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CITY OF BELLEVUE, WASHINGTON

ORDINANCE NO. 3669

AN ORDINANCE adopting the Uniform Fire Code, 1985 Edition, portions of the Appendix to the Uniform Fire Code, 1985 Edition, and the Uniform Fire Code Standards, 1985 Edition; repealing Section 1 of Ordinance Nos. 2050, 2135, 2434, 2929, 3320, 3376, and 3609; Sections 4, 5, 6, 16 and 23 of Ordinance No. 3376 and Bellevue City Code Sections 23.10.010, 23.10.137, 23.10.1385, 23.10.1386, 23.10.144, and 23.10.1463; amending Section 2 of Ordinance Nos. 2050, 2434, 2929, 3320, 3376, and 3609 and Bellevue City Code Section 23.10.020; Sections 19, 20, and 21 of Ordinance No. 2979, Sections 9, 10, 11, 12, and 14 of Ordinance No. 3376 and Bellevue City Code Sections 23.10.020, 23.10.1389, 23.10.139, 23.10.1391, 23.10.140, 23.10.141, and 23.10.1421; and adding new Sections 23.10.010, 23.10.137, 23.10.1385, 23.10.1386, 23.10.1387, 23.10.144, and 23.10.1463 to the Bellevue City Code.

THE CITY COUNCIL OF THE CITY OF BELLEVUE, WASHINGTON, DOES ORDAIN AS FOLLOWS:

Section 1. Section 1 of Ordinance No. 2050, Section 1 of Ordinance No. 2135, Section 1 of Ordinance No. 2434, Section 1 of Ordinance No. 2929, Section 1 of Ordinance No. 3320, Section 1 of Ordinance No. 3376 and Section 1 of Ordinance 3609, and Bellevue City Code 23.10.010 are repealed and a new Section 23.10.010 is added to Chapter 23.10 of the Bellevue City Code to read as follows:

23.10.010 Adoptions

The following codes, all as amended, added to, or excepted herein, together with all amendments and additions provided in this chapter or Chapters 23.19, 23.22 and 23.30 of the Bellevue City Code, are adopted and shall be applicable within the City:

- A. Uniform Building Code and Related Standards, 1985 Edition, published by the International Conference of Building Officials; the appendix to the Uniform Building Code is not adopted, except that Chapters 7 and 55 of said appendix are adopted;
- B. Uniform Housing Code, 1985 Edition, published by the International Conference of Building Officials;

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- C. The Uniform Fire Code, 1985 Edition; the Uniform Fire Code Appendix, 1985 Edition, Chapters I-A, I-C, II-B, II-C, II-D, III-A, III-B, III-C, IV-A, V-A, VI-A and VI-C; and the Uniform Fire Code Standards, 1985 Edition; all published by the International Conference of Building Officials and the Western Fire Chiefs Association;
- D. Regulations for Barrier Free Facilities, October 1, 1976, as amended August 17, 1983, adopted by the SBCAC pursuant to chapter 19.27 RCW;
- E. Washington State Energy Code, November 15, 1985, adopted by Section 2, Chapter 144, Laws of 1985;
- F. The Uniform Swimming Pool Spa and Hot Tub Code, 1985 Edition, published by the International Association of Plumbing and Mechanical Officials;
- G. Uniform Building Security Code, 1985 Edition, published by the International Conference of Building Officials;
- H. Uniform Solar Energy Code, 1985 Edition, published by the International Association of Plumbing and Mechanical Officials.

All codes, standards, rules and regulations adopted by this section are adopted by reference thereto as though fully set forth herein. A copy of each such adopted code, standard, rules or regulations in the form in which it was adopted and suitably marked to indicate amendments, additions, deletions and exceptions as provided herein, shall be authenticated and filed by the City Clerk in the records of his or her office, suitably referenced and indexed to the ordinance codified in this section. Not less than one copy of each each code, standard, rules or regulations, in the form in which it was adopted and suitably marked to indicate amendments, additions, deletions and exceptions as provided herein, shall be filed in the City Clerk's Office and available for use and examination by the public.

Section 2. Section 2 of Ordinance No. 2050, Section 2 of Ordinance No. 2434, Section 2 of Ordinance No. 2929, Section 2 of Ordinance No. 3320, Section 2 of Ordinance No. 3376, Section 2 of Ordinance No. 3609, and Bellevue City Code 23.10.020 are amended to read as follows:

23.10.020 Amendment Adoption.

The following amendments, additions and exceptions to the Uniform Building Code, 1985 Edition, Uniform Fire Code, 1985 Edition, and Uniform Fire Code Standards, 1985 Edition, are adopted and shall be applicable within the City of Bellevue.

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Section 3. Section 4 of Ordinance No. 3376 and Section 23.10.137 of the Bellevue City Code are repealed and a new Section 23.10.137 is added to Chapter 23.10 of the Bellevue City Code to read as follows:

23.10.137 Uniform Fire Code Section 4.101 amended -
Permit Requirements and Fees

Section 4.101 of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

"Section 4.101

(a) A permit effective for the time period indicated shall be obtained from the bureau of fire prevention prior to engaging in the following activities, operations, practices or functions:

	<u>Time Period Code</u>
1. <u>Aircraft refueling vehicles.</u> To operate aircraft refueling vehicles. See Section 24.201.	A
2. <u>Aircraft repair hangar.</u> To use any structure as an aircraft hangar for the purpose of servicing or repairing aircraft. See Section 24.102.	UR
3. <u>Automobile wrecking yard.</u> To operate an automobile wrecking yard, junkyard or waste material handling plant. See Article 34.	A
4. <u>Open Burning.</u> To kindle or authorize the kindling of any open outdoor fire. See Section 11.101.	T
5. <u>Bowling pin or alley refinishing.</u> To conduct a bowling pin refinishing or bowling alley resurfacing operation involving the use and application of flammable liquids or materials. See Article 26. (T for alley; UR for pin)	T or UR
6. <u>Burning in public place.</u> To ignite or burn waste material on publicly owned or controlled land, bridge, street or other public place which has not been set aside by public authority for such purposes. See Section 11.113.	T
7. <u>Candles and open flames in assembly areas.</u> To use open flame or candles in connection with assembly areas or restaurants' dining or drinking	T or UR

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establishments. For definition of Assembly, see Section 9.103. See Section 9.103. See Section 25.116 for open flame and candles. (T for temporary use)

8. Cellulose nitrate storage. To store or handle more than 25 pounds of cellulose nitrate plastic (pyroxylin) for the manufacturing or assembly of articles or parts of articles containing cellulose nitrate plastics (pyroxylin). See Article 27. A
9. Combustible fiber storage. To store or handle combustible fibers in quantities in excess of 100 cubic feet. See Article 28. UR
10. Compressed gases. To store, handle, transport on site, or use at normal temperatures and pressures compressed gases in excess of the following amounts:

<u>Type of Gas</u>	<u>Amount</u>	
Flammable (except cryogenic fluids and liquefied petroleum gases) and/or oxidizing (including oxygen)	500 cu. ft.	UR
Corrosive, highly toxic or poisonous	any amount	A
Radioactive	any amount	A
Reactive or unstable	any amount	A
Inert or chemically unreactive	6,000 cu. ft.	UR

See Article 74, Article 80 and Article 82

11. Combustible material storage. To store more than 2500 cubic feet gross volume of combustible empty packing cases, boxes, barrels or similar containers, or rubber or cork, or similarly combustible material. See Section 11.203. UR
12. Cryogenics. Except where federal or state regulations apply and except for fuel systems of the vehicle, permits are required to produce, store or handle cryogenic fluids in excess of the following amounts: A

<u>Type of Cryogenic</u>	<u>Inside Building</u>	<u>Outside Building</u>
Flammable	Over 1 gallon	60 gallons
Oxidizer (includes oxygen)	50 gallons	50 gallons
Corrosive or highly toxic	Over 1 gallon	Over 1 gallon
Nonflammable	60 gallons	500 gallons

13. Dry cleaning plants. To engage in the business of UR

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dry cleaning or to change to a more hazardous cleaning solvent. Such permits shall prescribe the class of system to be used. See Article 36 and Sections 79.1803 and 79.1804.

14. Dust-producing operations. To operate a grain elevator, flour starch mill, feed mill, or plant pulverizing aluminum, coal, coca, magnesium, spices, sugar or other material producing dusts as defined in Section 76.101. A
15. Explosives or blasting agents. For permits for explosives or blasting agents, See Section 77.104. T or A
16. Fireworks. For permits for fireworks, see Article 78. T or A
17. Flammable or combustible liquid pipeline operation and excavation. To use or operate a pipeline for the transportation of flammable or combustible liquids or to excavate or do any work below grade within 10 feet of any such pipeline. See Section 79.1701. (T for excavation; UR for operation) T or UR
18. Flammable or combustible liquids and tanks. A or UR
- A. To store, handle or use Class I liquids in excess of 5 gallons in a building or in excess of 10 gallons outside of any building, except that a permit is not required for the following:
- i. The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant, unless such storage, in the opinion of the chief, would cause an unsafe condition.
 - ii. The storage or use of paints, oils, varnishes or similar flammable mixtures when such liquids are stored for maintenance, painting or similar purposes for a period of not more than 30 days.
- (UR for storage in underground tanks or associated with wholesale or retail sales where the original containers remain unopened; A for all other)
- B. To store, handle or use Class II or Class III-A A or UR

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liquids in excess of 25 gallons in a building or in excess of 60 gallons outside a building, except for fuel oil used in connection with oil-burning equipment. (UR for storage in underground tanks or associated with wholesale or retail sales where the original containers remain unopened; A for all other)

Note: A single permit may be issued for A and B.

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|-----|---|---------|
| C. | To remove Class I or Class II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes. | T |
| D. | To install, alter or operate equipment in connection with the storage, handling, use or sale of flammable or combustible liquids regulated under Article 79. (T for installation or alteration; UR for operation) Note: This permit may be consolidated with A and/or B above onto a single permit. | T or UR |
| E. | To install, alter, remove, abandon, place temporarily out of service or otherwise dispose of any flammable or combustible liquid tank. See Article 79. | T |
| F. | To change the type of contents stored in any flammable or combustible liquid tank to a material other than that for which the tank was designed and constructed. | T |
| 19. | <u>Fruit ripening.</u> To ripen fruit by the process described in Section 46.101. | UR |
| 20. | <u>Fumigation or thermal insecticidal fogging.</u> To operate a business of fumigation or thermal insecticidal fogging. Also to maintain a room, vault or chamber in which a toxic flammable fumigant is used. See Article 47. | A |
| 21. | <u>Garages.</u> To use any structure as a place of business for repairing motor vehicles. See Article 29. | UR |
| 22. | <u>Hazardous materials.</u> To store, handle, transport on-site, or use hazardous materials in excess of the | |

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following amounts:

<u>Type of Material</u>	<u>Amount</u>
Ammonium nitrate, ammonium nitrate fertilizers and fertilizer mixtures	250 pounds A
Cellulose nitrate	25 pounds (see No. 8)
Combustible liquids	(see No. 18)
Corrosive gases	any amount (see No. 10)
Corrosive liquids	55 gallons A
Corrosive solids	250 pounds A
Flammable gases	500 cu. ft. (see No. 10)
Flammable liquids	(see No. 18)
Flammable solids	100 pounds A
Highly toxic or poisonous gases (including pesticides and fumigants)	any amount (see No. 10)
Highly toxic or poisonous liquids or solids (including pesticides and fumigants)	any amount A
Liquified petroleum gases	(see No. 27)
Magnesium	(see No. 29)
Nitrate film	any amount (see No. 32)
Nitromethane	1 gallon A
Oxidizing gases	500 cu. ft. (see No. 10)
Oxidizing liquids	A
Class 1	55 gallons
Class 2	10 gallons
Class 3	1 gallon
Class 4	any amount
Oxidizing solids	A
Class 1	500 pounds
Class 2	100 pounds
Class 3	50 pounds
Class 4	any amount
Organic peroxides	A
Stabilized (inhibited)	10 pounds
Unstabilized	any amount
Poisonous gases	any amount (see No. 10)
Radioactive materials (including gases, liquids and solids)	(see No. 40)
Reactive and unstable gases	any amount (see No. 10)
Reactive liquids	1 gallon A
Reactive solids	10 pounds A
Unstable liquids and solids	any amount A

Where a single material is included in several hazard classes, only a single permit is required.

See Article 80.

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23. Hazardous production materials. To store, handle or use hazardous production material regulated by Article 51. (see No. 22)
24. Highly toxic pesticides. To store any amount of highly toxic pesticides. (see No. 22)
25. High-piled combustible storage. To use any building or portion thereof exceeding 2500 square feet for the storage of high-piled combustible stock. A floor plan showing the dimensions and location of the stockpiles and aisles shall be submitted with applications for such permits. See Article 81 UR
26. Junk yards. To operate a wrecking yard, junk or waste material handling plant. (see No. 3)
27. Liquified petroleum gases. Except for portable containers of less than 120 gallons water capacity, to install or maintain any LP gas container or operate any tank vehicle which is used for the transportation of LP gas. Where a single container or the aggregate capacity of interconnected containers is over 1200 gallons water capacity, the installer shall submit plans for such permits. See Article 82. UR
28. Lumber yards. To store lumber in excess of 100,000 board feet. See Article 30. UR
29. Magnesium working. To melt, cast, heat treat or grind more than 10 pounds of magnesium per working day. (see No. 22) A
30. Mall, covered. To use a covered mall in the following manner: T or UR
- A. Placing or constructing temporary kiosks, display booths, concession equipment or the like in the mall.
 - B. To use the mall as a place of assembly.
 - C. To use open-flame or flame-producing devices.
 - D. To display any liquid or gas-fueled powered equipment.
 - E. To use liquefied petroleum gas, liquefied natural gas and compressed flammable gas. See Article 35.

(T for C. and E.; UR for others)

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31. Matches. To manufacture matches or to store matches exceeding an aggregate 60 matchman's gross (14,400 each gross). See Article 83. UR
32. Nitrate film. To store, handle, use or display nitrate film. See Article 33. UR
33. Oil and natural gas wells. To drill, own, operate or maintain an oil or natural gas well. See Section 79.1101. A
34. Open burning. (see No. 4)
35. Open-flame devices in marinas. See Section 11.410. To use open flame devices for maintenance or repair of boats, slips or wharves. T
36. Organic coatings. To manufacture more than one gallon of organic coatings in a working day. See Article 50. A
37. Ovens, industrial baking or drying. To operate an industrial baking or drying oven regulated by this code. See Article 62. UR
38. Parade floats. To use a parade float for public performance, presentation, spectacle, entertainment or parade. See Section 11.208. T
39. Places of assembly. To operate a place of assembly as defined in Article 9. T or UR
40. Radioactive materials. To store or handle at any installation more than 1 microcurie of radioactive material in a sealed source or sources, or any amount of radioactive material for which a specific license from the Nuclear Regulatory Commission is required. See Article 80. A
41. Refrigeration equipment. To install or operate a mechanical refrigeration unit or system. See Article 63. UR
- Exceptions:
1. Air, water or brine systems.
 2. All units and systems utilizing Group 1 refrigerants with a refrigerant compressor or horsepower rating of less than 100.
42. Spraying or dipping. To operate a spraying or dipping A

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enterprise utilizing flammable liquids included within the scope of Article 45. See Section 45.101.

43. Tank vehicles. To operate a tank vehicle for the transportation of flammable or combustible liquids. See Article 79, Division XII. UR
44. Tents and air-supported structures. To erect or operate a tent or air-supported structure covering an area in excess of 200 square feet unless such structures are used exclusively for camping. See Article 32. T or UR
45. Tire recapping. To operate tire recapping or rebuilding plants. See Article 31. A
46. Waste material handling plant. To operate a waste material handling plant. (see No. 3)
47. Welding and cutting operations. To conduct welding and/or cutting operations in any occupancy. See Article 49. T or UR

- (b) Time period codes: T - Temporary; A - Annual; UR - Until Revoked.
- (c) Each required permit indicated by assignment of a time period code above shall have a fee of \$50.00.

Exceptions:

1. No permit fee shall be charged for No. 4, candles in No. 7, and No. 38.
2. Fees for fireworks permits (No. 16) shall be \$18.00.
3. Except for sales of fireworks, fees shall be waived for governmental agencies and religious or non-profit organizations.
4. Activities requiring a permit with a time period code of UR that are in existence at the time of the adoption of this ordinance may have a permit issued prior to July 1, 1987 without the payment of a permit fee."

Section 4. Section 5 of Ordinance No. 3376 and Bellevue City Code Section 23.10.1385 are repealed and a new Section 23.10.1385 is adopted to read as follows:

23.10.1385. Uniform Fire Code Section 10.207(i) amended - Bridges and Other Structures.

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Section 10.207(i) of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

"(i) Bridges or Other Structures. Where fire apparatus access roadways pass over bridges or other structures, they shall be designed and constructed to support a minimum of a 62,000 pound 3-axle vehicle. That portion of such roadway structure within 75 feet of the exterior wall of any building shall be designed and constructed to withstand point loads of not less than 10,000 pounds per square foot. Bridges or other structures that are not required access roadways or that presently exist and do not meet the standards herein shall be conspicuously posted with a load limit sign. (see Bellevue Sign Code, BCC 22B.10).

Section 5. Section 6 of Ordinance No. 3376 and Bellevue City Code Section 23.10.1386 are repealed and a new Section 23.10.1386 is added to Chapter 23.10 of the Bellevue City Code to read as follows:

23.10.1386 Uniform Fire Code Section 10.207(j) amended - Maximum Grade.

Section 10.207(j) of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

"(j) Maximum Grade. Private fire access roadways shall have a maximum grade of 15%."

Section 6. Section 8 of Ordinance No. 3376 and Bellevue City Code Section 23.10.1389 are amended to read as follows:

23.10.1389 Uniform Fire Code Section 10.306(a) amended - Apartments and Hotels.

Section 10.306(a) of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

"Section 10.306(a) Apartments and Hotels. Every apartment house three stories or more in height or containing more than 15 apartments and every hotel three stories or more in height or containing 20 or more guest rooms and every apartment house and hotel more than one story in height having interior corridors shall have an approved fire alarm system as specified herein.

Smoke detectors shall be provided in all corridors and public areas and thermal detectors shall be provided in all parking garages, storage, laundry, mechanical, telephone equipment and electrical rooms. Any automatic sprinkler system provided in the building shall be equipped with a water flow detector which shall be connected to the building fire alarm system.

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Manual pull stations shall be located adjacent to each exit on all floors, in elevator lobbies on all floors, immediately adjacent to the telephone switchboard if there is a telephone switchboard in the building and at other locations as may be required by the chief.

Such fire alarm systems shall be designed so that all occupants of the building are warned simultaneously. Exception: alarm systems in high-rise buildings conforming with Section 1807(e)1.

The alarms shall be audible from all portions of the building at 60 decibels or 15 decibels above ambient noise, whichever is greater.

Installation, inspection and maintenance of the fire alarm system shall be according to the standards set forth in UFC Standard No. 10.2."

Hotel or motel fire alarm systems which have been activated, shall not have their evacuation alarm device silenced or incapacitated without fire department approval, unless this is accomplished by resetting the system.

Section 7. A new Section 23.10.1387 is added to Chapter 23.10 of the Bellevue City Code, to read as follows:

23.10.1387 Uniform Fire Code Section 10.306(c) amended - Fire Alarm Standards.

Section 10.306(c) of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

"(c) Standard for Installation, Inspection and Maintenance. Installation, inspection and maintenance of fire alarm systems shall be according to the standards set forth in U.F.C. Standard No. 10-2. All sensory mechanisms and components of alarm systems shall be adjusted or otherwise protected to suppress false signals so that alarms will not be activated by impulses due to transient pressure changes, electrical power surges or failures or restoration after failure, radio frequency interference, short flashes of light, normal room temperature changes, effects of wind, rattling or vibrating doors or windows, vehicular noises, or other causes unrelated to genuine signals."

Section 8. Section 19 of Ordinance No. 2929, Section 9 of Ordinance No. 3376 and Bellevue City Code Section 23.10.139 are amended to read as follows:

23.10.139 Uniform Fire Code Section 10.308(b) amended - Automatic Fire Extinguishing Systems.

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Section 10.308(b) of the Uniform Fire Code as adopted by this chapter is amended by the addition of a new paragraph to be numbered paragraph 5 and to read as follows:

"5. Throughout all buildings of four or more stories in height. Sprinkler systems required by this section, but not otherwise required, shall be allowed the same modifications permitted in Uniform Building Code Section 1807(m)."

Section 9. Section 10 of Ordinance No. 3376 and Bellevue City Code Section 23.10.1391 are amended to read as follows:

23.10.1391 Uniform Fire Code Section 10.308(c)1. Amended - Drinking and Dining Establishments.

Section 10.308(c)1. of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

"1. Drinking and Dining Establishments. An automatic sprinkler system shall be installed throughout Group A drinking or dining establishments where the total area of assembly uses and unseparated rooms exceeds 5,000 square feet. For uses to be considered as separated, the separation shall be not less than is required for a one-hour occupancy separation."

Section 10. Section 20 of Ordinance No. 2929, Section 11 of Ordinance No. 3376 and Bellevue City Code Section 23.10.140 are amended to read as follows:

23.10.140 Uniform Fire Code Section 10.311(b) amended - Standpipes.

Section 10.311(b) of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

"Section 10.311(b) Where required. Standpipes shall be provided as set forth in Table No. 10.311.

TABLE NO. 10.311 - STANDPIPE REQUIREMENTS

Occupancy ¹	NONSPRINKLERED BUILDING 2		SPRINKLERED BUILDING 3, 4	
	Standpipe Class	Hose Requirement	Standpipe Class	Hose Requirement
1. Occupancies exceeding 150 ft. in height and more than one story	III	Yes	III	No

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2. Occupancies 3 stories or more but less than 150 ft. in height, except Group R, Div. 3	I (or III)	Yes	I (or III)	No
3. Group A Occupancies with occupant load exceeding 1000	II I	Yes	No requirement	No
4. Group A, Div. 2.1 Occupancies over 5000 square feet in area used for exhibition.	II	Yes	II	Yes
5. Groups I, H, B, Div. 1, 2 or 3 Occupancies less than 3 stories in height but greater than 20,000 square feet per floor	II ⁵	Yes	No requirement	No

- 1 Class II standpipes need not be provided in assembly areas used solely for worship.
- 2 Except as otherwise provided in item no. 4 of this table, Class II standpipes need not be provided in basements having an automatic fire-extinguishing system throughout such basements.
- 3 Combined systems with their related water supplies may be used in sprinklered buildings.
- 4 Portions of otherwise sprinklered buildings which are not protected by automatic sprinklers shall have Class II standpipes installed as required for the unsprinklered portions.
- 5 In open structures where Class I standpipes may be damaged by freezing, the building official may authorize the use of Class I standpipes which are located as required for Class II standpipes.

Section 11. Section 21 of Ordinance No. 2929, Section 12 of Ordinance No. 3376 and Bellevue City Code Section 23.10.141 are amended to read as follows:

23.10.141 Section 10.311(c) amended - Location of Class I Standpipes.

Section 10.311(c) of the Uniform Fire Code as adopted by this Chapter is amended to read as follows:

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"Section 10.311(c) Location of Class I Standpipes. There shall be a Class I standpipe outlet connection at every floor level above the first story of every required stairway, on each side of the wall adjacent to the exit opening of a horizontal exit and elsewhere as determined necessary by the chief.

Risers and laterals of Class I standpipe systems not located within an enclosed stairway or smokeproof enclosure shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located.

EXCEPTION: In buildings equipped with an approved automatic sprinkler system, risers and laterals which are not located within an enclosed stairway or smokeproof enclosure need not be enclosed with fire resistive construction.

There shall be a three-way outlet above the roof line when the roof has a slope of less than 4 inches in 12 inches.

In buildings where more than one standpipe is provided, the standpipes shall be interconnected at the bottom.

Section 12. Section 14 of Ordinance No. 3376 and Bellevue City Code Section 23.10.1421 are amended to read as follows:

23.10.1421 Uniform Fire Code Section 11.112 amended - Burning Periods.

Section 11.112 of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

"Section 11.112 Burning Periods. Burning of cut or fallen vegetation materials shall be permitted only during the months of May and November. The Chief may extend these burning periods or establish special burning periods when inclement weather has made burning impractical or when storms have resulted in considerable litter. Such fires shall not be started before the time of sunrise and must be extinguished by the time of sunset."

Section 13. Section 16 of Ordinance No. 3376 and Bellevue City Code Section 23.10.144 are repealed and a new Section 23.10.144 is added to Chapter 23.10 of the Bellevue City Code to read as follows:

23.10.144 Preventable Responses to Fire Alarms.

- A. Scope. This section shall apply to activation of a fire alarm system resulting in responses of fire apparatus due to either direct transmission of the alarm to a monitoring station or telephone report of fire alarm activation caused by any of the following:

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1. Improper type, installation, sensitivity, or maintenance of automatic detectors.
 2. Improper installation (including unapproved or incompatible components) or maintenance of fire alarm systems including systems with unapparent reasons for repetitious alarms.
 3. Erroneous transmission of an alarm including the reporting of trouble signals by fire alarm monitoring companies.
 4. Work on a fire alarm system or automatic extinguishing system connected to an alarm system when reasonable steps were not taken to prevent reporting of an alarm to the fire department.
 5. Fire drills or tests of alarm or extinguishing systems when reasonable steps were not taken to prevent reporting of an alarm to the fire department.
 6. Work including painting, welding, cleaning, cooking, dust producing or other activities which could activate a fire alarm detector.
 7. Smoke or fumes resulting from closed fireplace dampers, cooking activities, smoking of tobacco products, etc., including opening a door to a corridor equipped with detectors for the purpose of ventilating such smoke or fumes.
- B. Exception. This section shall not apply to activation of a fire alarm system resulting from the following:
1. Any actual fire, explosion or overheating or other situation that could have resulted in a fire.
 2. Any manual activation of an alarm where it was believed that a fire or any other emergency requiring response of emergency personnel existed.
 3. Malicious manual activation or unlawful tampering with a fire alarm system.
 4. Accidental striking of an alarm box, detector, circuitry, panel or other components of an alarm system or accidental breakage or discharge of a sprinkler system or other fire extinguishing system.
 5. Accidental breakage or leak of any system that releases steam, heat, gases, water or vapors which might activate a detector.

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6. Earthquake, lightning or natural occurrences that result in movement or flooding of a building.
 7. Work on telephone lines or central office equipment.
- C. Fees and cost recovery.
1. Exempt alarms
 - a. The first preventable fire department response to fire alarms from any one system during a calendar year shall be exempt except that there shall be no exempt responses to alarms caused by alarm system monitoring companies or companies performing work on fire alarm or fire extinguishing systems.
 - b. For newly installed alarm systems, the first five preventable fire department responses to fire alarms from any one system or all preventable responses within 30 days of the first such alarm, whichever occurs first, are exempt.
 2. Non-exempt fire department responses to fire alarms.
 - a. A fee of \$50.00 shall be charged for the first non-exempt preventable fire department response to a fire alarm during a calendar year from any one system.
 - b. A fee of \$75.00 shall be charged for all subsequent non-exempt preventable fire department responses to a fire alarm from any one system during a calendar year.
 3. Recovery of costs. In addition to fees above, the City may attempt to recover costs through civil action when there are more than five non-exempt preventable responses to fire alarms during a calendar year. Costs shall include the following:
 - a. Personnel costs (including salaries, overtime, fringe benefits) for the time that involved personnel were not available to respond to valid emergencies.
 - b. Apparatus costs according to the "Fee Schedule for Hazardous Materials Incidents and/or Fire Suppression" established by the King County Fire Chiefs Association.
 - c. Administrative costs and court costs.

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D. Responsibilities

1. The owner of the alarm system or subscriber of an alarm service shall be responsible for all preventable fire department responses resulting from activation of a fire alarm system including those caused by tenants or any other occupant of the building or occupancy, except that fire alarm monitoring companies shall be responsible for their erroneous transmission of alarms and companies performing work on fire alarm or extinguishing systems shall be responsible when such work results in a fire department response.
2. When a preventable fire department response to a fire alarm has occurred, the responsible party shall, within 30 days, make a written report to the Fire Chief on forms provided by the Fire Department, stating the reasons for such alarm and the corrective action taken to prevent recurrence.

E. Appeals.

The Building Code Board of Appeals shall hear all appeals from any notice or order issued pursuant to this section. Any person aggrieved by any notice and order issued by the City pursuant to this section may file an appeal with the Building Code Board of Appeals pursuant to BCC 3.50.060 and the Board shall have jurisdiction over such appeal and shall follow the procedure for handling such appeal set forth in BCC 3.50.060 et seq.

Section 14. Section 23 of Ordinance No. 3376 and Bellevue City Code Section 23.10.1463 are repealed and a new Section 23.10.1463 is added to Chapter 23.10 of the Bellevue City Code to read as follows:

23.20.1463 Uniform Fire Code Article 80 amended - Hazardous Materials

Article 80 of the Uniform Fire Code as adopted by this chapter is amended to read as follows:

ARTICLE 80
HAZARDOUS MATERIALS

DIVISION I
GENERAL PROVISIONS

SCOPE

Sec. 80.101.(a). The general provisions and requirements

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contained within Division I of this article shall apply to all hazardous materials including those materials otherwise covered in this code which exhibit or manifest the characteristics described in this subsection.

The classification system contained in Division II of this article shall apply to all hazardous materials including those materials otherwise covered in this code, which exhibit or manifest the characteristics described in this subsection.

Those materials, chemicals or substances, which are highly flammable, or which may self-react or react with other materials to cause fires or explosions, or which by their presence create or augment a fire or explosion hazard, or which because of their toxicity, radioactivity or any other physical, chemical or nuclear property when contained or when released may cause danger to life or create a serious health hazard, are hazardous materials.

Hazardous materials shall include such materials as compressed gases, cryogenic fluids, flammable liquids, combustible liquids, flammable solids, corrosives, oxidizing materials, reactive and unstable materials, highly toxic, poisonous and radioactive materials as defined in Article 9 and classified in Division II of this article whether the materials are in usable or waste condition.

EXCEPTIONS: 1. The off-site transportation of hazardous materials when in conformity with the Department of Transportation (DOT) regulations on file with and approved by the Department of Transportation.

2. Hazardous materials in retail sales uses, provided the materials are packaged in individual containers not exceeding 1 liter for liquids or 1 kilogram for solids. There are no exceptions for highly toxic or poisonous gases, or for explosives and potentially explosive unstable materials.

(b) This article shall also apply to chlorinated hydrocarbons and other materials which if not properly safeguarded may pose a threat to the public health and safety in a manner not directly related to the hazards associated with fire or explosion. It shall include but is not limited to any material listed by any federal or state public health and safety agency as a hazardous and/or extremely hazardous material, chemical or substance and any material which appears on the list of Environmental Protection Agency (EPA) priority pollutants.

(c) The specific requirements contained in Division III of this article shall apply to hazardous materials not otherwise covered in this code. When a material exhibits a hazardous characteristic in only one category of the classification system in

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Division II, and it is regulated elsewhere in this code, the requirements contained in Division III of this article shall not apply, for example a flammable liquid which is not unstable or highly toxic is regulated according to the requirements contained in Article 79. When a material exhibits hazardous characteristics in more than one category of the classification system in Division II, and it is regulated elsewhere in this code, the requirements contained in Division III, IV and V of this article shall apply in addition to the other requirements, for example a flammable liquid which is also unstable and highly toxic is regulated in accordance with the requirements contained in Article 79, and those contained in Division III, IV and V of this article for unstable and highly toxic materials. When requirements conflict, the requirements related to the greater hazard shall take precedence. An attempt shall be made to satisfy the intent of all requirements.

Definitions:

Sec. 80.102(a) General. For the definition of: BLASTING AGENT, COMBUSTIBLE LIQUID, COMPRESSED GAS, CORROSIVE MATERIALS, CRYOGENIC FLUIDS, EXPLOSIVE, FLAMMABLE GAS, FLAMMABLE LIQUID, FLAMMABLE SOLID, HANDLING, HAZARDOUS CHEMICAL REACTION, HAZARDOUS MATERIALS, HIGHLY TOXIC MATERIALS, HIGHLY TOXIC PESTICIDES, HYPERGOLIC MATERIALS, LIQUEFIED PETROLEUM GAS, LIQUID, OXIDIZING MATERIAL, PESTICIDE, POISONOUS GAS, PYROPHORIC MATERIALS, RADIOACTIVE MATERIALS, REACTIVE MATERIALS, UNSTABLE (REACTIVE) LIQUIDS and UNSTABLE MATERIALS. See Article 9.

(b) Limited Application. For the purpose of this article, certain terms and words are defined as follows:

ACID is a chemical compound of hydrogen with one or more non-metals, which yields hydrogen ions, and exhibits a pH of less than 3 in aqueous solution.

AIR-REACTIVE MATERIALS are materials including pyrophoric materials which are capable of spontaneous ignition or other dangerous reaction upon exposure to dry or moist air.

ALKALI (See BASE)

ANHYDROUS is without water, not containing water.

BASE is a chemical compound of a metal and the hydroxide (OH-) ion in aqueous solution, which exhibits a pH of greater than 11. An alkali.

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CATALYST is an agent which causes or speeds up a chemical reaction and undergoes no permanent change itself.

CAUSTIC is a common name for hydroxides such as sodium and potassium hydroxides and for the strongly corrosive solutions they produce when dissolved in water.

COMMON RADIATION SOURCE MATERIALS are radioisotopes other than fissile materials, which are in common usage in various medical and industrial testing and measuring situations.

DECOMPOSITION is the breaking apart of molecules into elements or simpler compounds.

FISSILE MATERIALS are radioisotopes which may undergo a nuclear fission reaction, and are usually found only at reactor sites, or as part of a nuclear weapon.

INERT is possessing little or no tendency to undergo chemical change. Unreactive.

MIXTURE is a variable composition of elements, compounds, or both that have not combined chemically. The components of a mixture preserve their own individual identities and they can be separated by physical means.

MONOMER is a liquid or gaseous hydrocarbon or substituted hydrocarbon material, the molecules of which will under certain conditions, undergo a chain-reaction called polymerization to form large molecules called polymers. Some monomers are unstable and will spontaneously polymerize, while others require heat, pressure, a catalyst or a combination of these to initiate the reaction.

NITRO-COMPOUND is organic material, usually a hydrocarbon, which has been treated with nitric and sulphuric acid (nitrated) to produce a flammable substance containing its own oxygen source. Most will explosively decompose producing a detonation.

ORGANIC COMPOUND is a carbon-based compound.

pH is a number which represents hydrogen-ion concentration or activity in gram equivalents per liter and used in expressing both acidity and alkalinity on a scale whose values run from 0 to 14 with 7 representing neutrality, numbers less than 7 increasing acidity, and numbers greater than 7 increasing alkalinity; also, the condition represented by such a number.

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PEROXIDE FORMING CHEMICAL is a chemical which, when exposed to air, will form explosive peroxides which are shock sensitive.

POLYMERIZATION is a chemical reaction in which two or more small molecules combine to form larger molecules that contain repeating structural units of the original unit.

PRIMARY CONTAINMENT means the first level of containment, i.e., the inside portion of that container which comes into immediate contact on its inner surface with the material being contained.

PROPRIETARY INFORMATION means information regarding compounds or ingredients used in a process of production which do not qualify as trade secrets but which provides an industry or business with a competitive advantage.

SADT is Self-Accelerating Decomposition Temperature.

SECONDARY CONTAINMENT means that level of containment that is external to and separate from primary containment.

WATER-REACTIVE MATERIALS are those materials which explode, violently react, produce flammable, toxic or other hazardous gases or evolve enough heat to cause self-ignition or ignition of nearby combustibles upon exposure to water or moisture.

PERMITS

Sec. 80.103.(a) No person, firm or corporation shall store, handle or use any hazardous material in excess of quantities specified in Section 4.101 unless and until a valid permit has been issued pursuant to the Article.

(b) No person, firm or corporation shall construct, install, repair, abandon, remove, place temporarily out-of-service, close or substantially modify a storage facility for hazardous materials regulated by this Article until a permit has been issued.

Permittee shall apply for approval to close any storage facility at least (30) thirty days prior to the termination of the storage of hazardous materials at the facility. Such application shall include any change or alteration of the facility closure plan filed pursuant to Sec. 80.106 of this chapter. This (30) thirty-day period may be waived by the Chief if there are special circumstances requiring such waiver.

(c) Hazardous Materials Management Plan. When required by the Chief each application for a permit pursuant to this Article shall

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include a Hazardous Materials Management Plan (HMMP) in accordance with Appendix II-#.

(d) Hazardous Materials Inventory Statement. When required by the Chief each application for a permit pursuant to this Article shall include a Hazardous Materials Inventory Statement in accordance with Appendix II-E.

(e) For a permit to store, handle, transport on-site or use compressed gases, see Section 4.101. No. 10. Compressed gases.

For a permit to store, handle or use flammable or combustible liquids, see Section 4.101. No. 18. Flammable or combustible liquids and tanks.

For a permit to store, handle, transport on site or use ammonium nitrate, corrosive liquids and solids, flammable solids, highly toxic liquids and solids, oxidizing liquids and solids, reactive materials, hypergolic materials, pyrophoric materials, unstable materials or organic peroxides, see Section 4.101. No. 22. hazardous materials.

For a permit to install or maintain containers of liquefied petroleum gases, see Section 4.101. No. 27. Liquefied petroleum gases.

For a permit to store, handle, transport on site or use radio-active materials see Section 4.101. No. 40. Radioactive materials.

Where a material may be classified in more than one hazard category, the permit shall be obtained under the category in which the permit is required for the smallest amount.

All hazardous materials permits shall be posted in a conspicuous location on the premises.

GENERAL REQUIREMENTS

Sec. 80.104.(a) The manufacture, storage, on-site transportation or use of hazardous materials shall be safeguarded with such protective facilities as public safety requires.

(b) Tanks, piping, valves, fittings and related components intended for use with hazardous fluids shall be designed and fabricated from suitable materials compatible with the hazardous fluid and having adequate strength and durability to withstand the

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pressures, structural stress and exposure to which they may be subjected.

Such tanks and equipment shall conform to nationally recognized engineering standards, be listed by a recognized testing laboratory for the particular application or be approved by the Chief. Abandonment or removal of tanks shall be in accordance with Sec. 79.114 of this code.

Underground tanks used for the storage of hazardous liquids shall be located and protected in accordance with Sec. 79.601 and 79.603 of this code. Secondary containment shall be provided for all new underground tanks.

Stationary aboveground tanks used for the storage of hazardous liquids shall be located in accordance with the provisions contained in Division III, for exterior storage of the particular material involved and shall be marked as required by Sec. 80.311.

(c) In the absence of other requirements, portable tanks, containers and equipment intended for use with hazardous liquids shall conform to the requirements in Sec. 79.104 of this code.

Materials shall be compatible with the liquids to be contained. Unstable, reactive, highly toxic, or poisonous liquids shall be treated as Class I-A flammable liquids. Other hazardous liquids shall be treated as Class II combustible liquids.

(d) Defective containers which permit leakage or spillage shall be disposed of or repaired in accordance with recognized safe practices; no spilled materials shall be allowed to accumulate on shelves or floors. Hazardous materials shall not be released into any sewer, storm drain, ditch, drainage canal, lake, river or tidal waterway, or upon the ground, sidewalk, street or highway.

(e) Storage of hazardous materials on shelves shall be neat and orderly. Shelves shall be of substantial construction, adequately braced and shall have a lip or guard when used for storage of individual containers.

(f) Accurate records shall be kept of all leaks, spills or other unauthorized discharges of hazardous materials, and the Chief shall be immediately notified when such discharges may create an imminent danger to life.

(g) Provisions shall be made for containing or neutralizing spills or leakage of hazardous materials which may occur.

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(h) Accurate records shall be kept on peroxide-forming chemicals and other substances which may dangerously deteriorate. Records shall include receiving, opening and disposal dates.

Periodic tests shall be made and recorded. Materials shall be properly disposed of on or before the required disposal date or when indicated by tests. All records shall be made available to the Chief or his representative.

(i) Information regarding type, location, and amounts of hazardous materials including Material Safety Data Sheets or documents containing equivalent information for all hazardous materials on the premises shall be readily available to representatives of the Chief.

No owner or person in charge shall refuse to supply such information immediately in an emergency, or within 15 days if no emergency exists.

The Chief may enter into confidentiality agreements designed to protect trade secrets.

(j) Visible hazard identification signs as specified in UFC Standard 79-3, or as otherwise specified by the Chief shall be placed at all entrances to and in locations where hazardous materials are stored, handled or used in quantities requiring a permit. The Chief may waive this requirement in special cases when consistent with safety. Individual containers, cartons or packages shall be conspicuously marked or labeled.

(k) Secondary containment shall be provided for portable tanks and containers used for storage or processes involving liquid hazardous materials. Such containment shall be in the form of barriers (dikes, curbs, berms), channels or drains to approved holding tanks, or by other suitable means so that leaks or spills will not endanger surrounding areas and in order to prevent the intermixing of materials which may react to cause fire, explosion, generation of flammable or toxic gas or large amounts of heat, or otherwise threaten life or property.

The containment shall be impervious to and compatible with the liquid to be contained. The Chief may waive this requirement when consistent with safety, and the aggregate quantity of the hazardous liquid is 60 gallons or less.

- (l) The Chief may require any or all of the following:
- (i) Protection or removal of open flames, heated elements, mechanical equipment, electrical wiring and equipment,

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- other potential ignition source and initiating sources for other dangerous reactions.
- (ii) Fire or explosion detection, alarm and suppression systems.
 - (iii) Overfill and leak detection and alarm systems, and excess flow limiters.
 - (iv) Vapor or gas detection and alarm systems.
 - (v) Vapor or gas control and exhaust systems.
 - (vi) Separation or isolation of materials where a fire, explosion or other dangerous reaction in one material may cause a fire, explosion, release of flammable or toxic gas or other dangerous reaction in the other material. Such separation may be by distance, fire-resistive construction, enclosure within a storage cabinet, or by other suitable means.
 - (vii) Separation of occupancies, buildings, or areas within buildings, when handling, use or storage of hazardous materials creates a fire or life hazard to adjacent occupancies, buildings or areas within buildings. Such separation may be by distance, fire-resistive construction or other appropriate means.
 - (viii) Breathing apparatus, protective clothing and equipment, testing devices or other emergency equipment as deemed necessary by the Chief.
 - (xi) Tests and/or studies by recognized independent agencies as necessary to determine conformance with standards for equipment or compliance with requirements contained within this code.
 - (x) Written operation, emergency, or evacuation plans as deemed necessary for fire or life safety.
- (m) All areas of secondary containment shall be monitored in accordance with Appendix II-F.
- (n) Where specific requirements are not otherwise established, manufacture, storage, on-site transportation or use of hazardous materials shall be in accordance with nationally recognized standards or good practices.

CONSTRUCTION REQUIREMENTS

Sec. 80.105. Buildings or portions thereof in which hazardous materials are stored, handled or used in quantities in excess of the exempt amounts in Table 9A, UBC, shall be constructed in accordance with the Building Code.

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FACILITY CLOSURE PLAN

Sec. 80.106. The permit holder or applicant shall submit a plan to terminate the storage of hazardous materials in a storage facility in a manner that eliminates the need for further maintenance, eliminates the threat to public health and safety and the environment by residual hazardous materials in the facility and demonstrates that hazardous materials which were stored in the facility have been transported, disposed of or reused in an appropriate manner in accordance with Sec. 80.103B. Additional criteria appropriate for the quantity or types of material stored, may be required by the Chief.

OUT OF SERVICE STORAGE FACILITIES

Sec. 80.107. Storage facilities may be placed out of service in accordance with the following:

1. Temporarily out-of-service facilities: Storage facilities which are temporarily out-of-service and are intended to be placed back in service within 90 days, shall continue to be permitted, monitored and inspected.
2. Permanent out-of-service facilities: Storage facilities for which a permit is not kept current or is not being monitored and inspected shall be deemed to be permanently out-of-service and shall be closed in accordance with Sec. 80.106.

SPECIAL INSPECTIONS

Sec. 80.108. When expertise is not available within the Fire Department, the Chief may require the periodic employment of special inspectors to conduct an audit or assessment of permittee's facility to make a hazardous material safety evaluation and to determine compliance with the purpose and provisions of this article. The cost for such inspections shall be borne by the owners and/or operators of the facility.

DIVISION II CLASSIFICATION BY HAZARD

SCOPE

Sec. 80.201.(a) Scope. For the purposes of this code, hazardous materials shall be divided into "hazard categories." The categories shall include those materials regulated under this

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article, and those materials regulated under other articles of this code. When materials are regulated under other articles, references are given.

MULTIPLE HAZARDS

Sec. 80.201.(b) Multiple Hazards. Materials may pose multiple hazards, that is, they may exhibit hazards in more than one hazard category. When this is the case, the hazards in each category shall be considered separately and collectively to determine requirements.

SPECIFIC REQUIREMENTS

Sec. 80.201.(c) Specific Requirements. The specific requirements for each hazard category are contained in DIVISION III, IV, and V of this article.

GENERAL REQUIREMENTS

Sec. 80.201.(d) General Requirements. General Requirements for all hazard categories are contained in DIVISION I of this article.

DEFINITIONS

Sec. 80.201.(e) Definitions. For definitions see Sec. 80.102 and Article 9.

HAZARD CATEGORIES

Explosives and Blasting Agents

Sec. 80.202.(a) Category I - Explosives and Blasting Agents. Explosives and blasting agents shall be divided into sub-categories:

1. High Explosives (Detonating)
2. Low Explosives (Deflagrating)
3. Blasting Agents

(b) Companion Provisions: Article 77 contains requirements for explosives and blasting agents. Article 78 contains requirements for fireworks.

Compressed Gases

Sec. 80.203.(a) Category II - Compressed Gases. Compressed gases shall be divided into sub-categories:

1. Flammable
2. Oxidizing
3. Corrosive
4. Highly Toxic or Poisonous
5. Reactive or Unstable

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6. Liquefied (except Cryogenic Fluids)
7. Inert (Chemically Unreactive)

(b) Companion Provisions: Other code sections which contain requirements for compressed gases: Art. 11, Art. 46, Art. 47, Art. 49, Art. 51, Art. 63, Art. 74, Art. 75, Art. 82, Art. 86. Corrosive, reactive, toxic and unstable gases are primarily regulated under Art. 80; other gases are primarily regulated under Art. 74, which contains general regulations for all compressed gases.

Flammable and Combustible Liquids

Sec. 80.204.(a) Category III - Flammable and Combustible Liquids. Flammable and combustible liquids shall be divided into sub-categories which correspond with the classes described in Sec. 9.105 and 9.108 of this code.

(b) Companion Provisions: Requirements for flammable and combustible liquids are contained in Article 79, and other Articles: Art. 24, Art. 26, Art. 29, Art. 31, Art. 32, Art. 45, Art. 47, Art. 50, Art. 51, Art. 61, Art. 86.

Flammable Solids

Sec. 80.205.(a) Category IV - Flammable Solids. Flammable solids may also exhibit explosive, reactive or unstable characteristics. Flammable solids shall be divided into the following sub-categories.

1. Organic Solids
2. Inorganic Solids (except metals)
3. Combustible Metals (except dusts and powders)
4. Combustible Dusts and Powders (including metals)

(b) Companion Provisions: Other code sections which contain requirements for flammable solids: Art. 27, Art. 28, Art. 30, Art. 31, Art. 33, Art. 45, Art. 48, Art. 51, Art. 76, Art. 86.

Oxidizing Materials

Sec. 80.206.(a) Category V - Oxidizing Materials. Oxidizing Materials shall be divided into sub-categories:

1. Oxygen, Ozone
2. Other Gases
3. Liquids
4. Solids

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(b) Classification of liquid and solid oxidizers according to hazard:

Class 1 - An oxidizing material whose primary hazard is that it may increase the burning rate of combustible material with which it comes in contact.

Class 2 - An oxidizing material that will moderately increase the burning rate or which may cause spontaneous ignition of combustible material with which it comes in contact.

Class 3 - An oxidizing material that will cause a severe increase in the burning rate of combustible material with which it comes in contact.

Class 4 - An oxidizing material that can undergo an explosive reaction when catalyzed or exposed to heat, shock, or friction.

(c) Companion Provisions: Other code sections which contain requirements for oxidizing materials: Art. 49, Art. 51, Art. 74, Art. 75.

Highly Toxic Materials

Sec. 80.207.(a) Category VI - Highly Toxic Materials. Highly Toxic Materials shall be divided into sub-categories:

1. Poisons, Class A
2. Other Highly Toxic Materials (including pesticides, and fumigants and all Class B Poisons)
3. Chemical Asphyxiants
4. Anesthetics
5. Etiologic Agents
6. Carcinogens, Mutagens and Teratogens

(b) Only those materials included within the definition of "Highly Toxic Materials," "Highly Toxic Pesticide" and "Poisonous Gas" are regulated by this code. See definition, Section 9.110. HIGHLY TOXIC MATERIALS.

(c) Companion Provisions: Other code sections which contain requirements for toxic materials: Art. 22, Art. 46, Art. 51, Art. 63, Art. 75, Art. 86.

Radioactive Materials

Sec. 80.208.(a) Category VII - Radioactive Materials. Radioactive Materials shall be divided into sub-categories:

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1. Common Radiation Source Materials
2. Fissile Materials

Corrosives

Sec. 80.209.(a) Category VIII - Corrosives. Corrosives shall be divided into sub-categories:

1. Acids
2. Bases, Alkalis, Caustics
3. Other corrosives

(b) Companion Provisions: Other code sections which contain requirements for corrosives: Art. 51, Art. 63, Art. 74, Art. 75.

Sec. 80.210.(a) Category IX - Cryogenic Fluids. Cryogenic Fluids shall be divided into sub-categories:

1. Flammable
2. Non-flammable
3. Corrosive/Highly Toxic
4. Oxidizer

(b) Companion Provisions: Requirements for Cryogenic Fluids are contained in Article 75.

Reactive Materials

Sec. 80.211.(a) Category X - Reactive Materials. Reactive materials shall be divided into sub-categories:

1. Air-reactive Materials
2. Water-reactive Materials
 - (i) Alkali Metals
 - (ii) Metallic Carbides
 - (iii) Metallic Hydrides
 - (iv) Organo-metallic Compounds
 - (v) Other Water Reactive Compounds
3. Other Reactive Materials

(b) Those materials which are rated with a reactivity (instability) rating of 3 or 4 when rated in accordance with U.F.C. Standard No. 79-3, are regulated as reactive materials. Combinations of materials listed in NFPA Standard No. 491M-Manual of Hazardous Chemical Reactions, are regulated as reactive materials.

(c) Companion Provisions: Other code sections which contain requirements for reactive materials: Art. 49, Art. 51.

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Unstable Materials

Sec. 80.212.(a) Category XI - Unstable Materials. Unstable materials shall be divided into sub-categories:

1. Materials Which Vigorously Decompose (including organic peroxides)
2. Materials Which Vigorously Polymerize
3. Peroxide Forming Chemicals

(b) Only those materials which would be rated with a reactivity (instability) rating of 3 or 4 when rated in accordance with U.F.C. Standard No. 79-3 are regulated by this article. See definition, Section 9.123, UNSTABLE MATERIALS.

(c) Companion Provisions: Other code sections which contain requirements for unstable materials: Art. 45, Art. 49, Art. 51, Art 77, Art. 78.

Appendix

Sec. 80.213. Descriptions and examples of materials included in hazardous categories are contained in Appendix VI-E.

DIVISION III STORAGE REQUIREMENTS

Compressed Gases

Sec. 80.301(a) General. Storage of compressed gases shall comply with the provisions of Article 74, Division I. Where applicable, storage shall be in accordance with Articles 46, 49, 51, 63, 74, 82 and 86.

Storage of compressed gases which are radioactive shall comply with the provisions of Sec. 80.305. Storage of compressed gases which are highly toxic or poisonous shall comply with the provisions of Sec. 80.308.

(b) Indoor Storage. Indoor storage of flammable or oxidizing gases in quantities which exceed 3000 cubic feet shall be within a room or compartment separated from other hazardous materials storage by one-hour fire-resistive construction. Lesser quantities of flammable or oxidizing gases shall be separated from combustibles and from other hazardous materials storage by noncombustible construction or a minimum distance of 10 feet.

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Where the aggregate quantity of flammable or oxidizing gases exceeds 6000 cubic feet, an automatic sprinkler system shall be installed, and the storage area shall be separated from all other occupancies by an occupancy separation of not less than one-hour fire rating, constructed in accordance with the Building Code. Explosion venting, in accordance with the Building Code shall be provided for flammable gas storage which exceeds 6000 cubic feet.

(c) Exterior Storage. Exterior storage of flammable and oxidizing gases shall not be within 15 feet of any property line, street, public way, or exit to a public way. An unpierced, solid concrete or masonry wall, constructed in accordance with the Building Code to meet a four-hour fire-resistive rating may be accepted by the Chief in lieu of such distance. Buildings not connected with such storage, and all combustible materials, and other hazardous materials storage shall be separated from the storage of flammable and oxidizing gases by one-hour fire-resistive construction or a minimum distance of 15 feet.

Cryogenic Fluids

Sec. 80.302(a) Cryogenic fluids shall be stored and used in accordance with the provisions of Article 75.

(h) Storage and use of cryogenic fluids which are highly toxic shall also comply with the provisions of Sec. 80.308.

Flammable and Combustible Liquids

Sec. 80.303(a) Flammable and combustible liquids shall be stored and used in accordance with the applicable provisions of Articles 79, 24, 26, 29, 31, 45, 47, 50, 51, 61 and 86.

(b) Storage and use of flammable and combustible liquids which exhibit other hazardous characteristics shall also comply with the applicable provisions of this article.

Oxidizing Materials

Sec. 80.304(a) General. Liquid and solid oxidizing materials shall be segregated from other chemicals and from combustible materials by distance or by fire-resistive construction. Oxidizing materials which are also flammable shall be stored out of doors or within a room equipped with an automatic sprinkler system. Where oxidizing liquids are stored, secondary containment or other means shall be provided to prevent the mixing of incompatible materials or the contamination of surrounding areas. Class 4 Oxidizers and any oxidizers which violently decompose or otherwise react explosively

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shall be stored in accordance with Sec. 80.306. Oxidizers which are corrosive liquids shall also meet the requirements contained in Sec. 80.309. Oxidizers that are highly toxic liquids or solids shall also meet the requirements contained in Sec. 80.307.

(b) Indoor Storage. Indoor storage of liquid and solid oxidizing materials in quantities which exceed the following maximum quantities shall be within a room or compartment separated from combustible material and other hazardous materials storage by fire-resistive construction with a minimum rating of one hour:

<u>Oxidizer</u>	<u>Maximum Quantity</u>
Class 1 and 2 liquids	100 gallons
Class 1 and 2 solids	500 pounds
Class 3 liquids	40 gallons
Class 3 solids	100 pounds
Class 4 liquids and solids	any amount (see Sec. 80.306)

Lesser amounts of liquid and solid oxidizing materials shall be separated from combustible materials and from all other hazardous materials storage by noncombustible construction or by a distance of not less than 10 feet. Storage within metal storage cabinets constructed in accordance with Sec. 80.310.(b)A, shall satisfy this requirement.

Liquid oxidizing materials shall be stored within metal storage cabinets constructed in accordance with Sec. 80.310.(b)A, or within a room or area provided with recessed floors, raised sills, or open trench grating designed to contain the entire capacity of the largest single container.

When the total amount of such liquids stored in any one room or area exceeds 55 gallons, a drainage system which drains to a safe holding location shall be provided. When required by the Chief, the drainage system shall be designed and sized to carry off any anticipated spill, plus the minimum calculated fire flow in sprinklered rooms or areas.

Ventilation for highly toxic or corrosive oxidizing materials shall be provided in accordance with Sec. 80.307.(b) or Sect. 80.309.(b).

(c) Exterior Storage. Exterior storage of liquid or solid oxidizing materials shall not be within 15 feet of any property line, street, public way, or exit system to a public way. An unpierced, solid concrete or masonry wall, constructed in accordance with the Building Code to meet a four-hour fire-resistive rating may

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be accepted by the Chief in lieu of such distance. Buildings not connected with such storage, and all combustible materials, and other hazardous materials storage shall be separated from the storage of liquid or solid oxidizing materials by one-hour fire-resistive construction or a minimum distance of 15 feet.

Exterior storage areas for liquid oxidizing materials shall be provided with raised sills, open grate trenches or other means to contain leaks and spills. The volume to be contained shall not be less than the capacity of the largest individual tank or container.

Radioactive Materials

Sec. 80.305(a) General. When not in use, radioactive materials shall be kept in adequately shielded containers of such design that the gamma radiation will not exceed 200 milliroentgens per hour or equivalent at any point of readily accessible surface. Containers shall be fire-resistant or shall be stored within a storage cabinet which complies with Section 80.310.

Canisters or tanks of radioactive gases shall be stored within a fire-resistive cabinet which is equipped with an automatic sprinkler, or within a room separated from all other storage or use by fire-resistive construction with a minimum rating of one hour and equipped with an automatic sprinkler system.

(b) Indoor Storage. Indoor storage of contaminated combustible materials shall be in closed noncombustible containers within a room separated from all other storage or use by fire-resistive construction with a minimum rating of one hour.

(c) Exterior Storage. Exterior storage of radioactive materials and contaminated combustible materials shall require specific approval of the Chief and shall be subject to such requirements as he might prescribe.

(d) Durable, clearly visible signs of warning of radiation dangers shall be placed at all entrances to areas or rooms where radioactive materials are used or stored. In addition, each container in which radioactive materials are used, stored or transported shall bear a durable, clearly visible, appropriate warning sign. Such signs shall bear the three-bladed radiation symbol in magenta or purple on a yellow background in accordance with nationally recognized good practice.

(e) Signs are not required for storage of manufactured article other than liquids, such as instruments or clock dials or electronic tubes or apparatus of which radioactive materials are a component

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part, and luminous compounds, when securely packed in strong containers, provided the gamma radiation at any surface of the package is less than 10 milliroentgens in 24 hours.

Reactive and Unstable Materials

Sec. 80.306.(a) General. Reactive and unstable materials shall be stored away from open flames, heated elements and other reaction initiating sources, and shall be separated from combustible materials and other hazardous materials storage by fire-resistive construction with a minimum rating of one hour.

(b) Indoor Storage. Potentially explosive materials, including but not limited to Class 4 Oxidizers, unstabilized organic peroxides and materials with a reactivity (instability) rating of 4 when rated in accordance with UFC Standard No. 79-3 shall be stored in rooms or buildings which conform to requirements for Group H, Division 1 occupancies according to the Building Code. The room or area shall conform to Building Code requirements for explosion venting. Except where water reactive materials are stored, an automatic sprinkler system shall be provided.

When the amount of organic peroxide or other unstable material stored is 50 pounds or more, such storage shall be in a detached well ventilated storage building with walls having not less than a two-hour fire-resistive rating, constructed in accordance with Building Code requirements for a Group H, Division 1 occupancy. An automatic sprinkler system shall be provided. The floor shall be noncombustible and the roof shall be insulated. The building shall be located the following minimum distances from any other hazardous material storage, combustible materials in the open and from any building, property line, street, or public way.

WEIGHT OF MATERIAL		DISTANCE
(Pounds Over)	(Pounds Not Over)	(Feet)
50 to	100	75
100 to	500	100
500 to	1000	125
1000 to	3000	200
3000 to	5000	300

The materials shall be stored in their original (Department of Transportation approved) containers. Care shall be taken to avoid rough handling and contamination.

(c) Nitromethane. A suitable isolated outdoor storage area shall be provided for nitromethane. Hazardous processing shall not

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be permitted in the vicinity of this storage area. Nitromethane shall be stored in the drums in which it is received or in an underground tank with suitable corrosion protection and a minimum of 2 feet of earth over the tank or in barricaded tanks aboveground.

If the drum storage is not adequately protected by a fast-acting deluge-type automatic sprinkler system, the storage of 2000 pounds or more shall be located the following minimum distances from inhabited building:

WEIGHT (Pounds over)	WEIGHT (Pounds Not Over)	APPROXIMATE NUMBER OF DRUMS	DISTANCE
Beginning at	2000	4	100
2,000	to 10,000	20	200
10,000	to 20,000	40	300
20,000	to 40,000	80	400
40,000	to 80,000	160	500

Care shall be taken to avoid rough handling or contamination of this chemical. Readily legible warning signs and placards shall be prominently placed in the storage and processing areas.

(d) Ammonium Nitrate.

1. All flooring in storage and handling areas shall be of noncombustible material and shall be without drains, traps, pits or pockets into which any molten ammonium nitrate could flow and be confined in case of fire.

2. Each storage pile of bags or other authorized packages and containers of such materials shall not exceed 12 feet in height, 12 feet in width and 30 feet in length. Such pile units shall be separated by a clear space of not less than 36 inches in width from the base to the top of the piles, serving as cross aisles. At least one service or main aisle in the storage area shall be not less than 4 feet in width. A clearance of not less than 30 inches shall be maintained from building walls and partitions and of not less than 36 inches from ceilings or roof structural members with a minimum of 18 inches from sprinklers.

3. Ammonium nitrate storage areas shall be separated by a space of 30 feet or by a tight noncombustible partition from storage of organic chemicals, corrosive liquids, compressed gases, flammable and combustible materials or other contamination substances such as sulphur, coal, flour and metallic powders such as zinc, copper and magnesium where storage of such materials is permitted with ammonium

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nitrate. Separation shall also be maintained from pesticides and other highly toxic materials.

4. Quantities of ammonium nitrate or ammonium nitrate fertilizer having no organic coating, in the form of crystals, flakes, grains or pills, including fertilizer grade, dynamite grade, nitrous oxide grade and technical grade ammonium nitrate and ammonium nitrate phosphate (containing 60 percent or more ammonium nitrate by weight) of more than 50 tons total weight shall be stored in a well-ventilated building. Such building shall be of one-hour fire-resistive or noncombustible construction as specified in the Building Code and shall be equipped with an approved automatic sprinkler system. In populated areas, when approved by the Chief, quantities of 2500 tons or more shall be stored in well-ventilated buildings of one-hour fire-resistive or noncombustible construction as specified in the Building Code, equipped with an approved automatic sprinkler system. No combustible materials or ammonium nitrate sensitizing contaminants shall be stored in this building.

5. Storage of ammonium nitrate, coated or mixed with organic anticaking materials, except compounded blasting agents, shall not be permitted in populated and congested areas. Outside such areas, quantities of 500 tons or less may be stored in well-ventilated buildings of one-hour construction as specified in the Building Code, equipped with an approved automatic sprinkler system.

6. Distance to any other buildings, property line or street shall be as required by the Chief.

(e) Materials which may decompose, polymerize or otherwise react in a violent manner and/or release highly toxic or poisonous gases, vapors or fumes at normal ambient temperatures shall be stored in temperature controlled rooms or areas. Temperature control shall be designed for the specific hazard of the material. The system of temperature control shall be supplemented by an emergency system supplied from a separate power source, and designed so that the emergency system will automatically operate when the temperature in the room or area reaches a predetermined level. The activation of the emergency system shall cause an alarm to be transmitted to an approved alarm service company or to a control station on the premises which is equipped with a public telephone and is manned 24 hours a day, every day. Temperature control is required in addition to all other requirements.

(f) Materials which are shock sensitive shall be padded, suspended, or otherwise protected. Special consideration shall be given to seismic protection.

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(g) Materials which are pressure sensitive shall be stored in rooms designed to prevent the development of dangerous pressures.

(h) Materials which are light sensitive shall be stored in containers designed for such use.

(i) Water-reactive materials shall not be stored in any room or area with combustible or flammable materials except for shipping materials used to contain such water-reactive materials. The storage area shall be dry, water-proof and well ventilated. Unless otherwise specified by the Chief, automatic sprinklers and other piping carrying water shall be excluded from the room or area. See Article 49 for specific requirements for the storage of calcium carbide.

(j) Secondary containment or other means shall be provided to prevent the intermixing of materials which are dangerously reactive when combined, or contamination of materials which react when contaminated. Materials which may have become contaminated shall be disposed of in a safe manner.

(k) Exterior Storage. Exterior storage of potentially explosive materials, including but not limited to Class 4 Oxidizers, unstabilized organic peroxides and materials with a reactivity (instability) rating of 4 when rated in accordance with UFC Standard No. 79-3 shall not be within 50 feet of any property line, street public way or exit to a public way; nor within 25 feet of combustible materials, or other hazardous materials storage; nor within 25 feet of any building not connected with such storage. The Chief may require the storage of potentially explosive materials to comply with the provisions of Article 77.

Highly Toxic Materials (Liquids and Solids)

Sec. 80.307.(a) General. Highly toxic liquids and solids shall be segregated from other chemicals and from combustible and flammable substances by distance or by fire-resistive construction. Highly toxic materials which are also flammable shall be stored out of doors or within a room equipped with an automatic sprinkler system. Where highly toxic liquids are stored, secondary containment or other means shall be provided to prevent the mixing of incompatible materials or the contamination of surrounding areas.

Tanks used for the storage of highly toxic liquids under pressure shall be provided with monitoring and alarm devices to warn of pressure build-up beyond the maximum allowable working pressure. Means for transfer of the contents of the tank to a safe holding

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location, initiated manually and automatically upon signal from the monitoring devices may be required by the Chief.

(b) Indoor storage of highly toxic liquids and solids shall be within a room or compartment separated from all other storage by one-hour fire resistive construction. Storage rooms or areas shall be separated from other occupancies within the building by an occupancy separation with a rating of one-hour. Storage within storage cabinets constructed in accordance with Sec. 80.310(b) shall satisfy this requirement for limited amounts as determined by the Chief.

Highly toxic liquids shall be stored within storage cabinets constructed in accordance with Sec. 80.310, or within a room or area provided with recessed floors, raised sills, or open trench grating designed to contain the entire capacity of the largest single container.

When the total amount of such liquids stored in any one room or area, exceeds 55 gallons, a drainage system which drains to a safe holding location shall be provided. When required by the Chief, the drainage system shall be designed and sized to carry off any anticipated spill, plus the minimum calculated fire flow in sprinklered rooms or areas.

Mechanical ventilation which provides a minimum of 6 air changes per hour shall be provided in accordance with the Building and/or Mechanical Code. Such ventilation shall not discharge to a point where vapors may endanger any person, domestic animal or wildlife.

A manual control, located outside the room or area protected shall be provided. When required by the Chief, approved vapor detection devices shall be provided which will automatically activate the mechanical ventilation system. Exhaust scrubbers or processing as in Sec. 80.308(b) may be required.

(c) Exterior Storage. Exterior storage of highly toxic liquids or solids shall not be within 15 feet of any property line, street, public way, or exit to a public way. An unpierced, solid concrete or masonry wall, constructed in accordance with the Building Code to meet a four-hour fire-resistive rating may be accepted by the Chief in lieu of such distance.

Highly toxic liquids that are flammable shall not be stored within 50 feet of any property line, street or public way unless protected by an automatic fire extinguishing system. Buildings not connected with such storage, and all combustible materials and other hazardous materials storage shall be separated from storage of highly toxic

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liquids and solids by not less than 15 feet, or by fire-resistive construction with a minimum rating of one-hour.

All exterior storage areas for highly toxic liquids shall be provided with raised sills, open grate trenches or other means to contain leaks and spills. The volume to be contained shall be not less than the capacity of the largest individual tank or container.

(d) Legible warning signs and placards of a type determined by the Chief shall be posted at all entrances to areas where highly toxic materials are store or used.

Highly Toxic and Poisonous Gases

Sec. 80.308(a) General. Storage of highly toxic or poisonous gases shall be within buildings or rooms that comply with the provisions of Sec. 80.38(b) or in approved exterior locations in accordance with the provisions of Sec. 80.308(c). All storage shall comply with the following:

- (i) Container Support: Containers shall be individually secured at the top and bottom, so as to prevent falling during seismic activity or being knocked over. Containers not in use shall have valve protection devices in place or comparable protection provided at all times.
- (ii) Security: Areas where highly toxic or poisonous gases are stored or used shall be secured against unauthorized entry.
- (iii) Handling: Handling of highly toxic or poisonous gas shall be only by persons fully trained in the hazards involved and the safety precautions required.
- (iv) Breathing Apparatus: Two approved self-contained breathing apparatus units and suitable protective clothing shall be provided and located in the area adjacent to the area of storage.
- (v) Excess Flow Control: Excess flow control valves or the equivalent shall be provided at the source unless specifically exempted by the Chief.
- (vi) Automatic Fire Extinguishing System: An automatic fire extinguishing system which is compatible with the particular gas or gases stored shall be provided to protect all interior storage areas.

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- (vii) No other storage of combustible or hazardous materials is permitted within rooms or areas used for storage of highly toxic or poisonous gases unless separated by not less than 25 feet or by fire-resistive construction with a minimum rating of one-hour.
- (viii) Individual cylinders or tanks and systems of cylinders or tanks in which the aggregate capacity exceeds a water capacity of 30 gallons and which are used for the storage of highly toxic or poisonous gases shall be provided with monitoring and alarm devices to warn of pressure build-ups beyond maximum allowable working pressure. Means for transfer of the contents to another tank or container, initiated manually and automatically upon signal from the monitoring devices may be required by the Chief.
- (ix) The Chief may require the submission of an emergency response plan.

EXCEPTION. The Chief may exempt chlorine and other gases not classified as "Poison A" by the United States Department of Transportation, from certain provisions of this section when consistent with public safety.

(b) Inside Storage. Inside storage of highly toxic or poisonous gases shall be within a building or room which meets construction and location requirements specified in the Building Code for Group H, Division 1 Occupancies. The building or room shall be of fire-resistive construction, with a minimum rating of one hour and shall conform to all of the following:

- (i) Monitoring: The atmosphere in storage rooms, areas or cabinets shall be monitored for the particular gas or gases present. An audible and visual alarm shall be activated when the maximum safe level for long-term exposure is reached.
- (ii) Controls: Emergency shut-off controls shall be provided inside and outside the area of use.
- (iii) Ventilation: Mechanical ventilation, installed in accordance with the mechanical code shall be provided. Such ventilation shall not discharge to a point where gases may endanger any person, domestic animal or wild life. When required by the Chief, approved gas detection devices shall be provided which activate the mechanical ventilation system.

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- (iv) Discharge Treatment or Containments: Storage areas shall be provided with a system to control sudden or slow release of gas from containers or associated piping and/or equipment.

Such system shall be capable of diluting, filtering, absorbing or otherwise processing 100% of the capacity of the container presenting the highest potential hazard for each gas stored so that the maximum concentration at the point of discharge to the atmosphere shall not exceed the short term exposure limit of the material released.

The system shall be designed to handle anticipated pressure from a sudden release to the largest single container.

For the purpose of calculating system capacity, a release time of 5 minutes from maximum container capacity to empty is deemed to be a sudden release. The Chief may, however, require more stringent design criteria where necessary to protect human life.

- (v) Associated piping shall be installed in accordance with Division V of this Article.

EXCEPTION: The Chief may exempt storage of small amounts of highly toxic or poisonous gases from certain provisions of this subsection when supporting data is presented which shows that the danger to public safety is mitigated by engineering and/or operational controls.

(c) Exterior Storage. Exterior storage of highly toxic or poisonous gases when approved by the Chief shall not be located within 100 feet of any building not connected with such storage, nor within 100 feet of any property line, street, public way or exit to a public way. All combustible materials and other hazardous materials storage shall be separated from highly toxic or poisonous gas storage by not less than 25 feet, or by fire-resistive construction with a minimum rating of one-hour.

Corrosive Liquids

Sec. 80.309(a) General. Corrosive liquids shall be segregated from other chemicals, including other corrosives which are incompatible, and from combustible materials by distance or noncombustible construction. Secondary containment or other means shall be provided to prevent the mixing of incompatible materials or

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the contamination of surrounding areas. See Sec. 80.304 and Sec. 80.307.

(b) Indoor Storage. Indoor storage of corrosive liquids in quantities which exceed 110 gallons shall be within a room or compartment separated from all other storage by one-hour fire-resistive construction. Lesser quantities of corrosive liquids shall be separated from combustibles and from other hazardous materials storage by noncombustible construction or a minimum distance of 10 feet.

Corrosive liquids shall be stored with compatible corrosives within storage cabinets constructed in accordance with Sec. 80.310, or within a room or area provided with recessed floors, raised sills, or open trench grating designed to contain the entire capacity of the largest single container.

When the total amount of such liquids stored in any room or area exceeds 55 gallons, a drainage system which drains to a safe holding location shall be provided. When required by the Chief, the drainage system shall be designed and sized to carry off any anticipated spill, plus the minimum calculated fire flow in sprinklered rooms or areas.

When the total amount of corrosive liquids in any room or area exceeds 110 gallons, mechanical ventilation which provides a minimum of 6 air changes per hour shall be provided in accordance with the Building and/or Mechanical Code. Such ventilation shall not discharge to a point where vapors may endanger any person, domestic animal, or wildlife. A manual control, located outside the protected room or area shall be provided.

(c) Exterior Storage. Exterior storage of corrosive liquids shall not be within 10 feet of any property line, street, public way or exit to a public way. An unpierced, solid concrete or masonry wall, constructed in accordance with the Building Code to meet a four-hour fire-resistive rating may be accepted by the Chief in lieu of such distance.

All exterior storage areas for corrosive liquids shall be provided with raised sills, open grate trenches or other means to contain leaks and spills. The volume to be contained shall be not less than the capacity of the largest individual tank or container.

(d) Legible warning signs and placards of a type determined by the Chief shall be posted at all entrances to areas where corrosive liquids are stored or used.

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Storage Cabinets for Hazardous Materials

Sec. 80.310(a) General. When provisions of this code require that hazardous materials be stored in storage cabinets, such cabinets shall be in accordance with this section. Cabinets shall be conspicuously labeled in red letters on contrasting background HAZARDOUS - KEEP FIRE AWAY.

(b) Construction. Cabinets may be constructed of wood or metal. Cabinets shall be listed or constructed in accordance with the following:

- A. Unlisted Metal Cabinets. Metal cabinets shall be of steel having a thickness of not less than 0.043 inch. Doors shall be well-fitted, self-closing and equipped with a latching device. Joints shall be riveted or welded and shall be tight fitting. The bottom of a cabinet designed for the containment of liquids shall be liquid tight to a height of at least 2 inches.
- B. Wooden Cabinets. Wooden cabinets, including the doors, shall be of not less than 1-inch Exterior grade plywood, or equivalent, which is compatible with the material being stored. Doors shall be well fitted, self-closing and equipped with a latch, and piano type hinges. The bottom of a cabinet designed for containment of liquid shall be liquid tight to a height of at least 2 inches. Cabinets shall be painted with an intumescent-type paint.

Incompatible materials and materials which may cause a hazardous reaction shall not be stored within the same storage cabinet.

Aboveground Tanks and Pressure Vessels

Sec. 80.311(a) All aboveground storage tanks, pressure vessels and containers over 100 gallons (water capacity) permanently installed, mounted or affixed and used for the storage of flammable and combustible liquids, compressed gases, or hazardous chemicals regulated by this Article, shall be identified in accordance with U.F.C. Standard No. 79-3.

EXCEPTION: Portable tanks not permanently mounted, temporary tanks used on construction sites, drum storage and packaged materials in containers of 55-gallon or less capacity.

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Labels shall conform with U.F.C. Standard No. 79-3 for size and color and shall be affixed to tank, vessel or container so as to be conspicuously visible at all times.

(b) When any tank covered in this section is housed within a building, the building shall have the same hazard identification label in a conspicuous location on the exterior of the building.

DIVISION IV DISPENSING AND USE

Dispensing

Sec. 80.401.(a.) Dispensing of hazardous materials shall only be permitted in accordance with Sec. 80.404 or in buildings, rooms or areas within buildings which comply with the provisions of Division III of this Article, for storage of the particular material.

EXCEPTION: Small amounts of hazardous materials, excluding potentially explosive, reactive or unstable materials and highly toxic or poisonous gases may be dispensed from approved containers not exceeding 5 gallons capacity in other locations upon approval of the Chief.

(b) Liquid hazardous materials shall be dispensed only by approved pumps taking suction from the top of the container.

Use

Sec. 40.402. Use of hazardous materials shall only be permitted in accordance with Sec. 80.404 or in buildings, rooms or areas within buildings which comply with the provisions of Division III of this article for storage of the particular material, and which meet Building Code requirements for Group H Occupancies when required.

EXCEPTIONS: 1. Small amounts of hazardous materials may be used in other locations approved by the Chief.

2. Hazardous materials which are used within instruments, machinery or equipment that have been designed and approved for that use, for example: Photocopy and blueprint machines, and devices which contain a controlled radioactive source.

3. Hazardous materials which are used within enclosures that have been designed and approved for the particular hazard involved, for example: Spray booths, and laboratory fume hoods.

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4. Hazardous materials which are used in areas provided with special engineering controls approved by the Chief, such as:
- (i) Control or removal of ignition sources such as smoking, open flames, static electricity, etc.
 - (ii) Control of flammable, toxic, corrosive and other hazardous vapors, fumes or gases by means of special exhaust systems, gas detection and alarm systems and automatic gas shutoff valves.
 - (iii) Dust removal systems.
 - (iv) Isolation of materials which could interact.
 - (v) Storage of hazardous materials within approved storage cabinets.
 - (vi) Procedural controls on use of hazardous materials.
 - (vii) Fire extinguishing systems, alarm systems and other special systems.
 - (viii) Adequate exiting from the area.

Equipment

Sec. 80.403. (a) Equipment. All equipment and machinery used for dispensing, processing, or any other operation involving hazardous materials shall be of an approved type, and listed by a nationally recognized testing agency or otherwise approved as designated by the Chief. Such equipment shall be maintained in an operative condition at all times and shall be replaced or repaired where defective.

(b) Electrical Devices. Electrical wiring and equipment in hazardous materials dispensing and use areas shall be installed in accordance with the Electrical Code and classed for the hazardous atmosphere that may develop.

(c) Static Accumulation. When hazardous materials which are flammable liquids, dusts or powders are dispensed or used, adequate grounding or bonding shall be provided to prevent the accumulation of static electricity.

Sec. 80.404. Exterior dispensing and use of hazardous materials shall meet the requirements of Sections 80.401(b), 80.403, 80.407,

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80.408, 80.409 and shall comply with the provisions of Division III of this article for exterior storage of the particular material.

Ventilation

Sec. 80.405.(a) Ventilation shall be provided in all rooms or areas within buildings where hazardous materials are dispensed or used in accordance with requirements contained in Division III of this article.

(b) Location of the intake shall be dictated by the vapor density of the material.

(c) Manual control shall be provided for all mechanical ventilation systems required for removal of flammable and other hazardous gases, vapors or dusts. A remote control switch shall be installed at an approved location outside of the area served by the system.

EXCEPTION: Ventilation may be omitted where inert or other special atmospheres are required, and when approved by the Chief.

Containment

Sec. 80.407. Containment in the form of recessed floors, raised sills, or open trench grating shall be provided where hazardous liquids are dispensed or used. Such containment shall be in accordance with requirements contained in Division III of this article.

Operational Procedures

Sec. 80.408. Operational Procedures. When required by the Chief, written procedures shall be established for hazardous operations and processes. The procedures shall include a description of the hazards, proper operating procedures and an emergency action guide. The procedures shall be submitted for review by the Chief. A copy of the approved procedures shall be posted at the site of the operation or process, and a copy shall be retained for Fire Department use.

Training

Sec. 80.409. Training. Persons in charge of hazardous operations and processes shall be adequately trained concerning the nature of the hazards, proper operating procedures, and necessary

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emergency actions. The Chief may require written documentation or other evidence of such training.

DIVISION V
TRANSPORTATION AND HANDLING

On-site

Sec. 80.501. Hazardous materials, excluding reactive or unstable materials rated 3 or 4 in accordance with UFC Standard No. 79-3 and highly toxic or poisonous gases, may be transported through, but shall not be left unattended, even momentarily nor stored within any part of an exit.

Carts and Trucks

Sec. 80.502(a) Carts and trucks used to transport hazardous materials shall be provided with means for restraining containers. Incompatible materials shall not be transported on the same cart or truck.

Power carts and trucks shall be approved for Class 1, Division 1 or Class 1, Division 2 hazardous locations as classified in the Electrical Code. Internal combustion engines shall not be used in areas where hazardous materials are stored or used.

Piping

Sec. 80.503(a) A permit is required for installation of piping systems used to convey hazardous materials.

(b) Piping and tubing shall be installed in accordance with approved standards. All hazardous materials piping shall bear visible identification.

(c) Piping which carries hazardous materials having a (NFPA) health hazard rating of 3 or 4 shall have welded connections throughout unless an exhausted enclosure is provided.

(d) Piping which carries hazardous materials shall not be run within any portion of an exit system which is required to be enclosed in fire-resistive construction.

(e) Excess flow control. Excess flow control protection shall be provided on all piping which carries pressurized gaseous hazardous materials. A fail-safe system shall shut off flow due to rupture or other failure of piping, fittings or equipment. Where

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the piping originates outside the building, the valve shall be located outside the building as close to the bulk source as possible.

(f) Shutoff valves. Readily accessible manual and/or manually activated fail-safe emergency shutoff valves shall be provided as follows:

- (i) at the tank, cylinder or bulk source
- (ii) at the branch piping connection into the area of use

The valves shall be identified and the location shall be clearly visible, or indicated by means of a sign.

Off-Site

Sec. 80.504. No person shall operate any vehicle transporting any hazardous materials unless at the time of such transportation there are affixed to both sides, the front and the rear of the vehicle placards and identification numbers in conformity with Title 49, Code of Federal Regulations."

Section 15. A new Section 23.10.1465 is added to Chapter 23.10 of the Bellevue City Code to read as follows:

23.10.1465. Hazardous Materials Appendixes.

"APPENDIX II-E
HAZARDOUS MATERIALS INVENTORY
PLAN AND MANAGEMENT PLAN

1. INTENT

This appendix contains requirements for hazardous materials inventory statements and for hazardous materials management plans which may be required by the Chief pursuant to Article 80, Section 80.103.

2. HAZARDOUS MATERIALS INVENTORY PLAN (HMIP) REQUIREMENTS

- (a) Any person, firm or corporation which stores any materials included within the provisions of Art. 80, Sec. 80.101 and in the quantities specified in (b) below, shall file an HMIS. Such statement may be a part of the HMMP filed pursuant to No. 2 of this Appendix or it may be a separate document in a form specified by the Chief.

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- (b) An HMIS is required where the aggregate quantity of stored material is greater than 100 cubic foot for compressed gases at standard temperature and pressure (approximately 0°C and an atmosphere of 1 atm. (760 mm Hg), greater than 1 kg. in weight (2.2 lbs. for liquids and solids), or is in a mixture containing greater than 1% of such a hazardous material where the included quantities of such materials is also greater than 1 kg. in weight.
- (c) A separate HMIS shall be provided for each building including its appurtenant structures and each exterior facility in which hazardous materials are stored. The HMIS shall list by hazard class all hazardous materials stored in excess of the quantities specified in (b) above. The HMIS shall include the following information for each hazardous material listed.
1. Generic chemical name.
 2. Common/trade name.
 3. Formula or major constituents.
 4. Manufacturer.
 5. UN (United Nations) or NA (North American) ID number.
 6. Manufacturer's Safety Data Sheet or equivalent.
 7. Maximum quantity stored at any one time..
- (d) An amended HMIS shall be provided within thirty (30) days of the storage of any hazardous material which changes or adds a hazard class or which is sufficient in quantity to cause an increase in the quantity which exceeds five (5) percent for any hazard class.

EXCEPTIONS:

1. The following elemental metals included within 1(b) of this Appendix shall not be considered hazardous materials for the purposes of this Article unless they are stored in a friable, powdered or finely divided state: Chromium, Copper, Lead, Nickel and Silver.
2. Retail products. Materials contained solely in consumer products packaged for distribution to, and use by, the general public and commercial products used for janitorial or minor maintenance purposes (such as paint thinner or wax strippers).
3. Other exceptions. The Chief may exempt materials from the requirements of this Article where it has

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been satisfactorily demonstrated that the material in the quantity and/or solution stored does not present a potential danger to the public health, safety or welfare.

3. HAZARDOUS MATERIALS MANAGEMENT PLAN (HMMP) REQUIREMENTS

- (a) Any person, firm or corporation applying for a permit to store hazardous materials shall submit a Hazardous Materials Management Plan standard form or short form in accordance with this Section.
- (b) HMMP Standard form shall include the following:
 - 1. General Site Plan. A general site plan drawn at a legible scale which shall include, but not be limited to, the location of all buildings, exterior storage facilities, permanent access ways, parking lots, internal roads, chemical loading areas, equipment cleaning areas, storm and sanitary sewer accesses, emergency equipment and adjacent property uses. The exterior storage areas shall be identified with the hazard class(es) and the maximum quantities per hazard class of hazardous materials stored. The Chief may also require information regarding the location of wells, flood plains, earthquake faults, surface water bodies and general land uses within one (1) mile of the facility boundaries.
 - 2. Building Floor Plan. A building floor plan drawn to a legible scale which shall include, but not be limited to, all hazardous materials storage facilities within the building and shall indicate rooms, doorways, corridors and exits. Each hazardous materials storage facility shall be identified on the plan with the hazard class(es) and quantity range per hazard class of the hazardous materials stored.
 - 3. Hazardous Materials Handling. Information showing that all activities involving the handling of hazardous materials between storage areas and manufacturing processes on site are conducted in a manner to prevent the accidental release of such materials.
 - 4. Chemical Compatibility and Separation. Information showing procedures, controls, signs or other methods used to ensure separation and protection of stored

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materials from factors which may cause accidental ignition or reaction of ignitable or reactive materials.

5. Monitoring Program. Information including, but not limited to, the location, type, manufacturer's specifications (if applicable) and suitability of monitoring methods for each storage facility when required by Appendix II-F.
6. Security Precautions. A security program for preventing unauthorized entry of persons or animals into the storage facilities and reducing the potential for theft, sabotage or accidental discharge.
7. Hazard Labeling and Warning Signs. A description of warning markings on containers, storage areas, storage structures, surrounding fences, gates and access ways acceptable to the Chief.
8. Inspection and Recordkeeping. A schedule and procedures for inspecting all monitoring equipment, safety and emergency equipment. The permittee shall develop and follow a written inspection procedure acceptable to the Chief for inspecting the facility for malfunctions and deterioration, operator's error, poor housekeeping practices and discharges which may be causing, or may lead to, unauthorized discharges of hazardous materials. These inspections must be at a frequency appropriate to the possible deterioration of equipment or facilities, and to the probability of human error and of sufficient frequency to detect problems prior to a discharge. An inspection checksheet shall be developed to be used in conjunction with routine inspections. The checksheet shall provide for the date, time and location of inspection, note any problems, dates and times of any corrective actions taken, name of inspector and the countersignature of the designated safety manager for the facility.
9. Employee Training. A training program appropriate to the types and quantities of materials stored or used must be conducted to prepare employees to safely handle hazardous materials on a daily basis and during emergencies. The training program shall include:

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- (i) Instruction in safe storage and handling of hazardous materials including maintenance of monitoring records.
 - (ii) Instruction in emergency procedures for leaks, spills, fires or explosions including shut-down of operations, if necessary.
 - (iii) Record keeping procedures for documenting training given to employees.
10. Emergency Equipment. A description of emergency equipment, and testing and maintenance procedures used to assure operation and availability.
- (c) HMMP Short Form - (Minimal Storage Site). A facility shall qualify as a minimal storage site if the quantity of each hazardous material stored in one or more facilities in an aggregate quantity for the facility is 200 Kg (440 pounds) or less for solids, 110 gallons or less for liquids, or 5000 cubic feet or less at STP for compressed gases. The applicant for a permit for a facility which qualifies as a minimal storage site may opt to file the short form Hazardous Materials Management plan. Such plan shall include the following components:
- 1. General Facility Information.
 - 2. A simple line drawing of the facility showing the location of the storage facilities and indicating the hazard class or classes and physical state of the hazardous materials being stored.
 - 3. Information describing that the hazardous materials will be stored and handled in a safe manner and will be appropriately contained, separated and monitor.
 - 4. Assurance that security precautions have been taken, employees have been appropriately trained to handle the hazardous materials and react to emergency situations, adequate labeling and warning signs are posted, adequate emergency equipment is maintain, and the disposal of any hazardous materials will be in an appropriate manner.

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4. MAINTENANCE OF RECORDS

All records required by this article shall be maintained by the permittee for a period not less than three (3) years. Said records shall be made available to the Chief upon request."

"APPENDIX II-F
CONTAINMENT, MONITORING, DISCHARGES

1. INTENT

Article 80 includes requirements for containment of liquid hazardous materials so that leaks or spills will not endanger life or health and in order to prevent the intermixing of materials which may react to cause fire, explosion, generation of flammable or toxic gas or large amounts of heat, or otherwise threaten life or property. The intent of this appendix is to provide specific requirements which include protection of the environment.

2. DEFINITIONS

See Article 9 and Article 80.

3. REQUIREMENTS

- (a) Containment Requirements. Primary and secondary levels of containment shall be required for storage facilities intended for the storage of hazardous materials which are liquids at standard temperature and pressure (STP), and for certain other hazardous fluids and finely divided solids unless specifically exempted by the Chief.
- (b) Primary Containment. Primary containment shall be in tanks or containers as specified in Article 80.
- (c) Secondary Containment. Secondary containment shall be constructed and arranged in accordance with the following:
 - 1. All secondary containment shall be constructed of materials of sufficient thickness, density and composition so as not to be structurally weakened as a result of contact with the discharged hazardous materials and so as to be capable of containing hazardous materials discharged from a primary container for a period of time equal to or longer than the maximum anticipated time sufficient to allow recovery of the discharged hazardous material.

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Laminated, coated or clad materials shall be considered single walled and shall not be construed to fulfill the requirements of both primary and secondary containment.

2. In the case of an installation with one primary container, the secondary containment shall be large enough to contain at least 100% of the volume of the primary container.
 3. In the case of a storage facility with multiple primary containers, the secondary containment shall be large enough to contain 150% of the volume of the largest primary container placed in it, or 10% of the aggregate internal volume of all primary containers in the storage facility, whichever is greater.
 4. If the storage facility is open to rainfall, then the secondary containment must be able to additionally accommodate the volume of a twenty-four (24) hour rainfall as determined by a one-hundred (100) year storm history.
- (d) Drainage System. Drainage of precipitation from within the storage facility shall be controlled in a manner approved by the Chief so as to prevent hazardous materials from being discharged. No drainage system will be approved which could allow uncontrolled discharge. All drain valves in the drainage system shall be self-closing.
- (e) Professional Engineer Stamp. The Chief may require design submittals to bear the stamp of a professional engineer attesting to, but not limited to, the following: Structural soundness, seismic safety, compatibility of construction materials with contents, cathodic protection and mechanical compatibility with the structural elements.
- (f) Monitoring Requirements. Storage facilities intended for the storage of hazardous materials as described in (a) above, shall be designed and constructed with a monitoring system capable of detecting that hazardous materials stored in the primary containment has entered the secondary containment. Visual inspection of the primary containment is the preferred method. However, other means of monitoring may be approved by the Chief. Where secondary containment may be subject to the intrusion of water, a means of monitoring for such water shall be provided. Whenever monitoring devices are provided they

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shall be connected to attention-getting visual and/or audible alarms.

- g. Container Failure. Whenever any unauthorized discharge due to primary container failure is discovered, the involved primary containment shall immediately be emptied of all hazardous materials and removed from service. This shall include release into secondary containment.
- h. Reporting. Any actual unauthorized discharge or recognizable inventory loss which indicates a potential unauthorized discharge shall be reported to the Chief immediately.

Exception. Minor unauthorized discharges in non-public areas which present no health and safety hazard, are immediately contained and neutralized, and are recorded in accordance with Appendix II-E need not necessarily be reported in accordance with this section.

- (i) Clean-up Responsibility. Any person, firm or corporation responsible for any unauthorized discharge shall institute and complete all actions necessary to remedy the effects of such unauthorized discharge, whether sudden or gradual at no cost to the jurisdiction.

When deemed necessary by the Chief, cleanup shall be instituted by the Fire Department or by an authorized individual or firm, and all costs associated with such cleanup shall be borne by owner, operator or other person responsible for the unauthorized discharge."

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APPENDIX VI-E
HAZARDOUS MATERIALS CLASSIFICATIONS

1. INTENT

This appendix provides information, explanations and examples to illustrate and clarify the "hazard categories" contained in Division II of Article 80.

2. HAZARD CATEGORIES

CATEGORY I - Explosives and Blasting Agents

1. High explosives - Can be caused to detonate by means of a blasting cap when unconfined. (Examples) dynamite, TNT, nitroglycerine, C-3, C-4. Generally corresponds with DOT Class A.
2. Low explosives - Can be caused to deflagrate when confined. (examples) black powder, smokeless powder, propellant explosives, display fireworks. Generally corresponds with DOT Class B or C.
3. Blasting agents - Oxidizer/liquid fuel slurry mixtures. (examples) ammonium nitrate-fuel oil.

CATEGORY II - Compressed Gases

1. Flammable. (examples) acetylene, carbon monoxide (also toxic), ethane, ethylene, hydrogen, methane. (Methane is the largest component of natural gas)
2. Inert or Chemically Unreactive. (examples) argon, carbon dioxide, helium, nitrogen.
3. Corrosive. (examples) chlorine (also toxic), fluorine (also toxic).
4. Oxidizing. (examples) oxygen, ozone (also toxic), oxides of nitrogen (also toxic), chlorine and fluorine (do not contain oxygen but reaction with flammables is similar to that of oxygen).
5. Highly Toxic or Poisonous. (examples) arsine, (also flammable), carbon monoxide (also flammable), chlorine and fluorine (also corrosive and oxidizers), cyanogen (also flammable), hydrogen cyanide (also flammable, hydrogen

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sulfide (also flammable), nitric oxide, phosgene, phosphines.

6. Unstable. (examples) acetylene (under high pressure), butadiene, ethylene oxide, formaldehyde, vinyl chloride.
7. Liquified. (examples) propane, butane, etc., when liquified under pressure. Gases which liquify only at temperatures below - 150°F, regardless of pressure are considered under Category II, Cryogenic Fluids.

CATEGORY III - Flammable and Combustible Liquids

1. Flammable Liquids

Class I-A shall include those having flash points below 73°F and having a boiling point below 100°F.

CLASS I-B shall include those having flash points below 73°F and having a boiling point at or above 100°F.

CLASS I-C shall include those having flash points at or above 73°F and below 100°F.

2. Combustible Liquids

CLASS II liquids shall include those having flash points at or above 100°F and below 140°F.

CLASS III-A liquids shall include those having flash points at or above 140°F and below 200°F.

CLASS III-B liquids shall include those liquids having flash points at or above 200°F.

CATEGORY IV - Flammable Solids

1. Organic solids. (examples) camphor, cellulose nitrate, naphthalene.
2. Inorganic solids. (examples) phosphorous, phosphorous sesquisulfide, sulfur.
3. Combustible metals (excepts dusts and powders). (examples) magnesium, titanium, zirconium.
4. Combustible Dusts and Powders (including metals). Finely divided flammable solids which may be dispersed in air as a dust cloud. (examples) saw dust (wood), plastics, coal, flour, powdered metals.

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CATEGORY V - Oxidizing Materials

1. Oxygen, ozone.
2. Other gases. (examples) oxides of nitrogen, fluorine and chlorine. (reaction with flammables is similar to that of oxygen).
3. Liquids. (examples) bromine, hydrogen peroxide, chromic acid, nitric acid, perchloric acid, sulfuric acid.
4. Solids. (examples) chlorates, chromates, iodine, nitrates., nitrites, perchlorates, peroxides.

Classification of liquid and solid oxidizers according to hazard (extract from NFPA Standard No. 43A):

CLASS 1 - An oxidizing material whose primary hazard is that it may increase the burning rate of combustible material with which it comes in contact. (examples) aluminum nitrate, ammonium persulfate, barium chlorate, barium nitrate, barium peroxide, calcium chlorate, calcium nitrate, calcium peroxide, cupric nitrate, hydrogen peroxide solutions, over 8%, but not exceeding 17.5% concentration by weight, lead nitrate, lithium hypochlorite, lithium peroxide, magnesium nitrate, magnesium perchlorate, magnesium peroxide, nickel nitrate, nitric acid, 70% concentration or less, perchloric acid solutions, less than 60% by weight, potassium dichromate, potassium nitrate, potassium persulfate, silver nitrate, sodium carbonate peroxide, sodium dichloro-s-triazinetrione dihydrate, sodium dichromate, sodium nitrate, sodium nitrite, sodium perborate, sodium perborate tetrahydrate, sodium perchlorate monohydrate, sodium persulfate, strontium chlorate, strontium nitrate, strontium peroxide, thorium nitrate, uranium nitrate, zinc chlorate, zinc peroxide.

CLASS 2 - An oxidizing material that will moderately increase the burning rate or which may cause spontaneous ignition of combustible material with which it comes in contact. (examples) calcium hypochlorite, 50% or less by weight, chromium trioxide (Chromic Acid), hydrogen peroxide, 27.5% to 52% concentration, by weight, nitric acid, more than 70% concentration, potassium permanganate, sodium chlorite, 40% or less, sodium peroxide, sodium permanganate, halane (1,3-Dichloro-5, 5-Dimethyl hydantion), trichloro-s-triazinetrione (trichloroisocyanuric acid).

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CLASS 3 - An oxidizing material that will cause a severe increase in the burning rate of combustible material with which it comes in contact. (examples) ammonium dichromate, hydrogen peroxide, 52% to not more than 91% concentration by weight, calcium hypochlorite, over 50% by weight, potassium bromate, potassium chlorate, sodium chlorite, over 40% by weight, Mono-(trichloro) tetra-(monopotassium dichloro)-penta-s-triazinetrione, perchloric acid solutions 60% to 72.5% by weight, potassium dichloro-s-triazinetrione, (potassium dichloroisocyanurate), sodium chlorate, sodium chlorite, over 40% by weight, sodium dichloro-s-triasinetrione (sodium dichloroisocyanurate).

CLASS 4 - An oxidizing material that can undergo an explosive reaction when catalyzed or exposed to heat, shock, or friction. (Examples) ammonium perchlorate, ammonium permanganate, guanidine nitrate, hydrogen peroxide solutions, more than 91% by weight, perchloric acid solutions, more than 72.5% by weight, potassium superoxide.

CATEGORY VI - Highly Toxic Materials

1. Poisons, Class A as defined in U.S. Department of Transportation regulations, Code of Federal Regulations, Title 40, Parts 100-177.
2. Other Highly Toxic Materials (including pesticides, and fumigants and all Class B poisons).
3. Chemical Asphixiants
4. Anesthetics
5. Etiologic (biological) Agents
6. Carcinogens, Mutagens and Terotagens

Only those materials within the definition of "Highly toxic Materials," "Highly Toxic Pesticide" and "Poisonous Gas" are regulated.

CATEGORY VII - Radioactive Materials

1. Common radiation source materials. More than 100 radio-isotopes are in common usage in various medical and industrial test and measuring situations. Most emit Beta and Gamma radiation. Some emit Alpha radiation also.

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Some emit Beta or Gamma radiation exclusively (examples of Alpha, Beta, Gamma emitters) Americium-241, Bismuth-210, Polonium-210, Radium-226, Uranium-238. These are the heavier isotopes as indicated by high numbers.

(examples of Beta emitters) Calcium-45, Carbon-14, Hydrogen-3, Nickel-63, Sulfur-35, Tungsten-185, Zinc-65.

(examples of Gamma emitters) Beryllium-7, Germanium-71, Iron-55, Palladium-13, Praseodymium-143, Promethium-146, Tin-113.

2. Fissile Materials. Fissile materials are materials which may undergo a fission reaction, and are usually found only at reactor sites, or as part of a nuclear weapon. Fissile materials may emit Alpha, Beta, Gamma, and Neutron radiation. (examples of fissile materials) Plutonium-238, Plutonium-239, Plutonium-241, Uranium-233, Uranium-235.

NOTE: Uranium (and certain other radioactive metals) is combustible in its solid and finely divided form, as well as chemically toxic. When radioactive materials burn, the products of combustion (other than heat) will be radioactive as well.

CATEGORY VIII - Corrosives

1. Acids, (examples) chromic, formic, hydrochloric (muriatic), hydrofluoric, nitric, perchloric, sulfuric.
2. Bases, (alkalis) (examples) e.g., hydroxides - ammonium, calcium, potassium, sodium, certain carbonates - potassium.
3. Other corrosives (examples) bromine, chlorine, fluorine, iodine, ammonia, phenol.

CATEGORY IX - Cryogenic Fluids

1. Flammable - carbon monoxide, deuterium (heavy hydrogen), ethylene, hydrogen, methane.
2. Nonflammable - air, argon, helium, krypton, neon, nitrogen, xenon.
3. Corrosive/Highly Toxic - carbon monoxide, fluorine, nitric oxide.

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4. Oxidizer - fluorine, nitric oxide, oxygen.

CATEGORY X - Reactive Materials

1. Air-reactive materials

Pyrophoric (examples) diborane, dichloroborane, phosphines, silanes, boron, white or yellow phosphorus, alkali metals (see 2. below), hafnium, plutonium, thorium, and finely divided magnesium.

Spontaneously combustible (slower initial rate of oxidation) (examples) carbonaceous materials - coal, charcoal, animal/vegetable organics - fish meal, animal/vegetable oils, finely divided metals - cadmium, calcium, chromium, cobalt, iron, lead, manganese, nickel, titanium, zinc.

NOTE: Spontaneously combustible materials are not under ordinary conditions considered air-reactive hazardous materials and are included for information only. Finely divided combustible solids including metals are considered hazardous materials under the category of flammable solids.

2. Water-reactive Materials

Alkali metals (examples) sodium, lithium, potassium, rubidium, cesium - these metals violently decompose water to form hydroxides and liberate hydrogen gas. They are normally stored under kerosene. Alkaline earth metals (examples) calcium. Magnesium becomes water-reactive when it is heated sufficiently.

Metallic carbides (examples) alkali metal carbides produce violent exothermic reactions with water, aluminum carbide decomposes and produces methane gas, calcium carbide and water react to produce large amounts of acetylene gas and heat.

Metallic hydrides (examples) alkali metal hydrides and aluminum hydride and aluminum borohydride react violently with water releasing hydrogen gas and sufficient heat to ignite the gas. Alkaline earth metal hydrides are slightly less reactive. Hydrides are also reactive with acids, oxides and halogenated hydrocarbons.

Organo-metallic compounds - a metal or metalloid combined with a carbon atom of an organic group (examples) butyl

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lithium, diethyl aluminum chloride, diethyl beryllium, diethyl and dimethyl zinc, dimethyl arsine, nickel carbonyl, sodium methylate, triethyl and trimethyl aluminum.

Other water-reactive compounds (examples) strong acids - sulfuric, some alkali metal compounds - arsenides, selenides, nitrides, silicides, some hydrosulfides, some inorganic amides, some phosphides and sulfides.

3. Miscellaneous-reactive Materials

Miscellaneous reactive materials are materials which are reactive by definition, other than air, or water-reactive materials and not included in specific reactions covered under other categories such as oxidizers with combustibles. Hypergolic materials are included in this category.

Those materials which are rated with a reactivity (instability) rating of 3 or 4 when rated in accordance with U.F.C. Standard No. 79-3, are considered reactive materials. Combinations of materials listed in NFPA Standard 491M-Manual of Hazardous Chemical Reactions, are considered reactive materials.

CATEGORY XI - Unstable Materials

1. Materials which vigorously decompose - molecules break apart into simpler parts (examples) certain azides, nitrates, oxides, peroxides, including organic peroxides such as acetyl peroxide, benzoyl peroxide, butyl hydroperoxide, lauryl peroxide, methyl ethyl Ketone peroxide, peracetic acid, tertiary butyl peroxide.
2. Materials which vigorously polymerize - undergo a chain reaction to form large molecules called polymers (examples) certain unsaturated hydrocarbons and halogenated hydrocarbons such as acetaldehyde, acrolein, acrylic acid, formaldehyde, styrene, vinyl acetate and vinyl chloride.
3. Peroxide forming chemicals - materials which under normal conditions form peroxides that may then decompose (examples) acetaldehyde, isopropyl ether, tetrahydrofuran.

Only those materials which would require a reactivity (instability) rating of 3 or 4 when rated in accordance with U.F.C. Standard No. 79-3, are unstable materials.

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3. EVALUATION OF HAZARDS

The degree of hazard present depends upon several variables which should be considered individually and in combination. Some of these variables are:

(a) Chemical Properties of the Material

Chemical properties of the material determine self-reactions and reactions which may occur with other materials. Generally, materials within sub-divisions of hazard categories will exhibit similar chemical properties.

However, materials with similar chemical properties may present very different hazards. Each individual material should be researched to determine its hazardous properties and then considered in relation to other materials that it might contact and the surrounding environment.

(b) Physical Properties of the Material

Physical properties, such as whether a material is a solid, liquid or gas at ordinary temperatures and pressures, considered along with chemical properties will determine requirements for containment of the material. Specific gravity (weight of a liquid compared to water) and vapor density (weight of a gas compared to air) are both physical properties which are important in evaluating the hazards of a material.

(c) Amount and Concentration of the Material

The amount of material present and its concentration must be considered along with physical and chemical properties to determine the magnitude of the hazard. Hydrogen peroxide for example, is used as an antiseptic and a hair bleach in low concentrations (approximately 8% in water solution). Over 8%, hydrogen peroxide is classed as an oxidizer, above 90% it is a Class 4 oxidizer "that can undergo an explosive reaction when catalyzed or exposed to heat, shock or friction," a definition which incidentally also places hydrogen peroxide over 90% concentration in the "unstable" category. Small amounts at high concentrations may present a greater hazard than large amounts at low concentrations.

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(d) Actual Use, Activity or Process Involving the Material

The definitions (in the Fire Code) of "Handling" and "Storage" both refer to materials in packages or containers. "Dispensing" and "Use" describe situations where a material is exposed to ambient conditions, or vapors are liberated to the atmosphere. Dispensing and use then, are generally more hazardous situations than handling or storage. The actual use or process may include heating, electric or other sparks, catalytic or reactive materials and many other factors which could affect the hazard and must therefore be thoroughly analyzed.

(e) Surrounding Conditions

Conditions such as other processes or materials in the area, type of construction of the structure, fire protection features (e.g. fire walls, sprinkler systems, alarms, etc.), occupancy (use) of adjoining areas, normal temperatures, exposure to weather, etc. must be taken into account in evaluating the hazard.

Evaluation of the hazard is a strongly subjective process, therefore, the person charged with this responsibility must gather as much relevant data as possible from various sources so that the decision will be objectified and also be within the limits prescribed in laws, policies and standards.

It may be necessary that the responsible person in charge have tests made by qualified engineers and/or independent testing laboratories to support contentions that a particular material or process is or is not hazardous.

4. REFERENCE PUBLICATIONS

(a) General. See Appendix V-A "Nationally Recognized Standards of Good Practice."

(b) Specific.

(i) American Insurance Association
Engineering and Safety Service
85 John Street
New York, New York 10038

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Special Interest Bulletins

<u>No.</u>	<u>Date</u>	<u>Title</u>
4	1/71	Liquified Petroleum Gases
7	5/78	Fire & Explosion Hazards of Liquified Flammable Gas Tanks
20	5/50	Bottled Gas Systems & The Need of Safeguarding Their Inherent Hazards
49	1/71	Cellulose Nitrate
85	4/55	Hydrogen
133	7/63	Polystyrene-Expandable Beads & Foamed Products
143	11/59	Liquified Petroleum Gas Fire Control
145	7/60	Nitroparaffins
161	10/78	Physical & Chemical Properties of Flammable Liquids & Gases
164	11/53	Sodium Nitrate Storage
166	6/52	Fire Department Operations-Hydrogen Explosions From The Decomposition of Water Under Fire Conditions
178	9/56	Magnesium
199	1/64	Plastics
203	1/57	Organic Peroxides
208	9/56	Sodium
209	9/56	Sodium Hydride Descaling
214	2/74	Calcium Hypochlorite-Swimming Pool Sanitation
247	7/56	Asphalt Protected Metal Roofing & Siding
264	2/52	Fire Hazard of Flammable Fabrics
283	9/50	Film, Motion Picture Cellulose Acetate
289	9/50	Fire Department Operations-Radioactive Materials
293	7/66	Insecticide Fogging Hazards
295	12/52	Film, Aerial Mapping-Safety & Nitrate Types
303	11/55	Fire Department Operations-Protection of Firemen From Toxic Insecticidal Chemicals During a Fire
305	1/59	Fire Department Operations-Atomic Weapons Accidents
306	9/59	Fire Department Operations-Radioactive Material Incidents
311	7/66	Ammonium Nitrate-Fire-Explosion-Health Hazards
	(ii)	Compressed Gas Association, Inc. 500 Fifth Avenue New York, New York 10110

CGA Pamphlets
G-1 Acetylene
G-2 Anhydrous Ammonia
G-3 Sulphur Dioxide

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- G-4 Oxygen
- G-5 Hydrogen
- P-1 Safe Handling of Compressed Gases
- P-2 Characteristics and Safe Handling of Medical Gases

(iii) Factory Mutual Engineering and Research
1151 Boston-Providence Turnpike
Norwood, Massachusetts 02062

Data Sheets

	ELECTRICAL
5-1	Electrical Equipment in Hazardous Locations
5-8	Static Electricity
	HAZARDS
7-7	Semiconductor Plants
7-13S/12-61S	Ammonia Refrigeration Systems
7-14	Protection for Flammable Liquid/Flammable Gas Processing Equipment
7-19N	Fire Hazard Properties of Flammable Liquids, Gases, Solids (NFPA)
7-19S	Fire Hazard Properties of Flammable Liquids, Gases, Solids
7-22	Hydrazine and its Derivatives
7-23N	Hazardous Chemicals Data (NFPA)
7-23S	Data on General Classes of Chemicals
7-28	Explosive Materials (NFPA)
7-28N	Explosive Materials (NFPA)
7-29	Flammable Liquids in Drums and Small Containers
7-34	Electrolytic Chlorine Process
7-43	Loss Prevention in Chemical Plants
7-44	Spacing of Facilities in Outdoor Chemical Plants
7-45	Chemical Process Control and Control Rooms
7-45S	Process Control Houses Subject to External Explosion
7-46/17-11	Chemical Reactors and Reactions
7-47	Physical Operations in Chemical Plants
7-49/12-65	Emergency Venting of Vessels
7-50	Compressed Gases in Cylinders
7-51/17-12	Acetylene
7-52/17-13	Oxygen
7-53	Liquified Natural Gas (LNG)
7-54	Natural Gas and Gas Piping
7-55/12-28	Liquified Petroleum Gas
7-56	MAPP Industrial Gas

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7-58	Chlorine Dioxide
7-60/16-1	Fundamentals of Atomic Energy
7-61/16-2	Radioactive Materials
7-70	Fumigation
7-72/12-10	Catalytic Steam/Hydrocarbon Reformers
7-75	Grain Storage and Milling
7-76	Combustible Dusts
7-80	Organic Peroxides
7-81	Organic Peroxides-Hazard Classification
7-82N	Storage of Liquid/Solid Oxidizing Materials (NFPA)
7-83	Drainage for Flammable Liquids
7-84/12-48	Hydrogen Peroxide
7-86	Cellulose Nitrate
7-88	Storage Tanks for Flammable Liquids
7-89	Ammonium Nitrate
7-91	Hydrogen
7-92	Ethylene Oxide
7-94/12-22	Ammonia Synthesis Units

STORAGE

8-0S	Commodity Classification
8-9	Storage of Plastics and Elastomers
8-10	Coal and Charcoal Storage

BOILERS AND PRESSURE VESSELS

12-22/7-94	Ammonia Synthesis Units
12-23	Aqueous Nitrogen in Fertilizer Plants
12-27	Liquid Chlorine Storage Tanks and Systems
12-28/7-55	Liquified Petroleum Gas
12-48/7-84	Hydrogen Peroxide

NUCLEAR

16-6	Reactor Fuel Elements
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(iv) National Fire Protection Association
Batterymarch Park
Quincy, Massachusetts 02269

Fire Protection Handbook

Industrial Fire Hazards Handbook

National Fire Codes, specifically the following codes and standards:

No. 35	Manufacture of Organic Coatings
No. 40	Cellulose Nitrate Motion Picture Film
No. 43A	Storage of Liquid and Solid Oxidizing Materials
No. 43C	Storage of Gaseous Oxidizing Materials
No. 45	Laboratories Using Chemicals

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- No. 48 Storage, Handling and Processing Magnesium
- No. 49 Hazardous Chemicals Data
- No. 56A Use of Inhalation Anesthetics
- No. 56C Laboratories in Health-Related Institutions
- No. 58 Storage and Handling of Liquified Petroleum Gases
- No. 61B Prevention of Fires and Explosions in Grain Elevators and Facilities Handling Bulk Raw Agricultural Commodities
- No. 61C Prevention of Fire and Dust Explosions in Feed Mills
- No. 321 Basic Classification of Flammable and Combustible Liquids
- No. 325M Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids
- No. 481 Production, Processing, Handling and Storage of Titanium
- No. 482 Production, Processing, Handling and Storage of Zirconium
- No. 490 Storage of Ammonium Nitrate
- No. 491M Manual of Hazardous Chemical Reactions
- No. 495 Manufacture, Transportation, Storage and Use of Explosive Materials
- No. 651 Manufacture of Aluminum and Magnesium Powder
- No. 654 Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical and Plastics Industries
- No. 655 Prevention of Sulfur Fires and Explosions
- No. 704 Recommended System for the Identification of the Fire Hazards of Materials
- No. 801 Recommended Fire Protection Practice for Facilities Handling Radioactive Materials

(v) National Technical Information Service
Springfield, Virginia 22161

A Method for Determining the Compatibility of Hazardous Wastes,
EPA-600/2-80-076

(vii) United States Government Agencies
U.S. Government Printing Office
Washington, D.C. 20402

Code of Federal Regulations, Title 49

Section 16. Section 26 of Ordinance No. 3376 and Bellevue City Code Section 23.10.1471 are amended by the modification of Table 10-3-B-2 to read as follows:

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TABLE 10-3-B-2
OCCUPANCY FIRE FLOW MODIFIERS

Percentage of Base Fire Flow	Occupancy Groups
Credits:	
- 25%	B-4, I-1, I-2, I-3, R-1
- 20%	E-3
- 15%	E-1, E-2
- 10%	A-4, B-2 (office)
Surcharges	
+ 10%	B-1
+ 15%	B-3, H-4, H-6
+ 20%	H-3
+ 25%	B-2 (high-piled stock), H-1, H-2, H-5

Section 17. This ordinance shall take effect and be in force thirty days after final passage by the City Council.

PASSED by the City Council this 16th day of June, 1986, and signed in authentication of its passage this 16th day of June, 1986.

(SEAL)


Cary E. Bozeman, Mayor

Approved as to form:

Richard L. Andrews, City Attorney


Richard L. Kirkby, Assistant City Attorney

Attest:


Marie K. O'Connell, City Clerk

Published June 21, 1986