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Why hazardous areas aren't just those with high-hazard contents

BY KRISTEN BIGDA

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Hazardous areas, hazardous materials, and hazard of contents are all terms used in NFPA 101®, Life Safety Code®. They may sound alike, but they can result in different applications of the code.

We routinely receive questions on these terms via outlets such as NFPA's Technical Questions Service and face-to-face interactions at NFPA seminars, and it's clear that being able to distinguish how to properly protect a hazardous area and how to identify requirements for contents with varying hazard levels is a compliance matter that requires further clarification.

NFPA 101 addresses material hazards and hazards within buildings in multiple ways. Hazardous areas are areas of an occupancy that have a degree of hazard greater than normal to the general occupancy of that building. Examples of this include an area in a restaurant with commercial refrigeration equipment or a large general storage space containing combustible materials in an office building. The hazard of these areas is considered greater than that normally found in an assembly occupancy or a business occupancy, meaning those areas require special protection to ensure that a fire originating in one of those areas is isolated.

The occupancy chapters in the code address hazardous areas, and the particular hazards that require protection are identified. Some occupancies provide a specific list of areas that mandate protection as hazardous areas, while other occupancies provide only a general reference to Section 8.7 for protection options of those areas confirmed to be hazardous by the local authority having jurisdiction (AHJ).

There are generally two options for compliance: protect the hazard via automatic extinguishment systems, or isolate the hazard with fire-resistance-rated construction. If the hazardous area has been deemed severe by the occupancy or the AHJ, both protection measures are required. In most occupancies, where extinguishing systems are used to protect a hazardous area in new construction, the area must also be enclosed with a smoke partition. The smoke partition, while not fire-rated, will help contain the smoke generated prior to the sprinkler activation and the subsequent fire control.

The hazard of contents (low, ordinary, or high) within a space is based on the potential threat to life presented by the contents—the relative danger of the start and spread of fire, danger of smoke or gases, and the danger of explosion, all of which endanger the lives and safety of the occupants. The classification of the hazard of contents in NFPA 101 is based on life safety from fire. It is not the same as classifications of contents of other codes or standards where the classification is based on other goals beyond safety to life. For example, a school may be classified as light hazard by NFPA 13 for the purposes of sprinkler design, but would be considered ordinary hazard contents for the purpose of applying NFPA 101. Most requirements in the code are based on the assumption of ordinary hazard contents. Where low or high hazard contents are present, the code will include specific measures to address that condition. Chapters 40 and 42, for industrial and storage occupancies, respectively, contain detailed provisions on high-hazard contents.

Hazardous materials are physical-hazard or health-hazard materials, whether the chemical or substance is in usable or waste condition. By definition, they are not only materials with a high fire-related hazard.

Hazardous materials are addressed by the code in a comprehensive approach to assist in bridging the gap between NFPA 101 and other NFPA codes and standards. Protection strategies for hazardous materials must comply with the expert documents on those materials, such as NFPA 30, NFPA 58, or NFPA 400. Additional provisions in NFPA 101 provide occupant protection during emergency events involving hazardous materials.

Evaluating a hazardous area is relative and situational. What constitutes a hazardous area in one occupancy may not be considered a hazardous area in another. The presence of high-hazard contents or hazardous materials might result in an area that is protected as a hazardous area, but that area might also be protected as hazardous without the presence of high-hazard contents or hazardous materials.

The confusion often lies with the concept that a hazardous area is determined not just by the contents or materials in it, but also by the relative hazard of the space compared to the overall hazard of the occupancy. Understanding this distinction is critical to properly applying the code and isolating a fire within that space.

KRISTIN BIGDA, P.E., is principal fire protection engineer at NFPA.
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