



**Environmental
Protection Agency**

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

May 18, 2012

High Priority Facility
Notice of Violation (GC8 – Emission Violation)

CERTIFIED MAIL

RE: FOLLOW-UP TO DIVISION OF AIR POLLUTION CONTROL COMPLIANCE
EVALUATION FOR THE OPERATIONS AT 3M – ELYRIA LOCATED AT 1301 LOWELL
STREET, ELYRIA, LORAIN COUNTY, OHIO – FACILITY ID: (0247040822)

Mr. John Akey
Plant Manager
3M Elyria
1301 Lowell Street
Elyria, OH 44035-4864

Dear Mr. Miller:

On March 29, 2012, an Ohio EPA (OEPA) representative, Christine McPhee, visited the above-named site to determine compliance with the permits issued by the Division of Air Pollution Control (DAPC), and other applicable requirements. The purpose of this letter is to provide a follow-up to the inspection. Additional information was requested and was received on various dates in April and May of 2012 and was also reviewed. Your time and courtesy as well as that of other 3M team members were greatly appreciated. An electronic copy of the report will be e-mailed to you.

Emissions Limits Violations

Title V Operating Permit# P0085332 terms C.1.b)(1)a., C.2.b)(1)a., C.7.b)(1)a. and C.8.b)(1)a. for the Xanthation Reactors P001, P002, P008 and P009, respectively, limit annual emissions of organic compounds (OCs) to 1.1 tons each. The fee emissions reports noted that annual OC emissions were 5.99 tons and 6.20 tons at each reactor for calendar years 2010 and 2011, respectively, in violation of the aforementioned emissions limits. One reason for the exceedances of the OC emissions limits is that emissions testing performed on April 20, 2010 discovered that fugitive emissions were greater than previous estimates. Ohio EPA acknowledges the receipt of Application# A0043358, received on February 15, 2012 for a modification of the Title V Operating Permit to include a request for an increase in the allowable OC emissions limits for each of P001, P002, P008 and P009. However, for a Title V facility, the permit-to-install (PTI) must first be modified prior to any modification of the Title V Operating Permit.

- Please submit an application for an administrative PTI modification of the requirements in PTI# 02-18240 to increase the OC emissions limits for the xanthation reactors (P001, P002, P008 and P009) and any other currently permitted emissions unit, as needed, via eBusiness.

Other Emissions Limits Comment

Title V Operating Permit# P0085332 terms C.3.b)(1)a., C.4.b)(1)a., C.6.b)(1)a. and C.9.b)(1)a. limit annual H₂S emissions to 3.33 tons from P003, 3.33 tons from P004, 0.53 ton from P007, and 1.66 tons from P010. These terms also have an annual H₂S emissions limit of 9.95 tons from P003-P005, P007 and P010, combined. H₂S emissions are not required by the annual fee emissions report.

- So that Ohio EPA may determine compliance with the annual limits for H₂S emissions please submit estimates and supporting calculations of H₂S emissions at each of P003, P004, P007 and P010 and the group for calendar years 2010 and 2011.

Capture and Control Efficiency Requirements and Emissions Limits

Title V Operating Permit# P0085332 term B.4.d) states:

The inlet to the biofiltration units shall capture a minimum of 85 percent (%) of emissions of OC and hydrogen sulfide from any one or any combination of the following emissions units P001 - P005 and P007 - P010. This capture efficiency shall be determined by monitoring the inlet concentrations of OC and hydrogen sulfide to the biofiltration units and the inlet concentrations of OC and hydrogen sulfide to the plant ventilation stack.

Ohio EPA recognizes that the emissions capture efficiency calculation has been modified to include reactor room losses from P001, P002, P008 and P009, as determined from emissions testing conducted on 4/20/2010, for fugitive emissions that are not captured and controlled. Quarterly report noted the following deviations with the 85% emissions capture system requirements: 83.7% on January 19, 2011; 65% on April 6, 2011; 84.5% on July 31, 2011; and 74.6% on August 31, 2011. The corrective action noted in the report stated, "We are continuing to investigate the root causes on a case by case basis and it appears to happen in some partial startup/shutdown circumstances, but not others." There were no emissions capture efficiency deviations reported for the fourth quarter in 2011 nor for the first quarter of 2012.

- Please explain what corrective actions were taken, if any, to resolve the capture efficiency deviations, reported in the previous quarters.

Record Keeping and Monitoring Requirements

Overall, the record keeping and monitoring programs meet the requirements of the Title V Operating Permit# P0085332, issued on June 18, 2009.

Reporting Requirements

Quarterly deviation reports for facility-wide deviations of the requirements of the capture system and control system were submitted as required by Title V Operating Permit# P0085332 term B.9.

Other Emissions Units (EUs)

Emissions testing, conducted during the 9/27-29/2010 and 10/18-27/2010 periods found significant levels of emissions at the following emissions units: a blending operation (P011), viscose mixer nos. 2-7 (P012-P017), trickling tower nos. 1 and 2 (P018 and P019), a wastewater pit (P020), a reclaim salt pit (P021), and sponge block aftertreatment (P022). Capture devices were observed and materials transfer of these emissions units was discussed during the March 29, 2012 site visit.

Status of Permit Applications

Application# A0044193 was received on March 30 2012 for Permit to Install# P0109808 to include the emissions units (P011 – P022) that were discovered to have non-insignificant levels of emissions. A review of this installation application will resume by the end of 5/2012.

Ohio EPA acknowledges the receipt of Application# A0043358, received on February 15, 2012, for a modification of the Title V Operating Permit to include P011 – P022 and requested increases in the OC emissions limits for the xanthation reactors (P001, P002, P008 and P009). As previously stated, the PTI# 02-18240 must first be modified to increase the OC emissions limits for the xanthation reactors (P001, P002, P008 and P009) and any other currently permitted emissions unit, as needed, prior to any modification of the Title V Operating Permit.

Please submit the application to administrative modify the PTI to increase emissions limits at P001, P002, P008 and P009 and any other currently permitted emissions unit by **Wednesday, June 13, 2012**. The submittal of information requested in item nos. 2 and 3 is expected by Monday, June 18, 2012. If you are unable to respond within aforementioned timeframe(s) please inform this agency.

The submission of the requested information and application does not constitute a waiver of Ohio EPA's authority to seek civil penalties as provided in Ohio Revised Code (ORC) 3704.06. Ohio EPA will decide whether to pursue or decline to pursue penalties regarding this matter at a later date.

Should you have any comments or questions about this correspondence, please do not hesitate to contact me at (330) 963-1205, or via e-mail at christine.mcphee@epa.ohio.gov.

Sincerely,



Christine McPhee
Environmental Specialist
Division of Air Pollution Control

CM/cs

Attachment: 3M Insp Rpt 2012.pdf

cc: Mr. Randy Miller, 3M Elyria
Ms. Jennifer Cowman, 3M
Ms. Misty Koletich, Ohio EPA, NEDO, DAPC
Tom Kalman, Ohio EPA, DAPC, CO

pc: Tim Fischer, Ohio EPA, DAPC, NEDO
Bruce Weinberg, Ohio EPA, DAPC, CO
Bill MacDowell, U.S. EPA, Region V

Evaluator(s): Christine McPhee

PCE Date(s): 3/29/2012 Announced: Yes No

FCE Date: 3/29/2012

CETA Input Date: 5/10/2012

Reassess: # Fed Rules (NSPS, NESHAP, MACT and RATA): 1 # non-insignificant EU s: 12

Ohio EPA: Facility Evaluation Form

Facility Information:

Facility Name: 3M Elyria
Facility Address: 1301 Lowell Street
Elyria, OH 44035-4864
Phone Number: (440) 323-6161

DAPC Facility ID #: 02-47-04-0822
Facility County: Lorain

Facility Contacts: Mr. Randy Miller
Title(s): EHS Supervisor
Phone Number: (440) 323-6161, ext. 107
e-mail: rlmiller@mmm.com

Other Representative(s): Mr. Mark Swallen
Title(s): Plant Engineering General Supervisor
Phone Number: (440) 323-6161, ext. 186
e-mail: mrswallen@mmm.com

Facility Classification:

Facility Type: Mega TV Title V SMPTI FESOP Non-HP
(check all that apply)

Applicable Programs: PSD NESHAP NSPS MACT, Subpart UUUU
(list subparts)

Pollutant(s) regulated at facility:
(check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> PE | <input type="checkbox"/> Fluorides (excluding hydrogen fluoride) |
| <input checked="" type="checkbox"/> OC/VOC | <input type="checkbox"/> Sulfuric acid mist |
| <input type="checkbox"/> SO ₂ | <input checked="" type="checkbox"/> Hydrogen Sulfide |
| <input type="checkbox"/> CO | <input type="checkbox"/> Total Reduced Sulfur |
| <input type="checkbox"/> NO _x | <input type="checkbox"/> NMOCs |
| <input type="checkbox"/> Pb | <input type="checkbox"/> Mercury |
| <input checked="" type="checkbox"/> HAPs as COS & CS ₂ | <input type="checkbox"/> Beryllium |
| | <input type="checkbox"/> Vinyl Chloride |

SAFETY REQUIREMENTS

Visitors to the manufacturing area must have the following safety equipment: safety glasses with side shields, at least a half-face respiratory protection mask with acid gas/organic vapor cartridges for CS₂ & H₂S, and safety shoes with steel or composite toes. Hearing protective equipment may be required in designated areas. See Attachment 1 – 3M Elyria Visitor, Supplier & Contractor Environmental, Health, Safety & Security Orientation Guide.

FACILITY-WIDE REQUIREMENTS

Fee reports submitted? Yes No (due April 15 of preceding year for HP Facilities)

TV Compliance Certification (if applicable): Submitted? Yes No N/A

Compliant? Continuous Intermittent, in 2010 & 2011 No Pending

Has there been enforcement against company in past 10 years? Yes No

If yes, what units? N/A

Did the facility comply with facility-wide monitoring, record keeping & reporting requirements?

Yes, Reporting No, monitoring and record keeping. N/A

Any odors? No odors were detected outside on 3/29/2012 in the parking lot neither outside the front entrance nor behind the building near the biofilters and storage tanks.

Memo: See below for remarks made in the annual Title V permit compliance certifications for 2010 & 2011 and the first quarter deviations report for 2012.

Part A, Item 20 - Permit to Install Requirement

Deviation - In 2011, 3M Elyria identified that several significant emission sources were not included in the initial Title V permit application, although they were part of the initial facility construction. The initial Title V operating permit application was prepared prior to 3M's ownership of the facility.

Corrective Action - A(n application for a Title V) permit modification was submitted on February 14, 2012 to correct this error and add all existing emission sources to the facility's operating permit.

OEPA Note – The certification report referred to Part A, Item 20 - Permit to Install Requirement. The report could have also cited "Part A, Item 11 - Reopening for Cause" application# A0043358 for Title V permit modification# P0109510 was uploaded to STARS2 on 2/15/2012.

OEPA Note - Application# A0044193, uploaded on 3/30/2012, for PTI# P0109808 for installation of 11 EUs, which were discovered to have significant levels of air pollutant emissions through emissions testing conducted on Sept. 26 – 29, 2010, and October 18 -27, 2010.

Title V Permit term B.4(c) Requirement - grab bag samples from biofilter inlet and outlet analyzed on the GC and Organic Compound removal efficiency calculated

Deviation - On 12/19/10 and 12/20/10, no outlet readings could be obtained for calculating OC Removal Efficiency due to a frozen sample line.

Corrective Action – None specified.

Deviation - On 1/09/11, 1/10/11 and 1/11/11 no outlet readings could be obtained for calculating OC Removal Efficiency due to a frozen sample line.

Corrective Action – The Biofilter scrubber outlet sample line was replaced with a new line with less potential for freezing.

Deviation - On 4/06/11 (second shift), responsible personnel did not obtain inlet and outlet readings for calculating OC Removal Efficiency due to a miscommunication between shift staff.

Title V Permit term B.4(d) Requirement - grab bag samples from biofilter outlet analyzed on the GC and fugitive emissions determined during stack test.

Deviation - On 5/5/10 and 6/21/10, the daily capture efficiencies were 70.2% and 84.1% respectively, which is below the required 85%. OC readings from the biofilter and ventilation stack inlets and fugitive sources, are used to indicate the daily OC and H₂S capture efficiency.

Deviation - On 10/13/10, we had one instance where daily capture efficiency was 80.1%, which is below the required 85%.

Corrective Action – None specified for 5/05/10, 6/21/10 and 10/13/10.

Title V Permit term B.4(d) Requirement - grab bag samples from biofilter outlet analyzed on the GC and fugitive emissions determined during stack test continued

Deviation - On 1/19/11, the daily OC capture efficiency was 83.7%, which is below the required 85%.

Corrective Action - Appears to happen in some partial startup / shutdown circumstances, but not others and we are investigating root cause.

Deviation - On 4/06/11, we had one instance where daily capture OC efficiency was 65%.

Corrective Action - The sampling SOP that addresses startup and shutdown of Emission Units will be revised to better define responsibilities to ensure that we maintain required Capture Efficiency. Plant Engineering will assume responsibility for approving startups.

Deviation - On 7/31/11 the daily OC capture efficiency was 84.8%.

Deviation - On 8/31/11, the daily OC capture efficiency was 74.6%.

Corrective Action - We are continuing to investigate the root causes on a case by case basis and it appears to happen in some partial startup / shutdown circumstances, but not others.

Title V Permit terms B.4.(c) & (d) – Grab bag samples from biofilter inlet & outlet analyzed on the GC & OC removal efficiency.

Deviation - Sample concentrations were outside of the calibration range intermittently between 1/1/2011 and 3/1/2011. GC readings appeared truncated, which reduces the measured concentration. All data including the truncated data, as analyzed, indicates compliance with the required capture and control efficiency for the facility. The non-truncated readings actually indicated higher efficiencies than the efficiencies that we reported, however all collected data was used to calculate the rolling average.

Corrective Action - A new calibration curve has been developed for the GC to better analyze the range of CS₂ and H₂S concentrations. The GC Standard Operating Procedure has been updated for the new GC system and the new calibration curves. Lab staff have been retrained to review data and look for samples that are out of range.

Title V Permit term B.6(a)(1) Requirement - Grab bag samples from biofilter inlet and outlet analyzed on the GC and Total Sulfur Emissions removal efficiency calculated.

Deviation - On 12/19/10 to 12/20/10, no outlet readings could be obtained for calculating Total Sulfur Emissions removal efficiency due to a frozen sample line.

Corrective Action – None specified.

Deviation - On 1/09/11, 1/10/11 and 1/11/11 no outlet readings could be obtained for calculating OC Removal Efficiency & Total Sulfur Emissions removal efficiency due to a frozen sample line.

Corrective Action – The Biofilter scrubber outlet sample line was replaced with a new line with less potential for freezing.

Deviation - On 4/06/11 (second shift), responsible personnel did not obtain inlet & outlet readings for calculating OC Removal Efficiency or Total Sulfur Emissions removal efficiency due to a miscommunication between shift staff.

Corrective Action – Not specified.

Title V Permit term B.6(a)(3) Requirement – Visual inspection of car seal on bypass line valve.

Deviation - Car seal is installed on the bypass line valve, but facility did not formally inspect the seal monthly as required per 40 CFR 63.148(f)(2). Inspections were not documented from January to June 2010.

Corrective Action – None specified.

Title V Permit term B.8 (b)(1)(2)(3) Requirement – The permittee shall record the following biofilter operating parameters on an average daily basis:

(1) the biofilter inlet gas temperature;

Deviation - inlet temperature (meter) was inoperative from 1/20/10 until 1/21/10.

Deviation - The CMS for biofilter inlet temperature was intermittently not available from 7/11/11 to 7/12/11, 7/14/11 to 7/21/11, 8/04/11, 8/31/11, 9/07/11, 10/06/11, 10/09/11 and on 11/19/11.

(2) the biofilter effluent pH;

Deviation - The CMS for biofilter effluent pH was intermittently not available from 7/11/11 to 7/12/11, 7/14/11 to 7/21/11 and on 10/06/11.

Title V Permit term B.8 (b)(1)(2)(3) Requirement – The permittee shall record the following biofilter operating parameters on an average daily basis continued:

(3) the pressure drop:

Deviation - From 4/9/10 to 6/30/10 the Historian system did not properly interpret our Biofilter Pressure CPMS data and we experienced data drop outs.

Deviation - From 7/26/10 to 7/28/10, 8/11/10 to 8/18/10 and 9/8/10 to 9/15/10 (intermittent) the Historian system didn't properly interpret the Biofilter Pressure CPMS data & we experienced data drop outs.

Deviation - The CMS for biofilter pressure drop was intermittently not available from 7/11/11 to 7/12/11, 7/14/11 to 7/21/11, 8/04/11, 8/31/11, 9/07/11, 10/06/11, 10/09/11 and on 11/19/11.

Corrective Action – None specified for deviations that occurred in 2010.

Corrective Action – See corrective action for deviation of term B.8.(d)(6).

Title V Permit condition B.8.(c)(1) – daily average readings of pH of scrubber liquor.

Deviation - On 10/29/11, the backup scrubber pH reading was not taken as required.

Corrective Action - Both the lab and production supervisors were reminded of their responsibility to take the pH reading.

Title V Permit condition B.8.(d)(6) - CPMS for temperature, pressure and pH.

Deviation - 3M Elyria had missing data points during the durations noted due to maintenance and upgrade of servers, power outages and unknown causes (electronic glitches).

Corrective Action - We are considering software that will notify appropriate personnel if network or PLC problems are detected or "out of range" readings occur.

Title V Permit condition B.8.(f)(1) – Visually verify that the manufacturing area is under negative pressure, once per shift, while emission units are in operation.

Deviation - On 3/11/11 (third shift), responsible personnel did not confirm the presence of negative pressure in the manufacturing area.

Corrective Action - We reinforced with the supervisors that they responsible for checking and initialing a checklist that confirms that these requirements are met each shift.

Deviation - On 4/06/11 (second shift), responsible personnel did not confirm the presence of negative pressure in the manufacturing area.

Corrective Action - We reinforced with the supervisors that they are responsible for checking and initialing a checklist that confirms that these requirements are met each shift.

Deviation - On March 26 and 29 (2012, for 12 hour periods each) responsible personnel recorded a lack of negative pressure as evidenced by the plastic strip momentarily in a neutral or outward position relative to the production area.

Corrective Action - Plant personnel were reminded that exterior doors must be kept closed in the production area when they are not being used. The visual observations and Biotower blower speeds prior to and after the missed observation indicate that the emission units were operated under negative pressure.

Title V Permit term B.10(j)(1) Requirement – Timely completion of the emission testing.

Deviation - Failure to perform emission testing during the time period required by the Title V permit.

Corrective Action – Please reference the January 6, 2010 letter from Chris Korleski – Director of the OEPA authorizing the extension for the emission testing.

Evaluator: Christine McPhee **PCE Date(s):** 3/29/2012

Capture Equipment Parameters Assessment

Description of Enclosure(s): The entire production area of the main building is considered an enclosure with two natural draft openings (NDOs). The north NDO is a 14 feet W. x 14 feet H. warehouse style fire door near the Sponge Block line (P007) and adjacent to the interior wall that separates the main production area from the warehouse. At the top of the north NDO there are a few ≈1 foot plastic strips, which would be sucked inward towards the production area, demonstrating a positive pressure flow from the warehouse into the negative pressure production area.

Within the production area is the newly enclosed packaging area that includes the south NDO. According to a 10/15/2010 memo from 3M, barrier walls were installed around the packaging area to eliminate the need for the packaging workers to wear respirators. The south NDO (30 feet x 15 feet) has a flexible door that is usually kept closed. There are two separate air handling units for the packaging room: a 3600 scfm unit provides spot cooling to packaging stations; and a portion of a 16,000 scfm unit that mainly provides makeup air to the production area. Inside the packaging room there is a positive pressure, which would be set to a minimum of 0.007" H₂O static pressure, and exhausts to the production area whenever the south NDO is opened. See Attachment 2 – Project layout.

In the production area there are covered vents that look like "sun roofs" which are designed to melt, as required by fire department code(s).

Was capture device(s) operating at time of inspection? Yes No Unknown

Operating parameters observed at time of inspection: The plastic strips at the top of the threshold of the open, north NDO were blowing in towards the production area on 3/29/2012 and indicates a negative pressure within the production area. The south NDO was closed on 3/29/2012.

Description of Capture Equipment:

1. Xanthation reactor nos. 1, 2, 3 & 4, (P001, P002, P008 & P009), respectively, exhaust gases, containing CS₂, are directed to the "captured gases" main exhaust line, located at the building exterior, and directed to the control equipment. Some fugitive emissions escape through louver vents.
2. Cookers (P003 & P004) and sponge cloth machine no. 2 (P010) – exhaust gases, containing CS₂ & H₂S, are contained within lexane plastic panels around the treatment processes and the water wash areas and are pulled into hoods over each equipment group and then directed to the main exhaust duct. Some portions of sponge cooking machine no. 2 (P004) have plastic sheeting rather than lexane panels.
3. Sponge block line (P007) there is plastic sheeting around 8 cook stations and plastic lexane or latex panels at the rinse station capture gases, which are drawn to the main exhaust line.
4. Tanks for storage of CS₂ (T001 & T002) and some holding tanks in the on-site wastewater treatment area are directed to the main exhaust line.
5. Capture equipment is also employed at other emissions units; see the "Other Non-Insignificant Emissions Units" section on page 21 of this report.
6. The captured gases are drawn by Twin Fans (in parallel formation), which are located after the biofilters and after the "vent stack" scrubber. Since the fans are located after the control equipment, there is a negative pressure (a vacuum) within the enclosure.
 - According to Mr. Mark Swallen, Plant Engineering General Supervisor, both blower fans do run most of the time. If only one fan is operable, then production must be reduced.
 - According to a 4/05/2012 memo from 3M, if the main ventilation blowers (fans) static pressure goes below -0.315 "H₂O the sponge production lines (P003, P004, P007 & P010) will shutdown as directed by the electronic lockout system. The reactors (P001, P002, P008 & P009) processing would not progress to a stage when exhaust gases would be generated if the fan pressure suction falls below 0.25"H₂O.

Was capture device(s) operating at time of inspection? Yes No Unknown

Operating parameters observed at time of inspection: The blower "suction" fan(s) are in constant use. The differential pressure of the blower fan(s) are continuously monitored to document capture system operation. The blower fan inlet pressure is measured within the exhaust stack ducting just prior to the biofilter inlet and the blower fan outlet pressure is measured at the biofilter outlet just upstream of the backup caustic

scrubber. The differential pressure is calculated as follows: $\Delta P = P_{\text{Biofilter OUTLET}} - P_{\text{Biofilter INLET}}$.

$\Delta P = -12.29 \text{ psi} - (-1.73 \text{ psi}) = -10.56 \text{ psi}$ at 11:30 on 3/29/2012.

Term B.8.d)(1) requires a log or record of operating time for the capture (collection) system.....

Term B.8.f)(1) The permittee shall ensure, once per shift, that the manufacturing area of emissions units P001 - P005 and P007 - P010 is maintained under negative pressure, in accordance with the procedure specified in 10.h.: *Compliance may be demonstrated by hanging lightweight strips of material from egress points abutting the manufacturing area and ensuring the air current is moving towards the manufacturing area.*

Term B.6.a)(2)b. The permittee shall inspect annually, repair leaks, and maintain records of all closed-vent systems used to route emissions to a control device, as specified in 40 CFR 63.148 or an alternative operating parameter as established and approved by U.S. EPA, according to procedures specified in Table 2.

Were op. logs/usage records maintained in accordance with applicable permit(s)?

Yes, negative pressure verification of enclosure.

Yes, leak inspection of closed vent system.

Was capture equipment operating in compliance with permit T&Cs? Yes No Unknown N/A

Were maintenance records for capture equip. reviewed during inspection? Yes No Unknown

If yes, when was most recent significant maintenance? On 8/08/2011 the inlet and outlet pressure (transmitters) for the inlet and outlet exhaust gases to the biofilters were serviced; see "Control Equipment" section on p. 9 of this report.

Does the level and frequency of maintenance appear adequate? Yes No Unknown

Memo: Negative Pressure Verification of Enclosure - The lab technician checks to see whether the NDO strips are blowing towards the production area in the enclosure, and whether the exterior doors are closed on a 6 times/day basis and will record the findings on a "CS₂ and WW Manhole Visual Check" form.

An inspection of the main blowers and minor repair(s) was completed on 12/19/2011 and is due every 6 months; see Attachments 3-1 and 3-2 – Preventative Maintenance Work Order 109198. Lubrication and inspection of each of the blower engines is scheduled to be performed monthly. The north blower and the south blower engines were lubricated on 1/22/2011; see Attachments 4 and 5 – Preventative Maintenance Work Order(s) 109352 and 109354.

Leak Inspection of Closed Vent System - Annual closed vent inspections are required by 40 CFR 63 Subpart UUUU Table 1, Item 10. The annual leak inspection was performed on August 17 & 18, 2011 by Pace Analytical Services, Inc., Field Services Division. All connection points were found to have no leaks above the action levels of >500 ppmv.

The leak inspection report, dated 9/23/2011, stated that 458 connection points (valves, flanges & other connections) were visually inspected for physical integrity (cracks, loose fittings & other abnormalities); see Attachments 6-1 through 6-6 – "Introduction" and "Results Summary". Each connection point was sampled for vapor concentrations via U.S. EPA Method 21 which complies with 40 CFR 63.148 (c) (1); see Attachment 6-20 – "Test Procedures". A portable photo ionization detector (PID) was employed since it detects CS₂ more accurately than a flame ionization detector (FID), which responds poorly to CS₂. The VOC concentration of all measured connections were adjusted (subtracted by) the background concentration. The adjusted VOC concentration of most connections were <10 ppmv or barely leaking at all. 34 connection points had adjusted VOC concentrations of >10 ppmv. No connection points were >500 ppmv, the action level identified in 40 CFR 63.148(d) which requires that repair of a leak be initiated within 5 calendar days. Vapors from 2 connections were not measured because these were "unsafe to inspect" and are exempted per 40 CFR 63.148(g).

Evaluator: Christine McPhee **PCE Date(s):** 3/29/2012

Control Equipment Parameters Assessment

Deviation Reports: Term B.9.b) requires quarterly rpts of:

- (1) each period of time when the average inlet temperature to the biofiltration system exceeded the temperature restriction specified in 7.a). – no more than 50°C;

- (2) each period of time when the biofilter effluent pH was outside the appropriate range specified in 7.a). – within values established during recent performance test that demonstrated compliance;
- (3) each period of time when the pressure drop across the biofiltration system(s) was outside the range specified in 7.a). - within the range of 0.5 to 15.0 inches of water; and
- (4) each period of time when the sulfate concentration of the biofiltration system's discharge liquor exceeded the requirements specified in 7.a). - The daily average conductivity of the discharge liquor shall not exceed 200 millisiemens.

Term B.9.c) requires quarterly reports of: Each period of time when the pH of the back-up scrubber liquor was outside the requirement specified in 7.b). – daily average pH of >10 (*This requirement is only applicable to the caustic scrubber during periods where the permittee operates the caustic scrubber to demonstrate compliance with an applicable emission standard.*)

Were all reports submitted? Yes No Unknown N/A

Did reports indicate non-compliance with permit limitations? Yes No Unknown

Memo: During the 4/01/2010 – 3/31/2012 period there were no exceedances of the biofilter operating parameters reported in the quarterly deviation reports. Biofilter control equipment operating parameter data is recorded every 15 minutes.

- The average, daily biofilter inlet gas stream temperature was 19.6 – 34.0°C during the 1/01/2011 – 3/30/2011 period and is within the maximum baseline value of 32.2°C, established during the U.S. EPA Methods 320 and 15 performance tests, conducted on 4/23/2010.
- Five sets (A – E) of three bioway towers drain into one of four banks which route fluid to the reclaim acid tank. The biofilter bank effluent pH were the following values during the 1/01/2011 – 3/30/2011 period: A – 0.88 – 1.01; B – 0.82 – 1.10; C – 0.83 – 1.39; & D/E – 1.04 – 1.29. These values are near the average biofilter effluent pH baseline values of 0.76, established during the U.S. EPA Methods 320 and 15 performance tests, conducted on 4/23/2010.
- The biofiltration system(s) pressure drop was 3.12 – 8.18"H₂O during the 1/01/2011 – 3/30/2011 period and may be compared to the maximum baseline value of 3.7"H₂O was established during the U.S. EPA Methods 320 and 15 performance tests, conducted on 4/23/2010.
- The daily average conductivity of the discharge liquor, in millisiemens (mS), during the 1/01/2011 – 3/30/2011 period was not reviewed to see if it is within the maximum baseline value of 109.3 mS, established during the U.S. EPA Methods 320 and 15 performance tests, conducted on 4/23/2010.
- The back-up scrubber liquor pH was 12.1 – 13.4 pH during the 1/01/2011 – 3/30/2011 period and conforms to the ideal pH of 12. There are an alarm levels on the backup scrubber liquor pH set for <11 and >13 to assure compliance with a minimum pH of >10.
- During the specified dates the re-circulated water (scrubber liquor) flow was as noted, which were determined by 3M personnel processing recorded data taken every 15 minutes: 1/01/2011 – 361.8 gal/min; 1/16/2011 - 331.4 gal/min; and 1/27/2011 – 370.4 gal/min.
- A 3M representative stated that the ideal biofilter inlet water temperature is 77°F. Maintaining this ideal temperature can be a challenge in the winter. However, warm moisture from the sponge cloth emissions unit (P010) can provide some heat.

Description of air pollution control equipment (APCE): biofiltration system to control OC & H₂S emissions & backup packed bed scrubber for the following:

- a. to control OC emissions at the xanthation reactors (P001, P002, P008 & P009);
- b. to control OC & H₂S emissions at the sponge cooking machines (P003 & P004) & the sponge cloth machine (P010); and
- c. to control OC & H₂S emissions at the cellulose sponge block line (P007).

Was APCE operating at time of inspection? Yes No Unknown N/A

Operating parameters observed at time of inspection:

Instantaneous readings of biofilter parameters on 3/29/2012 at 11:22 – 11:30 were:

- The biofilter inlet temperature was 28.8°C and complies with the maximum value of no more than 50°C in permit term B.7.a)(1). It is within the maximum baseline value of 32.2°C, established during the U.S. EPA Methods 320 and 15 performance tests, conducted on 4/23/2010.
- The biofilter effluent pH was not recorded to see if the biofilter effluent pH value is within the 0.76 pH baseline value, established during the U.S. EPA Methods 320 and 15 performance tests, conducted on 4/23/2010.
- The biofiltration system(s) pressure drop was not recorded to compare with the acceptable range of (0.5 - 15.0 "H₂O) in permit term B.7.a)(3). The maximum baseline value of 3.7"H₂O was established during the U.S. EPA Methods 320 and 15 performance tests, conducted on 4/23/2010.
- The conductivity of the discharge liquor reclaim acid tank was 73.83 millisiemens (mS) and complies with the maximum value of 200 mS in permit term B.7.a)(4). The instantaneous conductivity of the each bank was: A -113.7 mS; B - 86.7 mS; C - 89.0 mS; and D/E - 26.8 mS. The maximum baseline value of 109.3 mS was established during the U.S. EPA Methods 320 and 15 performance tests, conducted on 4/23/2010.
- The back-up scrubber liquor pH was 11.75 pH and conforms to the ideal pH of 12. There are an alarm levels on the backup scrubber liquor pH set for <11 and >13 to assure compliance with a minimum pH of >10.
- The period the re-circulated (scrubber liquor) water flow was 333.6 gal/min.

According to Mark Swallen, Plant Engineering General Supervisor, the backup scrubber is run when the inlet concentration \geq 10 ppm H₂S or when the duct suction (flow) is not adequate.

Was APCE operating in compliance with permit T&Cs? Yes No Unknown N/A

Term B.8.b. requires daily biofilter operating parameters records (ave. of measurements taken once/8-hr basis); and

Term B.8.c. requires daily backup operating parameter records (ave. of pH measurements taken once/8-hr basis) if the backup scrubber is employed to comply with emissions limit(s).

Were op logs/usage records maintained in accordance with applicable permit(s)? Yes

Memo: Some parameter measurements are taken continuously or at least 6x/day & are recorded in the "Emissions Data" sheet. Ave. of 3 readings is calculated in the spreadsheet for each of the APCE parameters.

Were maintenance records for APCE reviewed during inspection? Yes No Unknown

If yes, when was most recent significant maintenance? On 2/10/2012 the pH meters for each of four bioway towers fluid recirculation tanks were calibrated as required by the 2-month schedule; see Attachments 7-1 – 7-3 – Preventative Maintenance Work Order 109197 Bioway CPMS, pH Meters, ABCD Recirculation Tanks.

On 8/08/2011 the inlet and outlet pressure (transmitters) for the inlet and outlet exhaust gases to the biofilters were calibrated as required by the annual schedule; see Attachments 8-1 – 8-3 – Preventative Maintenance Work Order 106387 Bioway CPMS, Pressure Transmitter.

Do the level/frequency of maintenance appear adequate? Yes Unknown

Memo: Both mechanical and electrical systems of the capture system, the biofilter controls, the biofilter continuous monitoring system (CPMS) and the backup scrubber control have preventative maintenance tasks that have their own respective schedules.

Did any permit (PTI, TV, PTO) require performance testing for this unit? Yes No Unknown
If yes, what pollutant(s)? CS₂ and H₂S.

If yes, was testing performed in accordance with the applicable permit? Yes No Unknown

Memo: On 4/20/2010 Method 320 testing was conducted to determine OC capture efficiency:

- The following egress points were sampled and analyzed via Method 320:
 - Reactor 4 (P009) fugitive exhaust gases and found 1.2 lbs OC/hr as CS₂ at 1500 cfm;
 - Vent stack for fugitive OC emissions from sponge cooking operations (P003, P004 & P010); and
 - Biofilter inlet while P003, P004, P007 & P010 and at least one xanthation reactor were operating at stage 8 when the maximum emissions occur.
- Capture Efficiency = (Inlet OC - [Vent OC + (4 reactors x OC/reactor)])/Inlet OC, as CS₂.
- An average OC emissions capture efficiency of 93.8% was determined during the 4/20/2010 Method 320 test and demonstrates compliance with the minimum 85% OC capture efficiency.

On 4/23/10 Method 320 sampling for CS₂ & COS was conducted at the biofilter inlet and outlet resulted in an average OC destruction efficiency of 89.5%, while P003, P004, P007 & P010 and at least one xanthation reactor were operating at stage 8, and demonstrates compliance with the minimum 80% OC control efficiency requirement for the biofiltration control system.

On 4/23/10 Method 320 sampling was conducted to determine the destruction efficiency of sulfides emissions.

- Biofilter inlet were analyzed for the combined mass rates of CS₂, COS & H₂S.
- Biofilter outlet were analyzed for CS₂ & COS. A modified Method 15 was employed to determine the lower H₂S concentrations at the biofilter outlet.

The 4/23/10 Method 320 and Method 15 test results show an average 91% destruction efficiency for sulfides emissions (as CS₂) and demonstrates compliance with the 75% sulfide control efficiency requirement for the biofiltration control system.

Evaluator: Christine McPhee PCE Date(s): 3/29/2012

Emissions Monitoring System Assessment

Term B.8. e)(1) biofilter monitoring & sampling in order to determine OC & H₂S removal (control) efficiencies: *The permittee shall determine average daily removal efficiency for the air pollution control system(s) (i.e., biofiltration unit and backup scrubber) for OC and hydrogen sulfide. The inlet to and outlet from the biofiltration system shall be monitored, at least once per shift, while any one or any combination of the following emissions units P001 - P005 and P007 - P010 is operating, using a gas chromatograph. The daily removal efficiency shall be based on a minimum of three sets of samples. This requirement is only applicable to the caustic scrubber during periods where the permittee operates the caustic scrubber to demonstrate compliance with an applicable emission standard.*

Term B.8.e.(2) vent stack monitoring & sampling in order to determine OC & H₂S vent stack concentrations, which are vented without reduction of mass emissions: *The permittee shall determine average daily emissions from the plant ventilation stack for OC and hydrogen sulfide. The plant ventilation stack shall be monitored, at least once per shift, while any one or any combination of the following emissions units P001 - P005 and P007 - P010 is operating, gathering three sets of samples, and within one hour of monitoring the biofiltration stack, using a gas chromatograph. This daily average shall be based on a minimum of three sets of samples.*

Term B.8.e.(3) data to determine sulfide emissions removal efficiency. *In order to demonstrate continuous compliance with the sulfide emissions (as carbon disulfide) removal efficiency, in percent, as a 6-month rolling average emissions limit, specified in 6.(a)(1), the permittee shall maintain a material balance that includes the pertinent data used to determine the percent reduction of total sulfide emissions. The permittee shall document the percent reduction of total sulfide emissions using the pertinent data from the material balance.*

Were operational logs/usage records maintained in accordance with applicable permit(s)? Yes

Emissions Monitoring System Assessment continued

Sample Point Locations & Collection Methods

The sample locations are:

- Vent stack (for uncontrolled OC/H₂S) near the bleach holding tanks is sampled for CS₂ and H₂S;
- Biofilter Inlet is indoors near pilot biofilters, tall, dark grey columns is sampled for CS₂ and H₂S; and
- Biofilter Outlet is outside downstream of the backup scrubber outlet is sampled for CS₂, COS and H₂S.

A sample tube is first purged to remove the materials from the previous sample. Three gas sample sets from each location (biofilter inlet, biofilter outlet & vent stack) are extracted via a pump and collected in the sample tube. Gas samples are collected 6x/day (twice/8-hr shift). The end cap is screwed back on each sample tube. The sample tubes are spun and normalized to adjust the pressure prior to analysis.

Capture system criteria status (e.g. negative pressure verification of enclosure at main production area, and verification that Natural Draft Openings (NDOs) are closed) is also recorded by the lab technician. The scrubber liquor pH is also recorded.

Analytical Methods

The gas sample sets are analyzed by a gas chromatograph with a flame photometric detector (GC-FPD) to determine the concentration, in ppm, of OC (as CS₂), COS and H₂S. The concentrations are recorded in the "Emissions Data" spreadsheet. A supervisor checks the data in the "Emissions Data" spreadsheet to ensure that samples were collected for each shift and documents the check in an "Environmental Sign-off" hard copy record form. The lab supervisor checks the pollutant concentration data and estimated emissions and efficiency results prior to submittal to the Environmental Health & Safety Supervisor, Mr. Randy Miller.

A daily average concentration of each pollutant is determined and employed in the efficiency calculations. Calibration records of the GC analytical instrument were not requested on 3/29/2012.

Emissions Calculations

The capture and removal efficiencies for each of six grab sample are estimated as the "spot" (instantaneous) efficiency values. The daily average efficiency values are input to "Efficiencies" sheet & determined as follows:

$$\text{OC (as CS}_2\text{) + H}_2\text{S Capture Efficiency} = \frac{[\text{CS}_2\text{ INLET} + (\text{H}_2\text{S INLET as CS}_2\text{)}]}{[(\text{CS}_2\text{ INLET} + (\text{H}_2\text{S INLET as CS}_2\text{)} + (\text{H}_2\text{S VENT as CS}_2\text{)} + \text{CS}_2\text{ VENT} + \text{R}_{\text{LOSS}})]} \times 100.$$

Where:

R_{LOSS} = fugitive reactor loss assumes 1.2 lbs OC/(hr x reactor) as CS₂ x 4 reactors yields 4.8 lbs OC emitted through 8 blowers of 1500 cf/min each or 12,000 cf/min.

4.8 lbs OC/hr as CS₂ x 4.5359 x 10⁵ mg OC/lb OC x min/12,000 cf x hr/60 min x 0.028317 m³/cf x 24.45 mole/m³ x mole/76.13 g CS₂ = 34.3 ≈ 34 ppm OC as CS₂.

$$\text{(Biofilter) OC Removal Efficiency} = (1 - \text{CS}_2\text{ OUTLET}/\text{CS}_2\text{ INLET}) \times 100.$$

$$\begin{aligned} \text{(Biofilter) Percent Reduction of Total Sulfide (sulfur) emissions, as CS}_2 \\ = 1 - \frac{[\text{Kg CS}_2\text{ OUTLET} + (\text{Kg H}_2\text{S OUTLET} \times 76/68) + \text{Kg COS OUTLET} \times 76/120]}{\text{Kg CS}_2\text{ INLET} + (\text{Kg H}_2\text{S INLET} \times 76/68)} \times 100. \end{aligned}$$

EMISSIONS CAPTURE AND CONTROL EFFICIENCY			
Capture & Control Performance Parameters	Time Period		Permit Requirement
	1/01/2011 – 3/31/2011	1/01/2012 – 3/31/2012	
% OC (as CS ₂) + H ₂ S capture, as 60-day average	90.5 – 93.5 ²	90.7 – 94.0 ²	85 ¹
% OC (as CS ₂) removal, as 60-day average	80.0 – 81.4	82.9 – 89.0	80, as 60-day average
% Sulfide (as CS ₂) removal, as 60-day average	83.0 – 85.0 ³	87.1 – 93.7 ³	75, as 6-month average

Note 1 – Emissions capture efficiency requirement is expressed as 85% with no averaging over any specified period. 6 samples/day are taken and averaged as daily values for use in other daily efficiency calculations. It may be assumed that the capture efficiency limit is a daily average.

Note 2 – For emissions capture efficiency the 60-day average values are presented. See Attachment 9 – Emissions Capture & Removal Efficiencies.

Note 3 – For sulfur compound removal efficiency the 60-day average values are presented and should demonstrate compliance with the 6-month average requirements.

Were all reports submitted? Yes No Unknown N/A
Did reports indicate non-compliance with permit limitations? Yes No Unknown

Memo: See reported deviations of sampling and analysis requirements for the determination of emissions capture and/or control efficiencies as reported on pp. 2 - 3 of this report.

Was CEM data reviewed during the inspection? Yes No Unknown N/A

Memo: The previous full compliance evaluation (FCE) was conducted on 2/26/2010.

Full Compliance Evaluation (FCE) Summary

Based on PCE and FCE evaluation findings, does it appear that the facility is in compliance with applicable requirements? Yes No

If no, were non-compliant issues discussed with the permittee? Yes No N/A

Memo: There were intermittent capture and control equipment monitoring & record keeping deviations. Some of the recent ones include the ones listed below. :

- The daily OC capture efficiency was 83.7% on 1/19/2011; 65% on 4/06/2011; 84.5% on 7/31/2011; and 74.6% on 8/31/2011, which is below the required 85%.
 - Corrective Action - We are continuing to investigate the root causes on a case by case basis and it appears to happen in some partial startup / shutdown circumstances, but not others.
- Title V Permit term B.8 (b)(1)(2)(3) – The permittee did not record the following biofilter operating parameters on an average daily basis. 3M Elyria had missing data points during the durations noted due to maintenance and upgrade of servers, power outages and unknown causes (electronic glitches):
 - The CMS for biofilter inlet temperature was intermittently not available from 7/11/11 to 7/12/11, 7/14/11 to 7/21/11, 8/04/11, 8/31/11, 9/07/11, 10/06/11, 10/09/11 and on 11/19/11.
 - The CMS for biofilter effluent pH was intermittently not available from 7/11/11 to 7/12/11, 7/14/11 to 7/21/11 and on 10/06/11.
 - The CMS for biofilter pressure drop was intermittently not available from 7/11/11 to 7/12/11, 7/14/11 to 7/21/11, 8/04/11, 8/31/11, 9/07/11, 10/06/11, 10/09/11 and on 11/19/11.
 - Corrective Action - We are considering software that will notify appropriate personnel if network or PLC problems are detected or "out of range" readings occur.
- OEPA Comment – The OC capture efficiency deviations appear to have occurred for one-day periods. Missing records for biofilter operating parameters had a duration of one day, except for a one-week period in July, 2011. However there were no significant deviations of long and/or frequent duration in 4Q2011 or 1Q2012. OEPA may request an explanation of how problems were resolved.
- The follow-up letter to the inspection will mention that estimated emissions from each reactor (P001, P002, P008 & P009) were above the current allowable limits. A review of Application# A0043358, rec'd 2/15/2012, for a modification of the Title V operating permit found that an increase in the current allowable emissions limits for the reactors was requested; see p. 14 of this report.
- Ohio EPA may make a request for estimates of H₂S emissions from (P003, P004 & P010) and from P007 for 2011 to compare to the allowable limits; see pp. 17 & 19 of this report.

Inspector(s) Signature: *Christine McPhee*

Date: *5-10-2012*

Reviewer(s) Signature: *Tracy Kolesich*

Date: *05-11-12*

Ohio EPA Emissions Unit Evaluation Form

OEPA EU ID#/Co ID	P001 – xanthation reactor#1	P002 – xanthation reactor#2	P008 – xanthation reactor#3	P009 – xanthation reactor#4
Description	x. reactor# 1, 396-gal steeping caustic tank, 40-gal CS ₂ batch tank, 210-gal H ₂ O tank for viscose production w. biofiltration system to control OC & H ₂ S emissions & backup packed bed scrubber to control OC & H ₂ S emissions	x. reactor# 2, 396-gal steeping caustic tank, 40-gal CS ₂ batch tank, 210-gal H ₂ O tank for viscose production w. biofiltration system to control OC & H ₂ S emissions & backup packed bed scrubber to control OC & H ₂ S emissions	x. reactor# 3, 396-gal steeping caustic tank, 40-gal CS ₂ batch tank, 210-gal H ₂ O tank for viscose production w. biofiltration system to control OC & H ₂ S emissions & backup packed bed scrubber to control OC & H ₂ S emissions	x. reactor# 4, 396-gal steeping caustic tank, 40-gal CS ₂ batch tank, 210-gal H ₂ O tank for viscose production w. biofiltration system to control OC & H ₂ S emissions & backup packed bed scrubber to control OC & H ₂ S emissions
PTI # & Install Date	Installed 6/01/90. PTI No. 02-9121 issued 8/16/95. PTI 02-18240 issued 12/26/03.	Installed 6/01/90. PTI No. 02-9121 issued 8/16/95. PTI 02-18240 issued 12/26/03.	Installed 1/01/96. PTI No. 02-9121 issued 8/16/95. PTI 02-18240 issued 12/26/03.	Installed 1/01/01. PTI 02-13356 issued 12/01/99. PTI 02-18240 issued 12/26/03.
Operating Permit	Title V operating renewal permit# P0085332 issued 6/18/09, effective 7/09/09 and expires 7/09/14. Application# A0043358, rec'd 2/15/2012 to add other EUs.			
Applicable Rules	Applicable Emissions Limits & Requirements			
OAC rule 3745-31-05(A)(3)	0.25 lb/hr & 1.1 tons/year OC from each EU. Combined emissions of no more than 50.8 lbs/hr & 222.5 tons/yr OC from P001-P005 & P007-P010.			
OAC rule 3745-21-07(G)(2)	Exempt, the permittee shall not employ organic liquids which are photochemically reactive, as defined in OAC rule 3745-21-01(C)(5).			
OAC rule 3745-21-07(M)(3)(a)	Exempt, in accordance with OAC rule 3745-21-07(M)(3)(d)(iii) this EU shall not be subject to the requirements of paragraphs M)(3)(a) and (M)(3)(b) of OAC rule 3745-21-07, provided that the OC emissions from this EU are controlled by means of a biofiltration system that maintains an overall control efficiency of >80%, by weight, in accordance with PTI# 02-13356.			
40 CFR 63.5480 – 63.5610	≥ 75% reduction of uncontrolled sulfide emissions, as CS ₂ , as a 6-month rolling ave.			
40 CFR 63.1 – 63.15	See Table 10 of Subpart UUUU of 40 CFR Part 63 for applicable General Provisions.			
Operational Restriction(s)	None.			
Memo	<p>Terms C.1., C.2., C.7. & C.8. state, "...All applicable OCs and H₂S emissions requirements are only applicable to the packed bed scrubber if this piece of control equipment is operated to demonstrate compliance with an emissions limitation."</p> <p>As of 9/19/2011 – U.S. EPA has approved (76 FR 51901) Ohio Administrative Code(OAC) rule 3745-21-07 as promulgated on February 18, 2008, for inclusion in Ohio's State Implementation Plan (SIP). Therefore the restriction to not employ photochemically reactive organic materials is no longer applicable.</p>			

Emission Unit Report(s):

CEM/COM: Were all CEM/COM reports submitted? Yes No Unknown N/A

Deviation Reports: Terms C.1., C.2., C.7. & C.8. e)2. requires quarterly reports of each day that a photochemically reactive material is employed at each EU.

Were all deviation reports submitted? Yes No Unknown N/A

Did reports indicate non-compliance with permit limitations? Yes No N/A

Memo: There were no deviations of the PCR materials usage restriction during 4/01/2010 - 3/31/2012.

Emissions Unit Evaluation Findings:

VE Observed: Were VE observations taken in accordance with Method 9 or Method 22? N/A

Memo: No visible PE is generated from the xanthation reactor nos. 1, 2, 3 & 4 (P001, P002, P008 & P009).

Review of Operational Logs & Usage Records:

Terms C.1., C.2., C.7. & C.8. d)2. requires records of all materials used in each EU:

- a. the identification of the chemical compound and its physical state; and
 - b. for any liquid organic materials, whether or not the material is a photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5). [Note: After the revision of OAC rule 3745-21-07 is approved by U.S. EPA as part of the Ohio SIP, the record keeping requirements in d)(2) shall be voided entirely.]
- Term B.8.d)(1) requires a log or record of operating time for the capture (collection) system, control device(s), monitoring equipment, and identify the operating time(s) of each of the associated EUs.

Were operational logs and/or usage records maintained in accordance with applicable permit(s)? Yes No Not Reviewed Unknown N/A

Memo: Essentially the same raw materials are input to each reactor with slight variations. The "Reactor Formula Worksheet" lists the physical state of all materials (i.e. solid or liquid) and is completed for every batch

made at each reactor (P001, P002, P008 & P009). The volume, in gallons, of liquid organic materials is recorded. The viscose mixture (aka cellulose xanthate), generated at a reactor (P001, P002, P008 or P009, contains cellulose and CS₂, the only liquid organic material input, which is non-photochemically reactive. The start time and end time of each batch are recorded daily in the "Viscose Reactor Batch Daily Report". Cellulose xanthate is transferred from a reactor to a blender.

Observed Actual Operating Parameters:

Was the unit operating at the time of the inspection? Yes for P001, P002, P008 or P009.

If no, when did it last operate? NA

Operating parameters observed at the time of the inspections:

When liquid CS₂ is added a blue light flashes above the closed reactor room door as a warning to not enter.

Terms C.1., C.2., C.7. & C.8. b)2.a. The permittee shall not employ organic liquids which are photochemically reactive, as defined in OAC rule 3745-21-01(C)(5).

Was each EU operating in compliance with permit T&Cs? Yes for P001, P002, P008 & P009.

Has equipment been changed, altered, or replaced since last permit application? No

Have any op. parameters/raw mtl's been changed/altered since last permit appl? No

Memo: All material usages are recorded for each batch in the "Viscose Reactor Batch Sheet".

Capture and Control Equipment Parameters Assessed:

Description of capture equipment: Exhaust gases, containing CS₂, from reactors are directed to the "captured gases" ducting. The captured gases are drawn by twin fans (in parallel formation) are located after the biofilters and after the vent stack scrubber.

There are uncaptured gases at the xanthation reactors (P001, P002, P008 & P009). There are two fans of 15,000 ft³/min flow each that exhaust air from each reactor room to the ambient air. There are also non-aspirated vents above each fan where ambient air is drawn into the reactor rooms to prevent CS₂ from accumulating and to prevent an explosive environment.

Was capture equipment operating at time of inspection? Yes No Unknown N/A

Operating parameters observed at time of inspection: See "Capture Equipment Parameters Assessment" section on pp. 4-6 of this report.

Description of air pollution control equipment (APCE): biofiltration system to control OC & H₂S emissions & backup packed bed scrubber to control OC & H₂S emissions

Was control equipment operating at time of inspection? Yes No Unknown

Operating parameters observed at time of inspection: See "Control Equipment Parameters Assessment" on pp. 6-8 of this report.

Has a compliance assurance monitoring (CAM) plan been submitted for this APCE? N/A

Memo: Xanthation reactors EUs are subject to the Maximum Achievable Control Technology standards for cellulose products so that the CAM rules are not applicable.

Did any permit (PTI, TV, PTO) require performance testing for this unit? Yes No

Memo: See "performance testing" section on p. 9 of this report. The 2 louver vents in each reactor room are NDOs where fugitive CS₂ emissions escape so that an explosive atmosphere does not occur. 4/20/2010 Method 320 for CS₂ emissions was conducted to determine fugitive emissions from xanthation reactor no. 4 (P009) simultaneously with EPA Method 204 and found 1.2 lbs OC/hr as CS₂.

Was CEM data reviewed during the inspection? Yes No Unknown N/A

Emissions at xanthation reactor nos. 1, 2, 3 & 4 (P001, P002, P008 & P009):

Emissions Unit Id.	Emissions from Xanthation Reactors			
	OC Emissions, Tons/Year ¹			
	2009	2010	2011	Allowable
P001	0.48	5.99	6.20	1.1
P002	0.48	5.99	6.20	1.1
P008	0.48	5.99	6.20	1.1
P009	0.48	5.99	6.20	1.1
P001-P005 & P007-P010 ²	81.27	119.67	172.88	222.5

Note 1 - from annual fee emissions reports.

Note 2 - facility-wide emissions can also include emissions from other emissions units identified on p. 20 of this report.

Note 3 - The fee emissions report for 2010 & 2011 also include fugitive emissions from each reactor. The explanation in the fee emissions report for 2011 stated the following:

*P001, P002, P008 or P009 - Based on Production data and best engineering judgement, this emission unit contributed 0.63% of the total emissions of CS₂ and COS. The total emissions of CS₂ and COS for the year was calculated based on shift GC readings from Stacks 1 and 2, reactor room fugitive emissions and annual production data.
 The total emissions value was 302,960 Lbs (GC) + 42,040 Lbs./Yr. (4 reactors Fugitive) = 345,000 lbs.
 For the emission unit GC readings for Stacks 1 and 2: 0.0063 * 302,960 Lbs. * Ton/2000 Lbs. = 0.95 Tons
 For the emission unit fugitive from one reactor room: 10,510 Lbs. * Ton/2000 Lbs. = 5.25 Tons
 Total Emissions = 0.95 tons + 5.25 tons = 6.20 tons CS₂ and COS*

The follow-up letter to the inspection will mention that estimated emissions from each reactor (P001, P002, P008 & P009) were above the current allowable limits. A review of Application# A0043358, rec'd 2/15/2012, for a modification of the Title V operating permit found that an increase in the current allowable emissions limits for the reactors was requested.

Evaluator: Christine McPhee

PCE Date(s): 32/29/2012

Ohio EPA Emissions Unit Evaluation Form

OEPA EU ID#/Co ID	P003 – continuous sponge cooking machine no. 1	P004 – continuous sponge cooking machine no. 2	P010 – cellulose sponge cloth machine no. 2
Description	Continuous Cellulose Sponge Cooking Machine #1 with a biofiltration system to control OC & H ₂ S emissions and a backup packed bed scrubber.	Continuous Cellulose Sponge Cooking Machine #2 with a biofiltration system to control OC & H ₂ S emissions and a backup packed bed scrubber.	Cellulose Sponge Cloth Machine #2 with a biofiltration system to control OC & H ₂ S emissions and a backup packed bed scrubber.
PTI # & Install Date	Installed 6/01/90. PTI No. 02-9121 issued 8/16/95. PTI 02-18240 issued 12/26/03.	Installed 6/01/90. PTI No. 02-9121 Issued 8/16/95. PTI 02-18240 Issued 12/26/03.	Installed 10/01/00. PTI 02-13356 issued 12/01/99. PTI 02-18240 issued 12/26/03.
Operating Permit	Title V operating renewal permit# P0085332 issued 6/18/09, effective 7/09/09 and expires 7/09/14. Application# A0043358, rec'd 2/15/2012 to add other EUs.		
Applicable Rules	Applicable Emissions Limits & Requirements		
OAC rule 3745-31-05(A)(3)	8.5 lbs/hr & 37.22 tons/year OC; and 0.76 lb/hr & 3.33 tons/year H ₂ S from each EU.		4.16 lbs/hr & 18.24 tons/year OC; and 0.38 lb/hr & 1.66 tons/year H ₂ S.
OAC rule 3745-31-05(A)(3)	Combined emissions of no more than 50.8 lbs/hr & 222.5 tons/yr OC from P001-P005 & P007-P010. Combined emissions of no more than 2.27 lbs/hr & 9.95 tons/yr H ₂ S from P003-P005, P007 & P010.		
OAC rule 3745-21-07(G)(2)	Exempt, the permittee shall not employ organic liquids which are photochemically reactive, as defined in OAC rule 3745-21-01(C)(5).		
OAC rule 3745-21-07(M)(3)(a)	Exempt, in accordance with OAC rule 3745-21-07(M)(3)(d)(iii) this EU shall not be subject to the requirements of paragraphs M(3)(a) and (M)(3)(b) of OAC rule 3745-21-07, provided that the OC emissions from this EU are controlled by means of a biofiltration system that maintains an overall control efficiency of ≥80%, by weight, in accordance with PTI# 02-13356.		
40 CFR 63.5480 – 63.5610	≥ 75% reduction of uncontrolled sulfide emissions, as CS ₂ , as a 6-month rolling ave.		
40 CFR 63.1 – 63.15	See Table 10 of Subpart UUUU of 40 CFR Part 63 for applicable General Provisions.		
Operational Restriction(s)	None.		
Memo	<p>Terms C.3., C.4., & C.9. state, "...All applicable OCs and H₂S emissions requirements are only applicable to the packed bed scrubber if this piece of control equipment is operated to demonstrate compliance with an emissions limitation." (P005) sponge cloth machine no. 1 was installed 6/01/90 and shutdown on 11/05/09.</p> <p>As of 9/19/2011 – U.S. EPA has approved (76 FR 51901) Ohio Administrative Code(OAC) rule 3745-21-07 as promulgated on February 18, 2008, for inclusion in Ohio's State Implementation Plan (SIP). Therefore the restriction to not employ photochemically reactive organic materials is no longer applicable.</p>		

Emission Unit Report(s):

CEM/COM: Were all CEM/COM reports submitted? Yes No Unknown N/A

Memo: See "Emissions Monitoring System Assessment" section in the facility-wide requirements discussion.

Deviation Reports: Terms C.3., C.4., & C.9. e)2. requires quarterly reports of each day that a photochemically reactive material is employed at each EU.

Were all deviation reports submitted? Yes No Unknown N/A

Did reports indicate non-compliance with permit limitations? Yes No N/A

Memo: There were no deviations of the PCR materials usage restriction during 4/01/2010 - 3/31/2012 .

Emissions Unit Evaluation Findings:

VE Observed: Were VE observations taken in accordance with Method 9 or Method 22? N/A

Memo: No visible PE is generated from the cont. cellulose sponge cooking machine nos. 1, 2 (P003 & P004) nor from the cellulose sponge (cloth) machine no. 2 (P010).

Review of Operational Logs & Usage Records:

Terms C.3., C.4., & C.9. d)2. Requires records of all materials used in each EU:

- a. the identification of the chemical compound and its physical state; and
- b. for any liquid organic materials, whether or not the material is a photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5). [Note: After the revision of OAC rule 3745-21-07 is approved by U.S. EPA as part of the Ohio SIP, the record keeping requirements in d)(2) shall be voided entirely.]

Term B.8.d)(1) requires a log or record of operating time for the capture (collection) system, control device(s), monitoring equipment, and identify the operating time(s) of each of the associated EUs.

Were operational logs and/or usage records maintained in accordance with applicable permit(s)?

Yes No Not Reviewed Unknown N/A

Observed Actual Operating Parameters:

Was the unit operating at the time of the inspection? Yes, P003 & P004. No, P010.

If no, when did it last operate? (P010) sponge cloth machine no. 2 last operation day is unknown.

Operating parameters observed at the time of the inspections:

After salt, pigments and fibers are blended into the viscose (cellulose xanthate) at mixer nos. 2-7 (P012 – P017) the mixture is further processed at a continuous sponge cooking machine (P003 or P004) or a sponge cloth machine (P010). Bleach (NaOCl), fungicide, salt and sulfuric acid is added to the blended viscose "slurry", but no additional liquid organic materials are input to the cookers (P003 or P004), the sponge cloth machine (P010) or the cellulose sponge block line (P007).

Batch times typically have a 45-minute duration. The number of sponge cuts is proportional to the sponge volume/batch and both sponge product densities at P003/P004 and P010 may be similar. Cooking (P003 & P004) & sponge cloth (P010) start & stop times, input materials addition, as well as the sponge production data are recorded in the "Measured Sponge Size" forms for each EU.

Gases from the dilute bleach (NaOCl) solution input, salt input point (aka dilute bleach solution equipment) associated with P003, P004, P007 and P010 are directed to the "vent" stack which exhausts to the ambient air. There is a scrubber prior to the "vent" stack egress that usually has water flow, probably to reduce bleach fumes, but does not normally control any CS₂, COS or H₂S emissions.

Terms C.3., C.4., & C.9. b)2.a. The permittee shall not employ organic liquids which are photochemically reactive, as defined in OAC rule 3745-21-01(C)(5).

Was each EU operating in compliance with permit T&Cs? Yes

Has equipment been changed, altered, or replaced since last permit application? No

Have any op parameters/raw mtl's been changed/altered since last permit application? No

Memo: The only liquid organic material in the blended viscose is CS₂, a non-photochemically reactive mtl.

Capture and Control Equipment Parameters Assessed:

Description of capture equipment: Cookers (P003 & P004) and sponge cloth machine no. 2 (P010) – exhaust gases, containing CS₂ & H₂S, are contained within lexane plastic panels around the treatment processes and the water wash areas and are pulled into hoods over each equipment group and then directed to the main exhaust duct. Some portions of sponge cooking machine no. 2 (P004) have plastic sheeting rather than lexane panels.

Uncaptured gases, from the dilute bleach (NaOCl) solution input, salt input point and the salt solution reclaim pit are directed to the "vent" stack which exhausts to the ambient air. The viscose slurry input point at P010 is not vented to the control equipment.

Was capture device operating at time of inspection? Yes No Unknown N/A

Operating parameters observed at time of inspection: See "Capture Equipment Parameters Assessment" section on pp. 4-6 of this report.

Description of air pollution control equipment (APCE): biofiltration system to control OC & H₂S emissions & backup packed bed scrubber to control OC & H₂S emissions

Was control equipment operating at time of inspection? Yes No Unknown

Operating parameters observed at time of inspection: See "Control Equipment Parameters Assessment" on pp. 6-8 of this report.

Has a compliance assurance monitoring (CAM) plan been submitted for this APCE? N/A

Memo: The cookers (P003 & P004) and cloth mfg. equipment (P010) are subject to the Maximum Achievable Control Technology standards for cellulose products so that the CAM rules are not applicable.

Did any permit (PTI, TV, PTO) require performance testing for this unit? Yes No

Memo: See "performance testing" section on p. 9 of this report.

Was CEM data reviewed during the inspection? Yes No Unknown N/A

Emissions at Continuous cellulose sponge cooking machine nos. 1 & 2 (P003 & P004) and the cellulose sponge (cloth) machine no. 2 (P010):

Emissions from Sponge Cooking & Sponge Cloth Machines								
Emissions Unit Id.	OC Emissions, Tons/Year ¹				H ₂ S Emissions, Tons/Year ³			
	2009	2010	2011	Allowable	2009	2010	2011	Allowable
P003	12.72	19.91	23.55	37.22	UK	UK	UK	3.33
P004	11.51	16.93	22.90	37.22	UK	UK	UK	3.33
P005	0.00	0.00	0.00	12.10	0.00	0.00	0.00	1.10
P010	4.67	4.03	8.59	18.24	UK	UK	UK	1.66
P001-P005 & P007-P010 ²	81.27	119.67	172.68	222.50	UK	UK	UK	9.95 ⁴

Note 1 - from annual fee emissions reports.

Note 2 - facility-wide emissions can also include emissions from other emissions units identified on p. 20 of this report.

Note 3 - the annual fee emissions report does not request estimates of H₂S emissions.

Note 4 - the allowable rate of 9.95 tons/yr H₂S is for the combined emissions from P003-P005, P007 & P010.

Note 5 - (P005) sponge cloth machine no. 1 was shutdown on 11/05/09.

The explanation in the fee emissions report for 2011 stated the following:

*P003 - Based on Production data and best engineering judgement, this emission unit contributed 15.55% of the total emissions of CS₂ and COS from Stacks 1 and 2. The total emissions of CS₂ and COS for the year was calculated based on shift GC readings from Stacks 1 and 2 and annual production data. The total emissions value was 302,960 Lbs (GC).
For the emission unit: 0.1555 * 302,960 Lbs. * Ton/2000 Lbs. = 23.55 Tons.*

*P004 - Based on Production data and best engineering judgement, this emission unit contributed 15.12% of the total emissions of CS₂ and COS from Stacks 1 and 2. The total emissions of CS₂ and COS for the year was calculated based on shift GC readings from Stacks 1 and 2 and annual production data. The total emissions value was 302,960 Lbs (GC).
For the emission unit: 0.1512 * 302,960 Lbs. * Ton/2000 Lbs. = 22.90 Tons*

*P010 - Based on Production data and best engineering judgement, this emission unit contributed 5.67% of the total emissions of CS₂ and COS. The total emissions of CS₂ and COS for the year was calculated based on shift GC readings from Stacks 1 and 2 and annual production data. The total emissions value was 302,960Lbs (GC).
For the emission unit: .0567 * 302,960 Lbs. * Ton/2000 Lbs. = 8.59 Tons*

Ohio EPA may request estimates of H₂S emissions from P003, P004 & P010 for 2011 be submitted.

Ohio EPA Emissions Unit Evaluation Form	
OEPA EU ID#Co ID	P007 – Cellulose sponge block line
Description	Cellulose Sponge Block Line with a biofiltration system to control OC & H ₂ S emissions and a backup packed bed scrubber.
PTI # & Install Date	Installed 1/01/96.
Operating Permit	Title V operating renewal permit# P0085332 issued 6/18/09, effective 7/09/09 and expires 7/09/14. Application# A0043358, rec'd 2/15/2012 to add other EUs
Applicable Rules	Applicable Emissions Limits & Requirements
OAC rule 3745-31-05(A)(3)	25.88 lbs/hr & 113.34 tons/year OC; and 0.12 lb/hr & 0.53 ton/year H ₂ S.
OAC rule 3745-31-05(A)(3)	Combined emissions of no more than 50.8 lbs/hr & 222.5 tons/yr OC from P001-P005 & P007-P010. Combined emissions of no more than 2.27 lbs/hr & 9.95 tons/yr H ₂ S from P003-P005, P007 & P010.
OAC rule 3745-21-07(G)(2)	Exempt, the permittee shall not employ organic liquids which are photochemically reactive, as defined in OAC rule 3745-21-01(C)(5).
OAC rule 3745-21-07(M)(3)(a)	Exempt, in accordance with OAC rule 3745-21-07(M)(3)(d)(iii) this EU shall not be subject to the requirements of paragraphs M)(3)(a) and (M)(3)(b) of OAC rule 3745-21-07, provided that the OC emissions from this EU are controlled by means of a biofiltration system that maintains an overall control efficiency of ≥80%, by weight, in accordance with PTI# 02-13356.
40 CFR 63.5480 – 63.5610	> 75% reduction of uncontrolled sulfide emissions, as CS ₂ , as a 6-month rolling ave.
40 CFR 63.1 – 63.15	See Table 10 of Subpart UUUU of 40 CFR Part 63 for applicable General Provisions.
Operational Restriction(s)	None.
Memo	Term C.6. states, "...All applicable OCs and H ₂ S emissions requirements are only applicable to the packed bed scrubber if this piece of control equipment is operated to demonstrate compliance with an emissions limitation." As of 9/19/2011 – U.S. EPA has approved (76 FR 51901) Ohio Administrative Code(OAC) rule 3745-21-07 as promulgated on February 18, 2008, for inclusion in Ohio's State Implementation Plan (SIP). Therefore the restriction to not employ photochemically reactive organic materials is no longer applicable.

Emission Unit Report(s):

CEM/COM: Were all CEM/COM reports submitted? Yes No Unknown N/A

Deviation Reports: Terms C.6. e)2. requires quarterly reports of each day that a photochemically reactive material is employed at each EU.

Were all deviation reports submitted? Yes No Unknown N/A

Did reports indicate non-compliance with permit limitations? Yes No N/A

Memo: There were no deviations of the PCR materials usage restriction during 4/01/2010 - 3/31/2012.

Emissions Unit Evaluation Findings:

VE Observed: Were VE observations taken in accordance with Method 9 or Method 22? N/A

Memo: There are no visible PE from the cellulose sponge block line (P007).

Review of Operational Logs & Usage Records:

Term C.6. d)2. Requires records of all materials used in the EU:

- a. the identification of the chemical compound and its physical state; and
- b. for any liquid organic materials, whether or not the material is a photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5). [Note: After the revision of OAC rule 3745-21-07 is approved by U.S. EPA as part of the Ohio SIP, the record keeping requirements in d)(2) shall be voided entirely.]

Term B.8.d)(1) requires a log or record of operating time for the capture (collection) system, control device(s), monitoring equipment, and identify the operating time(s) of each of the associated EUs.

Were op. logs/usage records maintained in accordance with applicable permit(s)? Unknown

Memo: Materials identification and mixing time are recorded for each batch.

Observed Actual Operating Parameters:

Was the unit operating at the time of the inspection? Yes No Unknown

If no, when did it last operate? N/A

Operating parameters observed at the time of the inspections: Operations at (P007) cellulose sponge block line typically occur 24 hrs/day and 7 days/week. After salt, pigments and fibers are blended into the viscose (cellulose xanthate) at mixer nos. 2-7 (P012 – P017) the mixture is further processed at a continuous sponge cooking machine (P003 or P004), a sponge cloth machine (P010) or the sponge block line (P010).

Gases from the dilute bleach (NaOCl) solution input, salt input point (aka dilute bleach solution equipment)

associated with P003, P004, P007 and P010 are directed to the "vent" stack which exhausts to the ambient air. There is a scrubber prior to the "vent" stack egress that usually has water flow, probably to reduce bleach fumes, but does not normally control any CS₂, COS or H₂S emissions.

Term C.6. b)2.a. The permittee shall not employ organic liquids which are photochemically reactive, as defined in OAC rule 3745-21-01(C)(5).

Was the emissions unit operating in compliance with permit T&Cs? Yes No Unknown N/A

Has equip. been changed, altered, or replaced since last permit application? Yes No Unknown

Have any op parameters/raw mtl's been changed/altered since last permit application? No

Memo: There are 3 conveyor loops to rinse the intermediate sponge block product at three different wash stations.

Capture and Control Equipment Parameters Assessed:

Description of capture equipment: At sponge block line (P007) there is plastic sheeting around 8 cook stations and plastic lexane or latex panels at the rinse station capture gases. A hood over the equipment following the cooker, such as the after treatment processes (regeneration area) directs captured exhaust gases, containing CS₂ & H₂S, to the main exhaust duct and the control equipment. Uncaptured gases from the dilute bleach (NaOCl) solution input are directed to the "vent" stack which exhausts to the ambient air.

Was capture operating at time of inspection? Yes No Unknown N/A

Operating parameters observed at time of inspection: See "Capture Equipment Parameters Assessment" on pp. 4-6 of this report.

Description of air pollution control equipment (APCE): biofiltration system to control OC & H₂S emissions & backup packed bed scrubber to control OC & H₂S emissions

Was control equipment operating at time of inspection? Yes No Unknown

Operating parameters observed at time of inspection: See "Control Equipment Parameters Assessment" on pp. 6-8 of this report.

Has a compliance assurance monitoring (CAM) plan been submitted for this APCE? N/A

Memo: The cellulose sponge block line (P007) is subject to the Maximum Achievable Control Technology standards for cellulose products so that the CAM rules are not applicable.

Did any permit (PTI, TV, PTO) require performance testing for this unit? Yes No

Memo: See "performance testing" section on p. 9 of this report.

Was CEM data reviewed during the inspection? Yes No Unknown N/A

Emissions at the cellulose sponge block line (P007):

Emissions from Sponge Block Line								
Emissions Unit Id.	OC Emissions, Tons/Year				H ₂ S Emissions, Tons/Year			
	2009	2010	2011	Allowable	2009	2010	2011	Allowable
P007	50.05	75.88	92.64	113.34	UK	UK	UK	0.53
P001-P005 & P007-P010	81.27	119.67	172.68	222.50	UK	UK	UK	*9.95

Note 1 - from annual fee emissions reports.

Note 2 - facility-wide emissions can also include emissions from other emissions units identified on p. 20 of this report.

Note 3 - the annual fee emissions report does not request estimates of H₂S emissions.

Note 4 - the allowable rate of 9.95 tons/yr H₂S is for the combined emissions from P003-P005, P007 & P010.

The explanation in the fee emissions report for 2011 stated the following:

P007 - Based on Production data and best engineering judgement, this emission unit contributed 61.16% of the total emissions of CS₂ and COS. The total emissions of CS₂ and COS for the year was calculated based on shift GC readings from Stacks 1 and 2 and annual production data. The total emissions value was 302,960 Lbs (GC).

*For the emission unit: 0.6116 * 302,960 Lbs. * Ton/2000 Lbs. = 92.64 Ton*

Ohio EPA may request estimates of H₂S emissions from P007 for 2011 be submitted.

Other Non-Insignificant Emissions Units (EUs)

Application# A0044193, received on 3/30/2012, for installation of EUs that were previously thought to be insignificant has the EUs noted below which were previously thought to be insignificant. Brief observations were made in order to assist in the review of the application.

Evaluator: Christine McPhee

PCE Date(s): 3/29/2012

(P011) The Blending System is a series of five blenders, which age the viscose produced by the reactors. The blenders are enclosed with gases directed to the main exhaust line and then to the biofilters. Intermediate product is aged and transferred in a sequence from blend tank no. 5 to no. 4 to no. 3 to no. 2 to no. 1 or such. The liquid level in each tank is monitored.

(P012-P017) Mixer Nos. 2 - 7 are used to produce sponge mass from raw materials. Viscose (cellulose xanthate) materials from the blenders are pumped to a mixer(s). Salt, pigments and fibers are blended into the viscose (cellulose xanthate) at the various mixers. Solid fibers are manually added. Viscose from mixer nos. 2 - 4 are pumped to the sponge cloth line or a continuous line. Viscose material is drop fed to feeders prior to the molds at the sponge block line.

Mixer No. 2 is dedicated to the Sponge Cloth Line.

Mixer No. 3 is dedicated to continuous Line Nos. 1 and 2.

Mixer No. 4 is dedicated to Continuous Line Nos. 1 and 2.

Mixer No. 5 is dedicated to the Sponge Block Line.

Mixer No. 6 is dedicated to the Sponge Block Line.

Mixer No. 7 is dedicated to the Sponge Block Line.

(P018 & P019) Trickling Tower Nos. 1 & 2: The trickling towers are used to pre-treat wastewater streams as a liquid/gas separation step prior to transfer to the wastewater treatment system.

Wastewater is treated with reclaim acid from the biotowers. The first two trays have plastic "contact" balls.

The contact media in trickle tray #1 is to be replaced in early May, 2012.

(P020) Wastewater Pit: A sump that stores process wastewater prior to transfer to the Wastewater Treatment System. It's an open tank with some fugitive emissions.

(P021) Reclaim Salt Pit: A collection system for reclaim salt solution.

It's an open tank with fugitive emissions.

(P022) Sponge Block - Aftertreatment: Sponge blocks from the Cooking Stations are rinsed and treated to produce the final sponge product. There are three loops in the process sequence.

ATTACHMENTS

Attachment 1 – 3M Elyria Visitor, Supplier & Contractor Environmental, Health, Safety & Security Orientation Guide.

Attachment 2 – Project layout - Barrier Wall Project (packing area) - attachment to 10/15/2010 3M memo.

Attachments 3-1 and 3-2 – Preventative Maintenance Work Order 109198 Inspection of Main Blowers, 12/19/2011.

Attachment 4 – Preventative Maintenance Work Order 109352 North Stack Blower PM, 1/22/2011.

Attachment 5 – Preventative Maintenance Work Order 109354 South Stack Blower PM, 1/22/2011.

Attachments X-1 through X-6 – “Introduction” and “Results Summary”, Comprehensive Emissions Test Report - 3M BS & CP Solvent System Elyria, Ohio – Leak Detection Survey, September 23, 2011.

Attachment 6-20 – “Test Procedures”, Comprehensive Emissions Test Report, September 23, 2011.

Attachments 7-1 – 7-3 – Preventative Maintenance Work Order 109197 Bioway CPMS, pH Meters, ABCD Recirculation Tanks, 2/10/2012.

Attachments 8-1 – 8-3 – Preventative Maintenance Work Order 106387 Bioway CPMS, Pressure Transmitter, 8/08/2011.

Attachment 9 – Emissions Capture & Removal Efficiencies, 1/01/2012 – 3/31/2012.

