

## Training Topic #1

**USA** *Automatic Sprinkler Corporation* recently held the quarterly training session for its service and inspection customers. Included with this issue are outlines of two topics from that training session.

### Training Topic #1: Discussion on the International Building Code and Storage

1. International Building Code as adopted by The State of Indiana
  1. The IBC and IFC are “linked”
  2. Chapter 9 of the IBC is nearly identical to Chapter 9 of the IFC.
  3. When trying to answer the question: “Are sprinklers required?” there are two key elements to the question.
    1. Location driven:
      1. Below grade will normally require sprinklers
      2. Above 30 ft will most likely require sprinklers.
    2. Occupancy driven:
      1. Chapter 3 defines use and occupancy classifications.
      2. Chapter 9 is the “you must install” chapter for fire protection.
      3. Chapter 4 details special requirements based on occupancy.
      4. Chapter 5 details is the “if this is the case” “then that is applied.”
      5. Also details the construction trade-offs when sprinklers are used.
  4. The IBC and IFC try to provide balanced protection.
    1. Heavier reliance on active protection, i.e., fire sprinklers.
    2. Passive protection alone does not work
    3. Example: the One Meridian Plaza fire in Philadelphia.
  5. Chapter 10 of the Building Code deals with egress.
    1. A very hot topic among fire officials.
    2. Travel distance, dead end corridors, common path of travel, and separation between exits are very important topics to consider in any of the buildings being evaluated. All of the decisions related to egress affect fire protection decisions.
2. Storage and other code considerations:
  1. Evolution of storage fire protection requirements has gone through some very significant changes since 1996.
  2. 1999 edition of NFPA-13 merged two documents NFPA-231 and 231C into the one NFPA-13, 1999 document. This was done mostly for efficiency so that basic items from NFPA-13 installation were not repeated in multiple documents.
  3. 2002 NFPA-13 reorganized the chapters and added some significant changes to several of the chapters.
  4. 2007 NFPA-13 will have other significant changes
  5. Importance of keeping up to date. Questions:
    1. The current adopted code includes language that negatively affect life safety. The newer version, but not adopted, fixes the problem. Are you as a building owner, general contractor, or facilities manager responsible for upgrading the property to address this life safety concern? The practical, consensus answer is yes.

1. NFPA 13 1999 edition and NFPA 13 2002 edition address protection areas and maximum spacing for light hazard in table 5-6.2.2(a): combustible with members less than 3 ft on center in the same manner. The 1999 edition would imply that you use this table for attic protection installation requirements. The 2002 edition specifically addresses attic protection spacing between sprinklers and sprinkler operating pressures. Testing drove this change to the code and became adopted in the 2002 edition.
2. Discussion continues in the appendix of the 2002 edition. A.8.6.6.6.1 states: When the spacing between sprinklers perpendicular to the slope exceeds 8 feet, it is necessary to increase the minimum density or sprinkler operating pressure as noted in Table 8.6.22.1(a) and in 8.6.4.1.4. Time to sprinkler activation and water distribution can be affected within combustible concealed spaces especially where wood joist rafters or wood truss construction is used. To reduce the probability of fires in these combustible concealed spaces involving the combustible roof or ceiling construction above standard spray sprinklers, more stringent spacing and installation guidelines apply.
3. Attic protection installed in nursing homes, or churches, for example, may be installed according to NFPA 13 1999 edition, but may be in conflict with the 2002 edition. What would you do?
2. Another example: Window sprinklers were typically protected with standard spray sprinklers, either upright or pendent. The code says use listed sprinklers for this application, but listed sprinklers for this specific application is fairly recent technology. Prior to this new technology window applications were protected standard spray sprinklers. What would you do?
6. The State of Indiana is currently in the process of review and adoption of NFPA-13, 2002 edition. We will try to keep all our customers current on that process and any significant changes which may result.
7. Up coming changes:
  1. More on window sprinklers.
  2. Systems requiring more than one control valve to work on a system must have a sign which indicates the location of the other valves. A good example is a drop to racks or mezzanines.
  3. Dry Pipe and Preaction Systems must meet the 60 second rule regardless of system size.
  4. Plastic parts, especially automotive related storage and use of plastic parts, receive their own special table.
  5. More single point design densities are listed for plastic parts storage configuration. In the past we had to deal with a primary density and secondary density.
  6. More clarification and options are provided for when barriers in rack storage are required.
8. ESFR Cold Storage Systems. Viking Sprinkler is currently the only manufacturer that sells and approved Freezer ESFR system. It is limited to:
  1. Class II commodity or less, stored on only wood pallets
  2. Storage height up to 35 feet in a 40 foot high building, with a minimum

- design pressure of 40 psi
- 3. Storage height up to 40 feet high in a 45'-3" high building, with a minimum design pressure of 60 psi
- 4. Maximum system size of 1,100 gallons
- 5. Must use Viking ESFR K-25.2
- 9. A commonly asked question: Why do grid systems build up extreme pressures when other systems do not?
  - 1. Answer: Grid systems generally contain less air pockets than loops or tree systems. Loops and tree systems have enough air in the dead ends that can absorb expansion due to temperatures. Remember, you can compress air, you can not compress water. That is why a pressure relief valve is required for grids.