

WAC 296-24-33017 Processing plants. (1) **Scope.** This section applies to those plants or buildings which contain chemical operations such as oxidation, reduction, halogenation, hydrogenation, alkylation, polymerization, and other chemical processes but does not apply to chemical plants, refineries or distilleries.

(2) **Location.**

(a) **Classification.** You must base the location of each processing vessel upon its flammable liquid capacity. You must locate processing vessels, with respect to distances to lines of adjoining property which may be built upon, in accordance with Table H-20, except when the processing plant is designed in accordance with (b) of this subsection.

TABLE H-20

Processing vessels with emergency relief venting to permit pressure	Stable liquids	Unstable liquids
Not in excess of 2.5 p.s.i.g.	Table H-9	2 1/2 times Table H-9.
Over 2.5 p.s.i.g.	1 1/2 times Table H-9.	4 times Table H-9.

(b) **Exception.** The distances required in (a) of this subsection may be waived when the vessels are housed within a building and the exterior wall facing the line of adjoining property which may be built upon is a blank wall having a fire-resistance rating of not less than 4 hours. When Class IA or unstable liquids are handled, the blank wall must have explosion resistance in accordance with good engineering practice, see subsection (3)(d) of this section.

(3) **Processing building.**

(a) **Construction.**

(i) Processing buildings must be of fire-resistance or noncombustible construction, except heavy timber construction with load-bearing walls may be permitted for plants utilizing only stable Category 3 flammable liquids with a flashpoint at or above 100°F (37.8°C) or Category 4 flammable liquids. Except as provided in subsection (2)(b) of this section or in the case of explosion resistant walls used in conjunction with explosion relieving facilities, see (d) of this subsection, loadbearing walls are prohibited. Buildings must be without basements or covered pits.

(ii) Areas must have adequate exit facilities arranged to prevent occupants from being trapped in the event of fire. Exits must not be exposed by the drainage facilities described in (b) of this subsection.

(b) **Drainage.**

(i) You must provide emergency drainage systems to direct flammable liquid leakage and fire protection water to a safe location. This may require curbs, scuppers, or special drainage systems to control the spread of fire, see WAC 296-24-33005 (2)(g)(ii).

(ii) Emergency drainage systems, if connected to public sewers or discharged into public waterways, must be equipped with traps or separators.

(iii) You must ensure that the processing plant is designed and operated to prevent the normal discharge of flammable liquids to public waterways, public sewers, or adjoining property.

(c) **Ventilation.**

(i) Enclosed processing buildings must be ventilated at a rate of not less than one cubic foot per minute per square foot of solid floor area. You must accomplish this by natural or mechanical ventilation

with discharge or exhaust to a safe location outside of the building. You must make provisions for introduction of makeup air in such a manner as not to short circuit the ventilation. You must arrange ventilation to include all floor areas or pits where flammable vapors may collect.

(ii) Equipment used in a building and the ventilation of the building must be designed so as to limit flammable vapor-air mixtures under normal operating conditions to the interior of equipment, and to not more than five feet from equipment which exposes Category 1 or 2 flammable liquids, or Category 3 flammable liquids with a flashpoint below 100°F (37.8°C), to the air. Examples of such equipment are dispensing stations, open centrifuges, plate and frame filters, open vacuum filters, and surfaces of open equipment.

(d) **Explosion relief.** Areas where Category 1 or unstable liquids are processed must have explosion venting through one or more of the following methods:

- (i) Open air construction.
- (ii) Lightweight walls and roof.
- (iii) Lightweight wall panels and roof hatches.
- (iv) Windows of explosion venting type.

(4) **Liquid handling.**

(a) **Storage.**

(i) You must ensure that the storage of flammable liquids in tanks is in accordance with the applicable provisions of WAC 296-24-33005.

(ii) If the storage of flammable liquids in outside aboveground or underground tanks is not practical because of temperature or production considerations, tanks may be permitted inside of buildings or structures in accordance with the applicable provisions of WAC 296-24-33005.

(iii) You must only permit storage tanks inside of buildings in areas at or above grade which have adequate drainage and are separated from the processing area by construction having a fire resistance rating of at least two hours.

(iv) You must ensure that the storage of flammable liquids in containers is in accordance with the applicable provisions of WAC 296-24-33009.

(b) **Piping, valves, and fittings.**

(i) You must ensure that piping, valves, and fittings are in accordance with WAC 296-24-33007.

(ii) Approved flexible connectors may be used where vibration exists or where frequent movement is necessary. Approved hose may be used at transfer stations.

(iii) You must identify piping containing flammable liquids.

(c) **Transfer.**

(i) The transfer of large quantities of flammable liquids must be through piping by means of pumps or water displacement. Except as required in process equipment, you must not use gravity flow. The use of compressed air as a transferring medium is prohibited.

(ii) You must provide positive displacement pumps with pressure relief discharging back to the tank or to pump suction.

(d) **Equipment.**

(i) Equipment must be designed and arranged to prevent the unintentional escape of liquids and vapors and to minimize the quantity escaping in the event of accidental release.

(ii) Where the vapor space of equipment is usually within the flammable range, the probability of explosion damage to the equipment

can be limited by inerting, by providing an explosion suppression system, or by designing the equipment to contain the peak explosion pressure which may be modified by explosion relief. Where the special hazards of operation, sources of ignition, or exposures indicate a need, you must give consideration to providing protection by one or more of the above means.

(5) **Tank vehicle and tank car loading and unloading.** You must separate tank vehicle and tank car loading or unloading facilities from aboveground tanks, warehouses, other plant buildings, or nearest line of adjoining property which may be built upon by a distance of 25 feet for Category 1 or 2 flammable liquids, or Category 3 flammable liquids with a flashpoint below 100°F (37.8°C), and 15 feet for Category 3 flammable liquids with a flashpoint at or above 100°F (37.8°C) and Category 4 flammable liquids measured from the nearest position of any fill stem. Buildings for pumps or shelters for personnel may be a part of the facility. Operations of the facility must comply with the appropriate portions of WAC 296-24-33013(3).

(6) **Fire control.**

(a) **Portable extinguishers.** You must provide approved portable fire extinguishers of appropriate size, type and number.

(b) **Other controls.** Where the special hazards of operation or exposure indicate a need, you must provide the following fire control provision.

(i) A reliable water supply must be available in pressure and quantity adequate to meet the probable fire demands.

(ii) You must provide hydrants in accordance with accepted good practice.

(iii) You must install hose connected to a source of water so that all vessels, pumps, and other equipment containing flammable liquids can be reached with at least one hose stream. You must provide nozzles that are capable of discharging a water spray.

(iv) You must protect processing plants by an approved automatic sprinkler system or equivalent extinguishing system. If special extinguishing systems including but not limited to those employing foam, carbon dioxide, or dry chemical are provided, you must use approved equipment and installed in an approved manner.

(c) **Alarm systems.** You must provide an approved means for prompt notification of fire to those within the plant and any public fire department available. It may be advisable to connect the plant system with the public system where public fire alarm system is available.

(d) **Maintenance.** You must adequately maintain and periodically inspect and test all plant fire protection facilities to make sure they are always in satisfactory operating condition and that they will serve their purpose in time of emergency.

(7) **Sources of ignition.**

(a) **General.**

(i) You must take precautions to prevent the ignition of flammable vapors. Sources of ignition include but are not limited to open flames; lightning; smoking; cutting and welding; hot surfaces; frictional heat; static, electrical, any mechanical sparks; spontaneous ignition, including heat-producing chemical reactions; and radiant heat.

(ii) You must not dispense Category 1 or 2 flammable liquids, or Category 3 flammable liquids with a flashpoint below 100°F (37.8°C), into containers unless the nozzle and container are electrically interconnected. Where the metallic floorplate on which the container stands while filling is electrically connected to the fill stem or

where the fill stem is bonded to the container during filling operations by means of a bond wire, the provisions of this section must be deemed to have been complied with.

(b) **Maintenance and repair.**

(i) When necessary to do maintenance work in a flammable liquid processing area, the work must be authorized by a responsible representative of the employer.

(ii) You must only permit hot work such as welding or cutting operations, use of spark-producing power tools, and chipping operations under supervision of an individual in responsible charge who must make an inspection of the area to be sure that it is safe for the work to be done and that safe procedures will be followed for the work specified.

(c) **Electrical.**

(i) You must install all electrical wiring and equipment within storage or processing areas according to chapter 296-24 WAC Part L.

(ii) Locations where flammable vapor-air mixtures may exist under normal operations must be classified Category 1 or 2 flammable liquids, or Category 3 flammable liquids with a flashpoint below 100°F (37.8°C), Division 1 according to the requirements of chapter 296-24 WAC Part L. For those pieces of equipment installed in accordance with subsection (3)(c)(ii) of this section, the Division 1 area must extend five feet in all directions from all points of vapor liberation. All areas within pits must be classified Division 1 if any part of the pit is within a Division 1 or 2 classified area, unless the pit is provided with mechanical ventilation.

(iii) Locations where flammable vapor-air mixtures may exist under abnormal conditions and for a distance beyond Division 1 locations must be classified Division 2 according to the requirements of chapter 296-24 WAC Part L. These locations include an area within 20 feet horizontally, 3 feet vertically beyond a Division 1 area, and up to 3 feet above floor or grade level within 25 feet, if indoors, or 10 feet if outdoors, from any pump, bleeder, withdrawal fittings, meter, or similar device handling Category 1 or 2 flammable liquids, or Category 3 flammable liquids with a flashpoint below 100°F (37.8°C). Pits provided with adequate mechanical ventilation within a Division 1 or 2 area must be classified Division 2. If Category 3 flammable liquids with a flashpoint at or above 100°F (37.8°C) or Category 4 flammable liquids only are handled, then ordinary electrical equipment is satisfactory though care must be used in locating electrical apparatus to prevent hot metal from falling into open equipment.

(iv) Where the provisions of (c)(i), (ii), and (iii) of this subsection require the installation of explosion-proof equipment, ordinary electrical equipment including switchgear may be used if installed in a room or enclosure which is maintained under positive pressure with respect to the hazardous area. Ventilation makeup air must be uncontaminated by flammable vapors.

(8) **Housekeeping.**

(a) **General.** Maintenance and operating practices must be in accordance with established procedures which will tend to control leakage and prevent the accidental escape of flammable liquids. You must clean up spills promptly.

(b) **Access.** You must maintain adequate aisles for unobstructed movement of personnel and so that fire protection equipment can be brought to bear on any part of the processing equipment.

(c) **Waste and residues.** You must keep combustible waste material and residues in a building or operating area to a minimum, stored in closed metal waste cans, and disposed of daily.

(d) **Clear zone.** You must keep ground area around buildings and operating areas free of tall grass, weeds, trash, or other combustible materials.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 15-24-100, § 296-24-33017, filed 12/1/15, effective 1/5/16. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-24-33017, filed 3/18/14, effective 5/1/14. Statutory Authority: Chapter 49.17 RCW. WSR 91-24-017 (Order 91-07), § 296-24-33017, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. WSR 85-10-004 (Order 85-09), § 296-24-33017, filed 4/19/85; Order 76-6, § 296-24-33017, filed 3/1/76; Order 73-5, § 296-24-33017, filed 5/9/73 and Order 73-4, § 296-24-33017, filed 5/7/73.]