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January 19, 2017

Todd Zynda
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Air Quality Division
Michigan Department of Environmental Quality
Cadillac Place
3058 West Grand Boulevard
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Detroit, MI 48202-6058

**Re: BASF Wyandotte
Response to December 15, 2017 Violation Notice**

Dear Mr. Zynda:

BASF Corporation (“BASF”) is submitting this response to the Violation Notice issued by the Air Quality Division (“AQD”) to BASF’s Wyandotte, Michigan plant (the “facility” or the “site”). As we agreed at our December 19th meeting with AQD personnel, we are submitting this response by January 19, 2018.

The Violation Notice alleges that the facility violated Prevention of Significant Deterioration (“PSD”) requirements, R 336.2802(3), when it resumed operation of its Steam Plant, which AQD alleges was a major modification to an existing major source, as defined in R 336.2801(aa). Given the extensive communication between BASF and AQD over the past several years since the project in question was initiated, and BASF’s cooperation in obtaining the permit to install (“PTI”) requested by AQD, we are surprised and disappointed by the issuance of the Violation Notice. In fact, the potential to emit (“PTE”) calculation that forms the basis for the Notice was a revised PTE submitted at the request of AQD, using unrealistically high PTE figures. We hope that this response helps clarify some of these issues.

I. Project Background.

BASF’s Wyandotte facility is a specialty chemical manufacturing plant that uses continuous and batch chemical processes to manufacture a variety of chemicals for its customers. The facility comprises three separate stationary sources: the Chemicals Plant; the Plastics Plants; and the Labs and Application Centers. BASF also operates a Steam Plant at the site. That plant consists of four 49.9 MMBtu/hr boilers that were installed in 1981 and permitted to fire either natural gas or No. 6 fuel oil. Historically, the boilers were used to provide both the steam required by the facility’s manufacturing processes and comfort heating for the entire plant. The Steam Plant has been considered as part of the Chemicals Plant for permitting purposes, although it also provides steam to the other operations at the site.



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In 2005, BASF entered into an agreement with the City of Wyandotte to purchase steam to meet its process and comfort heating needs. At that time, it idled the four on-site boilers, as no additional steam was required to serve the facility's needs. However, the site maintained the boilers in its Renewable Operating Permit ("ROP").

In 2016, the contract with the City ended, and BASF elected to resume steam generation on-site. As part of this plan, the site designed and purchased low-NO_x burners to control emissions from the boilers. As a result, under any "real-world" scenario, the emissions from the boilers will be significantly lower than their historical emissions.

II. PSD Analysis

AQD regulations, like the federal PSD program, requires preconstruction permitting for a "major modification" to an existing major stationary source. The facility is a major stationary source, and so the critical question at issue is whether the site's decision to resume operations of the boilers constituted a major modification – that is, whether it was a physical change or change in the method of operation of the site that would result in both a "significant emissions increase" and a "significant net emissions increase" of any regulated new source review pollutant. R. 336.2801(aa). For NO_x, the significance threshold is 40 tpy.

Under any real-world comparison, the boilers would clearly not result in a significant increase of NO_x emissions: as discussed above, the site's ROP authorizes unlimited operation of these units combusting natural gas, without the use of the low-NO_x burners that BASF installed; the installation of the low-NO_x burners cuts NO_x emissions in half.

PSD, however, does not operate on "real-world" principles. R 336.2802(c)-(d) requires emissions to be calculated in one of two ways: for projects that are limited to existing units, the emissions increase is calculated by subtracting the baseline actual emissions (that is, the historical emissions rate at which the units were operated) from the projected actual emissions; for projects that involve the construction of new units or modification of existing units, emissions are calculated by subtracting the baseline actual emissions from the PTE of the new or modified units. In this case, "baseline actual emissions" is zero, because the boilers had not operated within the ten-year baseline period provided in R 336.2801(b), so the project would result in a significant emissions increase if the projected actual emissions or potential to emit from the boilers themselves exceeded 40 tpy NO_x.

Because the project in question was limited to existing units, the emissions increase associated with the project is appropriately calculated based on the projected actual emissions from the site. Projected actual emissions is defined as the maximum annual rate at which an existing emissions unit is projected to emit a regulated pollutant in any one of the five years following the completion of the project, based on "all relevant information, including but not limited to historical operational data" and the company's projections for future business demand." R 336.2801(II).

In this case, the projected actual emissions are easily calculated, because the site has always required steam for both process use and comfort heating; the only change has been the source of that steam – first from the boilers at the facility itself, then from the City, and now again from the same boilers at the facility. Furthermore, the project in question does not involve any changes to process equipment or other facility operations that might increase the demand for steam



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production from those boilers. As a result, the site's historical steam usage data is a highly reliable indicator of the projected steam demand.

A chart identifying the steam usage at the facility over the past ten years is included as Attachment A. As the chart indicates, the highest monthly steam usage on record over this period was under 78 million pounds of steam; the highest total annual steam usage during any 12-month rolling period was 230,381 tons (October 2013 to September 2014), which would correspond to approximately 14.1 tpy of NO_x emissions from the boilers when equipped with low-NO_x burners. Even adding a 10% margin of safety to account for changes in the weather and demand demonstrates that the projected actual emissions associated with the project would be well below the 40 tpy significance threshold (15.5 tpy NO_x).

AQD refused to allow the site to evaluate the boiler project based on projected actual emissions, however, instead requiring the site to determine PSD applicability based on the site's PTE, as if the boilers were entirely new equipment providing an entirely new service that had never previously been used at the site. BASF does not believe that this approach is warranted in this circumstance. The 7th Circuit has clearly held that for PSD emissions purposes, the agency may not "wholly . . . disregard past operating conditions at the plant." *Wisconsin Electric Power Co. v. Reilly*, 893 F.2d 901 (7th Cir. 1990). Rather, in a case like this – in which the same type of unit will be used to serve the same demand – it is arbitrary and capricious to ignore this significant historical record and assume that the units will be operated continuously at their maximum rates.

Nevertheless, in an attempt to cooperate with AQD, the site calculated a PTE for the boiler project of 32.1 tpy, which figure was originally set forth in the site's August 16, 2016 Permit to Install Exemption Applicability Demonstration, and further explained in December 15, 2017 email from Brian Greenwald of Barr Engineering Co. to John Vial of the AQD Permits Section). As defined, PTE is "the maximum capacity of a stationary source to emit a pollutant under its physical and operational design." R 336.2801(hh). EPA has for decades recognized that this definition by its very terms includes inherent operational constraints, such as internal bottlenecks within the system, or the need to conduct maintenance and repairs, that prevent facilities from operating 24 hours per day, 365 days per year. As EPA explained in discussing the operation of batch chemical operations:

The EPA explicitly clarifies that in calculating the potential to emit for batch chemical operations, it is not necessary to determine the maximum emissions for a worst-case hour of operation, and to multiply that value times 8760. It is physically impossible for the process to sustain the worst-case hourly emission rate over the entire batch and so the EPA deems it appropriate to take into account variations in the emissions rate over the course of the entire cycle.

"Clarification of Methodology for Calculating Potential to Emit (PTE) for Batch Chemical Production Operations" (EPA Aug. 29, 1996) at 2.

Put another way, the concept of PTE assumes that the equipment in question will be used *as necessary for its intended purpose*. So, for example, EPA has agreed that the owner of a grain elevator, which is used only when crops are available for harvest and sale, does not need to pretend that the grain elevator will be used 12 months of the year, because "such a year-round operation is clearly unachievable as a practical matter and does not occur in reality." "Calculating



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Potential to Emit (PTE) and Other Guidance for Grain Handling Facilities” (EPA Nov. 14, 1995) at 4. Similarly, EPA has concluded that emergency generators, which are expressly designed to operate only during certain emergency situations, do not need to be assumed to operate 8760 hours per year as if they were a base-load unit. See “Calculating Potential to Emit (PTE) for Emergency Generators” (EPA Sept. 6, 1995).

These “inherent constraints” are appropriately considered in the PTE calculation even when they are not written into a permit. As EPA noted, requiring these sorts of inherent constraints to be included in a permit would be “unnecessary and burdensome.” Grain Elevator Memorandum at 3. Even more critically, it is a fundamental tenet of the PSD program itself:

The broad holding of *Alabama Power* is that potential to emit does not refer to the maximum emissions that can be generated by a source hypothesizing the worst conceivable operation. Rather, the concept contemplates the maximum emissions that can be generated while operating the source as it is intended to be operated and as it is normally operated. Of course, it is possible that a source could be operated without the control equipment designed into it or that a Konus heater could be operated so badly that the fire would go out. Yet, *Alabama Power* stands for the proposition that hypothesizing the worst possible emissions from the worst possible operation is the wrong way to calculate potential to emit.

United States v. Louisiana-Pacific Corp., 682 F.Supp. 1141, 1158 (D. Colo. 1988).

The *Louisiana-Pacific* case is directly relevant here. In that case, EPA concluded that the site in question had a PTE above the PSD thresholds, based on stack testing that was performed when the system overheated, causing the fire to smolder and CO emissions to skyrocket. The Agency argued that this testing could reasonably be used to estimate PTE, because “it was still possible to operate the unit in this way,” *id.* at 1157, even though that type of operation was “contrary to the unit’s design,” *id.* at 1158. The court rejected this claim, concluding that “it serves no legitimate purpose to test the emissions from a source when that source is being operated in a way it would never be operated in actual practice.” *Id.*

That same principle applies here. As discussed above, the boilers in question operate to serve two needs: the steam needs of the processes; and the comfort heating needs of the site. Before the site initiated this process, it evaluated the maximum anticipated demands for both of these purposes, and concluded that the maximum steam production that would ever be anticipated from the boilers is 120,000 lb/hr, which results in the 32.1 tpy figure the site used as its PTE. Assuming that the boilers would operate at a higher collective steam production rate than 120,000 lb/hr effectively assumes that BASF would elect to burn natural gas to produce steam and heat, only to vent the steam and heat to the atmosphere, because the equipment that steam is designed to serve cannot use it. Such an approach directly violates the principles set forth in *Louisiana-Pacific* and the EPA guidance discussed above.

The conservative nature of the 120,000 lb/hr figure is further borne out by the utilization data in Attachment A. Steam usage at a rate of 120,000 lb/hr corresponds to a monthly usage of 86 million lbs. As discussed above, that figure is well above even the highest recorded month in the past ten years (78 million pounds during January 2014) – and more than double the average annualized usage over that entire period. See Attachment A.



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BASF therefore cannot agree that its boiler project ever exceeded the PSD "major modification" thresholds, under either a projected actual emissions or PTE basis. Nevertheless, as we discussed in the December 15, 2017 email and at our December 19, 2017 meeting, BASF has already agreed to obtain a PTI that will ensure that the PTE of the project will always remain below the 40 tpy significance threshold, and it has submitted a PTI application that does so. Indeed, it was only in the submission of that application that led to the Violation Notice in question: BASF prepared that application following AQD's instructions to assume the boilers would operate 24/7/365 operation, which led to the submission of the artificially elevated PTE for the Steam Plant that is the basis of this Notice. For all of the reasons discussed above, BASF cannot agree that this final PTE calculation is an accurate or appropriate representation of the site's emissions for PSD purposes.

Please feel free to contact me (734-324-6523; bryan.hughes@basf.com) if you have questions or require further information.

Sincerely,

A handwritten signature in blue ink, appearing to read "Bryan J. Hughes".

Bryan J. Hughes
EHS Team Leader
Ohio-Michigan-Canada Hub