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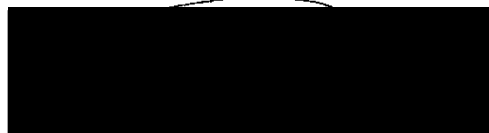
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**Emissions Monitoring
Midland Steel Structures Ltd,
Coventry
February 2002**

Your Ref:
Our Ref: HMSS213

For:
Mr. Tony Atkins
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Introduction

An emissions monitoring survey was requested by Mr Tony Atkins of Midland Steel Structures Ltd. The purpose of the survey was to measure airborne emissions of particulate and volatile organic compounds (VOC's) (as total carbon) from two emission points. The survey was carried out on 21st February 2002.

Process Descriptions

Midland Steel Structures Ltd is a fabricator of steel structures for the construction industry. The manufacturing processes, whose emissions are released to atmosphere, are paint spray operations.

Emissions monitoring for total particulate and volatile organic compounds (VOC's) (as total carbon) were carried out in two of the four emission stacks leading from the paint spray operation.

Sampling Methodology

Using the sampling holes provided in each case, the stack gas temperature was measured with a K-type temperature probe, and the velocity profile of the stack gas using a pitot tube traverse.

Particulate emissions were measured isokinetically in accordance with the main procedural requirements of BS3405: 1983 using a stainless steel sampling probe with a pre-weighed glass fibre filter mounted in-stack. Sample flow rate and inlet nozzle size were adjusted to match the stack gas velocity at the sampling position throughout the sampling period. The filters were subsequently reweighed in the laboratory, after conditioning to remove moisture, using an electronic microbalance to give results for total particulate.

Volatile organic compounds (VOC's) were measured by drawing a sample of the exhaust gas at a known flow rate through a stainless steel sampling probe to an activated charcoal tube just outside the duct. The charcoal tube samples together with undisclosed field blanks were analysed in the laboratory for the appropriate chemical compound using gas chromatography. Two consecutive sample periods of 15 minutes duration each were used in order to consider the variability of the VOC emissions.

Results

Company : Midland Steel Structures Ltd
Process : Spraying
Sampling position : Emission Stack A
Stack dimensions : 900 x 350 mm
Stack gas flow rate : 5.8 m³/s

Emission levels corrected to 0°C, 101.3 kPa:

Booth 1	Sample Time	Sample Volume (litres)	Emissions Concentrations		
			Volatile Organic Compounds (as Carbon) (mg/m ³)	Total Particulate (mg/m ³)	VOC Emissions (as Carbon) over 8-Hour Period (mg/m ³)
Sample 1	12:19 – 12:55	216	-	1.3	-
Sample 2	12:19 – 12:35	3.2	21.6	-	7.2
Sample 3	12:35 – 12:58	4.6	22.0	-	7.3

Process : Spraying
Sampling position : Emission Stack B
Stack dimensions : 900 x 350 mm
Stack gas flow rate : 3.3 m³/s

Emission levels corrected to 0°C, 101.3 kPa:

Booth 2	Sample Time	Sample Volume (litres)	Emissions Concentrations		
			Volatile Organic Compounds (as Carbon) (mg/m ³)	Total Particulate (mg/m ³)	VOC Emissions (as Carbon) over 8-Hour Period (mg/m ³)
Sample 4	11:24 – 12:09	270	-	0.5	-
Sample 5	11:26 – 11:52	5.2	48.2	-	16.1
Sample 6	11:52 – 12:09	3.4	46	-	15.3

The average emission of VOC to atmosphere over an 8-hour period is calculated to be 11.5 mg/m³.

Discussion & Conclusions

The above results indicate that all emissions of total particulate were within the permitted limits.

The emissions of volatile organic compounds (VOC's) (as total carbon) from both emission points were in excess of permitted limits for consumption of more than 15 tonnes of organic solvent per annum, the average emission to atmosphere over an 8-hour period being 11.5 mg/m³.

The emission results were obtained over short monitoring periods and reflect the average solvent based spraying times per hour. The results therefore reflect emission concentrations as if spraying were continuous. Average spraying times could be estimated at 20 minutes per hour and this figure has been used to calculate the emission value for VOC over an 8-hour period.

The laboratory analysis demonstrated that the VOC emission from the spray booths consisted of Xylene vapour.

All emissions have been calculated at the reference conditions 0 °C, 101.3 kPa.