COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection
December 7, 2017
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SUBJECT: Review of Application for Renewal Title V Permit
AUTH ID # 1171677; PF ID # 265869; APS ID #346004
Armstrong Cement & Supply
Winfield Township, Butler County

TO: AQ/Facilities/FACOP/ TV-10-00028

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THROUGH: Eric A. Gustafson EAG 12/7/17
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Introduction

The subject application is for the renewal of the Title V Operating Permit for Armstrong Cement. The Title V Permit was originally issued March 20, 2001 and was renewed on October 25, 2007, and November 9, 2012. The Permit was modified 3 times since the 2012 renewal. The first modification was an amendment on August 1, 2013 to incorporate Plan Approval 10-028I and include the amendments to 40 CFR 63 Subparts ZZZZ and LLL. The second modification was a minor operating permit modification to incorporate the extension of the Cement Compliance date granted by the Department on May 25, 2015. The third modification was for incorporation of Plan Approval 10-028J and revisions of 40 CFR Part 63 Subpart LLL, and 40 CFR Part 60 Subpart F since the November 2015 modification.

The subject renewal application was received on February 28, 2017 and was determined to be administratively complete on March 9, 2017.

The changes that were made to the permit with this renewal application include the RACT 2 requirements and addition of the requirements from the Consent Order and Agreement (CO&A) which memorialized the petition for the extension of compliance with the presumptive RACT 2 requirements.

Facility Description

This facility manufactures Portland cement by the wet type of process. In the wet process, the raw materials are ground with about 30 to 40 percent water, to produce what is called the mill slurry. This slurry is introduced into one of the two rotary kilns where it undergoes drying and calcination reactions.

The material leaves the kiln in the form of clinker, which is cooled prior to entering the finish mill where it is ground to its finished size. This facility normally operates 24 hours a day, 7 days a week. The capacity for clinker for each kiln is 23.5 ton per hour (TPH) or 205,860 TPY based on operating 8,760 hours per year. The facility is major for NOx, SOx, and PM-10 emissions. The facility is a minor source of VOCs. The facility is an area source for Hazardous Air Pollutants (HAPs) with emissions less than 10 TPY for individual HAPs and less than 25 TPY for combined HAPs. The CO2 emissions from the kilns are 328,503 TPY.

Sources and Control Devices

Source ID	Source Name	Control ID	Control Device Name
101	No. 1 Kiln	C101A/ C101	Carbon Injection System Kiln 1 Baghouse
102	Recirculating Elevator	C11	#11 Baghouse: Recirc. Elevator
103	Finishing Mill	C10 C18	#12B Baghouse: Mill Sweep #12A Baghouse: Separator
104	Feed Belt & Elevator + #11 Drag	C04 C08 C18	#10 Baghouse: #11 Drag #14 Baghouse: Clinker Feeder #12A Baghouse: Separator
105	No. 1 Clinker Cooler	C03	#17 Baghouse: No. 1 Cooler
106	Primary Crusher	C06	#33 Baghouse: Primary Crusher
117	Cement Storage Silos 1-14 (Lower)	C02 C12 C13 C19 C33	#24 Baghouse: (No. 7 Pump) #25 Baghouse: Lower Silos #31 Baghouse: H.S. Mortar #23 Baghouse: DCE (No. 6 Pump) #32 Baghouse: Mortar
118	Cement Storage Silos 15-27 (Upper)	C17 C118	#34 Baghouse: Upper Silos Baghouse: Bulk Loading @ Upper Silos
120	Clinker Storage Silos (3)	C36	#16 Baghouse: Stone / Clinker Silos
121	No. 2 Kiln	C121A/ C121	Carbon Injection System Kiln 2 Baghouse
122	No. 2 Clinker Cooler	C05	#18 Baghouse: No. 2 Cooler
123	Secondary Crusher	C07	#1 Baghouse: Secondary Crusher
124	Raw Materials / Clinker Silos (Belts / Elevator)	C34 C35 C36	#15-R Baghouse: Stone Belt #15-L Baghouse: Stone Elevator #16 Baghouse: Stone / Clinker Silos
125	Raw Mills (3)		
126	Site Roadways		
127	Coal Processing & Transport & Storage		
128	Raw Material Transfer Point (1/2 way)	C16	#5 Baghouse: ½ Way House
130	Bulk Loading Station	C24 C25 C26	#2 Baghouse: Bulk Load Roof #4 Baghouse: Bulk Load N/S Screen #3 Baghouse: Bulk Load Spout

131	CKD Handling System	C29	#26 Baghouse: Dust Silo
132	Packaging System	C20 C21 C22 C23	#19 Baghouse: Pkg. Type III #20 Baghouse: Pkg. Mortar #21 Baghouse: Pkg. Type I #22 Baghouse: Flex Kleen (Pkg. Mortar)
133	Gasoline Tank (4,000 gallon)		
140	100 KW Emergency Power Generator		

ESP (C01A) and ESP (C01B) are no longer classified as control devices after the installation of the baghouse. CAM no longer applies to the ESPs and CAM conditions were previously removed from the permit.

Federal Requirements

Subpart F

The clinker coolers (Sources 105 and 122) are subject to the Standards of Performance for New Stationary Sources for Portland Cement Plants (40 CFR 60 Subpart F). The PM emission limit is 0.10 lb/ton of feed (dry basis). The opacity from the clinker coolers is limited to 10 percent. The references to these requirements can be found in the source level for each of the two sources under the citation of §40 CFR 60.62.

Subpart LLL

The kilns, clinker coolers, and clinker storage piles are subject to the National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry (40 CFR 63 Subpart LLL). The kilns are subject to PM limits of 0.07 lb/ton clinker, dioxin/furan limit of 0.20 ng per dscm (or 0.40 ng per dscm TEQ if the average temperature at the inlet of the first particulate matter control device during the D/F performance test is 400°F or less, mercury (Hg) limit of 55 lb/MM tons clinker, and THC of 24 ppmvd corrected to 7 percent oxygen. The limits are found in Source 101 and 121 under §40 CFR 63.1343. The facility uses carbon injection followed by a baghouse on the exhaust of each of the ESPs for Kiln 1 and Kiln 2 to meet the kiln limits. The clinker coolers have PM limits of 0.07 lb/ton clinker as found in Sources 105 and 122 under §40 CFR 63.1343. Each of the clinker coolers has a baghouse to control the exhaust from the respective source. Paragraph (d) of §63.1343 contained limits prior to September 9, 2015 found in Table 2 which are no longer applicable and have been removed from the permit. The operating limits (based on the temperature of the gas) for the kiln are found in §63.1346. The facility must have an operation and maintenance plan as stated in §63.1347. The initial test requirements and continuous monitoring requirements for demonstration with the PM, D/F, THC, and Hg limits are found in §§63.1348-63.1350. The facility uses a Continuous Parametric Monitoring System (CPMS) for PM emissions, a Continuous Monitoring System (CMS) [monitoring the temperature] for D/F, and Continuous Emission Monitors (CEMs) for THC and Hg emissions compliance demonstration. The facility also must track the hourly production rate of clinker using a weigh scale system. The notification and reporting requirements for Subpart LLL are identified in §§63.1353- 63.1354. The recordkeeping requirements are found in §§63.1355.

Subpart ZZZZ

The emergency power generator is subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE). Source 140 is an existing emergency generator rated at 100 Kw located at an area source of HAPs. The purpose of the Subpart, applicability, identification of the affected source, and compliance dates are found in §§63.6580 – 63.6595. The work practice requirements for this engine (oil changes, inspections of air cleaner and hoses / belts) are found in §63.6603 and Table 2d. The general work practice requirements are listed in §63.6605. The monitoring, operation and maintenance requirements are contained in §63.6625 and include a maintenance plan, installation of an hour meter on the engine, and limiting the time that the engine is idled upon startup. The facility must follow the operation and maintenance instructions of the manufacturer or develop a maintenance plan. Deviations from the work practice requirements must be reported to the agency per §63.6640 and §63.6650. To be considered an emergency engine, the operation must be limited in accordance with §63.6640. The facility must comply with the recordkeeping requirements in §63.6655 and keep them in the form identified in §63.6660. The General Provisions of §§63.1 through 63.15 that apply to the facility are identified in §63.6665. Implementation and enforcement of this subpart are identified in §63.6670. The definitions related to this subpart are identified in §63.6675.

State Requirements

Site Level Requirements
The facility is required to comply with fugitive, fugitive particulate, malodor, visible emission and open burning requirements found in 25 Pa. Code §§123.1, 123.2, 123.31, 123.41, 123.42, 123.43, and 129.14 respectively. The prohibition of air pollution is included in §121.7. The Department reserves the right to require exhaust stack testing and requires daily monitoring of the facility for the presence of fugitive or visible emissions. The facility must keep records of the daily monitoring. The facility is required to keep records of the facility-wide emissions and provide emission statements in accordance with §§135.3, 135.4, 135.5, and 135.21. The facility must provide CEMs reports to the Department on a quarterly basis.

Source Level Requirements

The kilns, clinker coolers, crushers, elevators, finish mills, raw material transfer point, loading station, CKD handling system, packaging system, and storage silos are subject to the particulate matter emission limit of §123.13. The kilns and the emergency generator are subject to the SO2 emission limit of 500 ppmvd found in §123.21. The kilns contain plan approval requirements from 10-028I and 10-028J and the requirements for Emissions of NOx from Cement Manufacturing (§§145.141-145.146). The RACT 2 requirements for the kilns are found in §§129.96-129.100. The specific limits of Subpart LLL (§63.1343) and the operating limits for the kilns (§63.1346) are identified for the kilns. Plan Approval requirements from 10-028H are contained in Source 120 and 124. Each of the sources equipped with control devices list the monitoring, recordkeeping, and work practice requirements. The clinker coolers list the specific limit of Subpart LLL (§63.1343). Source 123 has CAM requirement listed for parameters of pressure drop, visible observations, and preventative maintenance. The CAM conditions

were developed in the previous operating permit renewal and have not changed. The Gasoline Tank has requirements of §§129.61 - 129.62. The emergency generator contains the Subpart ZZZZ requirements identified earlier in this memo.

Permit Changes

Incorporation of the RACT II requirements

The Department promulgated additional RACT requirements in the April 23, 2016, *Pennsylvania Bulletin* (RACT II). The RACT II regulation applies to major NOx and/or VOC-emitting facilities. Among other things, this regulation provides three compliance options: (1) presumptive RACT requirements and/or emission limitations; (2) facility-wide or system-wide averaging for compliance with presumptive NO_x emission limitations; and (3) RACT requirements determined on a case-by-case basis for sources that either do not have an applicable presumptive requirement or emission limitation or cannot comply with the applicable presumptive RACT requirement.

The RACT II regulation requires that an owner or operator of a major NOx-emitting facility or a major VOC-emitting facility demonstrate compliance with the RACT II requirements by January 1, 2017. If an owner or operator is proposing to install a control device to meet a presumptive RACT emission limitation or RACT emission limitation determined on a case-by-case basis, the owner or operator may petition the Department of Environmental Protection (DEP) for an alternative compliance schedule that goes beyond the January 1, 2017, compliance deadline. However, the RACT II regulation requires that the petition for an alternative compliance schedule or alternative RACT requirement (established on a case-by-case base basis) be submitted to the DEP by October 24, 2016. Any petition approved by DEP must be incorporated in an applicable operating permit or plan approval.

The kilns and the emergency generator are subject to the RACT II requirements for NOx but not for VOCs. The gasoline tank is exempt from the RACT II requirements based on the applicability found in 129.96 because the tank is subject to §§129.61-129.62. The emergency generator is only subject to the work practice requirement of §129.97(c) which states, "The owner and operator of a source specified in this subsection, which is located at a major NO_x emitting facility or major VOC emitting facility subject to §129.96 shall install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices." The facility must keep records in accordance with §129.100(d) and (i).

The facility submitted a petition for compliance with the presumptive RACT requirements for the kilns according to the limit in §129.97(h). The facility submitted a plan approval application for the installation of SNCR and the addition of slag to reduce the NOx emissions to 3.88 pounds of NOx per ton of clinker produced. The plan approval application is pending review and approval by the Department. The compliance milestones of the petition and CO&A are as follows and have been included in the Compliance Schedule at the end of Section C of the Title V Permit:

- Until 180 days after completion of construction of the permanent SNCR system, Armstrong Cement's interim NOx limitations for the RACT Sources are those found in Source 101

(Conditions #004-#006) and Source 121 (Conditions #004-#006).

- Within 180 days after completion of construction of the permanent SNCR system, Armstrong Cement shall achieve compliance with RACT II Regulation presumptive emission limits for NOx for the RACT Sources set forth at 25 Pa. Code Section 129.97(h).

- On or before December 19, 2017, Armstrong shall complete the trial run of the SNCR as described in the Request for Determination approved by the Department on December 16, 2016.

- Within 180 days after the Department issued a plan approval for construction of the permanent SNCR system, subject to any extension(s) granted by the Department, Armstrong Cement shall complete construction of the permanent SNCR system.

Removal of 1 year extension for Subpart LLL

This permit was modified (minor operating permit modification) pursuant to 25 Pa Code Section §127.462 on November 13, 2015. The modification incorporated the extension of the Cement Compliance date granted by the Department on May 26, 2015. Since this extension has expired and is no longer necessary it was removed from the permit during the current renewal.

Removal of §121.7 from the Site Level

The Department included the prohibition of air pollution (121.7) in the Site Level in the January 21, 2016 amendment to the Title V Permit. Shortly after this amendment, the Department revised the "Boiler Plate Language" of Section B of the Title V Permits. Since the prohibition of air pollution was added to Section B by the Department, it is no longer needed to be inserted for each individual Title V Permit and was therefore removed from the Permit during the current renewal process.

Control C09 removed from the Permit

During the review of the application it was noticed that Control CO9 Baghouse: Norblo was not mapped to any sources in the permit. This control device was discussed with the facility which indicated that they were not aware of C09 being in use and the facility agreed that it should be removed from the permit.

40 CFR 63.6 revised

The previous permit included the provisions of §63.6 in the Site Level of the permit. Paragraph (i) regarding extension of deadlines is no longer relevant to this facility since they have completed the installation of the baghouse to comply with Subpart LLL revisions as mentioned above. Therefore, paragraph (i) was removed from the condition

§127.511 requirement for Kiln Testing removed

The previous permit had testing requirements for PM at least once per term of the permit and required NOx testing for RACT 1 for the kilns. These requirements are no longer applicable based on more

stringent requirements from the revised Subpart LLL requirements and RACT 2. Testing and monitoring have increased such that this condition is no longer required. The NESHAP requires annual PM tests and a PM CPMS. RACT 2 (as well as other NOx requirements previously mentioned) requires a NOx CEMS. Therefore, the requirement of §127.511 was removed from both kilns.

RACT 1 NOx limit streamlined

The RACT 1 NOx emission limit was 6.62 lbs/ton of clinker. This limit was streamlined from the permit based on the new presumptive RACT 2 limit of 3.88 lbs/ton of clinker.

Additional Notes:

The EPA published additional revisions to Subpart LLL in the Federal Register on July 25, 2016 and August 22, 2017. The changes were reviewed and found to be not applicable to this application and therefore no additional changes were made to Subpart LLL since the previous modification on January 21, 2016 (Auth # 1102111). The EPA proposed additional revisions to Subpart LLL in the Federal Register on August 22, 2017. The revisions have not yet been finalized but do not pertain to Armstrong Cement so they would not have any effect on the issuance of the permit.
The facility has a NOx emission limit of 4.85 lb/ton from Plan Approval 10-028J which will also be streamlined from the permit after the milestones of the compliance schedule have been met. The requirements of §145.143 will be removed from the permit after the compliance schedule has been met because §129.97 supersedes the requirements of §145.141-146.

The "Boiler Plate" language in Section B was updated by the Bureau of Air Quality (Central Office) since the previous renewal permit. Condition 013 regarding communications to EPA is new and Conditions 014, 015, and 016 have been revised.

Compliance Issues

The Department conducted approximately 51 inspections for this facility since the 2012 renewal. Many of the inspections were administrative reviews of submittals by the facility such as the Title V compliance certification reviews, semi-annual compliance deviation reports, stack test reports, asbestos abatement and demolition, and emission inventory. The onsite inspections were for partial inspections, full compliance evaluation (FCE) inspections, and stack test observations. The Department conducted a FCE inspection of the facility on June 19, 2013, June 16, 2014, June 11, 2015, and June 28, 2016, and did not observe any violations from these inspections. The facility did have CEMs Violations were addressed or will be addressed through Consent Assessments for Civil Penalties.

Emission Inventory

The following table lists the emissions reported to the Department on an annual basis for the years 2012 through 2016 for the facility.

Facility-Wide Emissions

Pollutant	CO	NOx	PM-10	PM 2.5	SOx	VOC
2012	26.5	357.3	88.1	78.5	836.3	3.2

2013	23.7	385.2	22.4	12.9	588.3	2.9
2014	20.6	315.4	19.5	11.3	467.4	2.5
2015	22.0	341.3	19.8	11.3	608.8	2.6
2016	39.3	471.7	3.88	1.51	706.9	2.9

RFDs

The facility submitted a Requests for Determinations (RFD) in 2016 to install ports in the kilns for trial measurements for an SNCR system. The facility will run trial runs of the SNCR system prior to December 31, 2017. The information will help the facility design the final SNCR system for reduction of NOx emissions from the Kilns.

Recommendation

The draft Operating Permit was submitted to the company on October 6, 2017 for their review. The Intent to Issue Notice for the renewal permit was published in The Butler Eagle newspaper on October 19, 20, and 22, 2017. The notice stated there was a 30-day comment period. The notice of Intent to Issue was published in the Pa Bulletin on November 4, 2017. The review memo and draft permit were submitted electronically to EPA – Mr. Himanshu Vyas on October 20, 2017 with a request for EPA's comments by December 4, 2017.

Issuance of the TV renewal operating permit is recommended with the changes stated in this memo and the comments and responses received.

cc: AQ District Supervisor (New Castle Office)