

To Be Rescinded1301:7-7-23 Hazardous materials.

(A) Section FM-2301.0 General

(1) FM-2301.1 Scope: The purpose of this rule is to establish the requirements for the prevention, control, and mitigation of dangerous conditions created by the presence of hazardous materials. For the purpose of this code, hazardous materials are chemicals or substances classified as such in accordance with paragraph (C)(FM-2303.0) of this rule.

The provisions of this rule shall apply to all hazardous materials, including those regulated elsewhere in this code. Where there are specific requirements or exemptions in rule 1301:7-7-24 to THROUGH rule 1301:7-7-43 of the Administrative Code, such requirements shall take precedence over the requirements of this rule. Where a material presents multiple hazards, the requirements for all hazards shall be applicable.

Exceptions

(a) The off-site and on-site transportation of hazardous materials when in compliance with and regulated by the department of transportation (DOTn) regulations.

(b) Any substance present as a solid in a manufactured item to the extent hazardous exposure to the substance does not occur under normal conditions of utilization.

(c) The quantities of alcoholic beverages in retail sale occupancies are unlimited, provided the liquids are packaged in individual containers not exceeding one gallon (~~0.00379-m³~~ 4L).

(d) The quantities of medicines, foodstuffs and cosmetics containing not more than 50 percent of volume of water miscible liquids and with the remainder of the solution not being flammable are unlimited when packaged in containers not exceeding one gallon (~~0.00379-m³~~ 4L).

(e) The mercantile display of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in accordance with paragraph (G)(FM-2307.0) of this rule.

(f) The wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies in accordance with paragraph (A)(FM-3201.4) of rule 1301:7-7-32 of the Administrative Code.

(g) Where other laws pre-empt the regulation of these materials, the enforcement agency shall note the regulations in its records.

(h) Commonly utilized building materials not otherwise regulated by this code.

(i) Corrosives, irritants and sensitizers utilized in personal or household products in their original packaging for retail display.

(j) The display, sale or discharge of fireworks in accordance with rule 1301:7-7-31 of the Administrative Code.

(2) FM-2301.2 Approval required: Approval shall be required for the storage, dispensing, use, or handling of hazardous materials as indicated in rule 1301:7-7-24 ~~to~~ THROUGH rule 1301:7-7-43 of the Administrative Code. The ~~required permit~~ quantities FOR WHICH APPROVAL IS REQUIRED shall be as indicated in the referenced rules.

A storage or processing facility, or other area regulated by this code, shall not be abandoned, closed or substantially modified until a permit has been issued in accordance with rule 1301:7-1-04 of the Administrative Code.

(a) F-2301.2.1 Management plan: ~~Every~~ WHERE REQUIRED BY THE CODE OFFICIAL, EVERY application for a permit shall include a hazardous materials management plan (HMMP) or other approved plan that includes: a site plan; floor plan; information on hazardous material handling and chemical compatibility, monitoring methods, security precaution, hazard labeling IDENTIFICATION, inspection procedures, employee training and available emergency equipment.

~~Exception: An HMMP is not required when approved by the code official.~~

(b) F-2301.2.2 Inventory statement: ~~Every~~ WHERE REQUIRED BY THE CODE OFFICIAL, EVERY application for a permit shall include a hazardous materials inventory statement (HMIS), such as SARA Title III, tier II report, or other approved statement. The hazardous material inventory statement shall include the following information:

(i) Manufacturer's name.

(ii) Chemical name, trade names, hazardous ingredients.

(iii) Manufacturer's safety data sheet or equivalent.

(iv) United Nations (UN), North America (NA) or the chemical abstract service (CAS) identification number.

(v) Maximum quantity stored or used on-site at one time.

~~Exception: An HMIS is not required when approved by the code official.~~

(3) F-2301.3 Facility closure plan: A plan shall be submitted to the code official to terminate storage, dispensing, handling or use of hazardous materials at least 30 days prior to facility closure. The plan shall be approved and demonstrate that hazardous materials stored, dispensed, handled or used in the

facility have been transported, disposed OF or re-used in a manner eliminating the need for further maintenance and any threat to public health and safety.

FM-2301.3.1 Out-of-service facilities: Facilities shall be placed out of service in accordance with paragraphs (A)(3)(a)(F-2301.3.1.1) and (A)(3)(b)(FM-2301.3.1.2) of this rule.

(a) F-2301.3.1.1 Temporarily out-of-service facilities: Facilities that are temporarily out of service for a period of more than 90 days shall continue to be approved, monitored and inspected.

(b) FM-2301.3.1.2 Permanently out-of-service facilities: Facilities for which approval is not kept current or is not monitored and inspected on a regular basis shall be deemed to be permanently out of service and closed in accordance with paragraph (A)(3)(F-2301.3) of this rule.

(B) Section FM-2302.0 Definitions

FM-2302.1 General: The following words and terms shall, for the purposes of this rule and as stated elsewhere in this code, have the meanings shown herein.

Barricade: A structure consisting of a combination of walls, floor and roof designed to withstand the rapid release of energy in an explosion and which is fully confined, partially vented or fully vented; or other effective method of shielding from explosive materials by a natural or artificial barrier.

Closed system: The use of a solid or liquid hazardous material in a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations, and all uses of compressed gases. Examples of closed systems for solids and liquids include the product conveyed through a piping system into a closed vessel, system or piece of equipment.

Container: A vessel with a capacity of 60 gallons (0.227-m^3 227L) or less utilized for transporting or storing hazardous materials (See paragraph (M)(FM-2313.0) of this rule).

Control area: Spaces within a structure which are enclosed and bounded by exterior walls, fire walls, fire separation assemblies and roofs, or a combination thereof, where quantities of hazardous materials not exceeding the exempt amounts are stored, dispensed, used or handled (see paragraph (E)(FM-2305.0) of this rule).

Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue at the point of contact. A chemical shall be considered a corrosive if, when tested on the intact skin of albino rabbits by the test method described by DOTn 49 CFR; 173 listed in rule 1301:7-7-44 of the Administrative Code, such chemical destroys or changes irreversibly the structure of the tissue at the

point of contact following an exposure period of 4 hours. This term shall not refer to action of inanimate surfaces.

Cutoff: The arrangement of hazardous materials in which the material is physically separated by a fire separation assembly of not less than a one-hour fireresistance rating or contained in an approved stationary tank.

Cylinder: A pressure vessel designed for pressures higher than 40 psi (276 kPa) absolute and with a circular cross-section not including a portable tank, multiunit tank car tank, cargo tank or tank car.

Deflagration: An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration is capable of having an explosive effect.

Detached storage structure: A separate single-story structure, without a basement or crawl space, utilized for the storage of hazardous materials and located an approved distance from all structures.

Dispensing: The pouring or transferring of any material from a container, tank or similar vessel, whereby vapors, dusts, fumes, mists or gases are liberated to the atmosphere.

DOT container: Any container approved by department of transportation (DOTn) 49 CFR listed in rule 1301:7-7-44 of the Administrative Code for shipping any liquid, gaseous or solid material of a flammable, toxic or other hazardous nature.

Excess flow control: A fail safe system designed to shut off flow due to a rupture in pressurized piping systems.

Flammable: Capable of being readily ignited from common sources of heat or at a temperature of 600 degrees F. (316 degrees C.) or less.

Handling: The deliberate transport by any means to a point of storage or use.

Hazardous materials: Those chemicals or substances which are physical hazards or health hazards as defined and classified in this rule, whether the materials are in a 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 which are toxic or highly toxic, irritants, corrosives, sensitizers or radioactive.

Incompatible materials: Materials which, when mixed, have the potential to react in a manner that generates heat, fumes, gases or byproducts which are hazardous to life or property.

Liquid tight: The ability of a membrane that is compatible with the material retained to stop the passage of water for a minimum period of 1 hour.

Magnesium: A combustible metal in either pure form or combined with alloys of which the major part is magnesium (see rule 1301:7-7-33 of the Administrative Code).

Material Safety Data Sheet (MSDS): A written or printed material concerning a hazardous material prepared in accordance with DOL 29 CFR 1910.1200 listed in rule 1301:7-7-44 of the Administrative Code (see paragraph (D)(FM-2304.0) of this rule).

Open system: The use of a solid or liquid hazardous material in a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tanks and plating tank operations.

Physical hazard: A chemical for which there is evidence in the referenced standards listed in rule 1301:7-7-44 of the Administrative Code that it is a combustible liquid, compressed gas, cryogenic, explosive, flammable gas, flammable liquid, flammable solid, organic peroxide, oxidizer, pyrophoric or unstable (reactive) or water-reactive material (see paragraph (C)(2)(F-2303.2) of this rule).

Placards: Signs required by the department of transportation (DOTn) to be placed on vehicles transporting hazardous materials indicating the nature of the cargo.

Primary containment: The first level of containment, such as the inside portion of the container which comes into immediate contact on its inner surface with the material being contained (see secondary containment).

Pyrophoric material: A material that will spontaneously ignite in air at or below a temperature of 130 degrees F. (54 degrees C).

Secondary containment: Level of containment that is external to and separate from primary containment (see paragraph (O)(4)(F-2315.4) of this rule).

Tank, portable: Any packaging over 60 gallons (0.227-m^3 227L) in capacity and designed primarily to be loaded into or on or temporarily attached to a transport vehicle or ship and equipped with skids, mounting or accessories to facilitate handling of the tank by mechanical means, not including any cylinder with less than a 1,000 pound (454 kg) water capacity, or cargo tank, tank cart tank or trailers carrying cylinders of over 1,000 pounds (454 kg) water capacity (see paragraph (M)(FM-2313.0) of this rule).

Tank, stationary: Any vessel designed primarily for stationary installations not intended for movement or attachment to a transport vehicle as part of its normal operation in the process of use, not including cylinders with less than a 1,000 pound (454 kg) water capacity (see paragraph (M)(FM-2313.0) of this rule).

Unstable (reactive) material: A material which, in the pure state or as commercially produced, will vigorously polymerize, decompose or condense, become self-reactive, or otherwise undergo a violent chemical change under conditions of shock, pressure or temperature.

Class 4: Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes, among others, materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures.

Class 3: Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation. This class includes, among others, materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

Class 2: Materials that readily undergo violent chemical change at elevated temperatures and pressures. This class includes, among others, materials that exhibit an exotherm at temperatures less than or equal to 302 degrees F. (150 degrees C) when tested by differential scanning calorimetry.

(C) Section FM-2303.0 Hazard classification

(1) FM-2303.1 General: Hazardous materials shall be classified in accordance with paragraphs (C)(2)(F-2303.2) and (C)(3)(F-2303.3) of this rule. These classifications are applicable to materials regulated by this rule and rules 1301:7-7-24 through 1301:7-7-43 of the Administrative Code.

(2) F-2303.2 Physical hazards: The following materials are classified as physical hazards:

- (a) Explosives and blasting agents
- (b) Compressed gases
- (c) Flammable and combustible liquids
- (d) Flammable solids
- (e) Oxidizers
- (f) Organic peroxides
- (g) Pyrophoric materials

(h) Unstable (reactive) materials

(i) Water-reactive materials

(j) Cryogenic liquids

(k) CONSUMER FIREWORKS, 1.4G (CLASS C, COMMON)

A material with a physical hazard classification presenting a health hazard shall also comply with the health hazard requirements.

(3) F-2303.3 Health hazards: The following materials are classified as health hazards:

(a) Highly toxic or toxic materials

(b) Radioactive materials

(c) Corrosive materials

(d) Irritants

(e) Sensitizers

(f) Other health hazards

A material with a health hazard classification ~~presenting~~ POSING a physical hazard shall also comply with the physical hazard requirements.

(D) Section FM-2304.0 Material safety data sheets

(1) FM-2304.1 Location: Material safety data sheets (MSDS) information for all hazardous materials regulated by rule 1301:7-7-24 ~~to~~ THROUGH rule 1301:7-7-43 of the Administrative Code in any quantity shall be kept on the premises in an approved location. MSDS INFORMATION SHALL NOT BE REQUIRED FOR HAZARDOUS WASTES PROVIDED WITH A SHIPPING MANIFEST PREPARED IN ACCORDANCE WITH DOTN 49 CFR REGULATIONS LISTED IN RULE 1301:7-7-44 OF THE ADMINISTRATIVE CODE.

~~Exception: Hazardous wastes provided with a shipping manifest prepared in accordance with DOTn 49 CFR regulations listed in rule 1301:7-7-44 of the Administrative Code.~~

(2) FM-2304.2 Emergency response information required: Where the quantities of hazardous materials require approval in accordance with paragraph (A)(2)(FM-2301.2) of this rule, the owner or operator of any facility required to prepare or have available a material safety data sheet or a emergency and hazardous material inventory form under subtitle B, Sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA Title III) shall provide the required information at the facility site at a location approved by the fire official or other approved means as set forth in this section WITH A REPOSITORY CONTAINER (LOCK BOX) OR OTHER APPROVED MEANS AS SET FORTH IN THIS SECTION.

(3) FM-2304.3 Information contained: The following REPOSITORY CONTAINER (LOCK BOX) SHALL INCLUDE THE information as indicated in paragraphs (D)(3)(a)(F-2304.3.1) through (D)(3)(c)(FM-2304.3.3) of this rule ~~shall be available~~ for emergency response personnel. ~~Exception:~~ In facilities with a 24-hour per day staffed emergency control center, the required information shall be permitted to be provided by an alternative means, where approved.

(a) F-2304.3.1 Personnel list: A current list of key facility personnel knowledgeable about safety procedures of materials on-site, complete with telephone numbers for such personnel in the event of an incident after normal hours of facility operation SHALL BE PROVIDED.

(b) FM-2304.3.2 Inventory statement: A current emergency and hazardous material inventory statement where required by paragraph (A)(2)(b)(F-2301.2.2) of this rule and a binder containing the MSDS ~~and the MSDS shall be readily available for utilization by emergency response personnel~~ PROVIDED. IN THE EVENT THAT THE VOLUME OF MSDS IS TOO GREAT TO KEEP PRACTICALLY IN THE REPOSITORY CONTAINER (LOCK BOX), THE INFORMATION IN THE CONTAINER SHALL GIVE THE LOCATION OF THE ON-SITE MSDS, AND THE MSDS SHALL BE READILY AVAILABLE FOR UTILIZATION BY EMERGENCY RESPONSE PERSONNEL.

(c) FM-2304.3.3 Site plan: A current facility site plan shall include the following:

(i) The location of storage and use of hazardous materials on site;

(ii) The location of on-site emergency fire-fighting and spill clean-up equipment;

(iii) Diagrams of the complete sewer system and water system, showing fire hydrant and water main locations and sizes;

(iv) A copy of the hazardous materials management plan (HMMP) where required by paragraph (A)(2)(a)(F-2301.2.1) of this rule; and

(v) Any building floor plan where required by the code official.

(4) F-2304.4 LOCATION AND IDENTIFICATION: THE REPOSITORY CONTAINER (LOCK BOX) SHALL BE LOCATED, INSTALLED AND IDENTIFIED IN AN APPROVED MANNER.

(5) F-2304.5 SIZE: ALL REPOSITORY CONTAINERS (LOCK BOXES) SHALL HAVE A MINIMUM INTERIOR SIZE OF 14 INCHES (356 mm) HIGH BY 12 INCHES (305 mm) WIDE BY 2 INCHES (51 mm) DEEP, EXCEPT WHERE USE OF A SMALLER REPOSITORY CONTAINER (LOCK BOX) IS APPROVED.

(6) F-2304.6 KEYING: ALL REPOSITORY CONTAINERS (LOCK BOXES) SHALL BE KEYED AS REQUIRED BY THE CODE OFFICIAL.

(4) (7) FM-2304.4 2304.7 Update and notification: The owner or operator of the facility shall update the appropriate documents LOCATED WITHIN THE REPOSITORY CONTAINER (LOCK BOX) on an annual basis or more frequently where required by the code official. All updated material shall be sent to the code official, including an updated copy of the emergency and hazardous material inventory statement where required by paragraph (A)(2)(b)(F-2301.2.2) of this rule. ALL UPDATED DOCUMENTS SHALL BE PLACED IN THE REPOSITORY CONTAINER (LOCK BOX).

(E) Section FM-2305.0 Control areas

(1) FM-2305.1 General: Control areas shall be those spaces located within a structure where quantities of hazardous materials not exceeding the exempt amounts are stored, dispensed, used or handled. Control areas shall be separated from all adjacent interior spaces by fire separation assemblies in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

(2) FM-2305.2 Number and separation: The number of permitted control areas within a building and the required fireresistance rating for all fire separation assemblies shall be in accordance with Table FM-2305.2. the floor construction of the control area and all construction supporting the floor of the control area shall have a minimum two-hour fireresistance rating.

Table FM-2305.2
Permitted control areas^a

Floor level	Percentage of allowable exempt quantities per control area	Number of control areas per floor ^b	Fire resistance rating of fire separation assemblies (hours)
1	100	4	1
2	75	3	1
3	50	2	1
4	12.5	2	2
5	12.5	2	2
6	12.5	2	2
7-9	5	2	2
Higher than 9	5	1	2

Note a. For permitted control area locations, see paragraph (E)(3)(F-2305.3) of this rule.

Note b. In mercantile occupancies, a maximum of two control areas per floor shall be permitted.

(3) F-2305.3 Location of floor levels: ~~Floor~~ CONTROL AREAS SHALL NOT BE LOCATED MORE THAN TWO FLOOR levels below grade ~~shall not exceed two~~. The first floor level located below grade shall be limited to 75 percent of the maximum exempt amounts per control area with a maximum of three control areas. The second floor level located below grade shall be limited to 50 percent of the maximum exempt amounts per control area with a maximum of two control areas.

(F) Section FM-2306.0 Hazardous material storage cabinets

(1) FM-2306.1 General: Where storage cabinets are utilized to establish the exempt amounts in accordance with the provisions of rule 1301:7-7-24 ~~to THROUGH~~ rule 1301:7-7-43 of the Administrative Code, such cabinets FOR SOLID AND LIQUID MATERIALS shall comply with paragraphs (F)(2)(FM-2306.2) through (F)(4)(FM-2306.4) of this rule. ~~Exception:~~ Cabinets utilized for the storage of compressed gases shall be designed in accordance with paragraph (D) ~~(2)~~ (1) (b) ~~(ii) (F-2704.2.2.2) (F-2704.1.2)~~ of rule 1301:7-7-27 of the Administrative Code.

(2) F-2306.2 Warning markings: Cabinets shall be clearly identified in an approved manner with red letters on a contrasting background to read: "Hazardous-Keep Fire Away".

(3) FM-2306.3 Approval: Cabinets shall be approved as suitable for the intended storage or shall be constructed in accordance with paragraph (F)(3)(a)(F-2306.3.1) through (F)(3)(b)(F-2306.3.2) of

this rule.

(a) F-2306.3.1 Construction: Cabinets shall be of steel with a thickness of not less than 0.0478 inches (No. 18 gage). The cabinet, including the door, shall be double-walled with a one and one-half inch (38 mm) airspace between the walls. Joints shall be riveted or welded and tight fitting. Doors shall be well-fitted, self-closing and equipped with a self-latching device.

(b) F-2306.3.2 Bottom: The bottoms of cabinets utilized for the storage of liquids shall be recessed and liquid tight to a minimum height of 2 inches (50 mm).

(4) F-2306.4 Interior surfaces: The interior of cabinets shall be treated, coated or constructed of materials that are nonreactive with the hazardous material stored. Such treatment, coating or construction shall include the entire interior of the cabinet.

(G) Section FM-2307.0 Mercantile display

(1) FM-2307.1 General: The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials permitted within a single control area of a retail mercantile occupancy shall be permitted to exceed the exempt amounts specified in the building code listed in rule 1301:7-7-44 of the Administrative Code without classifying the building as use group H, provided the materials are stored in accordance with paragraphs (G)(2)(FM-2307.2) and (G)(3)(FM-2307.3) of this rule.

(2) FM-2307.2 Quantity: The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in a single control area of a mercantile occupancy shall not exceed the quantities indicated in Table FM-2307.2.

Table F-2307.2
Hazardous Materials In Mercantile Occupancies
Exempt Amounts For Storage And Display
(Maximum Quantities Per Control Area)

Material	Class	Solids (pounds) ^d		Liquids (gallons) ^d			
		Unprotected By sprinklers Or cabinet ^a	Within cabinet ^a in unsprinklered structure or in Sprinklered Structure, not in Cabinet ^a	In sprinklered structure within a cabinet ^a	Unprotected by sprinklers or cabinet ^a	Within cabinet ^a in unsprinklered structure or in sprinklered structure, not in cabinet ^a	In sprinklered structure within a cabinet ^a
Corrosive	Not applicable	9,750	19,500	39,000	975	1,950	3,900
Highly Toxic	Not applicable	2	4	8	0.2	0.4	0.8
	4	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Oxidizer	3	1,125	2,250	4,500	112	225	450
	2	2,250	4,500	9,000	225	450	900
	1	18,000	36,000	72,000	1,800	3,600	7,200
Toxic	Not applicable	975	1,950	3,900	97	195	390
	4	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Unstable	3	562	1,125	2,250	56	112	225
(reactive)	2	1,125	2,250	4,500	112	225	450
	1	No limit	No limit	No limit	No limit	No limit	No limit
Water	3	562	1,125	2,250	56	112	225
Reactive ^b	2	1,125	2,250	4,500	112	225	450
	1	No limit	No limit	No limit	No limit	No limit	No limit
Irritant, sensitizer Other health hazard	Not applicable	9,750	19,500	39,000	975	1,950	3,900

Note a. The maximum quantities apply independently to each material, class and state.

Note b. The fire protection system for storage of water-reactive materials shall comply with the suppression agent compatibility requirements of the building code listed in rule 1301:7-7-44 of the Administrative Code.

Note c. Hazardous materials storage cabinets shall comply with section F-2306.0 and shall be approved for the type of material being stored.

Note d. 1 pound = 0.454 kg; 1 gallon = 3.785 L.

(3) FM-2307.3 Storage and display: The area for storage or display of hazardous materials in mercantile occupancies shall comply with the following requirements:

(a) Display of solids shall not exceed 200 pounds per square foot (976 kg/m²) of floor area occupied by the solid merchandise.

(b) Display of liquids shall not exceed 20 gallons per square foot (0.82-m³/m² 814L/m²) of floor area occupied by the liquid merchandise.

(c) Display height shall not exceed 6 feet (1829 mm).

(d) Individual containers less than 5 gallons (0.019 m^3 19L) or less than 25 pounds (11.4 kg) shall be stored on pallets, racks or shelves.

(e) Storage racks and shelves shall comply with paragraph (N)(6)(FM-2314.6) of this rule.

(f) Containers shall be approved for the use intended and identified as to their content.

(g) Individual containers shall not exceed 100 pounds (45.4 kg) of solid material or 5 gallons (0.019 m^3 19L) of liquid material.

(h) Incompatible materials shall be separated in accordance with paragraph (I)(FM-2309.0) of this rule.

(i) Aisles of a minimum width of 4 feet (1219 mm) shall be maintained on three sides of the display area.

(j) Hazardous identification signs shall be provided in accordance with paragraph (H)(FM-2308.0) of this rule.

(k) The area shall be posted with the maximum quantity permitted.

(l) Liquid materials shall not be stored above solid materials.

(H) Section FM-2308.0 Identification signs

(1) FM-2308.1 Location: Visible hazard identification signs as specified in NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code shall be placed at all entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities exceeding the amounts requiring approval. The visible hazard identification signs shall not be required where a listing of hazardous materials, including chemical names, quantity and hazard in accordance with section PARAGRAPH (H)(FM-2303.0) of this rule, is posted at the room entrance or readily available to the liaison personnel as required by paragraph (L)(1)(F-2312.1) of this rule.

(2) FM-2308.2 Markings: Individual containers, cartons or packages shall be clearly identified in accordance with nationally recognized standards.

(I) Section FM-2309.0 Incompatible hazardous materials

(1) FM-2309.1 Isolation: Storage of incompatible hazardous materials exceeding the exempt amounts indicated in rule RULES 1301:7-7-24 THROUGH 1301:7-7-43 of the Administrative Code shall be isolated in accordance with paragraph (I)(1)(a)(F-2309.1.1), (I)(1)(b)(F-2309.1.2) or (I)(1)(c)(F-

2309.1.3) of this rule. The provisions of this section and paragraph (I)(2)(F-2309.2) of this rule shall not apply to containers of solids or liquids with a capacity of less than 5 pounds (~~0.19 m³~~ 2kg) or ½ gallon (1.9L) where stored or used in quantities not exceeding the exempt amounts.

(a) F-2309.1.1 Distance: Incompatible hazardous materials storage shall be segregated by a distance of not less than 20 feet (6096 mm).

(b) F-2309.1.2 Separation: Incompatible hazardous materials storage shall be separated by a noncombustible partition extending not less than 18 inches (457 mm) above and to the sides of the stored material.

(c) F-2309.1.3 Cabinets: Hazardous materials shall be located in storage cabinets or gas cabinets. Materials which are incompatible shall not be stored within the same cabinet.

(2) F-2309.2 Surfaces: All hazardous materials shall be stored and transported on or against compatible surfaces. Pallets shall have a compatible coating with the material handled or stored.

(J) F-2310.0 Discharge of hazardous materials

(1) F-2310.1 Release prohibited: Hazardous materials in any quantity shall not be discharged into a sewer, storm drain, ditch, drainage canal, creek, stream, river, lake or tidal waterway or on the ground, sidewalk, street, highway or into the atmosphere.

Exceptions

(a) The release or emission of hazardous materials shall be permitted when in compliance with federal, state, or local government agencies, regulations or permits.

(b) The release of pesticides is permitted when utilized according to registered label directions unless otherwise regulated in this code.

(c) The release of fertilizer and soil amendments shall be permitted when performed according to manufacturer's specifications.

(2) F-2310.2 Unauthorized discharge: When hazardous materials are released in quantities reportable under state, federal, or local regulations, the code official shall be notified and the following procedures required:

(a) Records shall be kept by the owner or operator of the facility of the unauthorized discharge of hazardous materials including date, time, material and quantity.

(b) Provisions shall be made for controlling and mitigating unauthorized discharges as required by the code official.

(c) Whenever any unauthorized discharge due to primary container failure is discovered, the involved primary container shall be repaired when approved by the code official, or removed from service.

(d) Any person responsible for any unauthorized discharge shall institute and complete all actions necessary to remedy the effects of such unauthorized discharge, whether sudden or gradual. When deemed necessary by the code official, cleanup shall be initiated by the fire department or an authorized individual or firm. All costs associated with such cleanup shall be borne by the owner, operator or other person responsible for the unauthorized discharge.

(K) Section FM-2311.0 Handling

(1) F-2311.1 Scope: The handling of hazardous materials in any quantity shall comply with this section.

(2) FM-2311.1 Hazardous liquids: Liquids in containers exceeding 5 gallons (~~0.019-m³~~ 19L) shall be transported on a cart or truck complying with paragraph (K)(6)(FM-2311.6) of this rule.

Exceptions

(a) Containers not exceeding 55 gallons (~~0.208-m³~~ 208L) are permitted to be transported by approved drum trucks.

(b) Approved containers equipped with wheels or casters and designed to be moved without carts.

(3) FM-2311.3 Multiple containers: Where more than two containers of hazardous materials with a health, fire, or reactivity hazard ranking of 3 or 4 in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code are transported within an exit or exit access corridor, the containers shall be on an approved cart or truck.

(4) F-2311.4 Hazardous solids: Solid hazardous materials not exceeding 100 pounds (45.4 kg) shall be permitted to be transported by approved hand trucks. A single container not exceeding 50 pounds (~~22.7~~ 23kg) shall be permitted to be hand carried.

(5) FM-2311.5 Carts and trucks: Carts and trucks utilized to transport hazardous materials with a health, fire, or reactivity hazard ranking of 3 or 4 in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code inside structures within any part of an exit or exit access corridor shall comply with paragraphs (K)(~~6~~)(5)(a)(F-2311.65.1) through (K)(~~6~~)(5)(e)(F-2311.65.5) of this rule. Transportation of materials exceeding the exempt amounts shall not be permitted within an exit.

(a) F-2311.5.1 Stability and restraint: Carts and trucks utilized to transport hazardous materials exceeding the closed-use exempt amounts shall be designed to provide a stable base for the commodities to be transported and shall have an approved means of restraining containers against accidental dislodgment.

(b) F-2311.5.2 Safety device: Carts and trucks shall be provided with a device enabling the operator to safely control movement by providing stops or speed reduction devices.

(c) F-2311.5.3 Construction: Construction materials for hazardous materials carts or trucks shall be compatible with the material transported. The cart or truck shall be of substantial construction.

(d) F-2311.5.4 Obstructions to egress: Carts and trucks utilized to transport materials shall not obstruct or be left unattended within any part of an exit access corridor or exit.

(e) F-2311.5.5 Incompatible materials: Incompatible hazardous materials shall not be transported on the same cart or truck.

(7) FM-2311.6 Emergency alarm: Where hazardous materials with a health, fire, or reactivity hazard ranking of 3 or 4 in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code are transported through an exit, there shall be an emergency telephone system, a local manual alarm station or an approved signaling device at maximum one hundred fifty foot (45720 mm) intervals and at each exit throughout the transport route. 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. An emergency alarm system is not required in structures equipped throughout with a fire protective signaling system in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

(L) Section F-2312.0 Emergency response capability

(1) F-2312.1 Response team: An emergency response team (ERT) shall be provided in occupancies in use group H-1, H-2, H-3 and H-4, at all times when hazardous operations are in progress. Personnel responsible for the storage, dispensing, handling, or use of hazardous materials shall be familiar with the nature of the hazards involved and the appropriate actions necessary in the event of an emergency.

(2) F-2312.2 Personnel: Responsible persons shall be designated and trained as liaison personnel. These persons shall assist the code official in preplanning emergency responses and identification of the locations where hazardous materials are located, and shall have access to material safety data sheets (MSDS) and be knowledgeable in site emergency response procedures.

(M) Section FM-2313.0 Containers, tanks and piping

(1) FM-2313.1 Scope: The storage, dispensing and use of hazardous materials regulated by rules 1301:7-7-24 through 1301:7-7-43 of the Administrative Code in any quantity shall comply with this section.

(2) F-2313.2 Containers, cylinders and tanks: Containers, cylinders and tanks ~~shall be designed and constructed in an approved manner~~ utilized for the storage, dispensing and use of hazardous materials shall comply with sections F-2313.2.1 through F-2313.2.6. Existing containers, cylinders and tanks, where approved, shall be permitted to continue to be utilized without change, provided such containers, cylinders and tanks do not constitute a hazard.

(a) F-2313.2.1 Design and construction: Containers, cylinders and tanks shall be designed and constructed in accordance with approved standards.

(b) F-2313.2.2 Tanks out of service: Any stationary tank not utilized for a period of 90 days shall be properly safeguarded or removed in an approved manner. Tanks which are to be placed back in service shall be tested in an approved manner.

(c) F-2313.2.3 Defective containers, cylinders and tanks: Defective containers, cylinders and tanks shall be removed from service, repaired in accordance with approved standards, or disposed of in an approved manner.

(d) FM-2313.2.4 Empty containers, cylinders and tanks: Empty containers, cylinders and tanks previously utilized for the storage of hazardous materials shall be free from residual material and vapor in accordance with EPA 40 CFR; Part 260 listed in rule 1301:7-7-44 of the Administrative Code or other regulating authority, or maintained as indicated for the storage of the hazardous material.

(e) F-2313.2.5 Underground tanks: Underground tanks utilized for the storage, dispensing and use of hazardous materials shall be located and protected in accordance with this code for the storage of the material stored. Secondary containment shall be provided for all new installations of underground tanks.

(f) F-2313.2.6 Above-ground tanks: Above-ground stationary tanks utilized for the storage, dispensing and use of hazardous materials shall be located and protected in accordance with the provisions OF THIS CODE for THE storage of the material stored and ~~marked as~~ identified as required by this code.

(g) FM-2313.2.7 Signage: In addition to the hazard identification signs required by paragraph (H)(FM-2308.0) of this rule, stationary above-ground tanks shall be identified with hazard identification signs in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative

Code for the specific material contained as follows:

(i) Signs prohibiting smoking shall be provided in storage areas and located within 25 feet (7620 mm) of outdoor storage areas.

(ii) Signs shall not be obscured or removed.

(iii) Signs shall be in English as a primary language or in symbols permitted by this code.

(iv) Signs shall be durable. Size, color and lettering shall be approved.

(3) F-2313.3 Piping, valves and fittings: Piping, valves, fittings and related components appurtenant to or intended for the storage of hazardous materials shall be designed and fabricated from materials compatible with the material to be contained, and shall be of adequate strength and durability to withstand the pressure, structural loadings and exposure to which such components will be subjected.

(N) Section F-2314.0 Material storage

(1) FM-2314.1 Scope: The storage of hazardous materials regulated by rule 1301:7-7-24 to THROUGH rule 1301:7-7-43 of the Administrative Code exceeding the exempt amounts shall comply with this section.

(2) F-2314.2 Security: The storage of hazardous materials shall be safeguarded from public access or unauthorized entry.

(3) F-2314.3 Ignition sources: The utilization of open flames or high-temperature devices in a manner creating a hazardous condition shall not be permitted within 25 feet (7620 mm) of hazardous material storage areas. Smoking shall not be permitted in any room where hazardous materials are stored nor within 25 feet (7620 mm) of outdoor storage areas.

(4) F-2314.4 Protection from light: Materials sensitive to light shall be stored in containers designed to protect the material from such exposure.

(5) FM-2314.5 Shock padding: Materials which are shock sensitive shall be padded, suspended or otherwise protected against accidental dislodgment. Seismic requirements shall comply with the building code listed in rule 1301:7-7-44 of the Administrative Code.

(6) FM-2314.6 Shelf storage: Shelves shall be of substantial construction and adequately braced. Seismic loadings shall comply with the building code listed in rule 1301:7-7-44 of the Administrative Code. Except for storage in hazardous material storage cabinets or laboratory furniture specifically designed for such utilization open shelves shall be provided with a lip or guard when utilized for the

storage of individual containers. Shelf storage of hazardous materials shall be maintained in an orderly manner.

(7) F-2314.7 Storage plan: When required by the code official, a storage plan shall be provided for all storage facilities. The plan shall indicate the intended storage arrangement, including the location and dimensions of aisles.

(8) F-2314.8 Protection from vehicles: guard posts or other means shall be provided to protect outside storage tanks from vehicular damage.

(9) F-2314.9 Clearance from combustibles: the area surrounding an outside storage area or tank shall be kept clear of combustible materials and vegetation for a minimum distance of 25 feet (7620 mm).

(10) FM-2314.10 Fire lanes and water supply: Fire lanes and approved water supplies shall be provided for outside storage areas as required by the code official.

(a) Fire lanes. Fire lanes shall be provided to within 150 feet (45,720 mm) of all portions of an outside storage area, and shall comply with paragraph (K)(F-311.0) of rule 1301:7-7-03 of the Administrative Code.

(b) Water supply. An approved water supply shall be provided. Fire hydrants capable of supplying the required flow shall be provided to within one hundred fifty feet (45,720 mm) of an outside storage area. The water supply and fire hydrants shall comply with rule 1301:7-7-5 of the Administrative Code and NFPA 24 listed in rule 1301:7-7-44 of the Administrative Code.

(11) F-2314.11 Weather protection: Where weather protection is provided for sheltering outside hazardous material storage areas, such storage shall not be considered inside storage where all of the following conditions are met:

(a) Structure supports and walls shall not obstruct more than one side nor more than 25 percent of the perimeter of the storage area.

(b) The distance from the structure and the structure supports to buildings, lot lines, public ways or exit discharge serving an adjacent structure shall not be less than the distance required for an exterior hazardous material storage area without a weather protection.

(c) The overhead structure shall be of noncombustible construction with a maximum area of 1,500 square feet (140 m²).

(O) Section FM-2315.0 Spill control, drainage and containment

(1) FM-2315.1 Where required: Where required in rule 1301:7-7-24 ~~to~~ THROUGH rule 1301:7-7-43 of the Administrative Code, rooms, structures or areas utilized for the storage of solid and liquid hazardous materials exceeding the exempt amounts shall be provided with a means to control spillage and contain or drain off spillage and fire protection water discharged in the storage area in accordance with this section.

(2) F-2315.2 Spill control: Floors shall be liquid tight and recessed a minimum of 4 inches (102 mm) or shall be provided with a liquid-tight 4-inch (102 mm) raised sill to prevent the flow of liquids to adjoining areas. Liquid-tight sills, where provided, shall be omitted at door openings protected with the installation of an open-grate trench connecting to the room drainage system.

(3) F-2315.3 Drainage: The room, structure or area shall be provided with a drainage system to direct the flow of liquids to an approved location in accordance with the following:

- (a) A slope to drain not less than one percent shall be provided.
- (b) Drains from the area shall be sized to carry the automatic fire extinguishing system design flow rate over the system design area.
- (c) Construction materials for the drainage system shall be compatible with the stored materials.
- (d) Incompatible materials shall have separate drainage systems and shall be permitted to be combined only when the materials have been rendered acceptable by an approved means for discharge into the public sewer.
- (e) Where drainage of spillage and fire protection water is directed to a neutralizer or treatment system, such system shall comply with the following:
 - (i) The system shall be designed to handle the maximum worst case spill from the single largest container in addition to the design discharge rate of fire protection water from the system over the minimum design area.
 - (ii) Overflow from the neutralizer or treatment system shall be provided to direct liquid leakage and fire protection water to a safe location away from control valves, means of egress, adjoining property or fire lanes.

(4) F-2315.4 Secondary containment: Drains shall be directed to a containment system or other location designed as secondary containment for the hazardous material liquids and fire protection water; or where permitted, the structure, room or area shall be designed with recessed floors or liquid-tight raised sills to provide secondary containment of hazardous material liquids and fire protection water.

(a) F-2315.4.1 Capacity: Secondary containment shall be designed to retain the spill from the largest single container in addition to the design flow rate of the automatic fire extinguishing system for the area of the room or area in which the storage is located or the system design area, whichever is smaller. The containment capacity shall be designed to contain the flow for a period of not less than 20 minutes.

(b) F-2315.4.2 Overflow: Overflow from the secondary containment system shall be provided to direct liquid leakage and fire protection water to a safe location away from the structure, control valves, means of egress, fire lanes, adjoining property or public sewers.

(c) F-2315.4.3 Rainwater: If the storage area is open to rainfall, the secondary containment shall be designed to accommodate the volume of a 24-hour rainfall as determined by the 25-year storm. Where curbs are utilized, provisions shall be made for draining accumulations of groundwater or rainwater.

(d) F-2315.4.4 Monitoring: Where secondary containment is required, a monitoring method capable of detecting hazardous material leakage from the primary containment into the secondary containment shall be provided. Visual inspection of the primary containment or other approved means of monitoring is required. Where secondary containment is subject to the intrusion of water, a monitoring method for such water shall be provided. Electro-mechanical monitoring devices, where provided, shall be connected to visual or audible alarms.

(P) Section FM-2316.0 Controls and alarms

(1) FM-2316.1 Monitor control equipment: Where required in rule 1301:7-7-24 ~~to~~ THROUGH rule 1301:7-7-43 of the Administrative Code, monitor control equipment for the storage of hazardous materials exceeding the exempt amounts shall be provided in accordance with paragraphs ~~(O)~~ ~~(P)~~(2)(F-2316.2) through ~~(P)~~(6)(FM-2316.6) of this rule.

(2) FM-2316.2 Liquid level limit control: Atmospheric tanks with a capacity exceeding 500 gallons (~~1.9-m³~~ 1893L) utilized for the storage of hazardous material liquids shall be equipped with a liquid level limit control to prevent overfilling of the tank.

Exceptions

(a) Tanks monitored by a system that will limit net contents by weight.

(b) ~~Above-ground~~ ABOVEGROUND storage tanks utilized for fuel oil storage in accordance with paragraph ~~(G)~~(F-2807.0) of rule 1301:7-7-28 of the Administrative Code.

(3) F-2316.3 Temperature control: Materials required to be stored at temperatures other than normal ambient temperatures to prevent a hazardous reaction, shall be stored in an area provided with a means to maintain the temperature within a safe range. Redundant temperature control equipment operating upon failure of the primary temperature control system shall be provided.

(4) FM-2316.4 Pressure: Stationary tanks utilized for the storage of hazardous material liquids capable of generating pressures exceeding the tank design limits due to exposure fires or internal reaction shall be constructed or equipped with a device that will safely relieve excessive internal pressure. Such relief devices shall vent to an approved location, an exhaust scrubber or treatment system where required in rule 1301:7-7-24 ~~to~~ THROUGH rule 1301:7-7-43 of the Administrative Code.

(5) F-2316.5 Emergency alarm: A manual pull station or an approved emergency signal device shall be installed in the path of egress travel and maintained outside and within 50 feet (15240 mm) of each storage room interior egress door or use area. Activation of the emergency alarm shall sound a local alarm, or the alarm shall be transmitted to a constantly attended on-site location.

(6) FM-2316.6 Supervision: Where alarm, emergency signal, detection or automatic fire suppression systems are required in rule 1301:7-7-24 ~~to~~ THROUGH rule 1301:7-7-43 of the Administrative Code, such systems shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

(Q) Section FM-2317.0 Mechanical and electrical systems

(1) FM-2317.1 Scope: The storage of hazardous materials regulated by rule 1301:7-7-24 ~~to~~ THROUGH rule 1301:7-7-43 of the Administrative Code exceeding the exempt amounts shall comply with this section.

(2) FM-2317.2 Ventilation: Where required in rule 1301:7-7-24 ~~to~~ THROUGH rule 1301:7-7-43 of the Administrative Code, inside storage areas and storage structures shall be provided with mechanical exhaust ventilation. ~~OR BY Exception: Natural~~ NATURAL ventilation is permitted where NATURAL VENTILATION ~~it~~ is shown to be acceptable for the materials as stored.

FM-2317.2.1 Mechanical exhaust ventilation: Exhaust ventilation systems shall comply with the following:

(a) Installation shall be in accordance with the mechanical code listed in rule 1301:7-7-44 of the Administrative Code.

(b) Mechanical ventilation shall be at a minimum rate of 1 cubic foot per minute per square foot [5074 cc/(s m²)] of floor area over the storage area.

(c) Systems shall operate continuously. Alternative designs shall be permitted where approved.

(d) A manual shut-off control shall be provided outside the storage room adjacent to the access door into the room or in an approved remote location. The switch shall be of the break-glass type and labeled as "Ventilation System Emergency Shut Off".

(3) FM-2317.3 Electrical wiring and equipment: Electrical wiring and equipment shall be installed and maintained in accordance with NFPA 70 listed in rule 1301:7-7-44 of the Administrative Code.

FM-2317.3.1 Standby power: Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be connected to a standby electrical system. Standby power shall be installed in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code and independent of the public supply. ~~Exception:~~ Emergency power shall be permitted as an alternative to standby power. The emergency electrical system shall be installed in accordance with ~~Chapter~~ ARTICLE 700 of NFPA 70 listed in rule 1301:7-7-44 of the Administrative Code and independent of the public supply.

(R) Section FM-2318.0 Dispensing and use

(1) FM-2318.1 General: This section shall apply to the dispensing and use of hazardous materials exceeding the exempt amounts indicated in Tables FM-2318.1(1) and FM-2318.1(2) and the building code listed in rule 1301:7-7-44 of the Administrative Code.

Table FM-2318.1(1)
Hazardous materials posing a physical hazard
(maximum quantities per control area^a)

Material	Class	Closed systems ^f		Open systems ^f	
		Solid pounds (cubic feet)	Liquid gallons (pounds)(cubic feet)	Solid pounds (pounds)	Liquid gallons (pounds)
Combustible liquid	II IIIA IIIB	Not applicable	120 ^a 330 ^a 13,200 ^a	Not applicable	30 ^a 80 ^a 3,300 ^a
Combustible dust pounds per 1,000 cubic feet	Not applicable	1 ^a	Not applicable	1 ^a	Not applicable
Combustible fiber	Loose Baled	(100) (1,000)	Not applicable	(20) (200)	Not applicable
Cryogenics flammable or oxidizing	Not applicable	Not applicable	45 ^a	Not applicable	10 ^a
Explosives	Not applicable	1/4 ^d	(1/4) ^d	1/4 ^d	(1/4) ^d
Flammable liquid	IA IB IC	Not applicable	30 ^a 60 ^a 90 ^a	Not applicable	10 ^a 15 ^a 20 ^a
Combination (IA, IB, IC)	Not applicable	Not applicable	120 ^{a,d}	Not applicable	30 ^{a,d}
Flammable solid	Not applicable	25 ^a	Not applicable	25 ^a	Not applicable
Organic peroxide	Unclassified detonable I II III	1/4 ^d 1 ^a 50 ^a 125 ^a	(1/4) ^d (1) ^a (50) ^a (125) ^a	1/4 ^d 1 ^a 10 ^a 25 ^a	(1/4) ^d (1) ^a (10) ^a (25) ^a
Oxidizer	4 3 2 1	1/4 ^d 2 ^a 250 ^a 4,000 ^a	(1/4) ^d (2) ^a (250) ^a (4,000) ^a	1/4 ^d 2 ^a 50 ^a 1,000 ^a	(1/4) ^d (2) ^a (50) ^a (1,000) ^a
Pyrophoric	Not applicable	1 ^d	(1) ^d	0	0
Unstable (reactive)	4 3 2	1/4 ^d 1 ^a 50 ^a	(1/4) ^d (1) ^a (50) ^a	1/4 ^d 1 ^a 10 ^a	(1/4) ^d (1) ^a (10) ^a
Water-reactive	3 2	5 ^a 50 ^a	(5) ^a (50) ^a	1 ^a 10 ^a	(1) ^a (10) ^a

Note a. The maximum quantities shall be increased 100 percent in buildings equipped throughout with an approved automatic sprinkler system in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

Note b. The permitted quantities shall not be limited in a building equipped throughout with an approved automatic sprinkler system in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

Note c. A dust explosion potential is considered to exist where 1 pound or more of combustible dust per 1,000 cubic feet of volume is normally in suspension or is capable of being placed into suspension in all or a portion of an enclosure, including dust inside pieces of equipment. This also includes combustible dust which accumulates on horizontal surfaces inside buildings or equipment and which is capable of being placed into suspension by an accident, sudden force or small explosion.

Note d. Permitted only in buildings equipped throughout with an approved automatic sprinkler system in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

Note e. Containing not more than the exempt amounts of class IA, IB or IC flammable liquids.

Note f. The aggregate quantity in use and storage shall not exceed the exempt amount per control area indicated in rule 1301:7-7-24 to rule 1301:7-7-43 of the Administrative Code.

Note g. Quantities in parenthesis indicate quantity units in parenthesis at the head of each column. 1 cubic foot = 0.028 m³; 1 pound = 0.454 kg; 1 gallon = 3.785 L.

Table FM-2318.1(2)
Hazardous materials posing a health hazard
Exempt amounts for dispensing and use
(maximum quantities per control area^d)

Material	Closed systems ^c		Open systems ^c	
	Solid pounds ^a	Liquid gallons (pounds) ^a	Solid pounds ^a	Liquid gallons (pounds) ^a
Corrosive	5,000	500 ^b	1,000	100 ^b
Highly toxic	1	(1)	1/4	(1/4)
Radioactive (see rule 1301:7-7-41 of the Administrative Code)	100 rem-sealed source		25 rem-sealed source	
Toxic	500	(500)	125	(125)

Note a. Maximum quantities shall be increased 100 percent in buildings equipped throughout with an approved automatic sprinkler system in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

Note b. Containment shall be provided and arranged so sprinkler discharge will not overflow and mix noncompatible materials.

Note c. The aggregate quantity in use and storage shall not exceed the exempt amount per control area indicated in rule 1301:7-7-24 through rule 1301:7-7-43 of the Administrative Code.

Note d. Quantities in parenthesis indicate quantity units in parenthesis at the head of each column. 1 pound = 0.454 kg; 1 gallon = 3.785 L.

FM-2318.1.1 Exempt amounts: Where the amount of hazardous materials dispensed or used in one control area exceeds the amount indicated in Table FM-2318.1(1) or FM-2318.1(2), such dispensing or use shall either be located in a room or area constructed in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code or located in an outside dispensing, use or handling area in accordance with the outside storage provisions of rule 1301:7-7-24 through rule 1301:7-7-43 of the Administrative Code.

(2) FM-2318.2 Piping, valves and fittings: Piping and tubing, and valves and fittings conveying hazardous materials shall be installed in accordance with approved standards and shall comply with paragraphs (F)(2)(FM-2318.2.1) through (F)(2)(FM-2318.2.2) of this rule and the mechanical code listed in rule 1301:7-7-44 of the Administrative Code.

(a) F-2318.2.1 Design and construction: Piping, valves, fittings and related components utilized for hazardous materials shall comply with the following:

(i) Piping, valves, fittings and related components shall be designed and fabricated from materials compatible with the material to be contained and shall be of adequate strength and durability to withstand the pressure and stress to which the piping, valves, fittings and related components will be exposed and the structural and seismic loads required by the building code listed in rule 1301:7-7-44 of the Administrative Code.

(ii) Piping and tubing shall indicate the material conveyed in accordance with approved standards.

(iii) Emergency shutoff valves shall be capable of being accessed, clearly visible, and prominently marked with the name of the material conveyed and the function of the valve.

(iv) Backflow prevention or check valves shall be provided where the backflow of hazardous materials creates a hazardous condition or causes the unauthorized discharge of hazardous materials.

(b) F-2318.2.2 Supply piping: Supply piping and tubing for gases and liquids with a health-hazard ranking of 3 or 4 in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code shall also comply with the following:

(i) Connections in piping and tubing installed within structures utilized for the transmission of highly toxic or toxic materials shall be protected by an exhausted enclosure where the material is a gas. Where the material is a liquid, the piping or tubing shall be provided with a receptor for containment.

Exceptions:

(a) Metallic piping or tubing with welded connections.

(b) Liquid and gaseous chlorine lines constructed of seamless schedule 80 carbon steel pipe which complies with ASTM A106 listed in rule 1301:7-7-44 of the Administrative Code and utilizing threaded connections for diameters of 1 ½ inches (36 mm) and smaller or class 300 carbon steel flanged connections for any pipe diameter.

(c) Gaseous chlorine lines constructed of schedule 80 nonmetallic piping materials where operated under vacuum or pressure not greater than 6 psig (41 kPa). Such lines shall be constructed of polyvinyl chloride (PVC) or chlorinated polyvinyl chloride (CPVC), which comply with ASTM D1784 listed in rule 1301:7-7-44 of the Administrative Code, or other approved nonmetallic materials that are demonstrated to provide resistance to permeation, degradation and structural failure from contact with chlorine.

(ii) Piping and tubing shall not be located within an exit or exit access corridor or in areas not classified as use group H.

Exception: Such piping and tubing shall be permitted to be installed within the space defined by the walls of an exit access corridor and floor or roof above, or in a space above other occupancies where installed in accordance with the provisions required for HPM facilities in the building code listed in rule 1301:7-7-44 of the Administrative Code.

(iii) Where gases or liquids are carried in pressurized piping above 15 psig (103 kPa), excess flow control or automatic fail-safe shutoff valves shall be provided. Where piping originates from within a hazard material storage room or area, the excess flow control or automatic fail-safe valves shall be located within the storage room or area. Where piping originates from a bulk source the excess flow control or automatic fail-safe shutoff valves shall be located as close to the bulk source as practical.

(iv) Manually or remotely activated automatic fail-safe emergency shutoff valves capable of ready access shall be installed on supply piping and tubing at the point of use and at the tank, cylinder or bulk source.

(3) F-2318.3 Processing equipment: Processing equipment and machinery utilized for dispensing or use of hazardous materials shall be suitable for the intended purpose. Both processing equipment and

machinery shall be maintained in an operable condition and replaced, repaired or removed from service when found defective.

(4) F-2318.4 Ignition sources: The utilization of open flames or high-temperature devices in a manner creating a hazardous condition shall not be permitted within hazardous material dispensing or use areas. Smoking shall not be permitted in any room where hazardous materials are stored nor within 25 feet (7620 mm) of outdoor dispensing or use areas.

(5) FM-2318.5 Static accumulation: Where the potential exists for ignition by discharge of static electricity, equipment shall be electrically bonded and grounded in accordance with article 500 of NFPA 70 listed in rule 1301:7-7-44 of the Administrative Code.

(6) FM-2318.6 Monitor control equipment: Monitor control equipment shall be provided in accordance with the following:

(a) Liquid level. Open tanks in which hazardous materials are used shall be equipped with a liquid level limit control or other means to prevent overfilling of the tank.

(b) Temperature. Process tanks and equipment containing materials utilized at temperatures which must be controlled to prevent a hazardous reaction shall be provided with a means to maintain the temperature within a safe range in accordance with paragraph (P)(3)(F-2316.3) of this rule.

(c) Pressure. Stationary tanks or equipment containing materials capable of generating pressures exceeding the tank or equipment design limits due to exposure fires or internal reaction shall be equipped with pressure limiting or relief devices. Relief devices for stationary tanks or equipment for highly toxic or corrosive materials shall vent to an exhaust scrubber or treatment system for processing of vapors or gases. Relief devices for flammable or explosive vapors or gases shall vent to an approved location.

(7) FM-2318.7 Standby power: Mechanical ventilation, treatment systems, temperature control, manual alarm, detection or other electrically operated systems required by this section or paragraph (S)(FM-2319.0) or (I)(FM-2320.0) of this rule shall be connected to a standby electrical system. Standby power shall be installed in accordance with ~~Chapter~~ ARTICLE 701 of NFPA 70 listed in rule 1301:7-7-44 of the Administrative Code and independent of the public supply.

Exceptions

(a) Emergency power shall be permitted as an alternative to standby power. The emergency electrical system shall be installed in accordance with ~~Chapter~~ ARTICLE 700 of NFPA 70 listed in rule 1301:7-7-44 of the Administrative Code and independent of the public supply.

(b) Where a fail-safe engineered system is installed, standby power for mechanical ventilation, treatment systems and temperature control shall not be required.

(8) FM-2318.8 Supervision: Manual alarm, detection and automatic fire suppression systems required by this section shall be supervised in accordance with paragraph (P)(6)(FM-2316.6) of this rule.

(9) FM-2318.9 Signage: In addition to the hazard identification signs required by paragraph (H)(FM-2308.0) of this rule, additional hazard identification and warning signs shall be provided as follows:

(a) Signs prohibiting smoking shall be provided in dispensing and open use areas and within 25 feet (7620 mm) of outdoor dispensing or open use areas.

(b) Stationary tanks shall be placarded with hazard identification signs in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code for the specific material contained.

(10) F-2318.10 Security: Dispensing and use areas shall be safeguarded from public access or unauthorized entry.

(11) FM-2318.11 Lighting: Lighting shall be provided by artificial means in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

(S) Section FM-2319.0 Inside dispensing and use

(1) FM-2319.1 General: Inside dispensing and use of hazardous materials exceeding the exempt amounts indicated in Tables FM-2318.1(1) and FM-2318.1(2) and the building code listed in rule 1301:7-7-44 of the Administrative Code shall comply with paragraphs (S)(2)(FM-2319.2) and (S)(3)(FM-2319.3) of this rule.

(2) FM-2319.2 Open systems: Dispensing and use of hazardous materials in open containers, tanks, or systems shall comply with paragraphs (S)(2)(a)(FM-2319.2.1) through (S)(2)(d)(FM-2319.2.4) of this rule.

(a) FM-2319.2.1 Dispensing: Where liquids with a health, fire or reactivity hazard ranking of 3 or 4 in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code are dispensed from tanks or drums, dispensing shall only be by approved pumps taking suction from the top.

(b) FM-2319.2.2 Ventilation: Where gases, liquids or solids with a health, fire or reactivity hazard ranking of 3 or 4 in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code are dispensed or used, mechanical exhaust ventilation shall be provided to control fumes, mists or vapors at the point of generation.

(c) FM-2319.2.3 Explosion control: Where an explosion hazard is capable of occurring as a result of the dispensing or use process, explosion control shall be provided in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

(d) FM-2319.2.4 Spill control and drainage: Rooms or areas where hazardous material liquids are dispensed or used shall be provided with a means to control spills and drainage in accordance with paragraphs (O)(2)(F-2315.2) and (O)(3)(F-2315.3) of this rule.

Exceptions

(i) Containers not exceeding 1 gallon (~~0.00379-m³~~ 4L) in capacity.

(ii) Hazardous material systems containing 5 gallons (~~0.019-m³~~ 19L) or less capacity.

(3) FM-2319.3 Closed systems: Use of hazardous materials in closed containers or systems shall comply with paragraphs (S)(3)(a) (F-2319.3.1) through (S)(3)(f)(FM-2319.3.6) of this rule.

(a) F-2319.3.1 System design: Systems shall be suitable for the intended purpose and designed by persons competent in such design. Where approved practices or standards have been established for the processes employed, such practices or standards shall be followed in the design. Controls shall be designed to prevent materials from entering or leaving process or reaction systems at other than the intended time, rate or path. Automatic controls, where provided, shall be designed to be fail safe.

(b) FM-2319.3.2 Ventilation: Where closed systems are designed to be opened as part of normal operations, ventilation shall be provided in accordance with paragraph (S)(2)(b)(FM-2319.2.2) of this rule.

(c) FM-2319.3.3 Explosion control: Where an explosion hazard is capable of occurring as a result of the dispensing or use process, explosion control shall be provided in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code. This requirement shall not apply to process vessels designed to fully contain the worst case explosion anticipated within the vessel under process conditions considering the most likely failure.

(d) FM-2319.3.4 Spill control, drainage and containment: Rooms or areas where hazardous material liquids are used in individual tanks or containers exceeding 55 gallons (~~0.21-m³~~ 208L) shall be provided with a means to control spills in accordance with paragraph (O)(1) (FM-2315.1) of this rule.

(e) FM-2319.3.5 Secondary containment: Secondary containment shall be provided in accordance with paragraph (O)(4)(F-2315.4) of this rule where the aggregate of multiple tanks or containers exceeds 1,000 gallons (~~3.8-m³~~ 3785L).

(T) Section FM-2320.0 Outside dispensing and use

(1) FM-2320.1 General: Outside dispensing or use of hazardous materials exceeding the exempt amounts indicated in Tables FM-2318.1(1) and FM-2318.1(2) and the building code listed in rule 1301:7-7-44 of the Administrative Code in either closed or open containers or systems shall comply with this section. Fuel dispensing areas of service stations shall comply with rule ~~1301:7-7-32~~ 1301:7-7-28 of the Administrative Code.

(2) FM-2320.2 Gravity dispensing: Gravity dispensing shall not be permitted where liquids with a health, fire or reactivity hazard ranking of 3 or 4 in accordance with NFPA 704 listed in rule 1301:7-7-44 of the Administrative Code are dispensed from tanks or drums.

(3) FM-2320.3 Fire suppression system: In other than motor vehicle service stations as defined in NFPA 30A listed in rule 1301:7-7-44 of the Administrative Code, flammable hazardous materials dispensing or use areas located within 50 feet (15240 mm) of either a storage area or structure, and vehicle loading racks where flammable hazardous materials are dispensed, shall be protected by an approved automatic fire suppression system.

(4) FM-2320.4 Open systems: Outside areas where hazardous material liquids are dispensed into containers shall be provided with a means to control spills in accordance with paragraph (O)(1)(FM-2315.1) of this rule. Secondary containment shall also be provided. Spill control and secondary containment shall not be required for containers not exceeding 55 gallons (208 L) that are provided with a means to absorb leakage or spillage during dispensing operations.


(5) FM-2320.5 Closed systems: Outside areas where hazardous material liquids are used in individual tanks or containers exceeding 500 gallons (~~1.9-m³~~ 1893L) shall be provided with a means to control spills in accordance with paragraph (O)(1)(FM-2315.1) of this rule. Secondary containment shall also be provided where the aggregate of multiple tanks or containers in any area exceeds 2,000 gallons (~~7.6-m³~~ 7570L).

(6) F-2320.6 Clearance from combustibles: The area surrounding an outside dispensing or use area shall be kept clear of combustible materials and vegetation for a minimum distance of 30 feet (9144 mm).

(7) FM-2320.7 Fire lanes and water supply: Fire lanes and approved water supplies shall be provided for outside dispensing or use areas where required by the code official in accordance with paragraph (N)(10)(FM-2314.10) of this rule.

(8) F-2320.8 Protection from vehicles: Guard posts or other means shall be provided to protect outside dispensing or use areas from vehicular damage.

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Certification

November 17, 1999
Date

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