

July 31, 2023

Via Email

Scott Evans
Environmental Quality Analyst
Air Quality Division
Michigan Department of Environment,
Great Lakes and Energy
Grand Rapids District
State Office Building
350 Ottawa Avenue, NW
Unit 10
Grand Rapids, MI 48503

**Re: Keebler Company, Grand Rapids**

Dear Mr. Evans:

I am writing on behalf of Keebler Company (“Keebler”) in response to your letter dated June 22, 2023 (the “VN”). First, I would like to thank you for agreeing to extend the time for this response to July 31, 2023.

As discussed in my May 9, 2023 letter to Annette Switzer of AQD, Keebler recently identified unexpected emissions of formaldehyde and acetaldehyde from Oven 2 at its Grand Rapids facility, located at 310 28th Street, SE (PTI 206-08J) (the “Grand Rapids Bakery”). Acetaldehyde and formaldehyde emissions are generally associated with the bioactivity of yeast and only unleavened products (*e.g.*, toaster pastries) are produced in Oven 2. In order to better understand the emissions, Keebler arranged for an engineering test of formaldehyde and acetaldehyde emissions from Oven 2. Those results were reported in my May 9, 2023 letter and, as requested in the VN, the engineering test report is included with this letter as **Attachment A**. There were no other Hazardous Air Pollutants (“HAPs”) that were tested during this engineering test. A separate report of emissions of 2,3 pentanedione; glycerin; triacetin; and ethyl pyrazine was previously provided to AQD.

The VN asserts that the emissions of acetaldehyde emissions exceed the facility-wide limit of 0.9 tons per year (“tpy”) in PTI 206-08J, Special Condition I.4. Although Special Condition I.4 is a facility-wide limit, the technical basis for that limit was anticipated acetaldehyde emissions from Oven 6, which is permitted to produce pita crackers, and not emissions from Oven 2. Therefore, in assessing this matter, Keebler is evaluating potential emission reduction methods as well as considering whether the permit should be revised in light of this new information.

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The VN also requested facility-wide potential to emit calculations for all individual and aggregate HAPs. The analysis, prepared by Trinity Consultants, is included as **Attachment B**. As shown in Attachment B, the potential to emit acetaldehyde was determined to be 8.40 tpy, for formaldehyde 6.73 tpy and total HAPs from the facility 15.74 tpy.

The Grand Rapids Bakery includes six natural gas-fired ovens, ranging from 9.6 mmBtu/hr to 15.7 mmBtu/hr and ancillary equipment, which are used for baking leavened and non-leavened bakery products. Based on the engineering test, Trinity Consultants calculated emission factors for acetaldehyde and formaldehyde in units of pounds per ton of product (toaster pastries). Of the six ovens, only three (EUOVEN1B, EUOVEN2 and EUOVEN7) are used for producing toaster pastries. Therefore, to calculate potential to emit for acetaldehyde and formaldehyde, Trinity Consultants applied the emission factor derived from the testing of Oven 2 to the maximum production rates for those ovens provided in the most recent PTI application. The estimated potential to emit also includes 0.9 tpy potential emissions of acetaldehyde and a lesser amount of formaldehyde from Oven 6 as discussed in Attachment B.

Trinity Consultants also included potential HAP emissions from natural gas combustion for all six ovens using AP-42 emission factors in deriving the potential to emit.¹

As discussed previously, since becoming aware of the possibility of formaldehyde and acetaldehyde emissions from Oven 2, Keebler has been evaluating options for addressing these emissions. At this time, the evaluation is focused on the possibility of utilizing thermal oxidizer technology. This assessment is ongoing, but is well underway and Keebler would be happy to discuss this further with AQD staff. Keebler looks forward to proposing a solution that will address any and all concerns regarding these emissions.

Thank you for your attention to this matter. Please let me know if you have any questions or would like to discuss this further.

Sincerely,



S. Lee Johnson

¹ AP-24 emission factors for formaldehyde from natural gas combustion for Oven 1B, Oven 2 and Oven 7 were not included because those emissions would already be included in the emission factors derived from the engineering test.

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cc: Danielle Poma, Keebler
Annette Switzer, EGLE
Christopher Ethridge, EGLE
Brad Myott, EGLE
Jenine Camilleri, EGLE
Heidi Hollenbach, EGLE
Ken Odza
Evelyn Parks
Stacy Huelsman
Carolina Canogil