

Air Permit Review

Permit Issue Date:

Region: Raleigh Regional Office
County: Chatham
NC Facility ID: 1900009
Inspector's Name: Steven Carr
Date of Last Inspection: 01/14/2010
Compliance Code: 3 / Compliance - inspection

Facility Data			Permit Applicability (this application only)
Applicant (Facility's Name): General Shale Brick, Inc. Moncure Facility Facility Address: General Shale Brick, Inc. Moncure Facility 300 Brick Plant Road Moncure, NC 27559 SIC: 3251 / Brick And Structural Clay Tile NAICS: 327121 / Brick and Structural Clay Tile Manufacturing Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V			SIP: NSPS: NESHAP: PSD: PSD Avoidance: NC Toxics: 112(r): Other:
Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	Application Number: 1900009.08B Date Received: 03/28/2008 Application Type: Renewal Application Schedule: TV-Renewal Existing Permit Data Existing Permit Number: 04384/T32 Existing Permit Issue Date: 01/13/2011 Existing Permit Expiration Date: 12/31/2010
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Review Engineer: Jenny Sheppard Review Engineer's Signature: _____ Date: _____		Comments / Recommendations: Issue 04384/T33 Permit Issue Date: Permit Expiration Date:	

I. Purpose of Application

This permitting action is a renewal of an existing Title V permit pursuant to 2Q .0513. The existing Title V permit (04384T32) was issued on January 13, 2011. The renewal application was received on March 28, 2008 and deemed complete. Since the renewal application was received at least nine months prior to the expiration date, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied. November 12, 2009 the facility submitted an application for 112(j), Case By Case MACT for Brick Manufactures, application 1900009.09C. This application will be processed along with the renewal and the language added for the affected kilns.

II. Facility Description

General Shale Brick, Inc. Moncure Facility operates General Shale Brick ("GSB") owns and operates a brick manufacturing facility in Moncure, Chatham County, NC. The facility is operating under the existing air permit 04384T32. This permit was issued on January 13, 2011 and is currently scheduled to expire on December 31, 2010.

III. History/Background/Application Chronology

May 6, 2003 – Initial Title V permit 04384T19 issued by Kevin Godwin.

January 13, 2004 – Administrative Amendment reissued initial TV because the facility never received a copy, permit 04384T20 by Kevin Godwin.

August 16, 2004 – Section 502(b)(10) modification and Administrative amendment to add screens and change the name of the facility. Permit number 04384T21 by Rahul Thaker.

February 28, 2005 – Significant modification 501(c)(2) modification of permit to add DLA’s to Kilns number 3 and 4. Permit number 04384T22 by Jenny Sheppard.

June 27, 2005 – Section 502(b)(10) modification of permit to add conveyors and update insignificant activities list. Permit 04384T23 by Judy Lee.

May 16, 2006 – Significant modification 501(c)(2) to add new concrete block plant and update insignificant activities list. Permit 04384T24 by Jenny Sheppard.

January 10, 2007 – Minor modification to add sawdust handling system. Permit 04384T25 by Jenny Sheppard.

March 21, 2007 – Significant modification 501(c)(2) to add coal as a fuel to kilns number 3 and 4, add brick MACT language, and replace DLA on kiln 4 with DIFF. Permit 04384T26 by Jenny Sheppard.

November 6, 2007 – Administrative amendment to remove brick MACT language that has been vacated. Permit 04384T27 by Jenny Sheppard.

November 26, 2007 – Minor modification to add controls, texturizing operation, and sand silo system. Permit 04384T28 by Jenny Sheppard

November 12, 2008 – Significant modification to replace DIFF on kiln 4 with DLA. Permit 04384T29 by Jenny Sheppard.

June 16, 2009 – Minor modification to add bagfilter to texturization line. Permit 04384T30 by Jenny Sheppard.

February 4, 2010 – Minor modification to add rumbler system. Permit 04384T31 issued by Jenny Sheppard.

January 13, 2011 – Minor modification to add a texturizing operation to lines 3 and 4, permit 04384T32 issued by Kevin Godwin.

IV. Permit Modification/Changes

Table of changes to permit 03590T31

Page(s)	Section	Description of Change(s)
Cover letter		Update permit revision number and issue date
1		Update permit revision number and issue date, application number
3	Section 1	Edit permit number in page header, returned emission source IDs and control device IDs to their original state per ESM and previous as abbreviated forms are not allowed, except when there is a numerical series.
7	Section 2.1	Starting in Section 2.1 A through 2.2 A updating all testing conditions to current language and other permit language as it applies
30	Section 3	Updated to current language

V. Regulatory Review

The facility is subject to the following regulations:

15A NCAC 2D .0515, Particulates from Miscellaneous Industrial Processes
15A NCAC 2D .0516, Sulfur Dioxide Emissions from Combustion Sources
15A NCAC 2D .0521, Control of Visible Emissions
15A NCAC 2D .0524, NSPS 40 CFR Part 60 Subpart OOO
15A NCAC 2D .1100, Control of Toxic Air Pollutants (*State-Enforceable Only*)
15A NCAC 2Q .0711, Control of Toxic Air Pollutants (*State-Enforceable Only*)
15A NCAC 2Q .0705, Air Toxic Demonstration (*State-Enforceable Only*)
15A NCAC 2D .1806, Control of Odorous Emissions (*State-Enforceable Only*)
15A NCAC 2D .1109, CAA § 112(j); Case-by-Case MACT for Brick Manufacturers

No new or additional requirements have been added to this renewed permit except for the addition of the requirements for the 112(j) applications being processed in parallel. Therefore, a regulatory review will be only for the kilns affected by that applications and will be included in the NESHAP/MACT section/discussion.

VI. NSPS, NESHAPS, PSD, Attainment Status, 112(r), CAM

NSPS

The facility is currently subject to New Source Performance Standard (NSPS) Subpart OOO.

NESHAP/MACT

The facility is currently not subject to any NESHAP or MACT.

1. **15A NCAC 2D .1109 – CAA § 112(j); Case-by-Case MACT for Brick Manufacturers** – On March 13, 2007, the D.C. Circuit Court vacated the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Brick & Structural Clay Products Manufacturing, which had been promulgated under 40 CFR 63, Subpart JJJJJ. The North Carolina Attorney General’s office has determined that the NESHAP vacatur equates to the failure of the U.S. EPA to promulgate a standard as required under Section 112(d) of the Clean Air Act (CAA). As a result, the site-specific Maximum Achievable Control Technology (MACT) standards required under CAA §112(j), commonly referred to as the MACT “hammer” provisions, have been triggered. North Carolina regulations implementing the MACT hammer are found at 15A NCAC 2D .1109.

Re: Kilns with a Capacity > 10 tph (wood as fuel)

On November 12, 2009, the NC DAQ received a Part 2 MACT “Hammer” application from this facility for two wood/natural gas-fired tunnel kilns. Two of the kilns (**ID Nos. ES-K1 and ES-K2**) have design capacities of 13.7 tons per hour. No control technologies for the control of filterable particulate matter (PM), HF, or HCl were identified for tunnel kilns in the state of North Carolina a production capacity of greater than 10 tons per hour (tons/hr) while combusting wood on a 12-month rolling average basis.¹ The NC DAQ has determined that MACT is the use of best work practice standards for tunnel kilns rated at less than 10 tons/hr or greater than 10 tons/hr while burning wood (sawdust), consistent with the provisions in CAA § 112(d)(2)(D).

As described below, this facility has established an alternative, health-based facility-wide HCl-equivalent emission rate to limit HCl and HF emissions from all affected tunnel kilns, including these two, small tunnel kilns.

Re: Kilns with a Capacity =, > 10 tph

The November 12, 2009 application also identified a two coal/natural gas/propane-fired

¹ The filterable PM standard is a surrogate for the regulated metal HAP, including antimony, arsenic, beryllium, cadmium, chromium, cobalt, mercury, manganese, nickel, lead, and selenium.

kilns (**ID Nos. ES-K3K and ES-K4K**) with a design capacities of 20.5 tons per hour each and are equipped with DLAs (**ID Nos. CD-K3DLA and K4DLA**). The application proposes to accept NC DAQ's recommended emission limitation for filterable PM and proposes a HBCA to establish to establish an HCl-equivalent emission limitation, limiting both HCl and HF emissions, using a facility-specific modeling analysis.

Filterable PM. The facility proposed a filterable PM emissions limitation of 0.17 pounds per ton of brick produced (lbs/ton) for the 20.5 tph kilns (**ID Nos. ES-K3K and ES-K4K**), which is consistent with the NC DAQ application guidance.² NC DAQ developed this guidance to provide standards and compliance procedures that it has determined meet the requirements of CAA § 112(j).

HCl-Equivalent (HCl & HF). Both HF and HCl are respiratory irritants. Neither chemical has been classified for carcinogenicity. To establish an emissions limitation using a health-based approach pursuant to CAA § 112(d)(4), the impacts of these two respiratory irritants must be summed and limited such that the combined effect does not exceed established reference concentrations (RfC's) available through U.S. EPA's Integrated Risk Information System (IRIS). The RfC (expressed in units of µg of substance/m³ air) is defined as an estimate of continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.³

The combined impact of HF and HCl from this facility was determined using the following procedure:

Step 1. Estimated Total HCl-Equivalent Emission Rate. Estimate the potential HCl and HF emission rates for each affected source. Then sum the total potential HCl emissions and HF emissions from all affected sources combined, and then calculating the facility-wide potential HCl-equivalent emission rate using the following equation:

$$E_{HCl-equiv.} = E_{HCl} + (E_{HF}) \left(\frac{RfC_{HCl}}{RfC_{HF}} \right)$$

Where:

- $E_{HCl-equiv.}$ = Toxicity-weighted HCl-equivalent emission rate from all affected sources (in lb/hr)
- E_{HCl} = Emission rate of HCl from all affected sources (in lb/hr)
- E_{HF} = Emission rate of HF from all affected sources (in lb/hr)
- RfC_{HCl} = Reference concentration of HCl, 20 µg/m³
- RfC_{HF} = Reference concentration of HF, 14 µg/m³

The facility-wide HCl-equivalent emission rate for this facility is estimated to be **18.29 lbs/hr** as demonstrated in the following table:

Kiln	Capacity (tons/hr)	HF Emission Rate (lbs/hr)	HCl Emission Rate (lbs/hr)	HCl-Equivalent Emission Rate (lbs/hr)
ES-K1	13.7	3.15	2.33	
ES-K2	13.7	3.15	2.33	
ES-K3K	20.5	0.78	1.20	
ES-K4K	20.5	0.78	1.20	
Total				18.29

² <http://daq.state.nc.us/permits/112j/>

³ http://www.epa.gov/iris/help_ques.htm#rfd

Step 2. Estimate Worst-Case Annual Impacts. Using the AERMOD model, the total HCl-equivalent emissions from the facility are modeled through the actual “worst-case” stack using five-years of meteorological data.⁴

Based on an HCl-equivalent emission rate of 18.29 lbs/hr, the AERMOD model for this facility predicted the modeled HCl-equivalent impact from the facility to be **3.66 µg/m³**.

Step 3. Determine the Hazard Quotient (HQ). The HQ is the ratio of the predicted pollutant concentration in ambient air to the RfC, or concentration at which no adverse effects are expected as a result of inhalation exposures. The RfC for HCl is 20 µg/m³. If the HQ is less than 1.0, the facility may establish a health-based emissions limitation for HCl-equivalent as an alternative to established a technology-based emission limitation for HCl and HF. This health-based approach is consistent with CAA § 112(d)(4).

Based on an HCl-equivalent emission rate of 18.29 lbs/hr, the HQ for this facility is **0.183**.

Step 4. Determine the Allowable HCl-Equivalent Emission Rate. The allowable HCl-equivalent emission rate is equivalent to the emission rate that may be modeled from the worst-case stack that results in a HQ < 1.0. The NC DAQ determined the allowable HCl-equivalent emission rate by scaling the modeled emission rate up to where it would result in HQ = 0.99, as follows:

$$E_{HCl\text{-equiv,allowable}} = E_{HCl\text{-equiv,actual}} \left(\frac{0.99}{HQ_{actual}} \right)$$

The allowable HCl-equivalent emission rate for this facility is **99.0 lbs/hr**. The total HCl-equivalent emission rate from all six affected tunnel kilns shall be less than the allowable HCl-equivalent emission rate established above.

Compliance with the Toxicity-Weighted Emission Rate

The facility must demonstrate, through testing, monitoring, and recordkeeping, that the total toxicity-weighted HCl-equivalent emission rate from all of the affected sources is less than the established allowable emission rate. Initial compliance shall be demonstrated using initial performance testing for both HCl or HF. Testing is required for all four tunnel kilns unless an alternative approach (e.g., fuel analysis or other approach for estimating worst-case emissions from the small, uncontrolled tunnel kilns) is approved by the NCDAQ-SSCB through the test protocol.

During the performance test, the Permittee shall establish the following operating parameters for the DLAs (**ID Nos. CD-K3DLA and CD-K4DLA**):

- The limestone feeder setting at the DLAs; and,
- The source and grade of limestone used at the DLAs.

In addition to monitoring compliance with these operating parameters, the Permittee shall check and record the pressure drop across the DLAs once per day to ensure the control device is not being by-passed, conduct a daily check the amount of limestone in the hoppers, storage bins, and DLAs, and conduct periodic visible emissions observations at the DLAs to ensure there are no visible emissions from the control devices.

⁴ The “worst-case” stack is determined by running different scenarios of the model, with the total emissions being released from a different stack in each scenario. The scenario resulting in the highest off-site impacts identifies the “worst-case” stack.

Limestone may be recycled through the DLAs. However, at least once per calendar month, the Permittee is required to ensure that the limestone feed system replaces the limestone at least as frequently as the schedule set during the performance test.

The small tunnel kilns shall demonstrate on-going compliance with the HCl-equivalent emission rate by conducting an annual inspection of the system ductwork, the kiln burners, and the air-to-fuel ration control system.

PSD

This facility is currently minor for PSD purposes.

Attainment Status

This facility is located in Chatham County, which is currently in attainment according to 2D .0902.

112(r)

This facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in the Rule.

CAM

40 CFR 64 requires that a continuous assurance monitoring plan be developed for all equipment located at a major facility that have pre-controlled emissions above the major source threshold and use a control device to meet an applicable standard. The facility has evaluated each source for CAM applicability and has determined that the sources either do not have a control device to meet compliance with an emission limit or a standard for a federally regulated pollutant or the sources have uncontrolled potential emission of less than 100 tons. Therefore, CAM does not apply to this facility at this time.

VII. Facility-wide Air Toxics

There is no change required for this renewal however this condition was modified to better suit the facility and the region for compliance purposes.

VIII. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. Based on visual observations and review of records at the time of the inspection, this facility appeared to be operating in compliance with Air Quality standards and regulations.

IX. Facility Emissions Review

There is no change in emissions for this renewal. The following table represents facility-wide actual emissions as submitted by the facility in its latest emissions inventory:

Pollutant	2009 Emissions (tons per year)
Particulate Matter less than 10 microns	65.88
Carbon Monoxide	57.28
Nitrogen Oxides	20.93
Sulfur Dioxide	38.94
Volatile Organic Compounds	4.45
(all other HAPs/TAPs)	25.49

X. Stipulation Review

The permit modification/changes (where needed) were incorporated into the permit (see table of changes in Section IV of this document).

XI. Public Notice / EPA and Affected State Review

A notice of the draft Title V Permit was placed on the DAQ website. The notice provided for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice were sent to persons on the Title V mailing list and EPA. *To be completed after comment period.*

Pursuant to 2Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. *To be completed after comment period.* Also pursuant to 2Q .0522, a notice of the draft Title V Permit was provided to each affected State at or before the time notice provided to the public. South Carolina, Mecklenburg County and the Catawba Indian Nation are considered to be affected States for this facility.

XII. Conclusions, Comments, and Recommendations

1. A professional engineer's seal was not required for this renewal.
2. A consistency determination was not required for this renewal.
3. RRO recommends issuance of the permit and does request a DRAFT permit prior to issuance.
4. RCO concurs with RRO's recommendation to issue air permit.
5. Comments received on DRAFT/PROPOSED permit:
6. *To be completed after comment periods and public notice.*