RULE 3.9 **ORGANIC LIQUID STORAGE AND TRANSFER** **(Adopted 6/91, Amended 6/2/14)**

A. GENERAL

A.1 **PURPOSE:** The purpose of this rule is to limit emissions of volatile organic compounds from the storage and transfer of organic liquids.

A.2 **APPLICABILITY:** This rule applies to any storage tank with a capacity of 250 gallons or greater that stores or transfers an organic liquid with a true vapor pressure of 1.5 psia or greater.

For the purposes of this rule, the organic liquid's true vapor pressure may be obtained from Table 1, provided that the actual storage temperature of the organic liquid does not exceed the corresponding maximum temperature listed in the table, or may be determined according to the test method specified in Section F.1.b, under actual storage conditions.

A.3 **SEVERABILITY:** If a court of competent jurisdiction issues an order that any provision of this Rule is invalid, it is the intent of the District that other provisions of this Rule remain in full force and effect, to the extent allowed by law.

B. EXEMPTIONS

B.1 **EXEMPTION – GASOLINE DISPENSING FACILITIES:** The provisions of this Rule shall not apply to storage tanks at gasoline dispensing facilities subject to Rule 3.8

B.2 **EXEMPTION – SUBMERGED FILL PIPE:** The provisions of Section D.1 shall not apply to floating roof tanks.

C. DEFINITIONS

C.1 DELIVERY VESSEL: Any cargo tank, tank truck, trailer, or railroad tank car that is designed and equipped to receive, transport, and deliver organic liquid.

C.2 EXTERNAL FLOATING ROOF TANK: A storage tank equipped with a floating roof exposed to the atmosphere that floats on the surface of the stored liquid.

C.3 FIXED ROOF TANK: A storage tank with a roof that is permanently affixed to the shell of the storage tank.

C.4 GASOLINE: Any petroleum distillate or petroleum distillate/alcohol blend having a Reid vapor pressure of 4 pounds per square inch absolute or greater as determined by a method specified by test methods ASTM DM2879-97 (2007), ASTM D323-06, or ASTM D5191-07.

C.5 GASOLINE BULK PLANT: Any gasoline loading facility where primary delivery of gasoline to a storage tank is other than by pipeline.

C.6 GASOLINE DISPENSING FACILITY: Any stationary facility which receives gasoline from delivery vessels and dispenses gasoline directly into the fuel tanks of motor vehicles.

C.7 INTERNAL FLOATING ROOF TANK: A storage tank equipped with a fixed roof and a floating roof that floats on the surface of the liquid being contained (but not necessarily in complete contact with it).

C.8 LOADING FACILITY: Any organic liquid or gasoline loading rack or set of such racks that load organic liquid or gasoline into delivery vessels.

C.9 ORGANIC LIQUID: Any liquid which contains any volatile organic compound or mixtures of volatile organic compounds with a true vapor pressure of 0.5 psia or greater under actual storage or loading conditions except liquefied petroleum gases.

C.10 PRESSURE TANK: A storage tank that maintains working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere, except under emergency conditions.

C.11 REID VAPOR PRESSURE: The absolute vapor pressure of an organic liquid except liquefied petroleum gases, as determined in accordance with the test method specified in Section F.1.a.

C.12 STORAGE TANK: Any container designed and equipped for storage of an organic liquid.

C.13 SUBMERGED FILL PIPE:
a. Top Loading: Any fill pipe which has the discharge opening entirely submerged when the liquid level is 6 inches above the bottom of the tank.
b. Side Loading: Any fill pipe which has the discharge opening entirely submerged when the liquid level is 18 inches above the bottom of the tank.

C.14 TRANSFER EQUIPMENT: All components of the liquid loading line between the liquid pump and the delivery vessel, and the vapor return line from the delivery vessel to the storage tank, or to and including the vapor recovery system.

C.15 TRUE VAPOR PRESSURE: The equilibrium partial pressure exerted by an organic liquid as determined in accordance with the test method specified in Section F.1.b.

C.16 VAPOR RECOVERY SYSTEM: Any vapor gathering system which is capable of collecting and returning discharged VOC vapors and gases during loading of organic liquids into cargo tanks or delivery vessels, back to a stationary storage tank, or into an enclosed process system.

C.17 VAPOR TIGHT: A vapor leak of less than 10,000 ppm hydrocarbon concentration, as determined by EPA Reference Method 21, using an appropriate analyzer calibrated with methane.

D. REQUIREMENTS

D.1 **SUBMERGED FILL PIPE:** A person shall not transfer or permit the transfer of organic liquid into any stationary storage container with a capacity of 250 gallons or more unless such container is provided with a permanent submerged fill pipe.

D.2 **ORGANIC LIQUID STORAGE TANKS GREATER THAN 39,630 GALLONS CAPACITY:** A person shall not store organic liquid in any stationary storage tank of more than 39,630 gallons (150,000 liters) capacity, unless such storage tank is a pressure tank or is designed and equipped with one of the

vapor loss control devices specified in Sections D.3 or D.4.

D.3 **FLOATING ROOF TANKS:** If the vapor loss control device used to comply with Section D.2 is a floating roof tank, the closure device shall meet the following requirements:

a. Consist of two seals, one above the other; the one below shall be referred to as the primary seal, and the one above shall be referred to as the secondary seal.
b. The true vapor pressure of the organic liquid stored in the tank is less than 11.0 psia under actual storage conditions as determined in accordance with the test method specified in Section F.1.b.
c. The organic liquid is not visible above the floating roof.
d. The floating roof is in contact with the liquid contents (but not necessarily in complete contact with it) at all times except when the storage tank is completely emptied, and subsequently refilled.

D.4 **VAPOR RECOVERY SYSTEM:** If the vapor loss control device used to comply with Section D.2 is a vapor recovery system, such system shall collect and process all organic vapors and gases and meet the following requirements:

a. The system shall have an abatement efficiency of at least 90% by weight as determined in accordance with the test methods specified in Section F.1.c, F.1.d, and F.1.e, as applicable.
b. All piping, fittings, and pressure-vacuum relief valves associated with the fixed roof tank and the vapor recovery system shall be constructed and maintained in a vapor tight condition unless the pressure within the fixed roof tank exceeds the valve setting pressure.

D.5 **TRANSFER OF GASOLINE INTO DELIVERY VESSELS AT LOADING FACILITES:** Any loading facility that transfers gasoline into a delivery vessel shall be equipped with a system that prevents at least 90% by weight of the gasoline vapors displaced from entering the atmosphere.

D.6 **OPERATING PRACTICES:** Organic liquids subject to this rule shall not be discarded to public sewers, stored in open containers, or handled in any other manner that would result in evaporation to the atmosphere.

E. ADMINISTRATIVE REQUIREMENTS

E.1 **RECORDKEEPING:** The owner or operator subject to the requirements of this rule shall maintain accurate records to demonstrate compliance with the requirements of this rule for a period of at least 5 years and make such records available to the APCO upon request.

E.2 **RECORDKEEPING – TRANSFER OF OWNERSHIP:** If a facility undergoes a transfer of ownership, the new owner shall be responsible for collecting and maintaining all records from the previous owner, as specified in section E.1.

F. TEST METHODS AND CALCULATIONS

F.1 **TEST METHODS:** A result by any of the test methods or test procedures listed below, or any amendments and successors thereto, which shows non-compliance with any provision of this rule shall constitute a violation of this rule.

a. **ASTM METHOD D-323-99a:** Reid vapor pressure shall be determined in accordance with American Society of Testing and Materials D-323-99a, Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method).
b. **ASTM METHOD D-2879-97(2007):** True vapor pressure shall be determined in accordance with American Society of Testing and Materials D-2879-97(2007), Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope.
c. **EPA METHODS 2A OR 2B:** The gas flow rate shall be determined in accordance with EPA Method 2A, Direct Measurement of Gas Volume Through Pipes and Small Ducts; or EPA Method 2B, Determination of Exhaust Gas volume flow rate From Gasoline Vapor Incinerators, as applicable.
d. **EPA METHOD 18:** Exempt compounds shall be determined in accordance with EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography.
e. **EPA METHODS 25A OR 25B:** VOC emissions shall be determined in accordance with EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Nondispersive Infrared Analyzer, calibrated with methane gas; or EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer, calibrated with methane gas, as applicable.

TABLE 1:
STORAGE TEMPERATURE VERSUS PRODUCT TRUE VAPOR PRESSURE

Organic Liquid .	Reference Properties			Not to Exceed Max. Temperature (˚F)
	Density (lbs/gal)	Gravity (API)	Initial Boiling Point (˚F)	1.5 psia
Kerosene	---	42.5	350	250
Diesel	---	36.4	372	290
Gas Oil	---	26.2	390	310
Stove Oil	---	23.0	421	340
Jet Fuel JP-1	---	43.1	330	230
Jet Fuel JP-3	---	54.7	110	25
Jet Fuel JP-4	---	51.5	150	68
Jet Fuel JP-5	---	29.6	355	260
Jet Fuel JP-7	---	44-50	360	260
Fuel Oil No. 1	---	42.5	350	250
Fuel Oil No. 2	---	36.4	372	290
Fuel Oil No. 3	---	26.2	390	310
Fuel Oil No. 4	---	23.0	421	340
Fuel Oil No. 5	---	19.9	560	465
Residual Fuel Oil	---	19-27	---	---
Fuel Oil No. 6	---	16.2	625	---
Asphalt 60-100 pen.	---	---	---	550
Asphalt 120-150 pen.	---	---	---	500
Asphalt 200-300 pen.	---	---	---	420
Acrylonitrile	6.8	41.8	173	62
Benzene	7.4	27.7	176	70
Carbon Disulfide	10.6	22.1	116	10
Carbon Tetrachloride	13.4	--	170	63
Chloroform	12.5	--	142	40
Cyclohexane	6.5	49.7	177	65
1,2 Dichloroethane	10.5	--	180	75
Ethyl Acetate	7.5	23.6	171	70
Ethyl Alcohol	6.6	47.0	173	85
Isopropyl Alcohol	6.6	47.0	181	95
Methyl Alcohol	6.6	47.0	148	62
Methyl Ethyl Ketone	6.7	44.3	175	70
Toluene	7.3	30.0	231	120
Vinyl Acetate	7.8	19.6	163	65