



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-1073B
Plant ID No.: 107-00022
Applicant: Silicon Processors, Inc.
Facility Name: Parkersburg Plant
Location: Wood County
SIC Code: 3295, 3299, 4449, 5032, 5052
Application Type: Modification
Received Date: February 22, 2012
Engineer Assigned: Steven R. Pursley, PE
Fee Amount: \$2,000.00
Date Received: February 24, 2012 (\$1,000) & April 12, 2012
Complete Date: April 19, 2012
Due Date: July 18, 2012
Applicant Ad Date: March 13, 2012
Newspaper: *The Parkersburg News and Sentinel*
UTM's: Easting: 712.15 km Northing: 4,348.64 km Zone: 17
Description: Addition of a second trona milling process line and addition of two sand silos.

DESCRIPTION OF PROCESS

Silicon Processors, Inc operates an existing bulk material handling, storage, processing and shipping plant in Parkersburg, WV. The facility receives bulk material by truck, barge and railcar. The material is then stored in silos or storage piles (either inside or outside the building). The material can then be shipped offsite by tuck, railcar or barge.

Additionally, raw Trona is processed at the facility before shipping. Currently the facility operates one Trona processing line. The purpose of this application is to:

1. Add a second bulk material milling process to the permit

The new Trona processing line is essentially identical to the existing line. Raw

material (unmilled Trona) is stored in enclosed building stockpiles and then transferred via front endloader, conveyor or vacuum system to the Mill Feed Hopper. The hopper feeds the material into the crushing mill. From there, the material is pneumatically conveyed to one of two storage silos. The silos load the trucks via gravity feed.

2. Add 2 sand storage silos

Sand comes into the facility via either truck or railcar and is then fed into one of the new storage silos by end loader, conveyor or vacuum system. From the silos the product is loaded out via gravity feed into trucks.

3. Add the ability to pneumatically transfer material directly from railcars to trucks

Fine bulk material (such as milled Trona or cement) will be pneumatically transferred between railcars and/or trucks. Emissions from the process will be controlled by an integral product filter on the pneumatic conveying unit.

SITE INSPECTION

No site inspection of the facility was performed by the writer. The facility was last inspected by Doug Hammell of DAQs enforcement section on April 11, 2012. He confirmed in an email that same day that the new mill had arrived but had not been installed nor positioned near the eventual installation site.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The facility is currently regulated under two existing permits, R13-1073A and R13-2559. R13-2559 primarily applies to the coal slag processing activities at the facility and R13-1073 applies to everything else. The existing PTE (point source) of all activities covered by R13-2559 are as follows (taken from engineering evaluation R13-2559):

Pollutant	Maximum Emission Limits	
	(lb/hr)	(ton/yr)
Particulate Matter (PM)	2.96	6.15
Nitrogen Oxide (NOx)	9.8	20.4
Sulfur Dioxide (SO2)	0.04	0.08
Carbon Monoxide (CO)	5.88	12.23
Volatile Organic Compounds (VOC)	9.0	6.15

The existing PTE (point source) of all activities covered by R13-1073A (taken from engineering evaluation R13-1073A) are as follows:

Pollutant	Maximum Emission Limits	
	(lb/hr)	(ton/yr)
Particulate Matter (PM)	26.63	16.63
PM ₁₀	12.28	7.83

Therefore, the facilities baseline PTE is as follows (conservatively assuming that all PM from permit R13.2559 is PM₁₀):

Pollutant	Maximum Emission Limits	
	(lb/hr)	(ton/yr)
Particulate Matter (PM)	29.59	22.78
PM ₁₀	15.24	13.98
Nitrogen Oxide (NOx)	9.8	20.4
Sulfur Dioxide (SO ₂)	0.04	0.08
Carbon Monoxide (CO)	5.88	12.23
Volatile Organic Compounds (VOC)	9.0	6.15

The applicant calculated emissions from the modification in two different ways. First the applicant used DAQs G40 spreadsheet. Secondly, a mass balance approach was used for certain emission points. Specifically, for transfer points T18-T21 and the crushing emissions, the applicant assumed that 2% of the proposed throughput was released to each baghouse and then assumed a control efficiency of 99.9%. Lastly, for the new pneumatic conveying unit, the applicant assumed 1% of the proposed throughput was released to the filter and then assumed a control efficiency of 99.9%. Where used, the mass balance method produced higher emissions estimates. The following table reflects the worst case scenario of the two methods.

	Controlled PM		Controlled PM-10	
	lb/hr	TPY	lb/hr	TPY
FUGITIVE EMISSIONS				
Stockpile Emissions	0.00	0.00	0.00	0.00
Unpaved Haulroad Emissions	1.59	2.41	0.47	0.71
Paved Haulroad Emissions	0.00	0.00	0.00	0.00
Fugitive Emissions Total	1.59	2.41	0.47	0.71
POINT SOURCE EMISSIONS				
Equipment Emissions	0.50	2.00	0.50	2.00
Transfer Point Emissions	23.79	25.88	14.87	18.04
Point Source Emissions Total	24.29	27.88	15.37	20.04
Modification Total	25.88	30.29	15.84	20.75

Therefore, the facilities new PTE will be as follows:

Pollutant	Maximum Emission Limits	
	(lb/hr)	(ton/yr)
Particulate Matter (PM)	55.47	50.66
PM ₁₀	31.08	34.73
Nitrogen Oxide (NOx)	9.8	20.4
Sulfur Dioxide (SO2)	0.04	0.08
Carbon Monoxide (CO)	5.88	12.23
Volatile Organic Compounds (VOC)	9.0	6.15

REGULATORY APPLICABILITY

The modification addressed by this application is subject to the following state and federal rules:

45CSR7 TO PREVENT AND CONTROL PARTICULATE MATTER AIR POLLUTION FROM MANUFACTURING PROCESSES AND AND ASSOCIATED OPERATIONS

The facility is subject to 45CSR7 for their existing raw material processes other than coal, and for the proposed modifications provided in the application.

The proposed Trona mill should be considered a duplicate source operation with the existing Trona mill. The maximum throughput for the two combined mills is 25 tons per hour, or 50,000 lbs/hr.

Section 4.1. of 45CSR7 limits the particulate matter emissions in Table 45-7A by source operations type. The proposed facility is a type 'a' emission source defined by 45CSR7-2.39. The corresponding maximum emission rate specified in Table 45-7a for the operations is 31 pounds per hour. The permit will limit emissions from the two mills combined to 1 pound per hour.

The Trona process controls fugitive particulate matter emissions with the use of partial and full enclosures of the conveyor system and hopper transfers, by the use of Baghouse at the Trona Mill, by the use of a Baghouse at the Trona product load-out, by the use of Bin Vents with Filter Cartridges in the Storage Silos, by the use of inside storage of the raw material Trona (P1 & P2), and by the use of watered unpaved roads as needed. These controls identified in the application indicate compliance with Section 5.

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).

Because uncontrolled PM emissions from the modification exceed 6 pounds per hour and 10 tons per year of PM the facility is required to submit a modification permit under 45CSR13. Additionally, the modification is subject to several substantive requirements (see below).

45CSR16 STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES PURSUANT TO 40 CFR PART 60.

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The permittee is subject to NSPS Requirements. Refer to Federal Regulations Section below for details.

45CSR30 Requirements for Operating Permits

In accordance with 45CSR30 Major Source Determination, this facility will be a non-major source which is subject to NSPS Subparts Y and OOO. The facility's potential to emit will be less than the 45CSR30 threshold of 100 TPY for any criteria pollutant. Therefore, the facility will continue to be subject to 45CSR30 and classified as a Title V deferred source.

FEDERAL REGULATIONS:

Part 60, Subpart OOO STANDARDS OF PERFORMANCE FOR NONMETALLIC MINERAL PROCESSING PLANTS

This Subpart is applicable because the facility is a nonmetallic mineral processing plant as defined in the rule. It should be noted that the Trona process is subject to the rule because the exemption provided for in §60.670(c)(1) only applies to fixed sand and gravel plants and crushed stone plants and does not apply to the other nonmetallic minerals. The MSDS for Trona identifies the chemical name as "natural sodium sesquicarbonate" and the composition as 90-98%. Sodium Compounds, including Sodium Carbonate are defined as a nonmetallic mineral in §60.671.

The main requirement of Subpart OOO applicable to this modification is the PM limit of 0.014 grains/dscf for all affected sources with a capture system. The applicant will have to demonstrate initial compliance with this limit by performing testing in accordance with 40 CFR 60.675(b)(1) of the rule. Additionally, the applicant will have to demonstrate ongoing compliance with the limit by either performing quarterly Method 22 tests or by installing a bag leak detection system (per §60.674.c or d respectively).

Additionally, the four Trona silos will be subject to a 7% opacity limit.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

No non-criteria regulated pollutants are addressed by this application.

AIR QUALITY IMPACT ANALYSIS

Since the facility is not a major source as defined in 45CSR14, no modeling was required.

MONITORING OF OPERATIONS

In addition to the monitoring already required by the permit and the monitoring required by the NSPS (see above) the permittee shall monitor and record the following:

- * Amount of Trona to the new crushing mill
- * Amount of sand to the sand storage silos
- * Amount of material pneumatically conveyed directly between railcars or from railcars to trucks
- * Record of any maintenance performed on any silo bin vent filters and the pneumatic conveying unit filter.

CHANGES TO PERMIT R13-1073A

The following changes were made to R13-1073A:

- * Table 1.0 was updated to include the new equipment.
- * Table 4.1.1 was updated to reflect the new, higher, trona throughout limits.
- * Condition 4.1.5 was updated to reflect the new, higher, trona throughout limits.
- * Condition 4.1.6 was updated to add emission limits on the new equipment.
- * Condition 4.1.7 was updated to include Baghouses BH2-4.
- * Condition 4.1.8 was updated to include Bin Vents 5 and 6.
- * Condition 4.1.9 was updated to include PF3.
- * Condition 4.1.15 was changed to reflect the correct version of the NSPS Subpart OOO.
- * Condition 4.2.1 was changed to include Baghouses BH3 and BH4, Bin Vents 5 and 6, and Product Filter PF3.

- * Condition 4.3.6 was changed to reflect the most recent version of Subpart 000.
- * Old Condition 4.4.10 was removed since it is redundant with the boilerplate (section 3.4).
- * Condition 4.5.2 was changed to reflect the current Subpart 000.
- * Condition 4.5.3 was changed to reflect the current Subpart 000.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R13-1073B for the modification of a dry bulk material handling, storage and processing plant in Parkersburg, Wood County, be granted to Silicon Processors, Inc.

Steven R. Pursley, PE
Engineer

May 16, 2012

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