



**west virginia department of environmental protection**

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**ENGINEERING EVALUATION / FACT SHEET**

**BACKGROUND INFORMATION**

Application No.:	R13-2334X
Plant ID No.:	029-00008
Applicant:	Ergon - West Virginia, Inc.
Facility Name:	Newell Facility
Location:	Newell, Hancock County
NAICS Code:	324110
Application Type:	Modification
Received Date:	December 29, 2014
Engineer Assigned:	Laura Jennings
Fee Amount:	\$1,000.00
Date Received:	January 6, 2015 and February 17, 2015
Complete Date:	April 29, 2015
Due Date:	July 27, 2015
Applicant Ad Date:	January 20, 2015
Newspaper:	<i>The Weirton Daily Times</i>
UTM's:	Easting: 531.0 km      Northing: 4,495.1 km      Zone: 17
Description:	Increase the fugitive emissions limit for the Solvent Dewaxing Unit [MEK-TOL].

**DESCRIPTION OF PROCESS**

The purpose of this modification is to correct the emission limit for the MEK-TOL solvent dewaxing unit. During a recent review, it was determined that an incorrect calculation was used. The valve leak rate calculation was inadvertently used for the the pump leak rate calculation, which resulted in a lower potential to emit (PTE). This modification will correct the error. The facility would also like to add connectors to the emission estimate. The MEK-TOL fugitive emission limit was originally permitted in R13-2334E issued May of 2004. The component count was also revised based on a recent audit of equipment performed on the unit.

**SITE INSPECTION**

WVDAQ is familiar with the Ergon, WV, Newell facility located in Hancock County, WV. The last full on-site inspection was conducted by Michael Wade of DAQ's Compliance and

Enforcement Section on July 25, 2014.

### ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The formula in the leak rate calculation for pumps previously used was incorrect. The formula for leak rate from the valves was inadvertently used. The component counts have been updated since the initial permit limit calculation and were revised based on a recent audit of equipment. The original component count was representative of the equipment in service in the MEK unit at that time.

The Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017, November 1995) was followed to calculate the fugitive emissions. The EPA Correlation Approach (Table 2-10) was used to calculate the leak rates for the valves and the pumps. Because connectors are not monitored by Method 21, the Refinery Screening Range Approach (Table 2-6) was used to calculate the leak rate for the connectors.

The MEK-TOL unit uses a mixture of methyl ethyl ketone (MEK) and toluene, and the majority of the components contain a 50%-50% mixture of the two. MEK is not a HAP; therefore, only the toluene leak rate is counted toward HAP emissions.

The current VOC permit limit is based on a leak rate of 4.24 tpy. The requested VOC permit limit shown in the table below is 9.29 tpy which is an increase of 5.05 tpy. In addition to the VOC limit, a permit limit of 4.65 tpy is being added for Toluene (HAP) and is shown in the table below. Because the current permit did not have a toluene (HAP) emission limit, the toluene emission limit increased 4.65 tpy.

VOC Fugitive Emissions Component Count Table - MEK Solvent Dewaxing Unit:

	Valves		Pumps		Connectors		EPA Correlation Approach		Screening Value Approach	Leak Rate
							Leak Rate (kg/hr)			
	Total	Leaks	Total	Leaks	Total	Leaks	Valves	Pumps	Connectors	tpy
3% VOC Leak Rate	1863	56	24	1	3258	0	0.63308	0.13602	0.19548	9.29

HAP Fugitive Emissions Component Count Table - MEK Solvent Dewaxing Unit:

3% Leak Rate	Valves		Pumps		Connectors		EPA Correlation Approach		Screening Value Approach	Leak Rate
							Leak Rate (kg/hr)			
	Total	Leaks	Total	Leaks	Total	Leaks	Valves	Pumps	Connectors	tpy
100% Toluene Service	58	2	1	0	98	n/a	0.01971	0.00567	0.00588	0.30

50/50 MEK-TOL Service	1747	52	22	1	3062	n/a	0.29683	0.06234	0.09186	4.35
100% MEK Service	58	2	1	0	98	n/a	0	0	0	0
Total	1863	56	24	1	3258	n/a				4.65

#### Revised Facility PTE\*

Criteria Pollutants	Potential Emissions (tpy)
Carbon Monoxide (CO)	251.68
Nitrogen Oxides (NO <sub>x</sub> )	207.56
Particulate Matter (PM <sub>10</sub> )	24.26
Total Particulate Matter (TSP)	24.26
Sulfur Dioxide (SO <sub>2</sub> )	79.04
Volatile Organic Compounds (VOC)	134.08
Hazardous Air Pollutants	Potential Emissions (tpy)
Benzene	1.76
Hexane	3.92
Iso-Octane	1.66
Toluene	8.81
Ethylbenzene	1.06
Xylene	4.27
Isopropyl Benzene	0.46
Total HAPs	21.94
* Calculated from Title V Fact Sheet (revisions through R13-2334 version "V" and engineering evaluations "W" and "X").	

#### REGULATORY APPLICABILITY

The state and federal regulations listed below were reviewed in association with this permit application.

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

Fact Sheet R13-2334W  
Ergon - West Virginia, Inc.  
Newell Facility

The application was initially submitted as a Class II Administrative Update; however, was increased to a Modification level by DAQ.

The applicant has demonstrated compliance by submitting a complete permit application, placing a Class I legal notice in *The Weirton Daily Times* on January 9, 2015, and paid the \$1,000 modification permit fee.

45CSR14

#### PERMITS FOR CONSTRUCTION AND MAJOR MODIFICATION OF MAJOR STATIONARY SOURCES OF AIR POLLUTION FOR THE PREVENTION OF SIGNIFICANT DETERIORATION

The EWVI Refinery is located in an area that is designated as an attainment area for all criteria pollutants. Hancock County was redesignated to attainment status for PM<sub>2.5</sub> in April 2014.

EWVI is a major source of criteria pollutants for the purposes of New Source Review (NSR).

“Major modification” (§ 2.40) means any physical change in or change in the method of operation of a major stationary source which results in: a significant emissions increase (as defined in subsection 2.75) of any regulated NSR pollutant (as defined in subsection 2.66); and a significant net emissions increase of that pollutant from the major stationary source. Any significant emissions increase (as defined at subsection 2.75) from any emissions units or net emissions increase (as defined in subsection 2.46) at a major stationary source that is significant for volatile organic compounds or NOX shall be considered significant for ozone.

“Significant emissions increase” (§ 2.75) means, for a regulated NSR pollutant, an increase in emissions that is significant (as defined in subsection 2.74) for that pollutant.

#### Step 1 Significance Determination

In reference to a net emission increase or the potential of a source to emit Ozone (VOC or NOX), “significant” (§ 2.74) means a rate of emissions that would equal or exceed the following rate.

#### Project Increases (Emission Point ID's):

Criteria Pollutant	Potential Emissions (tpy)	Significant Threshold
	[MEK-TOL]	
VOC (Ozone)	9.29	40

The proposed revision to the VOC emission limit for the Solvent Dewaxing Unit [MEK-TOL] does not meet the definition of a major modification because it does not meet the definition of significant; and therefore, is not subject to 45CSR14.

In permit revision "E" when the fugitive emissions were originally calculated for the MEK-TOL solvent dewaxing unit, there was a comment in the evaluation that there was a change in calculation methodology that resulted in a decrease of VOC emissions. This decrease in VOC emissions was not used in any subsequent PSD determinations; and therefore, a further review of previous PSD determinations is not required.

#### 45CSR30 REQUIREMENTS FOR OPERATING PERMITS

EWVI is currently subject to Title V permitting. The applicant has the responsibility to update the Title V permit to reflect the changes made with this modification.

The applicant is not a major source of hazardous air pollutants. The facility potential emissions of toluene remains below 10 tpy of an individual HAP and the total hazardous air pollutants remain below 25 tpy.

#### TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There are no new non-criteria regulated pollutants associated with this permit application.

#### AIR QUALITY IMPACT ANALYSIS

The proposed project does not meet the definition of a major modification according to the definitions in 45CSR14 and 45CSR19; therefore, modeling is not required for this permit application.

#### MONITORING OF OPERATIONS

There are no changes to the monitoring requirements as a result of the revision

#### CHANGES TO PERMIT R13-2334W

- Miscellaneous changes to address current permit version
- The emission limit in 6.1.2 was changed from 4.24 tpy VOC to 9.29 tpy VOC and a Toluene limit of 4.65 tpy was added as discussed in the emissions section of this evaluation.

## RECOMMENDATION TO DIRECTOR

Based on the information provided in the application including all supplemental information provided, Ergon - West Virginia, Inc. will be in compliance with all applicable state and federal air quality regulations if they demonstrate compliance with the permit requirements. It is therefore the recommendation of the writer that permit modification R13-2334X be granted to Ergon, Newell Facility located in Hancock County, WV.

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Laura M. Jennings  
Permit Engineer

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Date