

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

N179451739

FACILITY: Atlas EPS, a Division of Atlas Roofing Corp.		SRN / ID: N1794
LOCATION: 8240 Byron Center Rd., BYRON CENTER		DISTRICT: Grand Rapids
CITY: BYRON CENTER		COUNTY: KENT
CONTACT: Tim Van Hoeven, Plant Manager		ACTIVITY DATE: 12/17/2019
STAFF: April Lazzaro	COMPLIANCE STATUS: Non Compliance	
SUBJECT: Unannounced, compliance inspection.		SOURCE CLASS: MAJOR
RESOLVED COMPLAINTS:		

Staff, April Lazzaro arrived at the facility to conduct an unannounced, scheduled inspection and briefly met with Tim Van Hoeven, Plant Manager. Mr. Van Hoeven was in a meeting and asked if I could come back at 11:30, to which I responded that I would.

FACILITY DESCRIPTION

Atlas EPS, A Division of Atlas Roofing Corporation (Atlas) is a manufacturer of expandable polystyrene (EPS) beads and is the largest source of volatile organic compounds (VOC) in the Grand Rapids District with 234.7 tons of emissions reported for 2018. The facility operates pursuant to Renewable Operating Permit (ROP) No. MI-ROP-N1794-2017a. Atlas is located in downtown Byron Center, with a school directly to the north, a residential neighborhood directly to the east and shopping centers directly to the west and south. The facility consists of two buildings that are connected via a corridor. Atlas uses the EPS beads to make polystyrene foam products generally used in the construction industry. The raw material consists of tiny, (the size of a grain of salt) hollow polystyrene beads that is impregnated with the blowing agent pentane. A blowing agent is a substance which changes the cellular structure via a foaming process. When steam is applied, the pentane is released from the bead, causing it to expand in size (30x) and harden. As such, the primary pollutant emitted at Atlas is pentane, which is a VOC. Pentane is not identified as a hazardous air pollutant (HAP) according to the EPA, yet is identified as a toxic air contaminant according to State of Michigan Air Quality Division (AQD) air toxics rules with an Initial Threshold Screening Level (ITSL) of 17,700 µg/m³ over an 8-hour average which is the equivalent of 17.7 ppm. A Safety Data Sheet found online states that the odor is "gasoline-like" and has an odor threshold of 2.2 ppm. Pentane is highly flammable and heavier than air. The raw material also contains smaller amounts of ethylbenzene and styrene which are limited in the permit.

Atlas uses two boilers to provide steam for the polystyrene foam process. The first stage is called pre-expansion and the tiny bead is exposed to heat and steam which causes it to expand. Atlas has two batch expansion machines, (EUEXPANDER5 and EUEXPANDER6) and the emissions of pentane generated during the expansion process are directly ducted to a thermal oxidizer for emissions reduction. Approximately 27% of the pentane in the beads is released during pre-expansion. After pre-expansion, the beads are stored (EUBEADAGING) to allow for further off-gassing of the pentane. The pentane emissions from the bead storage is released to the atmosphere through the in-plant ventilation and remain there anywhere from four hours to three days. The next stage is molding, and Atlas currently has four molding machines (EUMOLD4-7). Steam is used again at the molding machines to press and form large rectangular blocks out of the expanded beads. The mold machines have stacks that duct emissions of pentane to the outside air. After molding, the blocks are held in storage to allow them to age for a period of time to get to the right moisture content. They may be put in one of several "hot" rooms which are heated up to 140°F. After the correct conditions have been achieved, the foam blocks are cut to the desired length and thickness. Some foam may also be embossed. Embossing is the creation of an impression in the foam, which can create a pattern and changes the density. Atlas also recycles scrap foam in-house which is shredded and re-condensed. Some of the recycled foam is reused at the facility, but most is externally sold.

Atlas recently made changes to equipment at the facility by replacing an older expander and moving the existing expander closer to the thermal oxidizer. This was done through the Permit to Install process, which was subsequently incorporated into the Renewable Operating Permit as a modification. They also removed two older boilers and installed one new boiler. An existing smaller boiler was moved into the boiler room. The new boiler at 12.563 mmBtu/hr was identified in the permit to install (PTI) application as being subject to the New Source Performance Standard Dc, which is found in 40 CFR Part 60 Subpart Dc. This boiler is fueled by natural gas and as such the only requirement is to record fuel usage. This information was requested, and fuel use information was provided for the facility. Per AQD guidance,

the facility may prorate or predict natural gas usage, with the prior approval of the AQD District Supervisor. Atlas EPS shall request this alternate method.

Beginning in early December 2019 the AQD began to receive odor complaints from a resident of the neighborhood directly to the east. Odors have been confirmed by AQD staff, but not at the intensity required to be considered a violation of Rule 901(b).

When I arrived back at the facility at 11:30 AM, I was met with Mr. Van Hoeven, Jon Nelson, Multi Site Controller, Robert Dever Production Manager and Miki Horton, Regional Human Resources Manager. We used a conference line to connect with corporate staff consisting of Josh Livingston, Corporate Director of Environment, David Sykes, Environmental Consultant and Bill. I provided all present a statement that the AQD has begun receiving odor complaints regarding this facility, which are being investigated. The investigations indicate that there is a smell of EPS that is noticeable in the neighborhood directly to the east, however it has not been observed by AQD staff at the levels that would constitute a violation. I described at length, the AQD Rule 901 and our Odor Investigation Policy, including explanations of frequency, intensity and duration. I assured those present that the method is objective, with the fact that our policy has been withheld in a court of law. Ms. Horton indicated that she too lives in a neighborhood to the east and has not smelled any odors at her residence. Mr. Van Hoeven indicated that the complainant called him to say they were smelling odors, and the company told them it was in compliance and had little emissions. I informed the group that Atlas is the largest source of VOC emissions in the Grand Rapids District. The company may want to contact the complainant to see if they can work something out. Mr. Van Hoeven stated that he would call the complainant back.

COMPLIANCE EVALUATION

FGEPS

Emission Limit(s)

This flexible group contains 8 emission units that include the expanders, mold, ageing and the thermal oxidizer. The emission limits include emissions from all of these operations combined. There are 14 stacks listed as being associated with these emission units. When questioned about the stacks, facility staff indicated they know all 14 are there, but they don't know what stack listed in the permit is where. I suggested that they label equipment associated with the stacks so that during future inspections those can be evaluated.

Emissions of VOC's are limited to 272.4 lb/hr based on the daily hours of operation and 374.5 tons per year based on a 12-month rolling time period as determined at the end of each calendar month. At a glance of the recordkeeping, I noticed that the company has been using a 32% pentane retention value dating back to at least 2014 (the earliest records provided). The number that should be used here is a production-weighted average based on the product produced and the pentane content in the as shipped product based on testing. This number is not expected to be exactly the same every month, assuming there's a different ratio of products manufactured, and they have different pentane contents. I requested data from testing of the finished product from the company and found that they have not been testing the finished product to generate a real number in this column. Additionally, the current incinerator destruction efficiency in the spreadsheet is 99.4%. The actual incinerator destruction efficiency based on a 2017 stack test is 99.23%. Based on these two incorrect parameters, the company is not properly calculating emissions and has been underreporting emissions. Mr. Van Hoeven indicated he would look into it and get back to me. It is discussed in further detail below however based on those inaccuracies a Violation Notice will be issued citing this deficiency. Recordkeeping is attached via data disk.

Material Limit(s)

Material limits consist of 16,600 lb/yr for ethylbenzene processed and 84,400 lb/yr for styrene processed, both based on a 12-month rolling time period as determined at the end of each calendar month. Since the Permit to Install was issued on February 12, 2019 and subsequently incorporated into the Renewable Operating Permit, there is not yet 12-months of data to compare to the limit. The spreadsheet has data for the material limit, however there is no formula, so I asked Mr. Nelson to clarify how these two columns are being calculated. He provided me with information that meets the permit requirements.

The material limit(s) section also provides a specific calculation that is to be used to determine emissions from the EPS bead expansion process. In the calculation, it requires that the facility calculate the production-weighted average fraction of VOC retained in the product. Because the facility has been using the 32% pentane retained value as indicated above, instead of actual retained values based on

testing, the company is not properly utilizing this calculation. This is a violation of Special Condition FGEPS.II.3. A Violation Notice will be issued citing this deficiency.

Process/Operational Restriction(s)

The permit requires that the feed to the expanders shall cease immediately, upon initiation of the thermal oxidizer bypass. I discussed whether or not there is a bypass with facility staff and was informed that there is no thermal oxidizer bypass on the unit.

The permit states that the permittee shall not operate more than 4 block mold machines at any given time. The permittee currently only has 4 block mold machines.

FGEPS and the associated thermal oxidizer has Compliance Assurance Monitoring (CAM) requirements. The permit requires that the permittee shall not operate the thermal oxidizer unless it is operating under a negative pressure. This is measured in the plant at the expanders. If the expanders are not under negative pressure, a blue light will flash and the units will shut down. The pressure drop on EUEXPANDER5 was -1.2" H₂O and EUEXPANDER6 was -0.852" H₂O. Additional recordkeeping is attached showing 2019 pressure drop readings, which appear to be negative at all times.

The permit defines an excursion as a measurement of less than 1,340°F upon a visual review of the report generated from electronic data and any observation that the capture system is not operating under a negative operating pressure. Data demonstrating compliance with these requirements was requested. There are many times during the months of February, March, April, May, June, July, October, November and December where the temperature is below 1,340°F. The unit was operating at 1,665°F at the time of the inspection. This data is further discussed in detail below and a Violation Notice will be issued citing this deficiency. Additional recordkeeping is attached showing 2019 temperature readings.

Design/Equipment Parameter(s)

The permittee has equipped the thermal oxidizer with a continuous temperature indicator and recorder.

The permittee shall not input feed into any expander unless it's vented to the thermal oxidizer that is installed and operated in a satisfactory manner. Satisfactory manner includes maintaining a minimum VOC destruction efficiency in the thermal oxidizer of 95% by weight a minimum combustion temperature of 1,340°F and retention time of 0.25 seconds. As indicated above, the requested temperature records indicate that there were times when the thermal oxidizer temperature was below the required minimum 1,340°F. The data indicates a violation of Rule 910, and the Renewable Operating Permit have occurred. A Violation Notice will be issued citing this deficiency. Additional recordkeeping is attached showing 2019 temperature readings.

Testing/Sampling

The permittee is required to verify VOC emission rates for the thermal oxidizer and establish parameters to ensure the capture system is operating under negative pressure by testing once every five years. The last test was in 2017 which showed the thermal oxidizer met the destruction efficiency requirement at 99.2%. There were no capture system parameters established and sent to the AQD as a result of the testing. This will need to be established during the next stack test.

The permittee is required to determine the VOC content as received and as shipped of product from FGEPS. I received the requested Certificate of Analysis upon request, and cross referenced with the recordkeeping and found that the information provided was mainly for product that had not been used yet. However, it appears as though they are maintaining it on a per batch basis. Since only 6-7 bead types are used, AQD expectation is that there is test data for all shipped product which is required to be conducted on an annual basis or on an alternate sampling schedule approved by the AQD District Supervisor. AQD learned that the permittee has not sampled and tested the product as shipped since 2008. The 2017 ROP renewal and the 2019 permit modification requires annual sampling and testing, which has not been done for the three years the permit has been active. A Violation Notice will be issued citing this deficiency.

Monitoring/Recordkeeping

The permittee is required to record the daily hours for the EPS process. The same production hours are entered into the spreadsheet for each month except for Saturday's, which is based on employee timecard information. As a result of this method, a Violation Notice was issued during the last

inspection for exceeding the lb/hr VOC emission limit. I specifically asked if this issue was addressed and was told that they check for that to ensure accuracy. In December 2018 however the spreadsheet showed that there again were hourly emissions exceedances. Additionally, this was not reported to AQD as a deviation nor was a Rule 912 notification received nor was the spreadsheet corrected. This raises the question as to whether or not the Responsible Official is properly reviewing compliance data prior to certifying to the accuracy of it. As detailed further below, the incorrect date and day was entered for December which affected the months report. The updated spreadsheet indicates compliance for the December 2018 errors.

The permittee appears to be accurately recording the monthly throughput at pre-expansion for each lot of EPS beads. The permittee records monthly pounds of regrind under a heading of "recycle" in the spreadsheet. The VOC content is being recorded, however the date of the most recent test data used is unknown and further discussed below. A Violation Notice will be issued citing this deficiency. The updated spreadsheet is attached via data disk.

The permittee records the pounds of VOC per 100 pounds of EPS beads as received, for each lot of EPS beads used. This mathematical expression is just another way of writing the pentane content as an equivalent to weight percent, which is the value available on the Certificate of Analysis. Additional information and Certificate of Analysis are attached via data disk.

The permittee is required to record the total VOC emissions emitted at pre-expansion and the VOC destruction efficiency of the thermal oxidizer. The permittee is currently using an incorrect value in the destruction efficiency of the thermal oxidizer. The spreadsheet contains 99.4%, when the actual value from the 2017 test is 99.2%. The maximum effect on emissions in the past 12-months was a difference of 51 pounds of VOC emissions. As further discussed below, the permittee has updated the spreadsheet. If a value other than 95% is used, the permittee is required to request approval in writing from the AQD District Supervisor. Atlas shall make this request.

The permittee is required to calculate and keep a record of the total VOC emissions from FGEPs, using the method detailed in Appendix 3. The permittee is not properly calculating the production-weighted average fraction of VOC retained in product based on annual sampling as required nor are they utilizing the proper destruction efficiency value from the most recent stack test. A Violation Notice will be issued citing this deficiency.

The permittee appears to be maintaining the ethylbenzene and styrene containing material calculations correctly.

The permittee is continuously monitoring the thermal oxidizer temperature, and no apparent monitoring malfunctions or data exclusions were identified. The permittee indicated they are performing all weekly inspections of the thermal oxidizer and capture system and provided the most recent annual inspection information conducted by an outside contractor. Mr. Van Hoeven understands the importance of maintenance as without the thermal oxidizer, the plant cannot make EPS foam. This is discussed further below.

The permit requires that the permittee review the electronic temperature report every three hours to determine if a minimum temperature of 1,340°F has been met. The static pressure is also monitored and recorded. Atlas EPS has stated that the shift supervisor is conducting the review. Records were provided which are attached.

Reporting

A review of the 2018 annual and semiannual reporting indicated that there was a late submittal and the company was informed that the late submittal is required to be reported as a deviation. The deviation was not reported as required. I asked Mr. Van Hoeven to resubmit the report with the correct information as a hard copy with original signature. There have been zero excursions, exceedances or monitor downtime reported.

The permittee was also reminded that they need to attach recordkeeping to the annual Michigan Air Emissions Reporting System, which has not been done in the past.

Stack/Vent Restriction(s)

The status of the stacks was discussed with the permittee. I was told that all the stacks are present sized as permitted, however what stack is associated with what equipment is unknown. The thermal

oxidizer stack is listed as SV0034 in this permit.

Other Requirement(s)

The other requirements are associated with the Compliance Assurance Monitoring Plan. Based on the final outcome of the issues with the thermal oxidizer temperatures a Quality Improvement Plan (QIP) may be required.

FGRULE290

The Rule 290 flexible group is used for the embossing processes at the facility. As previously described, embossing is where the foam is pressed into a specific shape or a design is pressed into the cut piece. Emissions generated from embossing are pentane and non-carcinogenic particulate matter. The permittee is keeping records on a daily basis, using an emission factor for both. The permittee should make changes to the spreadsheet so that each month's emissions totals are displayed. November 2019 pentane emissions were reported at 106 pounds. November 2019 particulate matter emissions were 194 pounds. These values indicate compliance with Rule 290. Rule 290 emissions data is attached via data disk.

Summary of Conference Call January 8, 2020:

This call was to discuss questions I had as a result of my initial information review. Present for at least a portion of the call representing Atlas was: Tim Van Hoeven, Ted Grant, Technical Director, Josh Livingston and David Sykes. The items discussed were as follows:

#1- I had asked via email for any dates the thermal oxidizer had shut down on an unplanned basis, but never received a direct answer. Mr. Van Hoeven stated he was unsure but would look into it. The company responded that there was one occurrence in 2019 and it has already been reported to AQD on a Semiannual report form.

#2- I requested additional information regarding the thermal oxidizer temperature fluctuations. Specifically, I asked for temperature charts for the entire 2019 calendar year. I pointed out to the company that I reviewed the temperature data AQD received during the two previous inspections and compared that data with what I received for January, February and July 2019. There is a significant variation in the data. In previous years, the temperature went up over 1,500°F and appeared to maintain that temperature in a fairly tight pattern. Now, in 2019 the temperature is bouncing up and down and, in many cases, appears to be going below the permitted limit. This is likely due to the fact that during the annual inspection the ceramic was found to be 9" below the manufacturer's recommended level as well as the fact that the poppet valves are corroded. These problems would make temperature regulation for the unit unstable and hard to control. The 2018 and 2019 oxidizer annual service reports were requested. The 2018 report includes information on poppet deterioration. The 2019 report recommendations included: 1) RTO poppet valve section is deteriorating from the moisture with mild steel. (report and photos attached) 2) Media is low 9" and should be added ASAP and 3) Flows look good 2002 SCFM from Process, 1000 SCFM from Make-up Air, 2000 SCFM from Recirculation. No parts were replaced during the annual preventative maintenance inspection, however the media was added on December 12, 2019.

The information contained in the report, along with the thermal oxidizer temperature fluctuations observed in the records indicate a lack of maintenance of the unit, and improper operation. The 2018 and 2019 reports are attached.

#3- I asked for information on what staff person is reviewing the thermal oxidizer temperatures every three hours as required by the permit. Atlas staff was unaware of who was doing that but would look into it and let me know. Following internal review, Mr. Van Hoeven stated that the machine operator reviews those records daily. Mr. Van Hoeven also states that an alarm stops all expanding if improper levels exist. That process is managed by the expander operator and supervisor. These records are attached.

#4- I pointed out to Atlas that the emissions spreadsheet destruction efficiency had not been updated pursuant to the most recent stack test. Mr. Van Hoeven asked if he could leave it at the 95% default and I said he could, but he would be reporting and paying for emissions that did not occur. An updated spreadsheet was submitted on January 17, 2019 using the 99.2% destruction efficiency.

#5- I stated that Atlas identified the boiler as being subject to NSPS Dc in the PTI application, and as

such I would treat that as an initial notification. NSPS Dc requires monthly natural gas usage records, and those were requested. Atlas is not separately monitoring natural gas throughput as required because it does not have its own meter. Atlas should begin maintaining records as allowed by the EGLE AQD Fact Sheet that was provided to the company. Atlas shall request in writing permission to utilize an alternate recordkeeping method.

#6- Past product as shipped VOC retention is identified in the recordkeeping as being at 32% VOC. This is intended to be a production-weighted average determined by dividing the VOC content of each product by the VOC content of the respective raw beads and weighting this ratio by the fraction, by weight, of the month's production that the product constitutes. To conduct this calculation, you need data that identifies the VOC content of both the raw bead and the VOC content of the final product as shipped from the facility. The permit requires that the permittee shall conduct the sampling and analysis on the final product as shipped on an annual basis, or an alternate sampling schedule approved by the AQD district supervisor. No alternate plan has been approved. I asked for the most recent annual product as shipped VOC testing results. The company is not conducting testing on the product and have not done so since 2008.

As explained above the calculation can't be completed without the shipped product VOC data and the permit specifically requires annual testing, which they are not doing. Additionally, Atlas is not conducting a production-weighted average calculation, they are using a straight retention rate of 32%, based on data that is over 20 years old. Atlas EPS provided the 2008 sampling data to support the use of 32% VOC retention for all beads. However, the data showed that the VOC retention for the three products tested ranged from 13.5% to 31.6%, with an average of 23.2%. This data does not support the use of a flat rate of 32% VOC retention nor does it equate to a production-weighted average calculation. Atlas maintains that they are complying. As previously indicated, a Violation Notice will be issued citing this deficiency.

#7- A review of the emissions spreadsheet found that the columns for ethylbenzene and styrene in pounds processed did not have formulas to determine the emission factor used nor did it have units to know what was being reported. Atlas updated the spreadsheet to include this information.

#8- During a previous inspection, the spreadsheet provided to the AQD identified that there were days where the VOC lb/hr emission limit had been exceeded and not properly reported. The AQD sent a violation notice to Atlas as a result. Atlas responded that the spreadsheet was incorrect, and there was not emission limit exceedance. During the inspection I spoke with Mr. Nelson specifically about this issue and was told it had been corrected. As previously noted, when I reviewed the spreadsheet, I found that in December 2018 there were three days in "red" that show emissions above the hourly limit. The company reports human error as the reason behind the incorrect spreadsheet. An updated spreadsheet has been submitted and it appears as though the facility incorrectly listed December 1, 2018 as a Sunday, when it was really a Saturday, which had the days off.

#9- I also noted that the data the company uses in their calculations for the hours of operation each day never changes. This is unlikely, and I suggested they reevaluate how that is being reported. Mr. Van Hoeven stated that all the hours worked are correct except for Saturday work. That data field is adjusted by hand because the hours worked on that day are not always the same.

#10- I discussed at length the requirements of a Responsible Official when reviewing company data and filling out the Semiannual and Annual Report Certifications. I made it very clear that the person signing the form, should be familiar with the conditions of the permit and what is needed to ensure compliance has been achieved prior to sign off. The fact that there were red cells in December that showed non-compliance and that they have been submitted to the AQD more than once without correction indicates to me that they are not conducting a thorough and reasonable inquiry. Mr. Van Hoeven has accepted full responsibility and stated that Atlas will implement new procedures to ensure that this does not occur again.

COMPLIANCE SUMMARY

Atlas was in non-compliance at the time of the inspection.

NAME Paul Lyngan

DATE 1-21-20

SUPERVISOR JK

