JHBaxter

October 23, 2020

Mr. Max Hueftle, PE, BCEE
Permit Section Manager
Lane Regional Air Protection Agency
1010 Main Street
Springfield, Oregon 97477

Re: Response to LRAPA September 23, 2020 Request for Information

Dear Mr. Hueftle:

J. H. Baxter & Co. (JHB) received your letter dated September 23, 2020 requesting further explanation and reference documents to support the "Emissions Estimate Approach to Cleaner Air Oregon [CAO]" technical memorandum (tech memo) prepared by Maul Foster and Alongi, Inc. (MFA) on August 5, 2020. The original intent of the tech memo was to disclose the proposed toxic air contaminant (TAC) emissions estimate approach to LRAPA for review and approval, prior to conducting liquid sampling at the facility and developing the CAO emissions inventory. The remainder of this letter outlines our responses to each item listed in your September 23 request.

Retort Door Openings:

Responses and reference documents addressing the "Retort Door Opening" section items are listed and summarized in the AquAeTer, Inc. report presented in Attachment A.

Drip Pad and Storage:

Responses and reference documents addressing the "Drip Pad and Storage" section items are listed and summarized in the AquAeTer, Inc. report presented in Attachment A.

Others:

1. *Since the [toxic release inventory] (TRI) spreadsheets will be used for the vacuum system and storage tanks, LRAPA requests versions of those files that include the formulas so that we can review and more easily track the calculations*

TRI example spreadsheets are being provided to LRAPA via email as a part of this letter. In total there are three separate TRI spreadsheets due to the different wood preservative solutions used at the facility. Each TRI spreadsheet is grouped depending on the wood preservative solution as follows: (1) the "heavy oils" TRI spreadsheet accounts for creosote, bunker C oil, and heavy oil blends of creosote and bunker C oil, (2) the pentachlorophenol (PCP) TRI spreadsheet, and (3) the "waterborne" TRI spreadsheet accounts for Ammoniacal Copper Zinc Arsenate and Alkaline Copper Quaternary—

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Type B. In the heavy oil and PCP TRI example spreadsheets, please see the "pressure" sheets for relevant calculations to derive the vacuum cycle and work tank emission estimates.

2. *LRAPA asked for assurances that there are no emissions from railcar/truck unloading. We understand that the facility no longer conducts air agitation but want to know if the trucks/railcars are heated and if there are any emissions.*

Upon further review of the railcar and truck unloading processes at the facility, we determined that TAC emissions may result due to the heating of delivered materials and/or open vents/hatches on the truck tanks. Railcar vessels may be heated up to 180°F prior to pumping delivered materials to a pre-specified storage tank. During this heating period, vapors in the vessel's headspace may be emitted through a small port and/or vent located atop the vessel. Note there is no heating of material for truck unloading. For truck unloading, a vent on top of the truck tank is left open during unloading and may emit directly to atmosphere.

As a result, potential TAC emissions from railcar and truck unloading will be included in the CAO emissions inventory upon submittal. Railcar and truck unloading emissions will follow the calculations and procedures as outlined in AP-42 Chapter 5.2. It is important to note that no noticeable odor has been observed by facility personnel during the unloading processes.

We trust that the above responses satisfy the LRAPA request and are sufficient, following review, for LRAPA to issue approval of the proposed CAO emissions estimate approach. We appreciate the ability to work collaboratively with LRAPA through this process in advance of the CAO emissions inventory submittal. Should LRAPA have any questions or require clarifying information about this letter, please contact me at (650) 349-0201.

Sincerely,
J.H. Baxter & Co.

Georgia Baxter-Krause
President, JHB

cc: Jeanne Olson, JHB
Brian Snuffer, PE, MFA
John Michael Corn, PE AquAeTer, Inc.

ATTACHMENT A

AQUAETER, INC. REPORT

Drip Pad and Storage:

1. *Since this the approach is heavily dependent on temperature corrections, LRAPA is requesting assurances and considerations to other approaches that do not underestimate emissions; LRAPA is requesting clarification on how the 24-hr California Pole Test Temp was used to calculate temperature corrections.*

The Feather River testing was conducted at ambient temperatures, with lows in the 50's and highs up to 90°F. The daily average temperature during the test was 80°F. The weather was sunny and dry. Additional temperature data for treated ties were collected at the Kerr McGee Avoca and Indianapolis sites and the Koppers Grenada facility. These data were presented to the USEPA in October 1994. The presentation given at that time, which includes the temperature measurements, is provided in Attachment 5. This presentation was given to ODEQ in July 1998 during a previous permit discussion concerning The Dalles facility, which was operated by Kerr McGee at the time.

The temperature correction factor was based on the exponential increase in naphthalene's vapor pressure as temperature increases. The equation is given in Equation 3. The derivation of the temperature correction factor begins on Page 5 of Attachment 5. If the daily average temperature is less than 80°F, the temperature correction factor is less than 1. If the daily average temperature is greater than 80°F, the temperature correction factor is greater than 1.

$$Temperature\ Correction\ Factor = e^{-11{,}161.25\left(\frac{1}{T_{avg}°F+460}-\frac{1}{80°F+460}\right)} \qquad 3$$

where: T_{avg} = daily average temperature, in degrees Fahrenheit.

The temperature correction factor was accepted as valid by the USEPA in a letter dated November 4, 1994. This letter is provided in Attachment 5.

2. *LRAPA believes the Feather River study is generally good but are concerned that it may not be representative of other facilities and other treatment solutions at other facilities (e.g., 50/50 and ammonia-based).*

The Feather River study can be related to other treatment facilities through the use of known, accepted methods. For plants using creosote only, the relationship is direct, with adjustments made based on known constituent analyses.

The use of blends for the wood treatment can also be related. For heavy oils like Number 6 oil, the emissions tended to be less than those from 100% creosote due to the lower vapor pressure of the heavy oil.

If a lighter oil was used as the blend with creosote, then a VMF analysis should be done for the components used.

regards to water, the specification for treatment is that water makes up no more than 3% of the solution.

The working solution contains water because it is removed from the wood during the treatment cycle. With respect to emissions based on the volume of creosote/treating solution, the volume of water does not come into the calculation. The TRI calculation completed to estimate emissions for the process does not take into account any water. It is therefore overestimating the emissions from process devices where water has entered the solution.

The main effect of water is on the vapor pressure of the treating solution. The presence of water is significant in the solution, since its vapor pressure at ambient and at operating temperatures is many times greater than the semi-volatile compounds that make up creosote.

Water is inherently part of the process following any treatment of the wood. Multiple tests have indicated that the water vapor becomes the dominant emission from the cylinder door. AquAeTer prepared an analysis of this phenomenon from test data and submitted this report to Kentucky DEP on May 10, 2010. The report is included as Attachment 6.

If you have questions or comments pertaining to this proposal, please contact us by telephone at (615) 373-8532 or by e-mail at jmcorn@aquaeter.com. We appreciate the opportunity to assist you on this project.

Sincerely,

AquAeTer, Inc.

John Michael Corn, P.E.
President

Michael R. Corn, P.E. (OR), BCEE
Senior Technical Advisor

ATTACHMENTS

Attachment 1. “Field Study of PAH Air Emissions from Creosote Wood-Treating Cylinder Door Openings” May 2010.

Attachment 2. Raoult’s Law Papers

Attachment 3. “Analysis of the Benzene Content in Creosote” November 2008

Attachment 4. Addendum to the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air – Second Edition

Attachment 5. History of Black Tie Storage Calculations

Attachment 6. Water Vapor Report, 2010.