount of higher hazard records that could be accommodated without increasing the commodity classification. The NFPA Sprinkler Handbook commentary for this section contains a discussion of mixed commodity classification and describes how fire testing at FM Global indicated that one tier of higher hazard among four tiers of storage tended to dictate the protection needs, regardless of whether it was located below, above, or homogeneously mixed with the lower hazard commodity.

Upcoming NFSA Technical Tuesday Online Seminar:

NFPA 13 Chapters 1-5 – Fundamentals and Hazard Classification
Instructor: Kenneth E. Isman, P.E.

Date: January 25, 2005

This seminar reviews the organization and content of the first five chapters of the sprinkler standard, beginning with the scope and purpose and including a discussion of how the standard can and can't be used. This is the first of a series of ten seminars dedicated to an in-depth review of the current (2002) edition of NFPA 13. This is your chance to learn from the experts who represent the fire sprinkler industry on the technical committees that write the sprinkler rules. Develop an appreciation for the way in which the material is organized in the 2002 edition while learning more about the background of the rules themselves.

The level of all seminar topics is considered intermediate. Because these seminars are being offered as a complete program on NFPA 13, a 30% discount is available when signing up for all ten seminars in the series.

Information and registration for this seminar is available at www.nfsa.org.

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