

DATE: September 8, 2006

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SUBJECT: Revised Air Dispersion Analysis for Prestige Custom Cabinetry – Green Bay

A. INTRODUCTION

A dispersion modeling analysis was completed on September 8, 2006 to assess the impact of the particulate matter emissions from Prestige Custom Cabinetry in Green Bay. This analysis was performed in support of construction permit 05-POY-125. Terrain is not a factor in the area, so receptor elevations were not considered in this analysis.

B. MODELING ANALYSIS

- ◆ Prestige Cabinetry supplied the emission parameters used in this analysis. Building dimensions were determined using BPIP with measurements taken on plot plans provided with the permit application. Please refer to the source parameter table.
- ◆ Five years (1983-1987) of preprocessed meteorological data was used in this analysis. The surface data was collected in Green Bay, and the upper air meteorological data also originated in Green Bay.
- ◆ The Industrial Source Complex Short Term 3 (ISCST3) model was also used in the analysis. The model used rural dispersion coefficients with the regulatory default options. These allow for calm wind correction, buoyancy induced dispersion, and building downwash.
- ◆ Regional background concentrations were found to be as follows:

BACKGROUND CONCENTRATIONS (Concentrations are in $\mu\text{g}/\text{m}^3$)			
Monitoring Site	Pollutant	Averaging Period	Concentration
600 East Greenfield Ave. Milwaukee County	PM ₁₀	24 hr	58.0
		Annual	27.0
5800 West Alwood Milwaukee County	TSP	24 hr	76.0

- ◆ The receptors used in this analysis consisted of a rectangular grid with 25-meter resolution extending 300 meters from the facility. Points within known fences or on top of buildings were not considered. Terrain is not a factor in the area, so receptor elevations were not considered.
- ◆ The PSD baseline for PM₁₀ was established in Brown County in 1983. All sources installed or modified since then must meet the Class II increment. All sources at Prestige Cabinetry must meet increment. In addition, sources at G&K and Anamax also consume increment in the area, and these sources were included.
- ◆ This revised analysis was necessary due to a request from Prestige to increase the emissions from stack S04.

C. MODEL RESULTS

The results demonstrate that the ambient air quality standards for TSP and PM₁₀ will be attained and maintained assuming the emission rates and stack parameters listed in the attached source table.

Modeling Analysis Results (All Concentrations in µg/m ³)			
	TSP – 24 hr	PM ₁₀ – 24 hr	PM ₁₀ – Annual
New Source Impact	20.8	20.8	2.24
PSD Class II Increment	-	30.0	17.0
% Increment Consumed	-	69.3	13.2
Full Facility Impact	20.8	20.8	2.2
Background	76.0	58.0	27.0
Total Concentration	96.8	78.8	29.2
NAAQS	150.0	150.0	50.0
% NAAQS	64.5	52.5	58.4

D. CONCLUSION

The results of the modeling analysis demonstrate that the applicable air quality standards will be satisfied assuming the emissions rates and stack parameters listed in the source table.

PRESTIGE CUSTOM CABINETRY – GREEN BAY Emission Rates & Stack Parameters						
ID	LOCATION (M)	HEIGHT (M)	DIAM (M)	VELOCITY (M/S)	TEMP (K)	PM RATE (#/HR)
S01	-26, 5	7.92	0.86	9.69	294.0	0.25
S02	-19, 0	7.92	0.86	9.69	294.0	0.25
S03	-12, 0	7.92	0.86	9.69	294.0	0.25
S04	-53, 32	9.14	0.92	17.81	294.0	0.90
<i>G&K Services Sources</i>						
G30	-20, 464	12.50	0.76	13.97	316.5	1.80
G31	-17, -464	12.50	0.76	13.97	316.5	1.80
G02	-20, -464	10.36	0.61	12.94	355.0	-1.33
G03	-17, -464	10.97	0.76	6.73	331.0	-1.33
G06	-26, -454	10.97	0.51	4.83	331.0	-0.60
G07	-24, -454	10.97	0.51	4.83	331.0	-0.60
<i>Anamax Sources</i>						
A06	953, 449	21.34	1.07	8.36	477.4	3.74
A04	953, 449	21.34	1.07	9.45	491.3	3.00
A05	953, 449	21.34	1.40	9.25	427.4	7.50
A14	953, 473	24.78	1.73	20.12	294.0	5.45

Note: All sources consume increment.