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April 23, 2019

Ms. Heidi Hollenbach, District Supervisor
MDEQ – Air Quality Division
Grand Rapids District Office
350 Ottawa Ave., NW – Unit 10
Grand Rapids, MI 49503-2341



RE: Worthen Coated Fabrics (SRN: P0634) Mix Room Permit to Install Exemption and Violation Notice Response

Dear Ms. Hollenbach:

This letter is a follow-up response to the MDEQ's Violation Notice dated January 15, 2019 and the subsequent response letter submitted by Worthen Coated Fabrics (Worthen) to April Lazzaro dated February 21, 2019, attached, specifically regarding Worthen's alleged violation of Rule 201 for failing to obtain a permit for its Mix Room operations.

The purpose of this follow-up letter is to:

- 1) notify the Air Quality Division (ARD) that the 2017 and 2018 Mix Room emission estimates submitted via Michigan's Air Emissions Reporting System (MAERS) were inaccurate and that using a mass-balance approach to calculating emissions, Worthen is not in violation of Rule 201 and,
- 2) provide revised emission estimates for 2017 and 2018 that meet the Rule 290 permit-to-install exemption for total uncontrolled noncarcinogenic volatile organic compound (VOC) emissions of 1,000 pounds per month or less.

In 2017 and 2018, Worthen reported Mix Room VOC emissions as 10.25 tons and 7.11 tons, respectively.¹ Actual VOC emissions were originally calculated using EPA's AP-42 emission factor from Chapter 6.4 Paint and Varnish, dated May 1983. The AP-42 emission factor of 30 pounds of VOCs per ton of coating manufactured is equivalent to 1.5% of the weight of coating. According to EPA guidance on this emissions calculation method, "Emissions data from chemical processes are sparse. It has been frequently necessary, therefore, to make estimates of emission factors on the basis of material balances, yields, or process similarities."² Given that the AP-42 emission factor is dated and potentially based on a small universe of sources, Worthen chose to take actual measurements of raw materials in and coatings out and follow a mass-balance approach to determine representative emissions from the Mix Room.

¹ Since filing these MAERS reports, Worthen reviewed its material accounting of manufactured coatings and revised the amounts. Using the 1.5% factor, emissions should have been 6.3 tons in 2017 and 7.4 tons in 2018.

² AP-42, Fifth Edition, Volume 1, Chapter 6: Organic Chemical Process Industry

As of March 15th, Worthen has collected mass-balance data to support revising its emission estimates for 2017 and 2018 and will continue to collect data for ongoing emission calculations. Worthen weighs all ingredients in each coating formulation prior to mixing and weighs the coating after the mixing is complete. The difference between input and output weights equals the amount emitted. Data collected thus far occurred during one of Worthen's busiest operating times and represents 80% of the types of coatings that are manufactured in one year. Based on the actual weight measurements of raw materials in and product out, emissions average 0.654% percent of the amount of coating manufactured and emissions over a 5-week period were measured as 461 pounds. Since 0.654% loss of total weight is a representative emission factor, Worthen has revised its 2017 and 2018 VOC emissions based on this percent loss to be 2.74 tons and 3.21 tons, respectively (with emissions less than 1,000 pounds in any one month period). Therefore, Worthen meets the Rule 290 permit-to-install exemption with emissions less than 1,000 pounds per month (6 tons per year) and is not required to obtain a permit under Rule 201. Emission calculations are as follows:

2017: $837,552 \text{ pounds coating manufactured} \times 0.654/100 = 5,478 \text{ pounds} / 2,000 = 2.74 \text{ tons}$

2018: $980,592 \text{ pounds coating manufactured} \times 0.654/100 = 6,413 \text{ pounds} / 2,000 = 3.21 \text{ tons}$

Worthen will continue to use the mass-balance approach for determining VOC emissions by weighing the raw materials and final product for each coating batch. Records will be maintained as required by Rule 290(2)(c)-(e) and monthly emissions will be calculated to confirm compliance. Worthen is also planning to install covers on the mixers which should further reduce VOC losses.

Worthen requests that ARD provide a response to acknowledge and accept the revised emission estimates for 2017 and 2018 and mass-balance approach for calculating emissions, and to acknowledge that a permit is not required under Part 201 for the Mix Room since emissions are less than 6 tons per year and exempt from permitting under Part 290.

If you have any questions or require further information, please contact Tony Harb, Plant Manager, at 914-419-8374 or Amy Austin of POWER Engineers, Inc. at 207-869-1257.

Sincerely,



David S. Worthen
President
Worthen Industries

cc: Steve Hutter, Worthen Coated Fabrics
Tony Harb, Worthen Coated Fabrics
Kristi Koetje, Worthen Coated Fabrics
Amy Austin, POWER Engineers, Inc.