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**west virginia department of environmental protection**

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**MEMORANDUM**

To: Beverly D. McKeone

From: Steven R. Pursley, PE *SRP*

Date: July 8, 2015

Subject: PD15-052

On July 1, 2015, Mississippi Sand, LLC submitted a request for a permit determination to construct and operate a “frac sand” unloading, storage, and loading facility in Benwood, West Virginia. Very little information was included in the request. No process description, or UTM coordinates were provided and the company is not registered with the Secretary of States office to do business in West Virginia. Additionally, although no emission calculations were included in the request, based on calculations performed for similar facilities it is certain that uncontrolled PM emissions from the facility would exceed 6 pounds per hour and 10 tons per year. For example, the writer performed calculation using the following (see attached):

- \* Equation 1 of AP-42 chapter 13.2 for the batchdrop from the barge to a truck, the truck to the storage building and from a front end loader to a bin feeder.
- \* Emission factor in Table 11.19.2-2 in AP-42 for the conveyor transfer points (the factor is labeled for crushed stone but is specifically referenced in Chapter 11.19 as the equation to use for sand).
- \* Throughput of 7,000,000 tons per year (based on a recently permitted, similar facility).

Said calculations result in PM emissions of 8.86 pounds per hour and 38.83 tons per year. This is a VERY conservative estimate. It does not include haul road calculations and gives credit (in the wind speed factor) for the use of a building.

Additionally, it should be noted that according to the MSDS included with the request, the material to be handled is a “frac sand” which contains, among other things, quartz/silica dust. Although crystalline silica is not regulated as a “Hazardous Air Pollutant” under section 112 of the

Clean Air Act, it does have the potential to cause serious lung diseases including silicosis and is regulated tightly by OSHA. Therefore, it would be the recommendation of the writer that this facility not be permitted without significant dust controls (per the requirements of 45CSR17).

Given the above, it appears that the facility meets the definition of a "stationary source" per §45-13-2.24 and therefore requires a permit before construction per §45-13-5.1.

Clamshell to truck

$$EF = 0.74 (.0032) \cdot \frac{(\frac{7}{15})^{1.3}}{(\frac{7.4}{2})^{1.4}} = .005 \frac{lb}{ton}$$

Truck dump to pile\*

$$EF = 0.74 (.0032) \cdot \frac{(\frac{1}{15})^{1.3}}{(\frac{7.4}{2})^{1.4}} = .00005 \frac{lb}{ton}$$

FE loader to Hopper\*

$$EF = (.74)(.0032) \cdot \frac{(\frac{1}{15})^{1.3}}{(\frac{7.4}{2})^{1.4}} = .00005 \frac{lb}{ton}$$

Hopper to conveyor

$$.003 \frac{lb}{ton}$$

conveyor to truck

$$.003 \frac{lb}{ton}$$

$$\text{total emissions} = .003 \frac{lb}{ton} + .003 \frac{lb}{ton} + .00005 \frac{lb}{ton} + .00005 \frac{lb}{ton} + .005 \frac{lb}{ton} = .011 \frac{lb}{ton}$$

$$.011 \frac{lb}{ton} \cdot \frac{7,000,000 \text{ tons}^{**}}{2,000 \text{ lb}} = \boxed{38.83 \text{ tons/year}}$$

$$38.83 \frac{\text{tons}}{\text{year}} \cdot \frac{2000 \text{ lb}}{\text{ton}} \cdot \frac{1 \text{ year}}{8,760 \text{ hrs}} = \boxed{8.86 \frac{lb}{hr}}$$

\* Assumes 1mph wind speed inside building      \*\* based on Unimln permit