





<b>Facility:</b>	Warwick Mills Inc.	<b>Engineer:</b>	PRN
<b>Location:</b>	301 Turnpike Rd., New Ipswich		
<b>AFS #:</b>	3301100129	<b>Application #:</b>	11-0080
		<b>Date:</b>	October 6, 2011
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<u>EU#</u>	<u>Device/Process</u>	<u>Description</u>
EU11 & EU12	Cement – Downdraft Tables	These processes are insignificant activities [ $<1000\text{lb/yr}$ ]; Adhesive is placed onto fabric by hand, roller, pressure pump dispenser, dip, kiss roller, or fountain for fabric heat bonding, patching and cleaning activities performed on a bench under a fume hood type enclosure; A maximum of approximately 37,500 feet of seaming would be processed per year in each table. These tables have the ability to move from location to location within the facility, but when in use, they must vent to the boilers for VOC destruction;

## POLLUTION CONTROL EQUIPMENT

Ductwork currently routes the emissions from the two coating ovens (EU01 & EU02), and four down draft tables (EU05, EU06, EU11 & EU12) to the Cleaver Brooks boilers (EU09 & EU10) for thermal destruction. The Facility will be routing the coating ovens and down draft tables emissions to the new biomass boiler (EU13), and EU09 and EU10 will be used as backup. Modeling performed for NAAQS compliance was conducted assuming all three boilers would be in operation simultaneously.

## EMISSION CALCULATIONS

### VOCs

The Facility used mass balance to calculate emissions from EU05, EU06, EU11 and EU12 (table attachment to application 09-0290). The calculations were based upon a 95% capture and 95% control of VOC/HAP emissions from the 4 new vented devices. The estimated reduction in HAP emissions was calculated to be 0.97 tpy.

### HAP

The Facility is a major source of HAP (toluene  $>10$  tpy before control).

### RTAPs

A compliance demonstration was submitted with the permit application and reviewed by DES.

### NAAQS

EU09 and EU10 are limited to 141,500 gallons of #6 fuel oil [1% sulfur by weight] per year to comply with  $\text{SO}_2$  NAAQS. The Facility's application requested the ability to burn #4 and #6 fuel oil at 1% sulfur by weight, but the fuel use restrictions to remain in affect. Based on these changes, the potential tpy emissions are:

<u>Emission Unit</u>	<u>PM<sub>10</sub></u>	<u>SO<sub>2</sub></u>	<u>NO<sub>x</sub></u>	<u>CO</u>
EU09 & EU10	0.88	11.1	3.89	0.354
EU13	0.53	0.88	3.9	0.39
Total	1.4	12.0	7.79	0.75

Emissions for EU09 and EU10 are for combusting #6 fuel oil  
 PM<sub>10</sub>, NO<sub>x</sub> & CO emissions for EU13 are based on vendor data

## MODELING

August 22, 2011 – Interactive modeling was performed by the Facility for NAAQS and accepted by DES;

June 10, 2008 – RTAP emissions were modeled based on maximum use rates for 2006/2007 (calculated based on the highest one-day use-rate reported in 2006/2007 and scaled up to 8760 for potential) and assuming the process coater emissions were controlled at 98%; Compliance with Env-A 1400 was demonstrated.

June 30, 2005 – Modeled for toluene and tetra hydro furan (THF); modeling indicted that if these exhausted through the calendar stack, there would not be exceedances of the AALs; The calendar stack was modeled as vertical and unobstructed, but has a cover which impedes the exit flow;

July 1999 – Criteria pollutant emissions for the two boilers was performed which showed modeled exceedances of the one-hour and three-hour  $\text{SO}_2$  NAAQS. Based on this modeling, the Facility agreed to a fuel use permit limit of 610 gallons per consecutive 24-hour period and 144,450 gallons per year of #6 fuel oil.

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## EMISSION TESTING

Stack testing will be required for the devices vented to the new boiler to demonstrate compliance with the MACT standards, and for the particulate emission limit [TSP and PM<sub>10</sub>] for biomass combustion required by the permit as well as verification of the NO<sub>x</sub> and CO emissions factors.

## COMPLIANCE STATUS

### Emissions Testing

June 8, 2010 – Testing of the capture efficiencies of the downdraft tables EU05, EU06, EU11 and EU12, and destruction efficiency of the boilers [EU09 & EU10] after the minor core activities [EU05, EU06, EU11 and EU12] were vented to them<sup>5</sup>. Initial results indicated that EU05, EU06, EU11 and EU12 achieved 100% capture and EU01 and EU02 achieved >98% control when only these minor core processes were vented to the boilers.

July 7<sup>th</sup> 2008 - Compliance testing performed for destruction/removal efficiency of the boilers and capture efficiency of the coating process enclosures to meet VOC RACT and NSPS/MACT emission limits; the destruction efficiency for coater 1, low VOC loading, when vented to boiler 1 did not meet the 98% destruction efficiency. As a result, a condition was placed into the permit stipulating that coater 1 [EU01] shall be vented only to EU10 when the solvent loading rate falls below 2.0 oz/min as measured on a mass balance basis;

February 26<sup>th</sup>, 2008 - Initial round of testing was performed, however, EPA did not accept the testing results since an inappropriate THC method was used at the outlet. The results of this test indicated an average control efficiency of 98.8% and 100% capture efficiency (PTE for coater enclosures).

### Inspections

<u>Date</u>	<u>Brief Description</u>
Aug 19, 2009	GCH - full on-site compliance inspection; compliance and emissions reporting irregularities;
Dec 4, 2003	AHM - full on-site compliance inspection; various reporting deficiencies were noted;

### Reports & Fees

Annual emissions reports and fees for 2010 have been received for the two boilers and the coating operations.

## REVIEW OF REGULATIONS

### State Regulations

#### Env-A 600 – Permitting (effective 10-01-2010)

- 607.01(c) – Applicable – existing boilers combusting #6 and #4 oil & new biomass boiler combusting solid fuel >2MMBtu/hr;
- 607.01(q) – NOT Applicable – proposed new biomass boiler does not meet applicability criteria;
- 607.01(y) – Applicable – modeling performed for NAAQS;

#### Env- A 1200 – Prevention, Abatement, and Control of Stationary Source Air Pollution (effective 06-01-2011)

- 1204.48(a) – NOT Applicable – fuel burning device;

#### Env-A 1300 – NO<sub>x</sub> RACT (effective 10-31-2010)

- 1300 – NOT Applicable – total TPE are < 50 tpy [potential <10 tpy due to fuel restrictions to comply with SO<sub>2</sub> NAAQS];

#### Env-A 1400 – Regulated Toxic Air Pollutants (effective 11-25-09)

- 1402.02(a) – Applicable – biomass is an exempt fuel;

#### Env-A 2000 – Fuel Burning Devices (effective 4-23-05)

- 2002.02 – Applicable – new biomass boiler the opacity limit will be ≤20%;

<sup>5</sup> Testing was to be performed within 180 days of connecting the first new capture device to the boilers. The first unit was connected to the boilers on December 30, 2009

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- 2002.08 – Applicable – PM limit 0.30lb/MMBtu;
- 2002.09 – NOT Applicable – new boiler will have a separate exhaust through a new stack;
- 2002.10 – Applicable – stack testing will be required to determine compliance with PM limit;

### **Federal Regulations**

#### 40 CFR Part 60 – New Source Performance Standards (NSPS)

Subparts Da, Db, Dc – Not Applicable – boilers do not meet applicability criteria (less than applicable MMBtu/hr criteria);

#### 40 CFR Part 61 – No applicable processes

#### 40 CFR Part 63 – National Emissions Standards for Hazardous Air Pollutants (NESHAP)

Subpart JJJJJ – Applicable – *Industrial, Commercial, and Institutional Boilers*

§ 63.11193 – boiler located at an area source of HAP (considering control);<sup>6</sup>

§ 63.11201(b) – comply with work practice standards, emission reduction measures, and management practices in Table 2, #1 & #3 of the rule;

### **SUMMARY**

On September 1, 2011, the Compliance Bureau submitted comments on the draft temporary permit. The comments concerned the operation of the down-draft tables in Table 3, Item 15 for the minor core activities, and stack testing requirements in Table 4, Item 7. Specifically, flow rate measurements are required in the monitoring section for the down draft tables. Table 3, Item 15 required an operational pressure differential, and the down draft tables are equipped with flow meters.

Estimates of emissions for NOx and CO were determined using vendor data for the proposed boiler. These emissions factors were also used to perform ambient air modeling for determination of compliance with the NAAQS. Since vendor data and not AP-42 emission factors were used to determine emissions for NOx and CO, stack testing requirements were added to Table 4, Item 17 for these two pollutants.

These changes were submitted to the Facility at the close of the public comment period, and the Facility has accepted the changes.

<sup>6</sup> The EPA guidance document “Potential to Emit for MACT Standards – Guidance on Timing Issues” dated May 16, 1995 states that if a facility is complying with one MACT standard and after compliance with that MACT has emissions (considering control) that are less than the major source applicability for HAPs, the source would be considered an area source for subsequently promulgated MACT standards.