

March 30, 2023

Julia DeGagné  
Oregon Department of Environmental Quality  
700 NE Multnomah Street, Suite 600  
Portland, Oregon 97232

**Re: Response to DEQ letter dated March 1, 2023**

Dear Julia:

Hollingsworth & Vose Fiber Company (H&V) received the letter dated March 1, 2023 (the letter), from the Oregon Department of Environmental Quality (DEQ) relating to the Cleaner Air Oregon (CAO) Emissions Inventory submitted by H&V on October 24, 2022. H&V and Maul Foster & Alongi, Inc. (MFA) have prepared the following responses, due March 31, 2023. This response document is organized in the same manner as the information was requested in the letter. DEQ comments are shown in bold followed by the response. MFA has prepared two versions of the revised CAO emissions inventory and AQ520 form. The first version (Attachment 1) includes all information and, as required by Oregon Administrative Rules (OAR) 340-214-0130, each page containing Confidential Business Information (CBI) is prominently marked as “Confidential Business Information – Do Not Release to Public.” This version should not be released to the public. The other version (Attachment 2) has all of the CBI redacted and is, therefore, suitable for public distribution. Both versions of the AQ520 forms (CBI and redacted) will be provided electronically to the DEQ.

H&V is requesting that portions of our response relating to certain proprietary raw material usage rates as well as Attachment 1 (in its entirety) be protected as confidential and exempt from public disclosure pursuant to OAR 340-214-0130 and Oregon Revised Statutes (ORS) 192.501(2). The pages of the materials eligible for this exemption from disclosure have been clearly marked with the words: **Confidential Business Information--Do Not Release to Public**. Consistent with the requirements in OAR 340-214-0130(3), these data (a) cannot be patented; (b) are known only to a limited number of individuals within H&V and the company makes efforts to maintain the secrecy of the information; (c) are information that derives significant economic value from not being disclosed to other persons; (d) provide H&V the chance to obtain and maintain a business advantage over its competitors which lack the information; and (e) do not constitute “emissions data” as that term is defined by state law. In short, the source, brand, and composition of the raw materials are at the core of H&V’s highly competitive business and the disclosure of these data would have a profound negative impact

upon H&V's ability to do business. Therefore, these data are precisely the type of trade secret information that ORS 192.501(2) and OAR 340-214-0130 are intended to protect. If the DEQ is unable or unwilling to exempt these data from public disclosure, we request that all copies of the data be returned to H&V immediately and we will work with you to provide the information you need by another means.

- 1. By March 31, 2023, Submit to DEQ a revised Inventory (AQ520 form), along with all supporting calculations in Excel format and supplemental information needed to verify emissions calculations as required under OAR 340-245-0040(4)(b)(C), including the following updates:**
  - a. Revise the Inventory to include quantitative estimates of glasswool fiber (DEQ SEQ ID 352) emissions for the following TEUs, based on the best available data:**
    - i. Ceramic Filter Unit (CFU) stacks, including:**
      - 1. Flame Blown (TEU FB);**
      - 2. Rotary Fine (TEU RF); and**
      - 3. Rotary Coarse/Ultra Rotary Coarse (TEU RC); and;**

Based on the study provided in response to Question 2 below, H&V has determined that there are no quantifiable glasswool fiber emissions from the CFUs. However, H&V has conservatively updated the emissions inventory to include glasswool fiber as one percent of filterable particulate matter (PM) emissions from the CFU stacks. The filterable PM emission factor is based on 2018 emissions testing of the CFUs. In November 2022, H&V investigated the composition of the PM emissions through the CFU stacks by Method 5 sampling for total PM and analyzing with microscopy to determine the presence of glass fibers in the samples. The results of this study found that the portion of the filterable emissions that is glass fiber is below quantitation, and certainly less than one percent of the filterable PM emissions from the CFU stacks. The updated emissions inventory, AQ520, and a memo summarizing the results of the fiber emissions study, are included as attachments to this letter provided in response to Question 2.

- ii. Glass fiber handling areas, including but not limited to:**
  - 1. The baling/packaging areas in:**
    - a. Glass Plant 1; and**
    - b. Glass Plant 2; and**

MFA has prepared an estimate of fugitive glasswool fiber emissions on behalf of H&V based on field observations and reasonable assumptions resulting from those observations. The source of fugitive glasswool fiber emissions at the H&V facility is the process of removing glass fiber pelts from the drum collectors or formers and bailing them. Small tufts of fiber can sometimes be seen falling off a pelt or becoming airborne from the displaced air in the bailing process.

Considering the size of the pelts and the observable emissions, MFA estimates that less than 0.01 percent of the collected fiber, by mass, becomes airborne in the building.

Once airborne, the bulk of the airborne fiber remains in the H&V facility through one of three mechanisms: deposition (clumps of multiple fibers settling out on the floor or surfaces), agglomeration (forming webbing that adheres to internal building structures), and filtration (fiber matting forming on screens that are required to be on all building vents in the roof and upper walls. All these mechanisms are easily observed. MFA estimates that 80 percent of the airborne glasswool fiber remains in the H&V building and only 20 percent is fugitive from the building. This is based on the assumption that there is 60 percent retention by deposition (larger clumps carry far more mass), 15 percent retention by agglomeration, and 5 percent retention by filtration.

This analysis applies to material meeting the definition of glasswool fiber. Glasswool fibers are synthetic vitreous fibers that are “at least 5 micrometers long and have an aspect ratio of at least 3 to 1 or sometimes 5 to 1 (the aspect ratio is the ratio of a fiber’s length to its diameter).” Glasswool fibers are a listed toxic air contaminant (TAC) under the CAO program (DEQ ID 352). H&V’s glass fibers are typically hundreds of microns in length, which is what allows the fibers to form mats for collection and for use in final products (i.e., it is an intrinsic and desired characteristic of the product). Due to the length of fibers in this classification, glasswool fibers are not, by definition, PM less than 2.5 microns in aerodynamic diameter (PM<sub>2.5</sub>) and few, if any, of the glass wool fibers would have a small enough diameter to be regulated as PM less than 10 microns in aerodynamic diameter (PM<sub>10</sub>) or PM. A new TEU (Bailing) has been included in the revised AQ520 form to account for the fugitive emissions of glasswool fiber from the bailing areas.

This emissions estimate is consistent with the ambient monitoring performed by DEQ in 2017 in the immediate vicinity of the plant. At that time, H&V employed wet scrubbers to control particulate emissions. While the wet scrubbers were quite effective, the CFUs currently in use attain an even higher control efficiency. Results from the 43 samples taken were summarized as follow’s in DEQ’s August 2017 ambient monitoring report:

*PCM [phase contrast microscopy] results showed the concentration of airborne fibers was less than or equal to 0.002 fibers/cc in all samples. The highest detection limit of the analytical method for the concentration of airborne fibers was 0.001 fibers/cc. The detection limit of the method is the minimum amount of a substance that the analytical process can reliably detect. The only sample that was above this detection limit was the duplicate sample taken at the Crystal Lake Dr. site on July 3rd, 2017 (result = 0.002 f/cc).*

DEQ's monitoring effort involved taking 12-hour samples over a month at four locations surrounding the facility. As described, only one sample out of 43 had detectable fiber and that was just barely over the detection limit. These ambient monitoring results are consistent with the fugitive glasswool fiber emission rates in the revised AQ520 form.

**2. Outdoor storage areas – if emissions from these areas are controlled through specific housekeeping or operational practices, please describe these;**

H&V does not have fugitive emissions from outdoor storage areas. All fiber products that leave the manufacturing areas are packaged and stretch wrapped. After being packaged and stretch wrapped, fiber products are moved outside for short periods of time in preparation for shipment in containers or while being transported to warehouses for storage. Because of the way in which all fiber products are handled, outdoor storage of product as it is staged for transportation does not result in fugitive emissions.

Glasswool fiber from track-out from the glass plant is controlled through housekeeping practices. A utility person sweeps to clean the exterior of the plant for track-out every weekday and as otherwise needed. Additionally, H&V practices monthly street sweeping as part of their stormwater plan.

**b. Revise the Inventory to include estimated emissions from the CFU stacks for the TAC present in the bulking agent (TEUs FB, RF, RC, and GM);**

The emissions inventory has been updated to include estimated emissions for the silica present in the bulking agent from the CFUs. As noted above, H&V has assumed that up to 1 percent of filterable PM emissions from the CFUs is glasswool fiber, therefore, H&V has conservatively assumed the remaining 99 percent of filterable PM is bulking agent. Four new TEUs have been included in form AQ520 to account for the bulking agent release from the CFUs: CFU\_FB, CFU\_RF, CFU\_RC, and CFU\_GM.

Additionally, H&V has identified an extremely small potential source of emissions from the super sacks at each CFU. The CFUs discharge collected filterable PM into super sacks which sit under each CFU. As the CFUs discharge into the super sacks, displaced air is filtered through filter socks with an estimated control efficiency of 95 percent for PM. We have defined an additional TEU for the CFU discharge filters (CFU\_SS) and accounted for silica emissions from the bulking agent.

**c. Update the Inventory to include revised emission factors for organic TACs from glass plant processes (TEUs RF, RC, FB, and GM), based on the results of the**

**source testing completed in December 2022, as requested and described in Items I.4 and II.1 of DEQ's September 22, 2022 letter. DEQ's approval of the source test results for organic TACs is included in Attachment A;**

The emissions inventory has been updated to include the emission factors for organic TACs from glass plant processes that were included in Attachment A to the letter. These emission factors were derived from the source testing completed in December 2022. We would like to make the DEQ aware of an error identified in Attachment A. Attachment A incorrectly stated the average emission factor for benzene from Flameblown production as 1.18E-01 pounds per ton (lb/ton), while the emission factor provided in Bison Engineering's source test report is 1.08E-01 lb/ton. H&V confirmed with Bison Engineering that the value listed in the source test report is the correct value. The corrected emission factor of 1.08E-01 lb/ton has been incorporated into the revised emissions inventory.

- d. Update the AQ520 form to include additional line items for TEUs with multiple emission points:**
- i. On Tab 2, for each emission point: designate a unique TEU ID in column A. TEU IDs may be listed in the format "[TEU Name]\_[Emission Point]" to indicate that a single TEU has multiple emission points which are broken out for clarity on the AQ520;**
  - ii. On Tab 2, for each emission point: provide an individual "Stack or Fugitive ID" in column E and activity information, as appropriate, in columns F-M; and**
  - iii. On Tab 3, list emission factor information and calculated emissions for each unique TEU ID.**

H&V has incorporated into their permit alternative routing pathways to enable fiberizers to direct fibers to different formers or drums. Due to this variability in operations, it is possible for emissions from certain fiberizers to be routed to different CFUs depending on the fiber routing configuration. Additionally, rotary fiberizers can be configured to make rotary fine, rotary coarse, or ultra-rotary coarse fiber depending upon operational demands. H&V is still in the process of determining the most conservative emissions routing assumptions for the risk assessment. Therefore, we have elected not to incorporate this change into the emissions inventory and AQ520 forms. This matter was discussed in a phone call between Leslie Riley and Amy DeVita-McBride of MFA and Julia DeGagné of the DEQ on March 20, 2023 and it was confirmed that this information will be provided as part of the modeling protocol. Sources called-in to the CAO program have historically broken out emissions by discharge point as part of the modeling protocol required under OAR 340-245-0210. H&V will ensure that this is clearly delineated in the modeling protocol. However, to provide more

clarity on these configurations now, H&V has included a table of emission points for each TEU in the excel version of the emissions inventory included as an attachment to this letter.

- 2. By March 31, 2023, provide the following additional documentation to support the Inventory:**
- a. Test reports for the Method 5 testing and microscopy analysis of CFU stack emissions referenced in the email from Anita Ragan to Julia DeGagné on November 21, 2022; and**
  - b. Any additional documentation needed to support the emissions estimates reported in response to Item 1.a above.**

The Fiber Emissions Study memo, Method 5 source test results, and the Microscopy Report are included as Attachment 3 to this letter.

- 3. By April 3, 2023, repeat the verification of a PTE for the raw materials handling areas (TEUs RMH\_BA, RMH\_ZN, RMH\_F, RMH\_S, RMH\_D, RMH\_L, RMH\_N), and submit a source test report demonstrating that it meets the criteria in Sections 5.1 and 5.3 through 5.5 of EPA Method 204.**

H&V repeated verification of EPA Method 204 as requested. The retest effort was completed the week of February 27 to March 3, 2023. We will submit the source test report demonstrating compliance by April 3, 2023.

Please do not hesitate to contact me at (541) 738-5382 if you have any comments or require additional information.

Sincerely,



Anita Ragan  
Environmental Health & Safety Manager

- Attachments:
1. CAO Emissions Inventory (Revision 3) - CBI
  2. CAO Emissions Inventory (Revision 3) - Redacted
  3. Ceramic Filtration Unit Glass Wool Fiber Emissions Analysis

cc: Cindy Frost, H&V  
Mike Eisele, DEQ