DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

A649726429

FACILITY: Hanson Brick - Michigan Plant		**SRN / ID:** A6497
LOCATION: 3820 E. Serr Rd., CORUNNA		**DISTRICT:** Lansing
CITY: CORUNNA		**COUNTY:** SHIAWASSEE
CONTACT: Jerry Greger , Supervisor		**ACTIVITY DATE:** 07/17/2014
STAFF: Michelle Luplow	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled, announced compliance inspection.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow
Personnel Present: Jerry Greger (jerry.greger@hanson.biz), Supervisor
Bill Stevens, Kiln Operator (kiln fireman)
Other relevant personnel: David McKeown (david.mckeown@hanson.biz)

Purpose: Conduct an announced, scheduled, partial compliance evaluation (PCE) inspection by determining compliance with Hanson Brick's ROP, MI-ROP-A6497-2010. This activity was done as part of a full compliance evaluation (FCE). Particular attention was paid to the SO2 recordkeeping: David McKeown had developed a new spreadsheet for the tracking of SO2 emissions and lime feed rate calculations.

Facility Background/Regulatory Overview: Hanson Brick, according to J. Greger, is the only brick manufacturer in Michigan. Its on-site shale mining operation, located in Shiawassee County, produces shale used for brick manufacturing for residential construction, primarily purchased by Detroit distributors. A primary crusher crushes the raw material into an acceptable size for the grinding plant. The size is then further reduced by grinding the material down to an acceptable mesh size for the pug mixers and extruders.

J. Greger explained that prior to 2013 and 2014, for 5 consecutive years, Hanson had shut down operations from April through the winter. Starting in 2013 Hanson has started to produce brick during the summer months again.

Hanson Brick is a major source of SO_2 and PM_{10}, according to the 2010 Staff Activity Report, as the PTE's for these two pollutants exceed 100 tons/year. Sulfur from the bricks is released as SO_2 upon firing them in the kiln. The exhaust stream from the kilns is injected with lime to neutralize the SO_2 (as sulfuric acid) and any particulate generated is collected with fabric filters.

The MACT JJJJJ (40 CFR 63, Subpart JJJJJ) for Brick and Structural Clay Products Manufacturing (BSCP) is still vacated, as previously noted in the 2011 activity report by B. Culham. According to Jeff Telander, EPA representative for the MACT JJJJJ, the EPA is on a court-ordered schedule for the MACT JJJJJ proposal in February 2014 and promulgation in December 2014. David McKeown, Regional Environmental Manager of Hanson Building Products based in South Carolina said that he and other Brick Manufacturing businesses are working closely with the EPA to create a new MACT JJJJJ. Part of this process involved EPA stack testing for various compounds, including hydrofluoric acid (HF), a HAP. D. McKeown said that the EPA stack tested for HF in 2010. I requested this new stack test from him, and it was reported in the stack test (see attached) that HF is emitted at 0.997 kg/hr or 0.138 kg/Mg of product (see attached). D. McKeown provided me with a Potential to Emit (PTE) calculation based on the 0.997 kg/hr (see attached). According to D. McKeown, Hanson's PTE for HF is 19.26 tons of HF per year for both kilns. I used D. McKeown's previous potential to emit (based on 271,560 tons of product fired in the kiln per year) to determine the potential to emit from this newer stack test to show that Hanson Brick is a major source of HAPS:

(0.138 kg HF/Mg product)*271,560 tons product = 37,475 kg HF/year *2.204 lbs/1 kg = (82,483 lbs HF/year)/2000 lbs ton^{-1} = **41 tons HF/year**

Through either calculation, based on EPA's stack test results, Hanson Brick is a major source of HAP (HF) and is therefore subject to the MACT JJJJJ once it is promulgated in December 2014.

Inspection: At approximately 9:30 a.m. on July 17, 2014 I met with J. Greger and B. Stevens. I had previously given J. Greger a DEQ "Environmental Inspections: Rights and Responsibilities" brochure during the June 2013 inspection. On July 9, 2014, at approximately 1:30 p.m., I arrived to do the inspection and saw work being done on Kiln 1. J. Greger explained that Hanson Brick is working on getting Kiln 1 up and running. He said there are no changes being made to the lime feed/injection. They were working on installing new bags for Kiln 1's baghouse, cleaning the baghouse out and renovating its structure, fixing Kiln 1's roof, and installing new kiln burners. A new digital reference lime feed rate system will be installed for both kilns, according to B. Stevens and J. Greger.

EUCRUSHING

Condition 2 requires that a fugitive dust control plan be implemented and maintained according to Appendix 10:

Site Roadways/Plant Yard
J. Greger said water is still used for dust suppression. An old fire truck, with a capacity of 3,000 gallons of water, is used to spray all dirt roads within the plant. He said that for this summer (which has been wetter than last summer) they've had to wet the roads twice per month at most. Water records are usually kept in the water truck, and I asked J. Greger for these, but he showed me that they have not been filled out possibly since the last inspection.

The plan also requires that all paved roadways and the plant yards be swept as needed and any spillage on roads shall be cleaned up immediately. While onsite I noticed that there were many piles of finely crushed shale pushed off to the sides of the plant yard, near the buildings and other process equipment. I mentioned to J. Greger that these are areas of concern that should be addressed, i.e. swept up, per the fugitive dust control plan.

Plant
Drop distances between transfer points must be kept at a minimum, but I observed no unenclosed transfer points within the plant during the inspection, thus this condition was not applicable to the current inspection.

Storage Piles – includes ***EUSTORAGE*** for open area stock piles
The stock piles are located near the crusher. A payloader feeds from the pile to the crusher.

Storage piles must generate no more than 5% opacity. I saw no opacity generated from the storage piles during the inspection. Hanson Brick is therefore in compliance with the Storage Piles and EUSTORAGE conditions.

Truck Traffic – includes ***EUTRUCKTRAFFIC*** for onsite transport of materials
There was no unloading/loading of trucks during the inspection, thus the condition for truck traffic within the fugitive dust plan did not apply during the time of inspection.

For both EUSTORAGE and EUTRUCKTRAFFIC, Hanson is required to perform and record the results of a 6-minute visible emission observation at least once per month. J. Greger said that he is currently Method 9-certified. J. Greger keeps records of "Monthly Truck Traffic Visible Emissions" readings, and provided me with 9/30/13, 1/30/14 and 7/29/14 VE readings (see attachment) he conducted on the pit road, plant roadways-yard, and storage piles (#1, #2, #3, respectively). All recorded readings resulted in 0% opacity for each 6-minute average, except for the January record where there is only one 6-minute reading recorded and it is unclear which part of the plant was being read at that time. The September 2013 and July 2014 records satisfy the opacity reading conditions for **EUTRUCKTRAFFIC** and **EUSTORAGE**.

During the brief July 9, 2014 visit I noticed at least 50% opacity coming from the crushing/brick producing section of the site as a truck drove through that area, that would have likely exceeded the 5% opacity standard for a 6-minute period of time for EUTRUCKTRAFFIC. I mentioned to J. Greger what I had observed and pointed out that this was an area of concern I had, and recommended that Hanson Brick water this road as necessary – meaning watering to keep opacity below the 5% 6-minute opacity average, as required by the ROP. The road dust upon entry to the plant was near 0%, satisfying the 5% opacity requirement.

IV. Design/Equipment Parameters

Hanson is required to label all equipment using company ID numbers. J. Greger verified that there have been no additions, removals or modifications to the EUCRUSHING equipment since the June 2013 inspection. The following table was pulled from Hanson Brick's ROP, MI-ROP-A6497-2010:

Equipment Description	ID Number	Opacity Limit (Percent)	Control Device
Primary Crusher	462-76	15	N/A - None
Grinding Plant Feed Belt	No. 1	10	Equipment enclosure
Stedman Impact grinder	SGR-1	0	Enclosed in Building
Steadman Grinder exit belt	No. 7	0	Enclosed in Building
Elevator belt to screens	No. 8	0	Enclosed in Building
Screen feed/plow belt	No. 9	0	Enclosed in Building
Finished belt under screens	No. 10	0	Enclosed in Building
Finished short cross conveyor	No. 11	0	Enclosed in Building
First finished elevator conveyor	No. 12	0	Enclosed in Building
Second finished elevator conveyor	No. 13	0	Enclosed in Building
Finished shuttle car conveyor	No. 14	0	Enclosed in Building
Coarse return belt	No. 4	0	Enclosed in Building
Coarse return elevator belt	No. 5	0	Enclosed in Building
Coarse return short feed		0	Enclosed in Building

belt	No. 6		
Reclaimer system	REC-1	0	Enclosed in Building
Reclaimer conveyor belt	Belt A	0	Enclosed in Building
Belt to splitting tower	Belt B	0	Enclosed in Building
Leahy screen #1	Screen 1	0	Enclosed in Building
Leahy screen #2	Screen 2	0	Enclosed in Building
Leahy screen #3	Screen 3	0	Enclosed in Building
Leahy screen #4	Screen 4	0	Enclosed in Building
Simplicity Screen #5	Screen 5	0	Enclosed in Building
Simplicity Screen #6	Screen 6	0	Enclosed in Building

Per the previous inspection, all belt guards have the label numbers on them. I did not verify that each belt was labeled. The enclosed equipment was running during the inspection; however, there were no visible emissions from the building which encloses the majority of the operating equipment. There were no visible emissions from the primary crusher's area nor the grinding plant feed belt (No. 1) which is a conveyor located on the outside of the building. The primary crusher (located underground) and grinding plant feed belt do not discharge to the ambient air.

The secondary crusher is equipped with a baghouse which exhausts to the in-plant environment.

IV. Monitoring/Recordkeeping

According to condition 1, a Method 9 observation should be performed once per month on the crushing operations. Each month, J. Greger said he does a Method 9 on the area near the crusher itself and at points around the building in which the crushing equipment is enclosed. I asked J. Greger to provide me with January 2014 and September 2013 reading sheets. The "Monthly Crusher Visible Emissions" (see attachment) performed on 9/30/13 and 1/30/14 by J. Greger shows a 0% opacity 6-minute average for the area near the crusher. J. Greger also did a Method 9 on the drop points, transfer points, and doors/roof of building, which are labeled #1, #2, and #3 on "Monthly Grinding Visible Emissions" on 1/30/14 (see attachment). All readings produced 0% opacity 6-minute averages. These records satisfy condition 1 of Section IV.

Hanson is required to keep monthly records of the amount of material processed through EUCRUSHING. The 12-month rolling throughput of material processed was 99,624 tons. J. Greger has an Excel spreadsheet with each month's throughput. I wrote down total material processed for July 2013 – June 2014 per the spreadsheet. This work satisfies conditions 2& 3; however, I reminded J. Greger, as I did during the last inspection, that these need to be incorporated into 12-month rolling totals.

VIII. Stack/Vent Restrictions

There are no exhaust stacks associated with the crushing operations, nor are there any ventilation fans installed on the building itself to allow for emissions to the ambient environment.

EUPUG-90

The EUPUG-90 is equipment used to add color and texture to the brick, depending on the customer's requests. A cyclone and a pulse-jet baghouse are equipped to the mixer/extruder.

VE readings are required once per month. J. Greger says he checks for opacity once per month and provided me with examples of his records from 9/30/13 and 1/30/14 "Monthly dust collector pug 90 Visible Emissions" (see attachment). According to this record, no visible emissions were seen from the PUG-90 for the 6-minute average. While onsite, I did not see any opacity coming from this unit.

A record of repairs and maintenance on the baghouse collector semi-annually is also required. After the inspection, J. Greger emailed me a copy of their maintenance record from 10/13/13 (see attached), which showed that the bags in the baghouse were replaced on 10/13/13. Future review of records should involve verifying that maintenance checks are conducted semi-annually via records.

FGKILNS (KILN01, KILN02)

Kiln 2 is still the only kiln that is operating. Hanson Brick plans on restoring kiln 1 to operating condition, but is unsure when the kiln will commence firing brick.

Prior to the "green" bricks entering the tunnel kiln, they are placed in a 610°F dryer remove moisture. This prevents the bricks from exploding in the kiln.

Emission Limits

Hanson Brick is limited to 241 lbs/hour of SO_2 and 650 tons/calendar year. According to Hanson's records, from January 2014 through July 2014 75.9 total tons of SO_2 was emitted. According to the 2013 MAERS report, 151 tons of SO_2 was emitted for 2013. The highest hourly SO_2 emissions were 46 pounds per hour in April 2014. Hanson is currently in compliance with its SO_2 emission limits.

Process/Operational Restrictions
The kilns can only be operated if a Preventative Maintenance Program (PMP) has been implemented and is maintained. Hanson Brick's Preventative Maintenance Plan was drafted May 1, 2003 and no changes to it have been made since then. It contains items to be monitored, corrective actions that can be taken in the event of abnormal operation, and what should be inspected and how often it should be inspected. J. Greger said that the Daily Inspection logsheet containing a checklist for the storage silo, bin activator, baghouse, piping leaks and insulation integrity, is filled out daily by the kiln operator. He also showed me "Quarterly Inspection" logsheets, "Semi-Annual Inspection" logsheets for the bin, feeder, baghouse and controls of the kiln, and "Bi-annual inspection" logsheets for the baghouse cleanliness and cooling tower. The logsheets were filled out appropriately and I did not see any issues logged; i.e. daily inspections were conducted daily (7-13-14, 7-14-14, 7-15-14, etc.), Quarterly inspections were conducted 10-7-13, 1-7-14, 4-1-14, and 7-2-14; Semi-annual inspections were conducted 1-7-14 and 7-2-14; and Bi-annual inspections were conducted 5-6-13 and 5-10-14. All inspections were conducted at the appropriate designated frequency.

Kilns must not be operated if the pressure drop across the kiln fabric filter is less than 2 inches H_2O or greater than 6 inches H_2O. A digital display (Hanson Brick refers to it as the "Pollution Control Device") continuously monitors the pressure drop across the fabric filter, with the acceptable operating range (2-6 inches H_2O) labeled (per request by B. Culham). An alarm should sound if the pressure drop exceeds 6 inches H_2O. B. Stevens explained that the pressure drop only exceeds 6 inches H_2O when the fan speed is increased to keep smoke out of the plant and that an alarm does sound when this occurs. During the inspection, Kiln 2's pressure drop was 5.30 inches of water. Hanson is in compliance with the pressure drop requirement.

Kilns must also not be operated unless the temperature in each fabric filter collector is maintained 15°F below the bag degradation temperature. According to J. Greger, Goretex bags were bought because they withstood higher temperatures. He said the degradation temperature for these bags is 475°F. B. Stevens said the exhaust from the kiln is sent through a gas cooling tower to drop the temperature of the gas before the gas enters the fabric filters. He also said the cooling tower alarm is set at 420°F and that the kiln operator has 30 minutes to start the water cooling system and bring the temperature down before the baghouse alarm sounds at 450°F. B. Stevens said that if the temperature in the fabric filter collectors reaches 450°F, the alarm sounds, and the kiln exhaust and kiln shut down automatically, thus Hanson Brick is operating the kilns more than 15°F below the bag degradation temperature and is in compliance with this condition.

J. Greger enters into a spreadsheet (see attached, this spreadsheet was developed by D. McKeown) the number of days per month the kilns were run, the average number of cars sent through the kiln, the monthly brick equivalents sent through the kiln, the weight of each dry and burnt brick that is tested, the % sulfur from each dry and burnt brick tested, and the weights of each. From there the spreadsheet calculates, among other permit-required items, the appropriate lime feed rate for a particular month. The lime feed rate also depends on the amount of cars sent through the kiln per day (the push rate). J. Greger provided me with a Lime Feed rate sheet for June 2014. The higher the number of cars per day, the greater the lime feed rate. J. Greger also says that if they determine the lime feed rate to be 77 lb/hr, for example, they always add an extra 10 lbs lime/hr to the lime feed rate, making the actual lime feed rate 87 lbs/hr. B. Stevens said that for every cart of bricks that is sent through the kiln, the kilnmen do a hands-on lime feed rate check to ensure that the feed rate is accurate. B. Stevens said that for 30 seconds they will catch the lime in a bag, weigh the bag and then extrapolate the lbs per 30 seconds to lbs/hour. They then correlate this to the dial on the lime feed rate monitoring system. For example, "40" on the lime feed rate monitor during the inspection would equate to 66 lb/hr, according to B. Stevens.

The permit requires that the hydrated lime feed rate is maintained at a rate that is determined monthly, based on the brick tests and the calculated sulfur released and also requires that the lime feed rate be monitored and recorded on a continuous basis. Hanson Brick is in compliance with this requirement.

Testing/Sampling
Hanson Brick is required to test one raw brick and one burnt brick at least once per month for sulfur content for use in hourly and yearly SO2 emission calculations. J. Greger provided me with % sulfur analytical results from Harrop Industries (see attachment) for 1 raw and 1 burnt brick tested on 6/10/14. The results were used to calculate SO2 emissions for May 2014 brick firing. Hanson Brick is in compliance with this condition.

Monitoring/Recordkeeping
The temperature entering the baghouses for each kiln should be monitored and recorded continuously. The monitor for kiln 2 read 403°F. I verified in the June 2013 inspection that Hanson keeps records of temperature per charge of brick into the kiln. Hanson Brick is in compliance with the monitoring and recording of temperature entering each baghouse.

Hanson Brick is also required to keep records of their yearly and hourly sulfur dioxide emissions. The aforementioned spreadsheet that J. Greger uses to enter in brick and % sulfur data is also used to record average pounds of SO2 per hour averaged over a month, tons of SO2 per month and 12-month rolling total SO2 emissions.

Hanson Brick is also required by the ROP to conduct a Method 9 visible emissions test at least once per month during routine operating conditions of the kiln stacks. J. Greger showed me multiple examples of VE readings done on the kiln 2 stack and provided me with copies of 2 VE readings: one conducted on 9/30/13 and the other conducted 1/30/14 for kiln 2 with an average opacity of 0% over the 6-minute interval for both. This satisfies the visible emission condition. I saw no opacity coming from the kiln stacks during the inspection.

J. Greger said that Hanson Brick's kilns operate 24 hours a day. The number of operating hours is also recorded in Hanson

Brick's spreadsheet as well as the tons of brick going into the kiln per day. These records satisfy the ROP recordkeeping condition 5 which requires Hanson to record the operating hours and production rate in tons of brick on a daily basis.

FGPLANT1

The FGPLANT1 consists of a paddle mixer, sand dryer system, 30 pug line (with small mixer and extruder), and a 50 pug line (with mixer and extruder). All of these processes are vented to the same control device: a wet cyclone separator which Hanson Brick refers to as a "Whirl Wet." J. Greger said this process does not operate all the time. Hanson Brick is required to do Method 9 readings once per month. He provided me with copies of VE readings done on 9/30/13 and 1/30/14 – there was a 0% average opacity for the 6-minute interval (see attachment). I did not see any signs of opacity during the inspection. Hanson Brick is in compliance with this condition.

Hanson Brick is also required to record pressure drops across the wet dust collector/cyclone on a weekly basis. Also provided on the VE observation form are J. Greger's weekly pressure drop records. Pressure drop must be maintained between 7 and 9 in H_2O. None of the readings done by J. Greger were outside of these bounds. During the inspection I recorded a pressure drop of 6.5 in H_2O. According to the records, Hanson Brick is in compliance with the pressure drop for the cyclone; *however, I will include a follow-up report on J. Greger's pressure drop readings for the month of July as well as include an explanation from Hanson Brick as to why the pressure drop was below appropriate operating conditions.*

FGPARTSWASHER

There are 3 cold cleaners (never heated) parts washers located onsite at Hanson Brick that J. Greger said are rented from Vic-Sol per the 2013 inspection. Each of them holds approximately 25 – 30 gallons. Each parts washer tub is attached to a drum where the solvent is stored through a drain at the bottom of the wash tub (no chemicals are stored in the washer itself), which meets the design requirement of equipping the washer with a draining device.

Mineral spirits is still the cleaning solvent used in all 3 parts washers; according to the MSDS submitted to me by J. Greger, the only halogenated compound present is trace amounts (<0.1%) of tetrachloroethylene (perchloroethylene) (see attachment). According to the ROP, the cleaning solvents must not exceed 5% by weight of this compound. Hanson Brick is therefore in compliance with the material limits condition of the ROP for this emission unit.

J. Greger said that Vic-Sol is the company who maintains the parts washers. The parts washers are also swapped out with other parts washers by Vic-Sol. I did not ask J. Greger how often Vic-Sol comes to maintain the washers, but knowing that maintenance is performed by Vic-Sol is enough to show compliance with condition 2 of the process and operational restrictions for the parts washers requiring that routine maintenance be performed on the cold cleaners

Each of the cold cleaners has an air/vapor interface of approximately 3.75 ft^2 (1.5 ft x 2.5 ft) and therefore meets the design requirement of not exceeding 10 ft^2 of air/vapor interface.

All 3 cold cleaners were equipped with lids. During the 2013 inspection the lids were not closed. B. Stevens and I revisited the 3 cold cleaners and I verified that all containers' lids were being kept closed. Hanson Brick is in compliance with the requirement to keep lids closed when not in use.

Conditions 4 & 5 of the FGPARTSWASHER design/equipment parameters requires certain conditions be met depending on the Reid vapor pressure of the cleaning solvents. The Reid vapor pressures for trimethylbenzene and mineral spirits are 0.095 psia and 0.13 psia, respectively, according to Cameo Chemicals MSDS. Condition 4 requires mechanical assistance of the cover if the Reid vapor pressures are more than 0.3 psia. Hanson Brick is not required to have mechanical assistance based on the psia's.
Condition 5 requires certain conditions be met if the Reid vapor pressures are greater than 0.6 psia; the Reid vapor pressures are not, and therefore the conditions are not applicable.

Condition 3 of Monitoring/Recordkeeping in the ROP says that written operating procedures must be posted in an accessible, conspicuous location near each cold cleaner. B. Culham and I provided J. Greger the orange "Cold Cleaner Operating Procedures" stickers provided by the Office of Environmental Assistance during the June 2013 inspection. J. Greger put these on the inside of each cold cleaner lid. B. Stevens showed me that some of the stickers have since fallen off and J. Greger has replaced the orange operating procedure stickers with Vesco Oil Cold Cleaner Operating Procedures. J. Greger provided me with an extra sticker to show what is currently being used at Hanson Brick. Hanson Brick is in compliance with the operating procedure requirement.

Hanson Brick is currently in compliance with all state and federal requirements at this time.

For the inspector:
If you are going into the crushing/screening/belt conveying building it is recommended you ask Hanson Brick to provide one of their dust masks to you prior to entering. It is visibly dusty and it is recommended you not expose yourself to PM at those levels for any length of time.

NAME Michael M Lupo DATE 8-20-14 SUPERVISOR M. McC