



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-2334AA
Plant ID No.: 029-00008
Applicant: Ergon - West Virginia, Inc. (Ergon)
Facility Name: Newell Refinery
Location: Newell, Hancock County
SIC/NAICS Codes: 2911/324110
Application Type: Class II Administrative Update
Received Date: October 3, 2016
Engineer Assigned: Joe Kessler
Fee Amount: \$300
Date Received: October 5, 2016
Complete Date: December 19, 2016
Due Date: February 17, 2016
Applicant's Ad Date: November 8, 2016
Newspaper: *The Weirton Daily Times*
UTM's: 531.0 km Easting • 4,495.1 km Northing • Zone 17
Latitude/Longitude: 40.609173/-80.629196
Description: Addition of a 126,000 gallon bio-diesel storage tank.

The Newell Refinery was originally constructed in 1972 by Quaker State and the facility was purchased by Ergon in 1995. On May 17, 2000, Permit Number R13-2334 was issued to Ergon that superseded and replaced all previous permits covering the facility. All portions of the facility are permitted under the current permit (R13-2334Z) and no sections of the facility are grandfathered.

DESCRIPTION OF PROCESS/MODIFICATION

Existing Facility

The Newell Refinery processes crude oil into fuels and other industrial chemical feedstocks through the use of distillation and chemical reaction processes. The existing facility has a capacity of 803,000 barrels/month.

Proposed Modifications

Ergon has now submitted a permit application to modify the facility by constructing a new 126,000 gallon (3,000 barrel) bio-diesel storage tank (4067). Biodiesel is diesel fuel made from vegetable oils, animal fats, or recycled restaurant greases. It can be used in its pure form (B100) or blended with petroleum diesel to be used as a fuel. Due to the low vapor pressure of bio-diesel (~ 0.13 kPa @ 72° F), the proposed tank is expected to have very low working/breathing emissions VOCs and is uncontrolled.

SITE INSPECTION

Due to the nature of the modification, the writer did not conduct a site inspection for this permitting action. According to information in the DAQ database, the last full on-site inspection occurred on September 16, 2016 by Ms. Becky Johnson of the Compliance/Enforcement Section. This inspection found the facility be “Status 30 - In Compliance.”

AIR EMISSIONS AND CALCULATION METHODOLOGIES

The only change in emissions resulting from the proposed modifications evaluated herein is the small increase in VOC emissions resulting from the working/breathing emissions from the new bio-diesel storage tank (TK-4067). The total emissions from a storage tank are the combination of the calculated “breathing loss” and “working loss.” The breathing loss refers to the loss of vapors as a result of tank vapor space breathing (resulting from temperature and pressure differences) that occurs continuously when the tank is storing liquid. The working loss refers to the loss of vapors as a result of tank filling or emptying operations. Breathing losses are independent of storage tank throughput while working losses are dependent on throughput. Due to the low vapor pressure of bio-diesel (~ 0.05 kPa), expected emissions - limited to Volatile Organic Compounds (VOCs) - are expected to be minimal.

Ergon provided an estimate of the VOC emissions produced from the new bio-diesel storage tank using proprietary software that pulls in emission factors from the TANKS 4.09d program (working/breathing losses) as provided under AP-42, Section 7 (AP-42 is a database of emission factors maintained by USEPA). According to information provided in the permit application, the software estimated the maximum VOC potential-to-emit (PTE) from the storage tank to be 115.9 lbs/year (0.06 tons/year). The change in annual facility-wide PTE as a result of the modifications evaluated herein is given in the following table:

Table 1: Change In Facility-Wide Annual PTE

Pollutant	R13-2334Z ⁽¹⁾	R13-2334AA	Change
	tons/year	tons/year	tons/year
CO	266.88	266.88	0.00
NO _x	200.45	200.45	0.00
PM _{2.5} /PM ₁₀ /PM	23.75	23.75	0.00

Pollutant	R13-2334Z ⁽¹⁾	R13-2334AA	Change
	tons/year	tons/year	tons/year
SO ₂	39.08	39.08	0.00
VOCs	126.95	127.01	0.06
HAPs	22.07	22.07	0.00

(1) Emissions taken from R13-2334Z Fact Sheet.

REGULATORY APPLICABILITY

The following will discuss only the regulatory applicability of general rules and specific rules to the emission units that have been proposed to be modified or added as part of this permitting action.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed changes to the Newell Refinery will increase the PTE of a regulated pollutant (see Table 1 above). However, the increase in PTE is below six (6) lbs/hour and ten (10) TPY of any regulated pollutant that would, pursuant to §45-13-2.17, define the installation as a “modification” under 45CSR13. Therefore, pursuant to §45-13-4.2(b)(1), Ergon is requesting a Class II Administrative Update to make a “[c]hange in a permit condition as necessary to allow changes in operating parameters, emission points, control equipment or any other aspect of a source which results in an increase . . . of any existing regulated air pollutant . . . “

As required under §45-13-8.3 (“Notice Level A”), Ergon placed a Class I legal advertisement in a “newspaper of *general circulation* in the area where the source is . . . located.” The ad ran on November 8, 2016 in *The Weirton Daily Times* and the affidavit of publication for this legal advertisement was submitted on November 18, 2016.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration - (NON APPLICABILITY)

The Newell Refinery is located in Hancock County, WV. Hancock County is classified as “in attainment” with all National Ambient Air Quality Standards. However, as the facility is a “listed source” under §45-14-2.43 (“Petroleum Refineries”), the individual major source applicability threshold for all pollutants is 100 TPY. As shown in Table 1, the existing facility-wide PTE of the Newell Refinery is greater than 100 TPY for CO, NO_x, and VOCs. Therefore, the existing facility is defined as a “major stationary source” under 45CSR14.

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Ergon - West Virginia, Inc.
Newell Refinery

The proposed of a new bio-diesel storage tank is considered, pursuant to §45-14-2.40, a “*physical change* or a change in the method of operation.” Therefore, to determine if the project is defined as a “major modification,” pursuant to §45-14-3.4(a), the project is examined under a two-step applicability test: “[A] project is a major modification for a regulated NSR pollutant if it causes two types of emissions increases -- a significant emissions increase (as defined in subsection [§45-14-2.75]), and a significant net emissions increase (as defined in subsections [§45-14-2.46] and [§45-14-2.74]). The proposed project is not a major modification if it does not cause a significant emissions increase. If the proposed project causes a significant emissions increase, then the project is a major modification only if it also results in a significant net emissions increase.”

Therefore, for the proposed storage tank to meet the definition of a major modification, the changes themselves must result in a significant emissions increase. The methodology for calculating the emissions increase under the first step is given under Sections §45-14-3.4(b), 3.4(c), 3.4(d) and 3.4(f). The substantive language relevant to the changes evaluated herein is given below:

[§45-14-3.4(b)]

The procedure for calculating (before beginning actual construction) whether a significant emissions increase (i.e., the first step of the process) will occur depends upon the type of emissions units being modified, according to subdivisions 3.4.c through 3.4.f.

[§45-14-3.4(d)]

Actual-to-potential test for projects that only involve construction of a new emissions unit(s). -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the potential to emit (as defined in subsection 2.58) from each new emissions unit following completion of the project and the baseline actual emissions (as defined in subdivision 2.8.c) of these units before the project equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

As stated under §45-14-3.4(d), the PTE of the new storage tank is calculated to be 0.60 tons/year of VOCs. This is far below the significant amount for that pollutant (as defined in subsection §45-14-2.74) that would define the project as a “major modification” and, therefore, the project is not subject to PSD review under 45CSR14.

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The Newell Refinery, defined under Title V as a “major source,” was last issued a Title V renewal permit on August 18, 2015 (R30-02900008-2015). Proposed changes evaluated herein must also be incorporated into the facility's Title V operating permit. Commencement of the operations authorized by this permit shall be determined by the appropriate timing limitations associated with Title V permit revisions per 45CSR30.

40 CFR60, Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (Non-Applicability)

Subpart Kb of 40 CFR 60 is the NSPS for storage tanks containing Volatile Organic Liquids (VOLs) which construction commenced after July 23, 1984. The Subpart applies to storage vessels used to store volatile organic liquids with a capacity greater than or equal to 75 m³ (19,813 gallons). However, storage tanks with a capacity greater than or equal to 151 m³ (39,890 gallons) storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m³ but less than 151 m³ storing a liquid with a maximum true vapor pressure less than 15.0 kPa are exempt from Subpart Kb. As noted above, bio-diesel has a low vapor pressure (~0.05 kPa) and is, therefore, exempt from the requirements of Subpart Kb.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the proposed new storage tank and that are not classified as “criteria pollutants.” Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM₁₀ and PM_{2.5}), and Sulfur Dioxide (SO₂). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs for the modified sources were discussed above under REGULATORY APPLICABILITY. Ergon did not identify any substantive increase in the emissions of non-criteria regulated pollutants as part of this permitting action.

AIR QUALITY IMPACT ANALYSIS

The estimated maximum increase in emissions are less than applicability thresholds that would define the proposed modification as “major” under 45CSR14 and, therefore, no air quality impacts modeling analysis was required. Additionally, based on the nature of the modification and the location of the source, an air quality impacts modeling analysis was not required under 45CSR13, Section 7.

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

No substantive change to the monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR) in the draft permit was made.

PERFORMANCE TESTING OF OPERATIONS

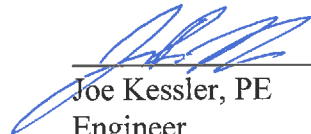
There was no change in the existing performance testing requirements.

CHANGES TO PERMIT R13-2334Z

The substantive changes made changes to R13-2334Z were limited to adding the proposed new storage tank to Emission Units Table 1.0.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved concerning the proposed changes evaluated above. Therefore, I recommend to the Director the issuance of Permit Number R13-2334AA to Ergon - West Virginia, Inc. for the proposed changes at the Newell Refinery located in Newell, Hancock County, WV.



Joe Kessler, PE
Engineer

1/5/17

Date