Ensuring Sanitation Chemical Storage Compliance with Current Building Codes

By Gregory C. Hammond, R.A.
Project Architect, Hixson

Abstract – Because many of the chemicals used for cleaning and sanitizing food and beverage facilities are corrosive or toxic in nature, they are classified as hazardous materials and their use and storage must be governed according to regulations set forth by current building and fire codes. These codes identify the maximum quantity allowed to be stored and determine how these hazardous substances may be stored within a facility.

Introduction

Many chemicals used for sanitation purposes within food and beverage producing facilities throughout the United States are corrosive or toxic in nature and are classified as hazardous materials. Building and fire codes define toxic, highly toxic, and corrosive chemicals as "Health Hazards" and limit the maximum allowable storage quantity for any given facility. Building and fire codes also outline building fire separation and life safety components required for designated storage areas. These regulations are intended to minimize the exposure of the public, firefighters and other emergency responders to harmful vapors, liquid matter, or splashes resulting from fire or accidental releases. Health hazard chemicals are limited by, and required to be stored within, designated areas of a facility called Control Areas.

If the maximum storage quantities outlined by the building and fire codes are exceeded within an individual room, area, or building defined as a single control area, the area designated for health hazard chemical storage no longer meets the defined limitations of a control area and is required to be classified as a hazardous occupancy (H-4).

Control Areas Defined

A control area is a space within a building that is enclosed and bounded by exterior walls, and/or fire-rated construction, where quantities of hazardous materials not exceeding the maximum allowable quantities per control area are stored. The overall size of a control area is not limited: An entire facility can be considered one control area if the allowable quantities for one control area are not exceeded.

Multiple control areas can be used to accommodate larger quantities of hazardous chemicals. The maximum allowable quantity of control areas within a building varies by the number of floor levels contained in the building and by which floor levels the control areas are located. For example, the maximum number of control areas permitted in a typical one-story facility is four. For multi-story buildings where control areas are located on upper levels, the maximum allowable quantity of hazardous chemical storage decreases as the elevation above grade increases.

In addition, where multiple control areas are used, they are required to be separated from each other by no less than a one-hour fire barrier. Control areas located on upper levels of multiple story buildings have additional fire separation requirements.

Maximum Storage Quantities for Control Areas

The 2006 International Building Code limits the maximum quantity of health hazard chemical storage within a facility. The following chart describes the maximum allowable quantities of health hazard chemicals stored within a control area:

Corrosive	1000 Gallons	N/A
Highly Toxic	2 Gallons	20 Pounds
Toxic	100 Gallons	1000 Pounds

Note: These quantities are assumed to be located within a facility that is equipped throughout with an automatic sprinkler system. Allowable quantities will decrease within a facility that is not fully sprinkled, but can be doubled if stored in approved storage cabinets.

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Hazardous Occupancy (H-4)

An H-4 hazardous classification affects many aspects of the building design, including fire separation, personnel egress, and spill control and containment.

Allowable Size – For an unlimited area building, the area of an H-4 occupancy cannot exceed 10% of the overall building area. For limited area buildings, the maximum allowable area of an H-4 occupancy varies per the building construction type, open perimeter dimensions, and fire protection system provided.

Fire separation - Fire separation requirements vary by which occupancy use group is adjacent to the storage area, but the required separation can range from a one- to four-hour fire barrier. A common separation requirement between an H-4 storage room and an F-1 production space requires a one-hour fire barrier.

Personnel Egress – Specific egress requirements for H-4 hazardous occupancies include a reduction in maximum egress travel distance and the installation of panic exit device door hardware.

Spill Control and Secondary Containment – Hazardous occupancies storing health hazard chemicals require spill control to eliminate the spread of liquid to adjacent areas and secondary containment sized to hold the largest vessel plus 20 minutes of fire sprinkler flow.

Other Requirements – Hazardous occupancies storing health hazard chemicals require continuous ventilation and stand-by power as life safety components.

Definitions

Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact.

Hazardous Materials: Those chemicals or substances which are physical hazards or health hazards as defined and classified by the International Building Code, whether the materials are in usable or waste condition.

Health Hazard: A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term "health hazard" includes chemicals that are toxic, highly toxic, or corrosive.

Highly Toxic: A material which produces a lethal dose or lethal concentration as categorized by the building code.

Storage, Hazardous Materials: The keeping, retention, or leaving of hazardous materials in closed containers, tanks, cylinders or similar vessels.

Toxic: A chemical that has a median lethal dose as categorized by the building code.

References

1. International Code Council. 2006 Building Code. Thomson Delmar Learning, 2006.

2. International Code Council. 2006 Fire Code. Thomson Delmar Learning, 2006.

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