



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-2277C
Plant ID No.: 099-00100
Applicant: Marathon Petroleum Company
Facility Name: Kenova
Location: Kenova, Wayne County
NAICS Code: 488320
Application Type: Class II Administrative Update
Received Date: January 6, 2011
Engineer Assigned: Laura Jennings
Fee Amount: \$1,000.00
Date Received: October 19, 2010 and February 22, 2011
Complete Date: February 25, 2011
Due Date: May 26, 2011
Applicant Ad Date: January 5, 2011
Newspaper: *Wayne County News*
UTM's: Easting: km Northing: km Zone:
Description: Installation of a 22,800 barrel storage tank [1S] for biodiesel storage, and possible petroleum hydrocarbon distillates in the future. The increase in potential emissions is 10.85 tpy of volatile organic compounds (VOCs).

DESCRIPTION OF PROCESS

Marathon Petroleum Company (MPC) has submitted an application for the installation of a 22,800 barrel above ground storage tank (AST) for the storage of Bio-Diesel and/or Petroleum Hydrocarbon Distillates. The date of anticipated start-up if a permit is granted is March 1, 2012.

The storage tank is being constructed to store bio-diesel and at some future date, the tank may be used for the storage of petroleum distillate products. Product will be transferred into the storage tank from a loaded barge. The product will be stored in the tank until needed. As needed, bio-diesel will be blended at a known percentage into petroleum distillate products as they are loaded into a barge slated for delivery to a bulk storage terminal.

Biodiesel is a complex mixture of C16-C18 methyl esters derived from the processing of soybean oil. This product is intended for use as a blending component in diesel fuel at a level of 0 - 5%.

The working volume or nominal capacity of the tank is 846,325 gallons. The maximum annual throughput is 65,167,019 gallons per year. The maximum daily throughput of the tank is 178,540 gallons per day. The number of turnovers per year based on the nominal capacity is 77. The tank is submerged filled. The tank will be heated when it is used for bio-diesel storage only.

Emission Units Table:

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type & Date of Change	Control Device
1S	1E	Cone Roof Storage Tank	2011	22,800 BBL (957,600 gal)	New	PRV

SITE INSPECTION

A site inspection was conducted by the writer on April 20, 2011. Representatives from Marathon Petroleum Company included Steve Chalupa (Environmental Representative), Brad Lambert (incoming Environmental Representative), John Burns (Supervisor), and Rosco White (Supervisor).

The location for the bio-diesel tank was observed and preparation of the land was in process at the time of the site inspection. The location of the proposed bio-diesel tank is in close proximity to the back of Allied Warehouse (owned by Allied Logistics). A portion of Allied Warehouse is leased by Marathon Petroleum Company. MPC is in close communications with AW concerning the location of the storage tank, including design details such as the location of the concrete dike wall that will be construction around the bio-diesel storage tank.

The ground preparation activities involve the area for the proposed bio-diesel tank as well as area for a potential second tank at some point in the future.

The location of the bio-diesel tank is behind the river flood wall. A new unloading line and loading line to/from the barge facilities will be added as part of the construction activities. In-line blending/mixing with injection of the bio-diesel will be utilized when loading the final blended product into the barge.

Although not related to this permit modification, the gasoline vapor recovery unit and control room were also observed during the site inspection.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The annual emissions were calculated using the TANKS 4.09 program and the material physical property information from the material safety data sheets. The hourly emissions were calculated for the working loss annual emissions and 77 turnovers/year as presented in the application and a minimum barge unloading time of 4 hours.

Biodiesel Annual emissions from TANKS 4.09

Component	Regulated Pollutant	Annual Emissions			lb/hr	tpy
		Working Loss (lbs)	Breathing Loss (lbs)	Total Emissions (lbs)		
BioDiesel	Volatile Organic Compounds (VOCs)	19,650	2,043	21,693	64	10.85
Distillate fuel oil #2	Volatile Organic Compounds (VOCs)	617	66	683	2.01	0.34
	Napthalene	3.09	0.33	3.42	0.78	0.01
	Total HAPs	3.09	0.33	3.42	0.78	0.01

The applicant referred to the MSDS for the list of regulated pollutants. Although not specifically provided in the emissions calculations, the writer calculated the Napthalene and total Hazardous Air Pollutants for the #2 Diesel Fuel based on this statement provided in the application. Napthalene is the only HAP listed on the MSDS, with a maximum composition of 0.5wt%.

The total fugitive emission loss estimate of VOCs is 0.22 tons per year for the proposed bio-diesel tank. The liquid sources include the following: 37 flanges/connectors, 166 penflex/dresser couplings, 2 pump seals, and 40 valves. The source used for the emission factors is API Publication No. 4588 "Development of Fugitive Emission Factors and Emission Profiles for Petroleum Marketing Terminals, March 1993".

REGULATORY APPLICABILITY

STATE REGULATIONS:

45CSR13 PERMITS FOR CONSTRUCTION, MODIFICATION, RELOCATION AND OPERATION OF STATIONARY SOURCES OF AIR POLLUTANTS, NOTIFICATION REQUIREMENTS, ADMINISTRATIVE UPDATES, TEMPORARY PERMITS, GENERAL PERMITS, PERMISSION TO COMMENCE CONSTRUCTION, AND PROCEDURES FOR EVALUATION

The hourly potential VOC emissions rate based on unloading a barge in 4 hours, is 64 lbs/hr. The annual maximum potential VOC emission rate is 10.85 tpy. Based on the potential emissions, the proposed change meets the definition of a modification permit because it is greater than 6 lb/hr and

10 tpy of any regulated pollutant.

Additionally, calculating the working loss of 19,650 lbs/yr and dividing by 77 turns/year is 255 lbs/day of VOC emissions that also meets the definition of a modification permit because it exceeds 144 pounds per calendar day of any regulated pollutant.

45CSR21 REGULATION TO PREVENT AND CONTROL AIR POLLUTION FROM THE EMISSION OF VOLATILE ORGANIC COMPOUNDS

Marathon Petroleum Company is located in Wayne County, one of the counties that is in the scope of 45CSR21 and is currently subject to 45CSR21.

45CSR21-28 Petroleum Liquid Storage in Fixed Roof Tanks:

The applicant is not subject to the requirements of this section because the future storage of petroleum distillate products has a vapor pressure less than 10.5 kPa and does not meet the applicability requirements of 45-21-28-1.b.3 and No 2 diesel fuel does not meet the definition of "petroleum liquid" under 2.54.

45CSR21-40 Other Facilities that Emit Volatile Organic Compound (VOC):

Although the facility does have aggregate maximum theoretical emissions of 100 tons or more of volatile organic compounds (VOCs) per calendar year in the absence of control devices, the applicant is not subject to the requirements of this section because the requirements of this section do not apply to vegetable oil processing facilities as identified in 45CSR21-40.1(d). . The proposed source is within the facility and is not subject to regulations under sections 11 through 39 of 45CSR21. The emissions from the proposed biodiesel storage tank are considered "vegetable oil processing" as listed in section 40.1.d and those emissions were not included in the determination of maximum theoretical emissions for the facility. The VOC potential emissions for the facility were taken from the emissions summary section of the Title V Fact Sheet that was prepared for permit number R30-09900100-2010. The potential VOC emissions for the facility are 225.47 tons per year, and did not include the VOC emissions for the proposed biodiesel storage tank.

If the contents of tank [1S] are changed from biodiesel to #2 diesel in the future, section 40 still would not apply to the facility according to 45CSR21-40.1.a. VOC emissions from sources regulated under sections 11 through 39, but which fall below the applicability thresholds of these sections, are not subject to the emissions control standards of these sections shall not be subject to the requirements of this section 40.

FEDERAL REGULATIONS:

40CFR60

Subpart Kb VOLATILE ORGANIC LIQUID STORAGE VESSELS FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER JULY 23, 1984

The applicant is not subject to the requirements of 40CFR60, Subpart Kb for the proposed [1S] biodiesel / #2 diesel fuel storage tank according to the applicability requirements of §60.110b (b). The storage vessel is greater than 39,890 gallons and will be storing a liquid with a maxim true vapor pressure less than 3.5 kPa.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The toxicology information provided on the MSDS for Biodiesel indicates that there are no hazardous ingredients in the composition of the Biodiesel.

Naphthalene is a component of No. 2 Diesel at 0.01 - 0.5 wt %. The MSDS for the No 2 Diesel indicates that it may contain a trace amount of benzene (<0.1%) and could contain small amounts of dye and other additives (<0.15%) which are not considered hazardous at the concentrations used.

Naphthalene:

Naphthalene is used in the production of phthalic anhydride; it is also used in mothballs. Acute (short-term) exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Cataracts have also been reported in workers acutely exposed to naphthalene by inhalation and ingestion. Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Hemolytic anemia has been reported in infants born to mothers who "sniffed" and ingested naphthalene (as mothballs) during pregnancy. Available data are inadequate to establish a causal relationship between exposure to naphthalene and cancer in humans. EPA has classified naphthalene as a Group C, possible human carcinogen.

AIR QUALITY IMPACT ANALYSIS

The proposed permit modification does not meet the definition of a "significant" change according to the definition of 45CSR19 and therefore does not require air modeling to be conducted.

MONITORING OF OPERATIONS

In addition to the VOC and HAP emission limits established for the biodiesel tank [1S], restrictions were provided for the annual throughput. Monitoring will be done with recordkeeping.

CHANGES TO PERMIT R13-2277B(A)

The application submitted for permit R13-2277B was withdrawn; therefore any changes made for this permit application R13-2277C were updated from permit R13-2277A.

With the modification application, the permit was updated to the current format and template. All changes were made to current personnel, revision numbers, and dates.

Added an Emissions Unit Table in Section 1.0 to reflect the equipment listed in this application and previous R13-2277(x) permits.

Renumbered the permit as shown:

REQUIREMENT FROM:	REQUIREMENT TO:
Specific Requirement A1	4.1.2
Specific Requirement A2	4.1.3
Other Requirement B1	4.1.6
Other Requirement B2	4.1.7
Other Requirement B3	4.1.8
Other Requirement B4	4.1.9
Other Requirement B5	4.4.4
Other Requirement B6	4.4.6
Other Requirement B7	Revised permit template
General Requirements	Revised permit template

Added the following requirements: 4.1.3, 4.1.4, 4.1.5, 4.4.5, 4.5.1, 4.5.2, and 4.5.3.

RECOMMENDATION TO DIRECTOR

It is the recommendation of the writer that permit R13-2277C be granted to Marathon Petroleum Company, Kenova Marine Terminal located in Wayne County, WV. Based on the information provided in the application, including any supplemental information provided, Marathon Petroleum Company meets the applicable state and federal regulations associated with this modification application.

Laura M. Jennings
Permit Engineer

Date