

FUEL STORAGE and HAZARDOUS MATERIAL STORAGE - Reminder List

**Applicable Codes and Standards**

CFC 2010,NFPA 30 - 2008, NFPA 704 - 2007 Date: 8/2/11

**Instructions:** The following items are to be verified for completeness prior to submitting tp OSHPD for plan review.

**Scope:** This list is relative to the storage of flammable & combustible liquids.

| <u>CHK</u>               | <u>N/A</u>               | <b>I. General Requirements Hazardous Material Storage</b>  |   |
|--------------------------|--------------------------|--|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. Determine Maximum Allowable Quantities (MAQ) per control area.  | CFC 2703.1, 2703.1.1                            |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Evaluate quantities not exceeding the MAQ per control area  | CFC 2703.1.1, Tables 2703.1.1(1),1.1(3)         |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Evaluate quantities exceeding the MAQ per control area.   | CFC 2703.1.4,CFC 2703.1.3                       |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. Evaluate design & construction of containers, cylinders, tanks, piping, fittings, tubing, valving..   | CFC 2703.2.1, 2703.2.2                          |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. Manual or automatic emergency safety shut-off valves at supply piping at the point of use and tank, cylinder, or bulk source.   | CFC 2703.2.2.1(4.)                              |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Underground tanks - secondary containment required. (or use vault   | CFC 3404.2.8)                                   |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. Aboveground tanks - in accordance to outdoor storage Chapter 34. (If vaults see   | CFC 3003.16, 3404.2.8)                          |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Sources of ignition, "no smoking", "no open flames" - signs provided  | CFC 2703.7.1, 2703.7.2                          |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. Liquid-level limit control required - Atmospheric tanks greater than 500 gallons.   | CFC 2703.2.7                                    |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Seismic protection required.   | CFC 2703.2.8                                    |
| <input type="checkbox"/> | <input type="checkbox"/> | 11. Control areas are to be separated from each other by fire barriers, floor assemblies, supporting members. Note exceptions based on construction, number of stories, and sprinkler protection.  | CFC 2703.8.3.1, 2703.8.3.4                      |
| <input type="checkbox"/> | <input type="checkbox"/> | 12. Percentage of MAQ of hazardous materials,(flammable,combustibe, oxidizers) per control area per floor within a building in accordance to CFC.  | Table 2703.8.3.2                                |
| <input type="checkbox"/> | <input type="checkbox"/> | 13. Maximum number of control areas per floor in a building calculated correctly?  | Table 2703.8.3.2                                |
| <input type="checkbox"/> | <input type="checkbox"/> | 14. Hazardous materials storage cabinets used to increase MAQ per control area, properly constructed or listed per UL 1275 & labeled with warning signs.   | CFC 2703.8.7.1, 8.7.2                           |
| <input type="checkbox"/> | <input type="checkbox"/> | 15. Protection from vehicles for storage tanks, piping, valves, and fittings subject to vehicle damage.  | CFC 2703 9.3, CFC 312                           |
| <input type="checkbox"/> | <input type="checkbox"/> | 16. Outdoor control areas not exceeding MAQ arranged per CFC.  | CFC 2703.12                                     |
| <input type="checkbox"/> | <input type="checkbox"/> | 17. Handling and transportation of small quantities of hazardous materials/liquids in corridors, elevators or exit enclosures per CFC?   | CFC 2703.10.1 - 2703.10.4.4                     |
| <input type="checkbox"/> | <input type="checkbox"/> | 18. Elevators used to transport hazardous materials/liquids per carts/containers.  | CFC 2703.10.4                                   |
| <u>CHK</u>               | <u>N/A</u>               | <b>II. Tank Storage - Flammable &amp; Combustible Liquids</b>  |   |
| <input type="checkbox"/> | <input type="checkbox"/> | 1. Tank construction /Design standards for above and below ground tanks.   | NFPA 30, 21.4.1,21.4.2                          |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Pressure limitations for tanks.   | NFPA 30, 21.4.2                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Tank vents for normal venting - piping used only for venting.   | CFC 3404.2.7.3.1, NFPA 30,                      |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. Vent piping design,size,constructed,&installed.   | CFC 3403.6                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. Vent line flame arresters provided? Use in accordance with API 2028   | CFC 3404.2.7.3.2                                |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Vent pipe outlets for Class I,II,IIIA liquids vents to safe location 12 feet above finished ground level.   | CFC 3404.2.7.3.3                                |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. Vent outlets not trapped by eaves or construction & 5 feet from building openings.  | CFC 3404.2.7.3.3                                |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Class IIIB liquids may vent inside buildings if normally closed. Connected to equipment vent outside.   | CFC 3404.2.7.3.3                                |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. Vent piping - protection from vehicle damage provided?  | CFC 3404.6.4                                    |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Flexible joints installed.   | CFC 3403.6.9                                    |
| <input type="checkbox"/> | <input type="checkbox"/> | 11. Manifolding vent pipes - Above -ground tanks? - sized for correct pressure limits  | CFC 3404.2.7.3.5.1                              |
| <input type="checkbox"/> | <input type="checkbox"/> | 12. Manifolding vent pipes - Below -ground tanks? - sized for correct pressure limits  | CFC 3404.2.7.3.5.2                              |
| <input type="checkbox"/> | <input type="checkbox"/> | 13. Vent Manifolding with Class I liquids not permitted with Class II,III liquids.   | CFC 3404.2.7.3.5.3                              |
| <input type="checkbox"/> | <input type="checkbox"/> | 14. Emergency venting provided - stationary above-ground tanks? See exception for tanks over 12,000 gallons.   | CFC 3404.2.7.4                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | 15. Filling,emptying and vapor recovery openings shall be outside buildings 5 ft. above grade, 5 ft. from lot lines & building openings. Class IIIB liquids connected to fuel burning equipment shall be located at grade outside buildings. . | NFPA 30, 22.7<br>CFC 3404.2.7.5.2, 3404.2.7.5.6 |
| <input type="checkbox"/> | <input type="checkbox"/> | 16. Piping, connections and fittings.  | CFC 3403.6                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | 17. Overfill protection provided?  | CFC 3404.2.7.5.8                                |
| <u>CHK</u>               | <u>N/A</u>               | <b>III. Vaults - Above &amp; Below Ground</b>  |   |
| <input type="checkbox"/> | <input type="checkbox"/> | 1. Listed in accordance with UL 2245 or built per the CBC (special inspections for seismic strength required).   | CFC 3404.2.8.1, CBC 1707                        |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Above ground tanks permitted to be installed in vaults.   | NFPA 30, 25.3.1.1                               |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Design and construction - vault completely enclose tank. Access openings for inspection only  | CFC 3404.2.8.2                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. Secondary containment required.   | CFC 3404.2.8.3                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. Internal clearance between vault and tank provided?   | CFC 3404.2.8.4                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Anchoring of vaults and their tanks.  | CFC 3404.2.8.5                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. Vehicle impact protection. (above ground)   | CFC 3404.2.8.6, 312                             |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Tank listed for above ground use and be in it's own vault. NFPA 30,25.3.1.5   | CFC 3404.2.8.7                                  |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. Vault ventilation provided?   | CFC 3404.2.8.8, 8.9                             |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Liquid detection provided  | CFC 3404.2.8.10                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 11. Monitoring and detection   | CFC 3404.2.8.11                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 12. Vent pipes for normal venting terminate 12 ft. above grade.  | CFC 3404.2.8.13                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 13. Emergency vents provided?  | CFC 3404.2.8.14                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 14. Access way provided in vault?  | CFC 3404.2.8.15                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 15. Means to admit a fire suppression agent.   | CFC 3404.2.8.16                                 |
| <input type="checkbox"/> | <input type="checkbox"/> | 16. Overfill protection provided?  | CFC 3404 2.8.18                                 |

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|--|--------------------------|---|------------------------------------|
| <b>IV. Access way provided in vault?</b>                         |                          |   |                                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 1. Fire protection of tank supports - For Class I,II,III > 12 inches in height requires fire protection rating of 2 hours.  | CFC 3404.29.2.3                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 2. Above-ground tanks inside buildings - Class I, II,III liquids require a means of overflow protection.  | CFC 3404.2.9.5                     |
| <input type="checkbox"/>   | <input type="checkbox"/> | 3. Tanks containing Class IIIB liquids & connected to fuel-burning equipment require a means of overflow protection.  | CFC 3404.2.9.5                     |
| <input type="checkbox"/>   | <input type="checkbox"/> | 4. Above-ground tanks outside buildings - location tanks 2.5 psig or less,Class I,II,III liquids locate perTble. 22.4.1.1(a), NFPA 30   | NFPA 30,CFC 3404.2.9.6.1.1         |
| <input type="checkbox"/>   | <input type="checkbox"/> | 4a. Protected above-ground tanks* at-grade or above-grade vaults (per 3404.2.8), distances in Tble. 22.4.1.1(b)can be reduced 1/2 but not less than 5 feet.   |                                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 5. Above-ground tanks outside buildings, Class I,II,III liquids exceeding 2.5 psig or with emergency venting pressures exceeding 2.5 psig shall be located per Tble. 22.4.1.3(a), NFPA 30               | CFC 3404.2.9.6.1.2, NFPA 30        |
| <input type="checkbox"/>   | <input type="checkbox"/> | 6. Location of above-ground tanks storing Class IIIB liquid - located perTble. 22.4.1.6, NFPA 30. When located in a diked or drainage path of tanks(Class I,II Liq.)distances per 3404.2.9.6.1.1 apply. | CFC 3404.2.9.6.1.5                 |
| <input type="checkbox"/>   | <input type="checkbox"/> | 7. Separation between adjacent tanks with flammable and combustible liquids and LP-gas is 20 feet. (See exceptions)   | CFC 3404.2.9.6.3                   |
|  |                          | * Atmospheric above-ground tanks with secondary containment.  |                                    |
| <b>V. ADDITIONAL REQUIREMENTS - PROTECTED-ABOVE GROUND TANKS</b> |                          |   |                                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 1. Construction of tanks per CFC 3404.2.7.  |                                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 2. Normal and emergency venting required. (3404.2.7.3 & 3404.2.7.4)   | CFC 3404.2.9.7.2                   |
| <input type="checkbox"/>   | <input type="checkbox"/> | 3. Flame arresters required or pressure vacuum breather valves shall be installed in normal vents.  | CFC 3404.2.9.7.3                   |
| <input type="checkbox"/>   | <input type="checkbox"/> | 4. Above ground tanks are to have secondary containment, drainage, control, or diking.  | CFC 3404.2.9.7.4,2704.2, NFPA      |
| <input type="checkbox"/>   | <input type="checkbox"/> | 5. Vehicle impact protection.   | CFC 3404.2.9.7.5                   |
| <input type="checkbox"/>   | <input type="checkbox"/> | 6. Overfill prevention system.  | CFC 3404.2.9.7.6                   |
| <input type="checkbox"/>   | <input type="checkbox"/> | 7. Vehicle impact protection.   | CFC 3404.2.9.7.6.1                 |
| <input type="checkbox"/>   | <input type="checkbox"/> | 8. Fill pipe connections  | CFC 3404.2.9.7.7                   |
| <input type="checkbox"/>   | <input type="checkbox"/> | 9. Spill containers.  | CFC 3404.2.9.7.8                   |
| <input type="checkbox"/>   | <input type="checkbox"/> | 10. Tank openings through the top only.   | CFC 3404.2.9.7.9                   |
| <input type="checkbox"/>   | <input type="checkbox"/> | 11. Antisiphon device provided?   | CFC 3404.2.9.7.10                  |
| <input type="checkbox"/>   | <input type="checkbox"/> | 12 Drainage and diking provided? (not required for listed secondary containment tanks)  | CFC 3404.2.10                      |
| <b>VI. UNDER-GROUND TANKS</b>                                    |                          |   |                                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 1. Distance from nearest basement wall, pit,cellar, or lot line shall not be less than 3 feet.  | CFC 3404.2.11.2                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 2. Minimum distance of 1 foot shell to shell between underground tanks.   | CFC 3404.2.11.2                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 3. Depth and cover - 6 inches of inert material. Traffic areas - 36 inches (see tank manufacturers instructions)NFPA 30, 23.5.2.2   | CFC 3404.2.11.3, NFPA 30, 23.5.2.2 |
| <input type="checkbox"/>   | <input type="checkbox"/> | 4. Maximum burial depth marked on tank.Designated on specifications.  | NFPA 30, 23.5.3.1                  |
| <input type="checkbox"/>   | <input type="checkbox"/> | 5. Leak detection required.   | NFPA 30, 23.5.3.1                  |
| <input type="checkbox"/>   | <input type="checkbox"/> | 6. Tank venting systems to prevent blowback of vapor/liquid during filling.   | NFPA 30, 23.6.1                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 7. Vent piping sized in accordance with Table 23.6.2  | NFPA 30, 23.6.2                    |
| <input type="checkbox"/>   | <input type="checkbox"/> | 8. Fill and discharge lines enter through the top?  | NFPA 30, 23.13.3                   |
| <input type="checkbox"/>   | <input type="checkbox"/> | 9. Filling,emptying,and vapor recovery openings shall be located outside 5 feet from building openings.   | NFPA 30, 23.13.6                   |

NOTE

Compliance with all items on this list does not necessarily assure compliance with all provisions of the applicable codes and standards. This check list should be used only by persons with a comprehensive knowledge of the applicable codes and standards. This list is for OSHPD personnel only and shall not be distributed to the public.

OSHPD Policy Intent Notices and Code Application Notices.

<http://www.oshpd.state.ca.us/fdd/Regulation/index.htm>

OSHPD Project Review Status

<http://www.oshpd.state.ca.us/logbook/search1.asp>

OSHPD Public Use Forms

<http://www.oshpd.state.ca.us/fdd/Resources/forms/index.htm>

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