WVCO

Tuesday, June 16, 2020

Katie Eagleson
Environmental Engineer
Lane Regional Air Protection Agency
1010 Main Street
Springfield, Oregon 97477

Re: **The Willamette Valley Company, LLC, Cleaner Air Oregon Toxic Air Contaminant Emissions Inventory Submittal**

Dear Katie:

On March 2, 2020, The Willamette Valley Company, LLC, (WVC) facility located at 660 McKinley Street in Eugene, OR, (the facility) received a letter from Max Hueftle at the Lane Regional Air Protection Agency (LRAPA). This document provided written notice that LRAPA has called the facility into the Cleaner Air Oregon (CAO) risk assessment process pursuant to Oregon Administrative Rule (OAR) 340-245-0050. WVC understands that on March 14, 2019, the LRAPA Board of Directors adopted the CAO rules, OAR 340-245, in their entirety. OAR 340-245-0030(1)(a)(A) specifies that an emissions inventory must be submitted no later than 90 days after the LRAPA notice date (in our case, by June 1, 2020). On March 23, 2020, WVC submitted a written request to LRAPA for an extension of the CAO emissions inventory submittal from June 1, 2020 to June 22, 2020. On March 25, LRAPA provided a written authorization approving this request.

The WVC facility operates under an existing Simple Air Contaminant Discharge Permit No. 208935 and falls under the standard industrial classification code 2851 “Paints, Varnishes, Lacquers, Enamels, and Allied Products.” A variety of coatings and putties used in the forest products industry are processed at the facility, and are best characterized by seven distinct product categories: coatings, putties, epoxies, plywood patch resins, spikefast resins, polyureas, and patch or spikefast curing agents. The process related to each of these finished product categories is generally the same: raw materials are loaded into one or more mixing vessels and blended together to achieve the appropriate mixture, and then are subsequently unloaded into totes or other containers where they are stored until delivery to the customer. The mixing vessels are identified in the existing permit as emission unit (EU) IDs 6 through 12 and 15 through 24.

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EMISSIONS CALCULATION METHODOLOGY

To develop a sound methodology to quantify emissions from the facility, WVC has retained Maul Foster & Alongi, Inc. (MFA) to assist with the CAO permitting process. MFA has identified the following toxic emission units (TEUs) at the facility.

- Resin bulk storage tank (EU ID 13)
- Methylene diphenyl isocyanate (MDI) bulk storage tank (EU ID 14)
- MDI railway loadout (EU ID 5)
- MDI pump (EU ID 3)
- Paint manufacturing

The MDI tank inlet valve (EU ID 4) in the existing permit is no longer operational, as all MDI is unloaded into the facility by rail car. The remaining EUs identified in the existing permit were not identified as TEUs as they do not emit air toxics and are not captured in the TEUs identified above.

Working and breathing TAC emissions from the resin bulk storage tank were estimated using methodologies identified in *AP-42*, Chapter 7, Section 7.1 "Organic Liquid Storage Tanks," (March, 2020). MDI bulk storage tank, MDI railway loadout and MDI pump emissions were estimated using calculation methodologies from the Alliance for the Polyurethanes Industry (API) guidance document *MDI/Polymeric MDI Emissions Reporting Guidelines for the Polyurethane Industry* published in December, 2004.

The facility's original CAO emissions inventory submitted in 2017 estimated emissions from paint manufacturing using a standard material balance model. Upon closer inspection of this methodology, it became clear that this approach did not accurately reflect emissions from product manufacturing at the facility. A fundamental flaw of this methodology is the assumption that all the TAC constituents in the finished product are volatilized and released into the atmosphere at the WVC site. While it is likely that some fraction of the TACs will volatilize during formulation, it would be against WVC's best interest as a formulator to allow the total release of compounds intended to be ingredients in the product provided to the customer. It's unreasonable to expect that all or even most of the TAC constituents in the products will volatilize during the formulation process.

To provide a more realistic emissions estimate scenario, MFA identified three areas of the facility's formulating process where emissions could potentially occur: (1) raw material loading into the mixing vessel(s), (2) raw material blending into the finished product, and (3) finished product loading into the shipping totes.

For each of these three processes, emission estimation methods identified in the U.S. Environmental Production Agency (USEPA) guidance document *Methods for Estimating Air Emissions from Paint, Ink, and Other Coating Manufacturing Facilities*, published in February, 2005, were used. This guidance document uses two governing equations: Equation 8.4-1 in Section 4.1 “Emission Model for Material Loading” was used to estimate emissions from both the raw material loading into the mixing vessel and the finished product loadout into the shipping container, and Equation 8.4-22 in Section 4.4 “Emission Model for Surface Evaporation” was used to estimate emissions from the product blending.

To account for potential fugitive loss from raw materials containing solids, TAC solids emissions were estimated using a particulate emission factor from AP-42 Chapter 6.4 (January 1995), Table 6.4-1 “Uncontrolled Emission Factors for Paint and Varnish Manufacturing.” The particulate emission factor was multiplied by the weight fraction of the listed TAC in any raw materials added to the mixing vessel for a finished product. Most mixing vessels at the facility have a hood just above the opening to capture fugitive pigment loss during raw material loading. Captured fugitive particulates are sent through ductwork to one of two dust-collection systems (EU IDs 1 and 2).

2018 EMISSIONS CALCULATIONS

To estimate annual facility-wide emissions for the 2018 calendar year, the calculation methods above and the total quantity of each finished product processed at the facility during the 2018 calendar year were used.

As the quantity and type of finished product can significantly vary from day to day, daily emissions were estimated using the products formulated during the day with the highest daily throughput for each product category. This emission estimation process was performed for each of the seven finished product categories, and the total emissions were summed to create a daily emission rate.

POTENTIAL-TO-EMIT EMISSIONS CALCULATIONS

The potential-to-emit (PTE) daily and annual emissions were estimated using the same calculation method described above. However, to identify which products would result in a worst-case operation scenario with respect to a risk assessment, a toxicity weighted emissions rate was developed for each finished product manufactured at the facility. The toxicity weighted emission rates were calculated by estimating the TAC emissions from manufacturing 1 gallon of each product at the facility and then dividing the pound-per-gallon emission rate by the risk-based concentrations listed in OAR 340-245-8040, Table 4. This resulted in a method that allowed direct comparison between and among all products with respect to risk. Toxicity weighted emission rates were calculated for each product category (i.e., putties, coatings, etc.) to identify the worst-case product for each.

Once the worst-case product was identified for each product type, maximum PTE annual and daily production rates for each product type were used to calculate the PTE daily and annual emissions with respect to risk. The estimated emissions for these products were summed to create facility-wide daily and annual emission rates that correspond to the worst-case combination of products that can be manufactured at the facility. Three sets of toxicity weighted emission rates were calculated for each product: acute noncancer risk, chronic noncancer risk, and cancer risk. This resulted in the identification of the worst-case product in each product category with respect to the cancer and acute and chronic noncancer and risks.

This method produced three separate facility-wide emissions estimates for the facility: daily PTE emissions that correspond to the highest acute noncancer risk, annual PTE emissions that correspond to the highest chronic noncancer risk, and annual PTE emissions that correspond to the highest chronic cancer risk. This method ensures identification of the worst-case configuration of products that can be manufactured at the facility.

WVC is submitting, as attachments, three versions of the AQForm405: the first contains emission estimates for the operating scenarios with the worst-case daily and annual emissions corresponding to acute and chronic noncancer; the second presents the annual emission rates that correspond to the worst-case chronic cancer risk; and the third presents the daily and annual emission rates that correspond to the actual production rates for 2018. The emission inventories are labeled accordingly.

WVC understands that because of the complex nature of the emissions inventories, it may be beneficial to review the calculation and toxicity weighted emission rates methodologies over a conference call. Once LRAPA has reviewed the attached emission inventories, please let me know in the event a conference call is preferred in order to facilitate your review of the submittal or the analytical approach.

Sincerely,
The Willamette Valley Company, LLC

Sarah France
Director of Regulatory Affairs

Attachments: DEQ AQForm405-PTE-NoncancerOnly
DEQ AQForm405-PTE-CancerOnly
DEQ AQForm405-2018

cc: Andrew Rogers, Maul Foster & Alongi, Inc.