


**MEMO**

**TO** James D. Rebarchak  8/18/23  
Manager, Air Quality Program  
Southeast Regional Office

**FROM** Jing Y. Guo  
Facilities Permitting Section JYG 8/1/2023  
Air Quality Program

**THROUGH** Janine Tulloch-Reid, P.E. JET 8/10/2023  
Manager, Facilities Permitting Section  
Air Quality Program

**DATE** August 1, 2023

**RE** RACT III Technical Review Memo  
Title V Operating Permit, No. 46-00198  
**Blommer Chocolate Company**  
APS No. 346422; PF No. 524123  
Upper Hanover Township  
Montgomery County

## **Procedural History**

As part of the RACT regulations codified at 25 Pa. Code §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO<sub>x</sub> and VOCs for the 2015 ozone NAAQS) (RACT III), PA DEP has established a method under 25 Pa. Code § 129.114(i) (relating to alternative RACT proposal and petition for alternative compliance schedule) for an applicant to demonstrate that the alternative RACT compliance requirements incorporated under 25 Pa. Code § 129.99 (relating to alternative RACT proposal and petition for alternative compliance schedule) (RACT II) that are currently in force in the applicable operating permit continue to be RACT under RACT III.

The procedures to demonstrate that RACT II equals RACT III are specified in 25 Pa. Code § 129.114(i)(1)(i), 129.114(i)(1)(ii) and 129.114(i)(2), that is, subsection (i), paragraphs (1) and (2). An applicant may submit an analysis, certified by the responsible official, that the RACT II permit requirements remain RACT for RACT III by following the procedures established under subsection (i), paragraphs (1) and (2).

25 Pa. Code § 129.114(i) paragraph (1) establishes cost-effectiveness thresholds of \$7,500 per ton of NO<sub>x</sub> emissions reduced and \$12,000 per ton of VOC emissions reduced as “screening level values” to determine the amount of analysis and due diligence that the applicant shall

perform if there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis. Paragraph (1) has two subparagraphs.

25 Pa. Code § 129.114(i) subparagraph (i) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under 25 Pa. Code § 129.99(e) had a cost effectiveness equal to or greater than \$7,500 per ton of NO<sub>x</sub> emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains equal to or greater than \$7,500 per ton of NO<sub>x</sub> emissions reduced or \$12,000 per ton of VOC emissions reduced.

25 Pa. Code § 129.114(i) subparagraph (ii) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under 25 Pa. Code § 129.99(e) had a cost effectiveness less than \$7,500 per ton of NO<sub>x</sub> emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.

- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains less than \$7,500 per ton of NO<sub>x</sub> emissions reduced or \$12,000 per ton of VOC emissions reduced.
- A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique.

25 Pa. Code § 129.114(i) paragraph (2) establishes the procedures that the applicant that evaluates and determines that there is a new or upgraded pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis shall follow.

- Perform a technical feasibility analysis and an economic feasibility analysis in accordance with 25 Pa. Code § 129.92(b) (relating to RACT proposal requirements).
- Submit that analysis to the Department (or appropriate approved local air pollution control agency) for review and approval.

The applicant shall also provide additional information requested by the Department (or appropriate approved local air pollution control agency) that may be necessary for the evaluation of the analysis submitted under 25 Pa. Code § 129.114(i).

## **RACT III Applicability Analysis**

Blommer Chocolate Company (Blommer) is a chocolate manufacturing plant located in Upper Hanover Township, Montgomery County. The facility is considered as a Title V facility because it has been identified as a major source of Volatile Organic Compounds (VOC) emissions. The facility is an area source for Hazardous Air Pollutants (HAP) and a minor source for all other criteria pollutants. The facility-wide potential to emit (PTE) VOC emissions are 87.59 tons per year (tpy); the facility-wide potential to emit Nitrogen Oxide (NO<sub>x</sub>) emissions are 15.71 tpy. The facility is currently operating under Title V Operating Permit, No. 46-00198.

The Department of Environmental Protection (DEP) conducted a Full Compliance Evaluation inspection at this facility on March 16, 2021. No violations were observed.

On December 22, 2023 (revised notification was received on May 12, 2023), Blommer addressed the applicable RACT III VOC requirements in their Notification of RACT III Applicability submittal. This submittal was timely as per 25 Pa. Code §§ 129.112(a)(1)(i) and 129.115(a)(1)(i). It included and/or indicated the following:

- **Applicability**  
this facility is a minor Nitrogen Oxides (NO<sub>x</sub>) emitting and a major Volatile Organic Compounds (VOC) emitting facility, as defined in 25 Pa. Code § 121.1,
  - Major NO<sub>x</sub> emitting facility – a facility-wide potential to emit (PTE) greater than 100 tpy.
  - Major VOC emitting facility – a facility-wide PTE greater than 50 tpy.

This facility commenced operation before August 3, 2018. Therefore, Blommer is not subject to the NOx provisions of RACT III, and is subject to the VOC provisions of RACT III, in accordance with 25 Pa. Code § 129.111(a);

- There are no applicable presumptive RACT requirements and RACT emissions limitations for the affected sources listed in Table 1 at this facility. In accordance with 25 Pa. Code §129.114(i), Blommer determined that there is no new VOC control device, air pollution control technology or technique available. Blommer conducted cost effectiveness analysis and concluded that they can maintain compliance with the alternative RACT requirements and/or emissions limitations previously approved under 25 Pa. Code §129.99(e) as RACT by the DEP;
- the RACT III notification was prepared in accordance with 25 Pa. Code § 129.115(a).

### Summary of RACT II Requirements for Each Affected Source

It was determined under the RACT II analysis (see Appendix A – RACT II review memo) that for each affected source listed in Table 1, through the cast-by-case analysis, the economic feasible VOC control option is the *use of good operating practices for the control of VOC emissions*, and the facility shall also comply with the following RACT II standards:

- keep sufficient records for demonstrating compliance as defined in 25 Pa. Code §129.100(d) and (i).

**Table 1 Source Specific Summary of RACT II Case-by Case Analysis**

Process Line	Source ID	Source Description	Potential to Emit VOC (tpy)
Line 1	109	Line 1 Roaster	5.74
	132A	Line 1 Grinder	5.5
Line 2	105	Line 2 Roaster	10.41
	108	Line 2 Grinder	4.68
Line 3	118A	Line 3 Grinder	7.78
	125	Line 3 Roaster	21.31
Line 4	143	Line 4 Micronizer	3.29
	147	Line 4 Cooler	6.42
Alkanization	124A	Alkanization Processes	13.05

### RACT II as RACT III (Economically Feasible VOC Control Options)

Blommer states in the RACT III notification submittal that the facility has not modified or changed any RACT affected sources that commenced operation on or before October 24, 2016, has not installed and commenced operation of a new source after October 24, 2016, there are no presumptive RACT requirements and RACT emission limitations under the RACT III rule for the affected sources. Additionally, Blommer and the Department evaluated and determined that

there is no new VOC control technology or technique available since the RACT II was promulgated. Therefore, the RACT III evaluation for the affected sources which were evaluated through the case-by-case analysis under the RACT II review (see Table 2), is conducted via 25 Pa. Code §129.114(i)(1)(i) or §129.114(i)(1)(ii) based on their RACT II cost effectiveness.

**Table 2 Cost effectiveness review under RACT II and RACT III evaluation citations**

Process Line	Source ID	Source Description	Potential to Emit VOC (tpy)	Cost Effectiveness (\$/ton VOC reduced) <sup>(1)</sup>	RACT III Review under Following Citations
Line 1	109	Line 1 Roaster	5.74	\$25,964	§ 129.114(i)(1)(i)
	132A	Line 1 Grinder	5.5		
Line 2	105	Line 2 Roaster	10.41	\$10,833	§ 129.114(i)(1)(ii)
	108	Line 2 Grinder	4.68		
Line 3	118A	Line 3 Grinder	7.78	\$8,358	§ 129.114(i)(1)(ii)
	125	Line 3 Roaster	21.31		
Line 4	143	Line 4 Micronizer	3.29	\$32,234	§ 129.114(i)(1)(i)
	147	Line 4 Cooler	6.42		
Alkanization	124A	Alkanization Processes	13.05	\$11,828	§ 129.114(i)(1)(ii)

(1) See RACT II review memo in Attachment A.

Path A – 25 Pa. Code § 129.114(i)(1)(i), is for the feasible VOC control method cost analysis expressed in the RACT II alternate compliance package (25 Pa. §129.99) was equal to or greater than \$12,000 per ton of VOC reduced.

For Source IDs. 109, 132A, 143, and 147, the procedures to demonstrate “RACT II equals RACT III” will be reviewed through Path A.

Path B - 25 Pa. Code §129.114(i)(1)(ii), is for the feasible control method cost analysis expressed in the RACT II alternate compliance package (25 Pa. Code §129.99) was less than \$12,000 per ton of VOC reduced.

For Source IDs. 105, 108, 118A, 125, and 124A, the procedures to demonstrate “RACT II equals RACT III” will be reviewed through Path B.

Presented below are the step-by-step evaluation under 25 Pa. Code §129.114(i)(1)(i) and 25 Pa. Code §129.114(i)(1)(ii), for each affected source.

<b>Steps</b>	<b>Path A – 25 Pa. Code §129.114(i)(1)(i)</b> Cost effectiveness equal to or greater than \$12,000 per ton VOC reduced	<b>Path B - 25 Pa. Code §129.114(i)(1)(ii)</b> Cost effectiveness is less than \$12,000 per ton VOC reduced
<b>Affected source IDs</b>	<b>109, 132A, 143, and 147</b>	<b>105, 108, 118A, 125, and 124A</b>
<b>(A)- Identification of New Air Cleaning Devices, Air Pollution Control Technologies</b>	<p>Blommer reviewed entries in the RACT/Best Available Control Technology (BACT)/Lowest Achievable Emissions Rate (LAER) Clearinghouse (RBLC) to determine if any new technologies were applicable to the units onsite. The facility also performed an internet search of various web sites including the USEPA Technology Transfer Network (TTN) control technology clearinghouse. General web searches were performed to identify VOC controls implemented at chocolate manufacturing facilities. A search of the Chocolate Manufacturers Association (CMA) web site was also conducted. No new technically feasible technologies were discovered. DEP believes that the Blommer’s analysis is sufficient.</p> <p>Blommer identified eight (8) potential VOC control technology options, including good operating practices for the affected units which are consistent with recent and historical RBLC determinations.</p>	
<b>(B)- List Previously-Identified Technically Feasible Controls</b>	<p>Under the RACT II review, the following six (6) control technology options were determined to be <i>technically infeasible</i> due to the following reasons:</p> <ul style="list-style-type: none"> <li>• Utilizing the Existing Thermal Oxidizer – limited capacity,</li> <li>• Catalytic Oxidation – catalyst blinding due to the fats and oils,</li> <li>• Adsorption – fat and oil clogging the adsorption media;</li> <li>• Absorption - fat and oil are easily entrained into a water-based scrubbing solution (for a wet scrubber system),</li> <li>• Dry Electrostatic Precipitation – significant amount of tar buildup near electrodes from condensed fat and oil during a short period of operating time, and this leads to decreased unit efficiency.</li> <li>• Mist Elimination/Fine Fiber Filtration – the sticky nature of fats and oils in the exhaust system will clog the filter beds as fats and oils can not be washed down easily.</li> </ul> <p>The remaining control technology options determined to be technically feasible for the affected VOC emissions sources:</p> <ul style="list-style-type: none"> <li>• Installing new Thermal Oxidizers (RTO), and</li> <li>• Use of Good Operating Practices</li> </ul>	
<b>(C)- Previously-Identified Economic Feasible Control</b>	<p>Under the RACT II review, Blommer conducted an economic analysis of a new regenerative thermal oxidizer (RTO). In order to evaluate the most economically conservative control scenario, the emissions sources were grouped together based on the respective locations of each affected source</p>	

	at the Facility. Table 2 summarizes the results of the RACT II economic analysis.	
<b><i>(D) - A statement about economic feasibility evaluation under RACT II and RACT II requirements</i></b>	<ul style="list-style-type: none"> <li>• For VOC emissions sources of Line 1 and Line 4 (Source IDs 109, 132A, 143, and 147), the cost effectiveness of RTO VOC control method remains greater than \$12,000 per ton of VOC emission reduced.</li> <li>• The RTO VOC control method is NOT economic feasible option as the costs exceed the cost effectiveness benchmark.</li> <li>• Thus, the economic feasible VOC control for the affected sources is the installation, maintenance, and operation of the source in accordance with the manufacturer’s specifications and the <i>use of good operating practices</i>.</li> </ul>	<ul style="list-style-type: none"> <li>• For VOC emissions sources of Line 2, Line 3 (Source IDs 105, 108, 118A, 125) and Source ID 124A, the estimated cost of RTO VOC control method is less than \$12,000, but greater than \$8,357 per ton of VOC emission reduced.</li> <li>• It was approved by the DEP under the RACT II review [25 Pa. Code §129.99(e)] that the economic feasible VOC control for the affected sources is the installation, maintenance, and operation of the source in accordance with the manufacturer’s specifications and <i>the use of good operating practices</i> for the control of VOC emissions from the source in addition to compliance with established permit emissions limitations.</li> </ul>
<b><i>(E)</i></b>	No additional information requested by DEP.	<p><b><u>A new economic feasibility analysis:</u></b> Under the RACT III analysis, Blommer re-evaluated VOC emission control options and concluded that the technically feasible options for VOC control are:</p> <ul style="list-style-type: none"> <li>• <i>RTO (thermal oxidation), and</i></li> <li>• <i>Use of Good Operating Practice.</i></li> </ul> <p>Based on the current prices, Blommer conducted cost effectiveness analysis for RTO VOC control option for each of the affected sources listed above, following the same pattern as under RACT II. The updated cost estimates are presented in Table 3, with the estimated cost effectiveness ranges from \$12,365 to \$16,578 per ton of VOC emission reduced.</p>
<b><i>(F)</i></b>	Not applicable	No additional information is required.

<p><b><i>(G) economic feasibility evaluation under RACT III</i></b></p>	<ul style="list-style-type: none"> <li>Based on the cost analysis evaluation under the RACT II, the RTO VOC control method for the above listed emission sources is NOT an economic feasible option as the cost effectiveness exceeds the DEP benchmark threshold of \$12,000 per ton of VOC emission reduced.</li> </ul>	<ul style="list-style-type: none"> <li>From the RACT III preamble, “<i>The RACT III cost-effectiveness benchmark for presumptive <u>VOC RACT</u>, \$7,500, is larger in absolute magnitude than the RACT III cost-effectiveness benchmark of \$3,750 for presumptive <u>NOx RACT</u>,” and according to the new economic feasibility analysis results (see Table 3), the RTO VOC control method is an economic infeasible option as the updated cost effectiveness estimates for the above affected sources exceed the benchmark of \$7,500 per ton of VOC emissions reduced.</i></li> </ul>
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Based on the above analysis, Blommer and DEP both determine that the *economic feasible* VOC RACT III control method for the affected sources remains the same as under the RACT II analysis. That is,

- the use of good operating practices* for the control of VOC emissions from each affected source.

Additionally, Blommer shall install, maintain, and operate the sources in accordance with the manufacturer’s specifications, and comply with the permit emission limitations. All previously established permit emission limits satisfied Best Available Technology (BAT) at the time of the permitting each source.

**Table 3 Summary of RTO cost effectiveness based on current prices**

Process Line	Source ID	Source Description	RACT III Cost Effectiveness (\$/ton VOC controlled)
Line 1	109	Line 1 Roaster	N/A
	132A	Line 1 Grinder	
Line 2	105	Line 2 Roaster	\$16,490
	108	Line 2 Grinder	
Line 3	118A	Line 3 Grinder	\$12,365
	125	Line 3 Roaster	
Line 4	143	Line 4 Micronizer	N/A
	147	Line 4 Cooler	
Alkanization	124A	Alkanization Processes	\$16,578



## Comparison between RACT II and RACT III Requirements

Blommer is subject to the RACT III recordkeeping requirements, and there are no other requirements under this RACT Rule.

Blommer will keep the required records to demonstrate compliance with the RACT III Rule in accordance with 25 Pa. Code § 129.115(f) and (i). Sufficient data will be recorded, and all data used to demonstrate compliance with the proposed RACT requirements and emission limitations will be recorded and maintained in a time frame. The records will be maintained for 5 years and make available to the Department upon a request from the Department. The required recordkeeping shall include, but not limited to, (1) annual compliance reports, (2) preventative maintenance program records, (3) production rate and (4) emission calculations and emission data.

A summary of the RACT II requirement and the RACT III requirement citations for each affected source are presented in Table 4 below. The RACT III requirements under 25 Pa. Code § 129.115(f) and (i) are identical to the RACT II requirements as defined in 25 Pa. Code § 129.100(d) and (i). Thus, the RACT III requirements are as stringent as the RACT II requirements.

**Table 4 RACT II & III requirements and economic feasible VOC control method**

Source ID	Source Description	RACT II Requirements and Economic Feasible VOC Control Method	RACT III Requirements and VOC Control Method
105	Line Roaster	25 Pa. Code § 129.100(d) 25 Pa. Code § 129.100(i)  <i>the use of good operating practices</i> for the control of VOC emissions from each affected source	25 Pa. Code § 129.115(f) 25 Pa. Code § 129.115(k)  <i>the use of good operating practices</i> for the control of VOC emissions from each affected source
108	Line 2 Grinder		
109	Line 1 Roaster		
118A	Line 3 Grinder		
124A	Alkalization Processes		
125	Line 3 Roaster		
132A	Line 1 Grinder		
143	Line 4 Micronizer		
147	Line 4 Cooler		

## Conclusions

DEP has reviewed source information, control technologies and cost analysis evaluated by Blommer Chocolate Company. DEP also performed an independent analysis which included, the Department's continuous review of permit applications since the applicability date of RACT II, internet searches, BACT/RACT/LAER Clearinghouse search, knowledge gained from DEP

permitting staff participating in technical presentations by several vendors and manufacturers of pollution control technology, and a review of EPA and MARAMA's documents. Based on our review of these documents, along with training and the expertise of the reviewing staff, DEP concludes that there are no new or updated air pollution control technologies available for the sources found at Blommer Chocolate Company and determines that RACT II requirements for sources IDs 105, 108, 109, 118A, 124A, 125, 132A, 143, and 147 at Blommer Chocolate Company listed in the table 4 assure compliance with requirement for RACT III for the § 129.111 - § 129.115. The RACT II requirements continue to be the RACT for Blommer, and there will be no change to the permit conditions.

cc: TVOP 46-00198  
Montgomery County District

Appendix A – RACT II Review Memo

Blommer Chocolate Company  
Title V Operating Permit No. 46-00198

February 1, 2017

COMMONWEALTH OF PENNSYLVANIA  
Department of Environmental Protection  
Southeast Regional Office: 484-250-5920

**SUBJECT:** Technical Review Memo  
Significant Modification of Title V Operating Permit No. 46-00198  
Blommer Chocolate Company  
Upper Hanover Township, Montgomery County  
APS: 346422; AUTH ID: 1156504; PF ID: 524123

**TO:** James Rebarchak  
Regional Air Quality Program Manager  
Air Quality Program – Southeast Region Office

**FROM:** Jessica M. McMullen  
Facilities Permitting Section  
Air Quality Program

**THROUGH:** Janine Tulloch-Reid, PE  
Environmental Engineer Manager  
Air Quality Program

**I. Introduction**

Blommer Chocolate Company (Blommer) is a chocolate manufacturing plant located in Upper Hanover Township, Montgomery County. The facility is considered a Title V facility because it has been identified as a major source of Volatile Organic Compound (VOC) emissions only. The facility is an area source for Hazardous Air Pollutants (HAP) and a minor source for all other criteria pollutants. The facility-wide potential to emit VOC emissions is 87.59<sup>a</sup> tons per year (tpy); the facility-wide potential to emit Nitrogen Oxide (NO<sub>x</sub>) emissions is 15.71 tpy<sup>a</sup>. The current Title V Operating Permit (TVOP) No. 46-00198 expires on January 28, 2018.

On October 24, 2016 the Department of Environmental Protection (DEP) received two (2) modification applications from All4, Inc. on behalf of Blommer in order to incorporate Reasonably Available Control Technology (RACT) II compliance requirements into the existing TVOP:

- (1) The **Minor Modification** application (AUTH ID 1156500) includes the *Presumptive* RACT II Compliance Proposal. The Minor Modification application disposition has been changed to "REPLACED" by the Significant Modification application (AUTH ID 1156504) in the eFACTS database. All Presumptive RACT II requirements are incorporated with the Significant Modification; Presumptive RACT is discussed further in Section IV of this review memo.
- (2) The **Significant Modification** application (AUTH ID 1156504) includes the *Alternative* RACT II Compliance Proposal for the control of VOC emissions from processes that are not subject to Presumptive RACT requirements found in 25 Pa. Code § 129.97 because potential VOC

<sup>a</sup> PADEP technical review memo dated January 25, 2013 for the Title V renewal permit.

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emissions are greater than or equal to 2.7 tpy for individual sources. In accordance with RACT II requirements as found in 25 Pa. Code §§ 129.96 – 129.100, the submittal includes a case-by-case analysis and a top-down evaluation of Reasonably Available Control Technology for each source. The significant modification incorporates all Presumptive RACT requirements as discussed herein. The significant modification application was considered administratively complete with receipt of the Compliance Review Form on November 1, 2016 and all Title V fees are paid for and up to date. The application to modify the Title V Operating Permit is being processed in accordance with 25 Pa. Code § 127.541.

**II. Case-by-Case RACT II Sources and Emissions**

The Table 1 summarizes the nine (9) VOC process emission sources listed in the TVOP that require a case-by-case analysis and alternative RACT requirements proposal in accordance with 25 Pa. Code § 129.99. All of the combustion portions of emissions from Source IDs 109, 125, and 143 are addressed separately in the Presumptive RACT Compliance Proposal as summarized in Table 5, Section IV of this review memo.

TABLE 1: Source Specific Summary of RACT II Case-by Case Analysis

TVOP Source ID No.	Process Emission Source Description	Potential to Emit VOC (tpy)
105	Line 2 Roaster	10.41
108 <sup>b</sup>	Line 2 Grinder	4.68
109	Line 1 Roaster (Process Emissions)	5.74
118A <sup>b</sup>	Line 3 Grinder	7.78
124A	Alkalization Processes	13.05
125	Line 3 Roaster (Process Emissions)	21.31
132A <sup>b</sup>	Line 1 Grinder	5.5
143	Line 4 Micronizer (Process Emissions)	3.29
147	Line 4 Cooler	6.42

Other than Source ID 109, all potential to emit VOC emissions are based on current TVOP No. 46-00198 emission limits per source, appearing in Section D. Source ID 109 potential to emit VOC emissions are calculated using VOC emission factors based on historical stack testing conducted in accordance with US EPA Test Method 25, and throughputs based on maximum line throughputs as submitted in the 2005 expansion project plan approval application, assuming cocoa nibs are 80% of the weight of cocoa beans, as follows:

Source ID 109 Line 1 Roaster  
VOC Emission Factor = 0.45 lb VOC/ton bean  
Throughput = 25,500 ton bean/year

<sup>b</sup> Source ID 118 (Line 3 Grinder) equipment was removed and replaced with old Line 1 Jetzone Grinding (Source ID 132) equipment during the Spring 2007 Phase II Facility Expansion Project. Source ID 132 (Jetzone Line 1) equipment was moved to Line 3 and replaced with Line 2 Grinding (Source ID 108) equipment. Corrections to the permit are incorporated into this modification regarding these changes at the facility that occurred during the expansion project in 2007. PTE for each source is unchanged and original intentions of permit conditions are maintained.

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Process-related VOC emissions from the sources summarized above in Table 1 are primarily comprised of fats and oils resulting from the release of organic constituents in the cocoa bean due to a change in the state of the bean (increases in temperature, physical deformation, etc.). Volatile constituents in the cocoa beans include but are not limited to acetic acid, isovaleraldehyde, and isobutylaldehyde. VOC emissions occur in the roasting processes from the liberation of volatile constituents of the cocoa bean as it is heated. During grinding operations, cocoa nibs are forced through mills creating friction and heat and the nib itself is reduced into a liquid slurry. VOC compounds not volatilized during the roasting process (including micronizing and winnowing) are released as the physical state of the cocoa nib is changed. VOC emissions are released during the alkalization process as the nibs and kibbled cocoa are again subjected to high temperature and pressure.

The nature and speciation of process-related VOC emissions is similar for all sources at Blommer since each of the emissions sources process essentially the same raw material (cocoa beans) in one form or another. Due to the similarities in the VOC emissions profile, the alternative RACT analysis was conducted in general for all of the affected sources summarized in Table 1.

### **III. Step by Step Top-Down Analysis**

#### **Step 1: Identify Available Control Technologies**

Blommer searched the USEPA's RACT BACT LEAR Clearinghouse (RBLC) database for entries within the last ten (10) years to identify available VOC controls for roasting, grinding, cleaning, and miscellaneous operations in food industries. No determinations were found relating to chocolate manufacturing processes or for nut and coffee roasting. Blommer reviewed several BACT/LAER clearinghouse databases maintained by California Air Resource Board (CARB) for potential application of VOC controls for the chocolate industry in California. Specifically, the CARB, Bay Area Air Quality Management District (BAAQMD), and South Coast Air Quality Management District (SCAQMD) databases were searched. Again, no determinations were found relating to VOC control for any chocolate manufacturing processes.

Blommer performed an internet search of various web sites including the USEPA Technology Transfer Network (TTN) control technology clearinghouse. General web searches were performed to identify VOC controls implemented at chocolate manufacturing facilities. A search of the Chocolate Manufacturers Association (CMA) web site was also conducted. Several sources identified oxidation techniques as an available control option for VOC emissions from coffee roasting operations. However, no information on actual VOC control equipment installations for chocolate manufacturing facilities was found. After a review of the available resources, the following control technologies were identified as potentially available options for reducing emissions of VOC from the affected process sources:

(1) Thermal Oxidation (new and existing equipment), (2) Catalytic Oxidation, (3) Adsorption and (4) Absorption, (5) Wet Electrostatic Precipitation (ESP), (6) Dry Electrostatic Precipitation, (7) Mist Elimination/Fine Fiber Filtration, (8) Bio-filtration, and (9) Good Operating Practices.

#### **Step 2: Eliminate Technically Infeasible Options**

Six (6) control technology options were determined to be *technically infeasible* as indicated below:

*Existing Thermal Oxidizer* – The existing RTO (Source ID C001) currently controls emissions from the Line 4 Roasting (Source ID 145) and Line 4 Grinding (Source ID 148) operations. The existing RTO is

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designed to control VOC emissions to the required levels at a normal operating flow of 4,000 to 5,000 standard cubic feet per minute (SCFM). The RTO is currently handling a combined air flow from the Line 4 Roasting and Grinding operations of approximately 4,025 SCFM. Conveying uncontrolled VOC emissions from other sources to the existing RTO is not feasible because the existing RTO does not have the capacity to adequately handle and control those additional air flows.

*Catalytic Oxidation* – Catalytic oxidation is not considered technically feasible due to the incompatibility of the catalyst with the exhaust constituents. Based on Blommer’s engineering judgment and practical experience, the condensed oils and fats in the exhaust stream will blind and foul the catalyst bed.

*Adsorption* – Adsorption accomplishes the removal of VOC by collecting the pollutant in a carbon, or related, filter. The presence of fats and oils in the exhaust stream will foul, clog, and saturate the adsorption media. Therefore, adsorption is not considered technically feasible for this application.

*Absorption* – Absorption systems (i.e., wet scrubbers) function by absorbing soluble vapors and wetting particulate phase contaminants such that pollutants become entrained in the scrubbing fluid. Since fats and oils are hydrophobic in nature, they will not easily be entrained in a water-based scrubbing medium. Additionally, even if the technology were effective and a scrubber would be capable of entraining sub-micron and hydrophobic particulate matter, the end result would be the exchange of an air pollution problem for a water pollution problem in that the scrubber medium would ultimately require treatment and disposal. Therefore, absorption was determined not to be technically feasible.

*Dry Electrostatic Precipitation* – Blommer had initially installed this type of technology in the late 1980s on the Line 2 grinding units to control smoke. However, tar from condensed fats and oils collected by the unit accumulated on the electrodes over a period of time. This led to decreased efficiency of the unit and ultimately caused electrical problems, rendering the unit inoperable. Therefore, Blommer concluded that dry ESP is not technically feasible due to the presence of fats and oils in the exhaust stream.

*Mist Elimination/Fine Fiber Filtration* – This technology consists of a fine microfiber mesh filter and, in some cases, a wash down spray system to promote condensation and for washing of the filter. The filter is designed to collect sub-micron particulate and condensable particulate. The sticky nature of the fats and oils in the exhaust stream will not be removed by the wash down spray system and result in clogging the filter bed. For these reasons, mist elimination/fine fiber filtration is considered technically infeasible.

**Step 3: Rank Remaining Control Technologies by Control Effectiveness**

Those remaining control technology options determined to be technically feasible under Step 2 are ranked by control effectiveness in Table 2.

TABLE 2: Feasible VOC Control Technology Ranking

Control Technology Option	Control Efficiency	Ranking
Thermal Oxidation (new unit)	95-99.9%	1
Bio-filtration	60-99.9%	2
Wet ESP	50-75%	3
Good Operating Practices	Variable	4

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Step 4: Evaluate Economic, Environmental, Energy Impacts of Technically Feasible Control Technology  
Blommer conducted an economic analysis of a *new* regenerative thermal oxidizer (RTO). Since the RTO control technology will abate more VOC emissions (i.e., highest control efficiency) than the other technically feasible control technology options, and since overall costs associated with the RTO are lower than the other control technology options, the RTO cost analysis will yield the most cost effective result (i.e., the lowest \$/ton VOC controlled). In order to evaluate the most economically conservative control scenario, the emissions sources were grouped together because an RTO would be able to control more than one source of VOC emissions at a time. Blommer grouped emissions sources for the economic feasibility analysis based on the respective locations of each affected source at the Facility (i.e., the emissions sources were grouped based on the process line that they are associated with). Based on this methodology, Blommer has included an economic analysis for the RTO following the procedures and guidelines identified in the USEPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual (6<sup>th</sup> Edition). The detailed economic analyses for each of the processes evaluated are included in Appendix D of the significant modification. The results of these analyses demonstrate that the use of an RTO is not economically feasible for any of the processes evaluated. Table 3 summarizes the results of the economic analysis.

TABLE 3: Summary of RTO Cost Effectiveness

Process Line	Source ID	Source Description	Cost Effectiveness (\$/ton VOC controlled)
Line 1	109	Line 1 Roaster	\$25,964
	132A	Line 1 Grinder	
Line 2	105	Line 2 Roaster	\$10,833
	108	Line 2 Grinder	
Line 3	118A	Line 3 Grinder	\$8,358
	125	Line 3 Roaster	
Line 4	143	Line 4 Micronizer	\$32,234
	147	Line 4 Cooler	
Alkanization	124A	Alkanization Processes	\$11,828

Blommer currently uses good operating practices for the affected sources and therefore, a control cost analysis was not conducted. The facility does not anticipate any additional economic, environmental, or energy impacts associated with this control technique.

Step 5: Identify RACT

Blommer is proposing VOC RACT II for the affected sources to be the installation, maintenance, and operation of the source in accordance with the manufacturer’s specifications and *the use of good operating practices* for the control of VOC emissions from the source in addition to compliance with established permit emissions limitations. All previously established emission limits satisfied Best Available Technology (BAT) at the time of permitting each source. Table 4 provides a summary of the proposed VOC RACT II for each of the emissions sources evaluated. All of the requirements listed in Table 4 are existing conditions of the Title V permit; there are no changes to intent of original permit conditions. The Department approves of the proposed RACT for each source as summarized in Table 4 and in accordance with 25 Pa. Code § 129.99(e)(2). The modifications to the permit include the addition of RACT II citations 25 Pa. Code § 129.96-100, as applicable, and incorporating the terms “good operating practices” to each affected work practice standard condition.

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TABLE 4: Summary of Proposed VOC RACT

Source ID	Source Description	Proposed VOC RACT	TVOP No. 46-00198 Condition No.
105	Line Roaster	Good Operating Practices	Section D, Condition #006
		VOC Emissions < 10.41 tpy	Section D, Condition #002
108	Line 2 Grinder	Good Operating Practices	Section D, Condition #006
		VOC Emissions < 4.68 tpy	Section D, Condition #002
109	Line 1 Roaster	Good Operating Practices	Section D, Condition #009
118A	Line 3 Grinder	Good Operating Practices	Section D, Condition #006
		VOC Emissions < 7.78 tpy	Section D, Condition #002
124A	Alkalization Processes	Good Operating Practices	Section D, Condition #009
		VOC Emissions < 13.05 tpy	Section D, Condition #001
125	Line 3 Roaster	Good Operating Practices	Section D, Condition #010
		VOC Emissions < 21.31 tpy	Section D, Condition #004
132A	Line 1 Grinder	Good Operating Practices	Section D, Condition #006
		VOC Emissions < 5.5 tpy	Section D, Condition #002
143	Line 4 Micronizer	Good Operating Practices	Section D, Condition #008
		VOC Emissions < 3.29 tpy	Section D, Condition #003
147	Line 4 Cooler	Good Operating Practices	Section D, Condition #005
		VOC Emissions < 6.42 tpy	Section D, Condition #001

Blommer will demonstrate compliance with the proposed RACT by keeping the records as follows. In accordance with 25 Pa. Code §129.100(d), Blommer will keep sufficient records for demonstrating compliance with the RACT II Rule. All data used to comply with the proposed RACT requirements and emissions limitations will be recorded and maintained in a time frame that is consistent with the averaging period, as applicable. To demonstrate compliance with the proposed emissions limitations, Blommer proposes to calculate VOC emissions on a 12-month rolling basis using site-specific emissions factors. Blommer will also maintain other sufficient records including, but not limited to: (1) annual compliance reports, and (2) preventative maintenance program records. Pursuant to §129.100(i), all records will be maintained for at least five years and will be made available to DEP upon request. The affected Title V Conditions are summarized in Table 5.



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TABLE 5: Summary of RACT Recordkeeping Conditions

Source ID	Source Description	RACT Recordkeeping	TVOP No. 46-00198 Condition No.
105	Line Roaster	25 Pa. Code § 129.100(d)	Section D, Condition #004
		25 Pa. Code § 129.100(i)	Section D, Condition #005
108	Line 2 Grinder	25 Pa. Code § 129.100(d)	Section D, Condition #004
		25 Pa. Code § 129.100(i)	Section D, Condition #005
109	Line 1 Roaster	25 Pa. Code § 129.100(d)	Section D, Condition #007
		25 Pa. Code § 129.100(i)	Section D, Condition #008
118A	Line 3 Grinder	25 Pa. Code § 129.100(d)	Section D, Condition #004
		25 Pa. Code § 129.100(i)	Section D, Condition #005
124A	Alkalization Processes	25 Pa. Code § 129.100(d)	Section D, Condition #005
		25 Pa. Code § 129.100(i)	Section D, Condition #007
125	Line 3 Roaster	25 Pa. Code § 129.100(d)	Section D, Condition #008
		25 Pa. Code § 129.100(i)	Section D, Condition #009
132A	Line 1 Grinder	25 Pa. Code § 129.100(d)	Section D, Condition #004
		25 Pa. Code § 129.100(i)	Section D, Condition #005
143	Line 4 Micronizer	25 Pa. Code § 129.100(d)	Section D, Condition #006
		25 Pa. Code § 129.100(i)	Section D, Condition #007
147	Line 4 Cooler	25 Pa. Code § 129.100(d)	Section D, Condition #003
		25 Pa. Code § 129.100(i)	Section D, Condition #004

Please note the amount of cocoa nibs was not included as an enforceable limit during BAT analysis during initial permitting for each source and is not included with RACT II analysis because the cocoa nibs throughput was requested and approved as confidential and proprietary information to Blommer.

**IV. Presumptive RACT II Summary (AUTH ID 1156500)**

Separately, on October 24, 2016 DEP received a Minor Modification application (AUTH ID 1156500) from All4, Inc. on behalf of Blommer in order to incorporate *presumptive* RACT compliance requirements under 25 Pa. Code §129.97 into the TVOP.

In accordance with 25 Pa. Code § 129.97(c), RACT II for all of the presumptive RACT sources is the installation, maintenance, and operation of the source in accordance with the manufacturer’s specifications and with good operating practices for the control of VOC emissions from the source. As part of the presumptive RACT compliance proposal outlined in the minor modification application, Blommer has requested that Condition #023 in Section C (Site Level Requirements) of the current TVOP be revised to add the reference to good operating practices. However, instead of revising the Section C condition, the individual Source Level Requirement (Section D) has been modified to include the correct language and presumptive RACT II citation at each presumptive RACT II source. Table 6 summarizes the sources subject to presumptive RACT requirements.

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TABLE 6: Presumptive RACT Summary (Minor Modification AUTH ID 1156500)

TVOP Source ID No.	Source Description	RACT II Citation
107	Line 2 Cooler	25 Pa. Code § 129.97(c)(2): VOC PTE less than 2.7 tpy and greater than 1 tpy
110A/110B	Line 1 Feed Hopper/Retention Chamber	
131A	Line 2/3 Micronizer & Bucket Elevator (Process)	
135	Line 1 Winnower	
142	Line 2 Alkanization Mixer	
144	Line 4 Winnower	
033	Hurst Boiler No. 1	
034	Hurst Boiler No. 2	
109	Line 1 Roaster (Combustion)	
125	Line 3 Roaster (Combustion)	
131A	Line 2/3 Micronizer & Bucket Elevator (Combustion)	
143	Line 4 Micronizer (Combustion)	
700	Emergency Generator – Internal Combustion Engine (ICE)	25 Pa. Code § 129.97(c)(5): Stationary ICE rated at less than 500 bhp
C001	Regenerative Thermal Oxidizer (RTO)	25 Pa. Code § 129.97(c)(6): RTO used primarily for air pollution control

The significant modification incorporates all presumptive RACT II requirements as proposed in the minor modification application (AUTH ID 1156500) and described herein.

**V. Comment and Response**

Significant Modification Public Notices

A notice of Intent to Issue Title V Operating Permit was published in the *Pennsylvania Bulletin* on December 10, 2016 (Volume 46, Number 50) and in the local newspaper, *The Morning Call*, on November 16, 17, and 18 of 2016, in accordance with 25 Pa. Code § 127.424. There have been no comments received from the public.

Minor Modification Public Notices

In accordance with 25 Pa. Code § 127.462, the permittee has published the intent to modify the Title V Operating Permit in the local newspaper, *The Morning Call of Allentown* on October 26, 2016. The permittee has also notified surrounding municipalities, the affected states, and the USEPA. At the time of final issuance, the Department will publish notice of the final action in the *Pennsylvania Bulletin*.

EPA Review

A draft of the significant modification of the Title V Operating Permit was sent to USEPA Region III via email on December 5, 2016. On December 28, 2016, PADEP received comments from the USEPA and forwarded the comments to the facility on January 9, 2017. The comments are in regards to the facility's RACT proposal provided in the application; therefore, the comments must be addressed by the facility in order for USEPA to approve the revision to the SIP. USEPA comments are as follows:

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1. The proposal indicates that all combustion sources at the facility use natural gas as primary fuel and propane as back up fuel. Further, the proposal explains that Blommer does not have the capability to fire propane on an annual basis, thus estimating potential-to-emit (PTE) for these sources based only on natural gas combustion. In general, PTE should be based on the maximum capacity of the source unless there are any applicable enforceable restrictions (i.e., permit conditions) that would limit further the allowed emissions. By reviewing Title V operating permit #46-00198, in effect since January 28, 2013, (TVOP), none of the combustion units at the facility are subject to any conditions restricting how much propane or natural gas can be combusted. Thus, the facility can presumably burn propane to any amount that allows natural to be the primary fuel. This is relevant in the RACT evaluation since combustion of propane will generate greater NOx reductions than natural gas combustion.
  - A. Please clarify how much propane has been combusted on an annual basis based on recent operations.
  - B. PTE for VOC and NOx should be based on either the combustion of the propane or the combustion of a combination of propane and natural gas, whichever achieves the maximum allowed level of emissions.
2. The RACT proposal concludes without justification that the regenerative thermal oxidation (RTO) is the most cost-effective control option. Please substantiate.
3. The proposal does not include a cost-evaluation for any other technically feasible controls than the RTO, assuming that "overall costs associated with the RTO are lower than the other control technology options." The facility must evaluate economic feasibility of all available and technically feasible controls in order to adequately comply with RACT.
4. RACT was evaluated for each process line which contain more than 1 process unit; however, each of the process units are currently permitted as separate sources and have separate emissions stacks. Therefore, EPA believes that each of these sources must be evaluated separately for RACT, unless the facility can explain how this relates to optimum or reasonably feasible control of VOC emissions.
  - A. Line 1: Process Line 1 Roaster (Source ID 109) and Line 1 Grinder (Source ID 132)
  - B. Line 2: Process Line 2 Roaster (Source ID 105) and Line 2 Grinder (Source ID 108)
  - C. Line 3: Process Line 3 Roaster (Source ID 125) and Line 3 Grinder (Source ID 118)
  - D. Line 4: Line 4 Micronizer (Source ID 143) and Line 4 Cooler (Source ID 147)
5. VOC emissions from the alkalization process (Source ID 124A) are currently controlled by a condenser and limited to 12.05 tons on a 12-month rolling sum basis (see TVOP source-specific condition #001). This control technology (condenser) was not considered as a control option for this source. Why?
  - A. If no other feasible controls are economically reasonable, then RACT should include at a minimum the operation of the condenser in addition to compliance with the applicable VOC emissions limitation.

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- B. EPA recommends including a shorter term emissions rate as RACT for the alkalization process (124A), based on the operation of the condenser.
6. As part of the direct capital costs, the facility should consider sales taxes for the purchase of the control equipment. For a thermal oxidizer, EPA's Control Cost Manual (6<sup>th</sup> edition) assumes 3% of equipment costs.
  7. The proposal includes a retrofit cost for the installation of the RTO on each of the process lines evaluated. This assumed cost represents a significant portion of the total capital investment cost estimated for the RTO and does not follow EPA's cost methodology for thermal oxidation units. Please justify the retrofit cost assumed for each source.

Permittee Review

A draft of the significant modification of the Title V Operating Permit was sent to the permittee via email on December 5, 2016. There have been no comments received from the permittee.

**VI. Recommendation**

I recommend issuance of the significant modification to the Title V Operating Permit for Blommer Chocolate Company located in Upper Hanover Township, Montgomery County, to address the following items: (1) alternative RACT II compliance requirements as proposed in the significant modification application received on October 24, 2016, (2) presumptive RACT II compliance requirements as proposed in the minor modification application received on the same date of October 24, 2016, and (3) change in responsible official as requested in the administrative amendment application received on September 30, 2016.

In accordance with 25 Pa. Code § 129.99(e), the Department approves the alternative RACT proposal submitted by Blommer and summarized in Table 4, Section III of this review memo. The Department is satisfied that the alternative RACT proposal complies with the requirements of 25 Pa. Code § 129.99(d) and is satisfied that the proposed RACT emission limitations are RACT for each air contamination source as summarized in Table 4, Section III of this review memo.

**VII. Responsible Official**

The revision to the permit also addresses the change in responsible official from Chris Milligan, Continuous Improvement Manager, to Michael Krieger, Operations Manager. Administrative amendment application (AUTH ID 1154331) received September 30, 2016 disposition has been changed to "RETURNED" in the eFACTS database.

**Addendum 1 – Blommer Responses to EPA Comments received December 28, 2016**

**Addendum 2 – DEP Responses to EPA Comments received December 28, 2016**

**Addendum 3 – DEP Responses to EPA Comments received June 19, 2017.**