

SOUTHWEST REGIONAL OFFICE

MEMO

TO Air Quality Permit File SOOP # 26-00590
Carlisle Construction Materials

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DATE August 3, 2012

RE Review of Title V Operating Permit Initial Application
Georges Township, Fayette County
APS# 768800; AUTH # 908402; PF# 738074

Background

This application is for Carlisle Construction Materials (CCM)/ Hunter Panels facility located in Georges Township, Fayette County. On December 30, 2011, a Title V Operating Permit application was received by the Department and determined to be Administratively Complete on February 16, 2012.

Plan Approval PA-26-00558A was issued to Hunter Panels, LLC at this location on December 5, 2005, expired June 5, 2007. The plan approval was for the installation of a foam insulation panel manufacturing plant. The facility encompasses the delivery and storage of raw materials, panel manufacturing, and product warehousing. The plan approval limited VOC emissions from Hunter Panels, LLC to 49.6 tons per year in any consecutive 12 month period. A State Only Operating Permit application (OP-26-00558) was received on April 5, 2007 and determined Administratively Complete on June 20, 2007. PA-26-00558A was not extended and was allowed to expire upon receipt of the application for OP-26-00558.

Plan Approval PA-26-00590 was issued to CCM / Insulfoam at this location on July 11, 2011, with an expiration date of January 11, 2013. The plan approval was for the installation of an insulfoam expanded polystyrene block molded product line. The plan approval limited VOC emissions from Insulfoam to 49.3 tons per year in any consecutive 12 month period. The facility completed construction and began the initial temporary operating period on September 6, 2011. The plan approval was modified to reflect the temporary operation period (180 days) on February 8, 2012 which expires on March 6, 2012. A request for extension was received by the Department on February 8, 2012 to allow time for an initial operating inspection and Source Testing to review stack test results. The plan approval expiration date is September 9, 2012. At this time, CCM has

informed the Department that they will be submitting another Extension Form to allow time for processing the Title V review, public comment and EPA comment periods. This request is yet to be received.

The Air Pollution Control Act Compliance Review Form received as part of this Title V Operating Permit application identifies Hunter Panels, LLC (Federal Tax ID 01-0514287) and Insulfoam (Federal Tax ID 16-1449809) as subsidiaries (shared ownership) of the parent corporation Carlisle Construction Materials (Federal Tax ID 16-1449809). The applicant acknowledges that PA-26-00590 was a modification to the existing minor facility and the Hunter Panels and Insulfoam are considered a single facility as defined by Title 25 Pa Code Section 121.1. Therefore, as indicated in the Title V Operating Permit Application, PA-26-00588A and PA-26-00590 are incorporated into TV-26-00590 under Federal Tax ID 16-1449809. The State Only Operating Permit application for Hunter Panels, OP-26-00558, is withdrawn and replaced with TV-26-00590 as requested by the facility on February 17, 2012.

Sources, Control Devices and Emissions

Hunter Panels-

Polyisocyanurate Foam panel manufacturing process begins with the mixing of polyol (polyester resin) with additives such as catalysts, surfactants and flame retardant compounds. Once mixed, this material is blended with pentane and Polymeric Di-phenyl-methane Di-iso-cyanate (PMDI) immediately prior to being dispensed at the "laydown point." Four streams of the "wet" product exit from the laydown nozzle and are blown between two sheets of paper backing located on a conveyor. From here, foam fills the space between the paper backings to form the continuous length of panel as it moves into the furnace. The thickness of the foam insulation panel varies depending on line speed and laminator settings. Side walls along the conveyor force the expanding foam to conform to the width of the paper backing. Pentane emissions are expected at the laydown point, during product cutting, and during product storage. Emissions from the process consist primarily of the VOC pentane. Pentane is a volatile organic compound used as an expanding agent in the foam panel manufacturing process. VOC emissions from the pour table and laminator are directed to a 10,000 SCFM Regenerative Thermal Oxidizer (RTO), 1.25 MMBtu/hr burner, with 98 percent destruction efficiency. Particulate and VOC emissions from the cutting operation are directed to a 33,300 SCFM Mikropul Dust Collection System. Particulate is captured in the system with 99.9 percent efficiency while VOC are uncontrolled. VOC fugitive emissions occur at various points in the process including a percentage of the pour table, laminator, the cutting operations and storage area.

On December 14, 2006, ARI Environmental conducted a compliance testing on the RTO and baghouse according to the conditions of Plan Approval 26-00558A. On April 13, 2007 the Department's Source Testing Review approved results from stack testing report.

Insulfoam-

The Expandable Polystyrene (EPS) manufacturing process (Insulfoam) begins with dumping bags of ESP beads, resin which has a sand like appearance impregnated with pentane (blowing agent), into a hopper and auguring them into a pre-expander. With the aid of steam supplied to the processes by a Superior Boiler containing a Limpfield burner rated at 7.97 MMBtu/hr, and agitation, the beads are pre-expanded in batches into BB size particles called pre-puff. The steam softens the polymer and causes the pentane to expand inside the bead and blow outward. Each batch of pre-puff exiting the pre-expander is dried in a fluid bed drier prior to being blown to aging bags for stabilization. The pre-puff is stored in multiple large air-permeable bags and the required aging time varies from 6-48 hours depending on raw material type and product density. Aged pre-puffs are air conveyed from the aging bags to the mold where with steam and pressure, the pre-puff is fused into a foam billet or block. Foam billets will be shipped as blocks in the original molded form. Other blocks will be stored and permitted to stabilize from 24-120 hours before being cut into various sizes and shapes with an electric hot wire. VOC emissions from the pre-expander vent and door to dryer are directed to an 8,400 SCFM Regenerative Thermal Oxidizer (RTO) with 97 percent destruction efficiency. The RTO burner is rated at 2.0 MMBtu/hr. The bead aging farm is a significant source of pentane emissions. The room is maintained as a permanent enclosure and emission are directly vented to the RTO. During the molding process, emission during filling and fusing also release VOC emissions which are directed to the RTO. Emissions that escape the collection system as well as those from product storage areas will be emitted as fugitive emissions.

Directly following molding, blocks are typically placed in storage for a minimum of three to four days prior to shipment or cutting. Based on pentane losses measured at Insulfoam facilities, it has been estimated that on an average of approximately 45 percent of the total pentane content of the raw material is emitted during the manufacturing process. Data collected from the Dixon, California facility shows that while total pentane loss percentage is not clearly dependent on initial raw material pentane content, it is however dependent on time in storage. The study shows that while the total pentane loss increases over time the rate of loss decreases over time. It is estimated that approximately a 72 percent of the available pentane is in the raw material off gases during processing and within the first four weeks of storage. CCM has developed emissions factors based on the time in storage. Once the product leaves the facility, the emissions are no longer the responsibility of the permittee. CCM is required to maintain records and analysis records on a monthly basis to determine fugitive emissions from the storage areas.

On December 8, 2011, ARI Environmental conducted a compliance testing on the RTO according to the conditions of Plan Approval 26-00590. On May 25, 2012 the Department's Source Testing Review approved results from stack testing report.

Table 1 provides the facility's potential emissions. The Foam Panel Process (Group 2) identifies the total emissions from the Polyisocyanurate Foam Panel manufacturing

process (Source 111), storage tanks (Source 112-118), RTO burner and miscellaneous natural gas units (space heaters totaling 8.7 MMBtu/hr and a 1.7 MMBtu/hr Boiler for the Rail Car System) . The EPS Process (Group 3) identifies the total emissions from the pre-expander (Source 101), vacuum block mold (Source 102), bead age farm (Source 103), product storage (Source 104), RTO burner and Process Boiler (Source 031). The Foam Panel Process is limited to 49.6 tons per year VOC per plan approval 26-00558A and the EPS Process is limited to 49.3 tons per year VOC and 5.5 tons per year HAPS per plan approval 26-00590.

Table 1: Potential To Emit

Source	Tons/Year					
	NOx	CO	SOx	PM	VOC	HAPs
Foam Panel Process	4.92	4.11	0.03	25.37	49.6	0.0
EPS Process	4.28	3.43	0.03	0.33	49.3	5.5
Total:	9.2	7.5	0.1	25.7	49.6 / 49.3	5.5

Testing

Hunter Panels last performed source testing on December 14, 2006 under plan approval PA-26-00558A. Within six months of issuance of the Title V Operating Permit and every five years thereafter, Hunter Panels is required to conduct a source testing of the inlet VOC (as pentane) emissions to the RTO, outlet VOC (as pentane) emissions from the RTO, DRE of the RTO, Outlet VOC (as pentane) from the baghouse, and outlet particulate grain loading from the baghouse by Methods in Appendix A of 40 CFR Part 60 or any alternate methods approved by the Department.

Insulfoam last performed source testing on December 8, 2011 under plan approval 26-00590. Insulfoam is required to conduct source testing of the RTO exhaust every five years while processing a high pentane bead (5.5% or higher) unless approved by the Department otherwise.

Compliance

CCM is required to submit a Title V Compliance Certification by January 31 of each year which covers the previous calendar year period of January 1 through December 31. Semi-annual monitoring reports must be submitted by January 31 and July 31 of each year. The January 31 semi-annual monitoring report shall cover the period from July 1 through December 31 and may be included in January 31 Title V Compliance Certification. The July 31 semi-annual monitoring report shall cover the period from January 1 through June 30. Annual emission statements are due by March 1 for the preceding calendar year.

The Polyisocyanurate Process is not to use more than 3,700,000 pounds of pentane, foam production of 58,830,000 pounds and is limited to 49.6 tons per year in any 12-month consecutive period. VOC (as pentane) from the RTO is limited to 0.7 lbs/hr and 1.9 tons

per year. Visible emissions from the RTO and baghouse shall not exceed 10 percent at any time. The baghouse emissions are limited to 0.02 gr/dscf particulate matter and 11.4 lbs per hour VOC. The DRE of the RTO must be at least 98 percent.

EPS Process is not to emit more than 49.3 tons per year VOC and 5.5 tons per year HAPs in any 12-month consecutive period. Visible emissions are limited to 10 percent opacity for periods less than three minutes or 30 percent at any time. The RTO must meet 98 percent DRE or less than 7 ppmvd propane.

Monthly and 12-month records are to be maintained and stack testing is required every five years to verify compliance with limitations set forth in operating permit for polyisocyanurate process and EPS process.

Storage tanks shall have pressure relief valves which are maintained in good operating condition and which are set to release at no less than .7 psig (4.8 kilopascals) of pressure or .3 psig (2.1 kilopascals) of vacuum.

Regulatory Analysis

Applicability of 40 CFR Part 63 Subpart III, JJJ, MMMMM and OOOOOO were examined and the facility is not an affected source, based on the facility not being a major source of HAPs as well as the EPS beads are not manufactured at the CCM facility.

40 CFR Part 64- Compliance Assurance Monitoring

This part was promulgated on October 22, 1997 and applies to a pollutant-specific emissions unit at a major source that is required to obtain a Title V operating permit if the unit satisfies the following criteria (*per 40 CFR 64.2*): "(1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof); (2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and (3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source." CCM is defined as a major source. CCM developed and proposed a CAM plan to the Department for the polyisocyanurate foam panel manufacturing process and EPS process. The VOC and particulate emissions from the polyisocyanurate foam panel manufacturing process are controlled by an RTO and baghouse. The VOC emissions from the EPS process are also controlled by an RTO. The Department approves and incorporated the proposed CAM plan into the Title V Operating Permit.

Conclusions and Recommendations

On December 30, 2011, CCM / Hunter Panel Facility submitted a Title V Permit Application for the manufacturing of polyisocyanurate foam panels and expandable polystyrene located in Georges Township, Fayette County. CCM has complied with the municipal notification requirements contained in 25 Pa. Code §127.413. Municipal notification was received by the Township of Georges and Fayette County on December

29, 2011. A fee of \$750 was remitted to the "Clean Air Fund: by CCM on December 30, 2011 as required under 25 Pa. Code §127.704 (b)(3). The draft Title V Permit will be submitted to the company for their review as well as the requirements to post a notice into the newspaper for three nonconsecutive days. The Notice of Intent to Issue the permit will be published in the Pa. Bulletin for a 30 day public comment period. The draft operating permit and memo will also be submitted to EPA for a 45-day comment period.

On March 7, 2012, an initial operating permit inspection was conducted by Devin Tomko and myself, both Air Quality Engineering Specialists. No violations of any permit requirements or conditions were noted at the time of inspection. It is my recommendation that the Title V Operating Permit for Carlisle Construction Materials / Hunter Panel Facility, TV-26-00590, be issued.