BUNDLE 'A'

ALcontrol Laboratories

Emissions Monitoring Group
Templeborough House
Mill Close
Rotherham S60 1BZ
Tel: 01709 841013
Fax: 01709 841079

Trelleborg Ltd
Holbrook Lane
Coventry
West Midlands
CV6 4QX
FAO : John Davenport

18th November 2004

Dear John,

Isocyanates & VOCs measurements at Trelleborg, Reports R/04-194, 195, 196

Please find enclosed the *amended page 5* - 2 copies (1 for EHO) for insertion in above reports.

INSERTED ✓

This now includes detail about the method procedure (including blanks & calibration)

With reference to flows, as you indicated, the flow velocity for Billet Ralph machine was 7.2 m/sec (versus 11.2 m/sec in 2003), Desma 1/2 4.1 m/sec (versus 5.4 m/sec) and Desma 3 8.3 (versus 7.7)

We have checked measurements and calibrations of the pitot values for 'Flow Velocity, m/sec' 'Volumetric Flow, in m3/sec' –and they confirm.

If you require any more information do not hesitate to contact me.

Yours sincerely,

[redacted]

Mark Craig
Emissions Monitoring Manager

BUNDLE 'A'

1. **Isocyanates** were sampled according to MDHS method 49 whereby a measured volume of flue gas is drawn through a glass impinger containing dimethylformamide and dilute hydrochloric acid. The amount of isocyanate in the sample is determined by spectrophotometric methods.

2. **Volatile Organic Compound Emissions**
   Extractive sampling is performed following TPM/2.71.. utilising a heated probe and transfer line. Detection and analysis is by Flame Ionisation Detector (FID) calibrated against certified propane span gas (Method based on US EPA Method 25A).

3. **Flue Gas Velocity**
   The flue gas velocity is determined by measurement of the differential pressure and temperature within the stack according to BS3405 (ALcontrol Laboratories, Method Number NAM/8.3/2.1.1).

ALcontrol Laboratories, TPM/00,Testing Procedures Manual Copy No 6

Received March '05 regarding Monitoring in June 2004.

CONTENTS

1.0 SCOPE OF WORK

This quotation covers the annual stack emissions monitoring programme at the Coventry site of Trelleborg together with personnel exposure monitoring

Stack Monitoring Requirements

Sample Location	Determinant	Number of Tests	Sample Period
3 Stacks	VOCs as methane	Continuous	30 mins
	Di-isocyanates (MDI)	2	30 mins

Personnel Monitoring Requirements

3 staff for isocyanates at the same time as the VOC monitoring.
4 Staff for Rubber fumes
1 staff member for paint fumes in conjunction with the data sheets provided by Trelleborg.

2.0 SAMPLING METHODS

Listed below is some basic information outlining the methods to be used, the standard methods they follow and if the monitoring is UKAS accredited.

Stack Monitoring

Determinant	Reference Method	Description	UKAS Status
Volatile Organic Carbons	BS EN 12619	A sample is passed via a heated line to an analyser for direct measurement utilising flame ionisation detection	Y
Di-isocyanates	MDHS 25/3	A sample is extracted and transferred via to a set of midget impingers containing a fixing reagent where the MDI is collected	N

Detailed method statements can be supplied if more technical information is required.

Personnel Monitoring

Rubber Fume
Sampling will be carried out following HSE method MDHS 47/2.

Paint Fumes
The active ingredients in the paint fumes are xylene, ethyl benzene, perchlorethylene, phenol and methyl isobutyl ketone.
All these components are sampled using MDHS 72. The gases are passed over a set of tubes containing the relevant adsorption materials.

Isocyanates
Sampling will be carried out following HSE method MDHS 25/3.

3.0 ANALYTICAL METHODS

The following table shows the analytical techniques to be used throughout the contract.

Determinant	Description	UKAS Status
MDI	Samples are extracted and analysed by HPLC	Y
Paint Fumes Rubber Fumes	All analysis will be carried out by desorption followed by gas chromatography mass spectrometry.	Y

Some of the analysis will be sub-contracted only to a UKAS accredited laboratory.

4.0 QUALITY STATEMENT

UKAS
ALcontrol Laboratories has an extensive UKAS accreditation schedule covering all the major pollutants routinely measured by industry. If you wish to see the full UKAS schedule it can be provided or it can be accessed via the UKAS website on www.ukas.org.

MCERTS
The new MCERTS scheme for stack monitoring requires that both companies and personnel are accredited to the MCERTS standards. All Alcontrols offices operating in the emissions industry have been awarded MCERTS accreditation. We currently have nine MCERTS level 2 accredited team leaders, 5 Level 1 accredited technicians and 4 technicians going through the training process.

5.0 COST SCHEDULES

The price is based on the scope of works listed above.

Stack Emissions Monitoring
Total Costs £1745.00

The price covers the costs for preparation, mobilistaion, sampling, equipment costs, analytical costs, subsistence costs if any and report production.

Occupational Exposure Monitoring
Total Costs £1420.00

These have been quoted as two separate visits as requested.

The costs have increased since last year with the majority of increase due to monitoring the paint fumes as this will need to be carried out over two days to capture the different components required.

Site requirements
In general we will need the following to allow the sampling to be carried out:-

- All stacks should be fitted with two 4" BSP sockets that comply with M1.
- A safe working platform at the sampling plane (again that complies with guidance given in M1).
- A power supply, preferably 110V sockets.

Delays
Any delays caused by reasons outside of Alcontrol's control will be charged at a rate of £75.00 per hour per team.

Cancellation/Postponement
After receipt of order number, site work will be scheduled for completion. Any delays, or cancellation of order after this time will incur charges of up to 50% of quotation value.

Value Added Tax:
All Costs are Excluding VAT, which is Chargeable at the Standard Rate.
This quotation is subject to the terms and conditions on the reverse of the title page and is valid for sixty days from the date of this document.

Acceptance
If the work is accepted, an order number or written confirmation will be required before site work can commence.

1 of 3

further info requested Nov '04 Need this to check reports are OK.

EMISSION TEST RESULTS

Client Trelleborg Ltd.
Site Coventry
Plant Billet Ralph no.5
Date 28th & 29th June 2004

Holbrook Lane
Coventry
West Midlands
CV6 4QX

ALcontrol Laboratories
Emission Monitoring Group
Templeborough House
Mill Close
Rotherham
S60 1BZ

Tel: 01709 841103
Fax: 01709 841024

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company **Trelleborg Ltd.**
Site **Coventry**
Plant **Billet Ralph no.5**

The report presents the atmospheric emissions from the tests undertaken on : **28th & 29th June 2004**
The results were measured from the sample positions downstream of the arrestment plant.
The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm³	Uncertainty +/- mg/Nm³	Detection limits for ND values mg/Nm³	Mass emission g/h
Isocyanates (Test 1)	ND	-	0.00003	ND
Isocyanates (Test 2)	ND	-	0.00004	ND
TOC (Test 1)	13.1	0.66	-	305
TOC (Test 2)	10.7	0.57	-	248

* at Ref Conditions	0	°C	as found	%Moisture
	101.3	kPa	as found	%Oxygen

Where applicable
Oxides of nitrogen results are expressed as nitrogen dioxide
VOC results are expressed as total carbon
Dioxins/furans expressed as upper limit values (TEQ)

Throughout Report:

*	Reference conditions (see above)	Nm³ 273 K, 101.3 kPa
**	Analysis not required	# - UKAS accredited only
ND	Non detectable	## - Not Accredited
s - Subcontracted laboratory analysis, see page 4		
N/A	Not applicable	

UKAS TESTING
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All tests included in this report are accredited under UKAS and MCERTS accreditation schemes unless otherwise stated. Opinions and interpretations expressed herein are outside the scope of MCERTS and UKAS accreditation.

MCERTS

CERTIFICATE

This is to certify that, to the best of our knowledge and belief, the results contained within this Report are a true and fair reflection of the plant operation during the time of the tests.

Job Number:	**051a01**
Report Number:	R/04-194
Plant Designations:	Billet Ralph no.5
Test Personnel	Sunil Salpekar (MCERTS Level 1 MM02 119)
Date of tests:	28th & 29th June 2004
Site Address:	Holbrook Lane Coventry West Midlands CV6 4QX

Prepared by: Ben Tranmer (MCERTS Level 2 MM02 113)

Checked by: Sign [redacted] Print [redacted] Position Technical Administrator

Authorised by: Sign [redacted] Print [redacted] Position Project Manager

Date: 16 August 2004

SUB-CONTRACTED LABORATORY ANALYSIS

ALcontrol Laboratories has, with your approval, used the following sub-contracted laboratories for the laboratory analyses referenced below:

Laboratory:	RPS Laboratories
Table Numbers:	3&4
Accreditation:	UKAS accredited testing laboratory Number 0605

Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propane (nominal 12 vppm)).

Isocyanates

To a non accredited method based on IOSH 5521 using sampling equipment as in US EPA Method 26a. Metered volume of gas extracted through a multi mini-impinger train containing 1-(2-methoxyphenyl1)-piperazine in tolune solution and subsequent analysis by high performance liquid chromatography (HPLC)

Monitoring Objectives

The monitoring was undertaken to check compliance with authorised emission limits.

All monitoring procedures were carried out to the MCERTS requirements under the ALcontrol Laboratories quality system to ISO 17025: 2000.

Monitoring was undertaken for the listed emissions from the following sampling positions:

Emission	Sampling Location
Isocyanates	Billet Ralph no.5
Volatile organic compounds	Billet Ralph no.5

Comments on monitoring procedures

All monitoring procedures performed correctly with no problems.

The velocity and temperature profile at the sampling location met the requirements of BS EN 13284-1: 2001.

Plant operating conditions

The plant was operating normally during the tests.

Monitoring Timetable

Emission	Start Time	Finish Time	Date
Isocyanate (Test 1)	10:05	10:35	29/06/2004
Isocyanate (Test 2)	10:37	11:07	29/06/2004
Volatile organic compounds (Test 1)	10:05	10:35	28/06/2004
Volatile organic compounds (Test 2)	10:35	11:05	28/06/2004

RESULTS DISCUSSION

All results are as presented in Tables 1-4.

Test Measurements and Derived Data

Date 28/06/2004

From 10:05 to 10:20

Hourly Mean

Volatile organic compounds	vppm	7.2	mg/m³*	11.7

From 10:20 to 10:35

Hourly Mean

Volatile organic compounds	vppm	9.0	mg/m³*	14.5

From 10:35 to 10:50

Hourly Mean

Volatile organic compounds	vppm	4.8	mg/m³*	7.8

From 10:50 to 11:05

Hourly Mean

Volatile organic compounds	vppm	8.3	mg/m³*	13.5

Sampling Detection limits

Volatile organic compounds	vppm	0.1	mg/m³*	0.2

Zero and Span Gas Details

Species	units	value	Cylinder reference
Volatile organic compounds	vppm	16.5	P2851ZD396068

Table 1. VOC's - Continuous analysis data.

Preliminary readings taken before sampling

Line	A		B		C		D	
Traverse Data (D)	Temperature (°C)	h mm w.g.	Temperature (°C)	h mm w.g.	Temperature (°C)	h mm w.g	Temperature (°C)	h mm w.g
1	21	3.16	21	2.96				
2	21	3.16	21	2.96				
3	21	2.86	21	2.86				
4	21	2.96	21	2.55				
5	21	3.77	21	3.98				
6	21	3.57	21	3.37				
7	21	5.61	21	5.2				
8	21	1.73	21	1.84				
9	21	2.04	21	1.94				
10	21	3.37	21	3.26				
11	21	3.98	21	3.57				
12	21	3.98	21	3.57				
Total Ta =	252		Total Tb = 252		Total Tc =		Total Td =	

1. Tp = (Ta + Tb + Tc + Td)/(Number of traverse points) + 273 = 294 K

2. Permitted range = 0.95Tp - 273 to 1.05Tp - 273 6 to 36 °C

3. Axial flow of gases along traverse A :Yes B :Yes

4. a) Highest pitot static reading = 6 4. b) Lowest pitot static reading = 2

5. Ratio a/b = 3.2 Highest permitted ratio = 9/1

   Satisfactory leak check Yes Angle of maximum flow established Yes

   Any local negative flows No

   Is minimum pitot reading >5Pa Yes Duct dimensions 0.35 m

6 Average Stack temp = 21 °C

7 Average Pitot Reading = 3.21 mm w.g

8 Calibration Constant (Cp) = 1.00

Duct Static Gas Pressure	kPa	-1.622
Barometric Pressure	kPa	99

Average velocity	7.248	m/s
Average flow rate	2.537	m³/s
Average flow rate	6.469	Nm³/s

Table 2. Isocyanate/VOC's:- Preliminary data.

Date	29/06/2004
Start time	10:05
Finish time	10:35

	UNITS	Impinger 1	Impinger 2	Impinger 3 (Drop Out)	Impinger 4 (Silica Gel)
Start volume	ml	100	100	0	150
Start meter reading	m³	65.9480			
Meter temperature	°C	21.0			
Finish meter reading	m³	66.0190			
Finish volume	ml	96	90	0	160

ACID GAS	UNITS	Sample Impinger conc.	Sample Wash conc.	Blank Impinger conc.	Blank Wash conc.
Isocyanate	mg/l	**0.0002**	**0.0002**	**0.0002**	**0.0002**

Wash vol. 200 ml

		Emission	Detection limit
Isocyanate	mg/Nm³	0	0.00003

Date of analysis	09/07/2004

Numbers in bold indicate detection limits

Table 3. Isocyanate emissions, Test 1.

Date	29/06/2004
Start time	10:37
Finish time	11:07

	UNITS	Impinger 1	Impinger 2	Impinger 3 (Drop Out)	Impinger 4 (Silica Gel)
Start volume	ml	100	100	0	150
Start meter reading	m^3	66.0190			
Meter temperature	°C	21.0			
Finish meter reading	m^3	66.0830			
Finish volume	ml	100	100	0	159

ACID GAS	UNITS	Sample Impinger conc.	Sample Wash conc.	Blank Impinger conc.	Blank Wash conc.
Isocyanate	mg/l	**0.0002**	**0.0002**	**0.0002**	**0.0002**

Wash vol. 200 ml

		Emission	Detection limit
Isocyanate	mg/Nm	0	0.00004

Date of analysis	09/07/2004

Numbers in bold indicate detection limits

Table 4. Isocyanate emissions, Test 2.

BUNDLE 'A'

EMISSION TEST RESULTS

amended

Client	Trelleborg Ltd.
Site	Coventry
Plant	Billet Ralph no.5
Date	28th & 29th June 2004

Holbrook Lane
Coventry
West Midlands
CV6 4QX

ALcontrol Laboratories
Emission Monitoring Group
Templeborough House
Mill Close
Rotherham
S60 1BZ

Tel: 01709 841103
Fax: 01709 841024

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company **Trelleborg Ltd.**
Site **Coventry**
Plant **Billet Ralph no.5**

The report presents the atmospheric emissions from the tests undertaken on : **28th & 29th June 2004**
The results were measured from the sample positions downstream of the arrestment plant.
The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm³	Uncertainty +/- mg/Nm³	Detection limits for ND values mg/Nm³	Mass emission g/h
Isocyanates (Test 1)	ND	-	0.00003	ND
Isocyanates (Test 2)	ND	-	0.00004	ND
TOC (Test 1)	13.1	0.66	-	107
TOC (Test 2)	10.7	0.57	-	87

* at Ref	0	°C	as found	%Moisture
Conditions	101.3	kPa	as found	%Oxygen

Where applicable
Oxides of nitrogen results are expressed as nitrogen dioxide
VOC results are expressed as total carbon
Dioxins/furans expressed as upper limit values (TEQ)

Throughout Report:

*	Reference conditions (see above)	Nm³ 273 K, 101.3 kPa
**	Analysis not required	# - UKAS accredited only
ND	Non detectable	## - Not Accredited
s - Subcontracted laboratory analysis, see page 4		
N/A	Not applicable	

Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propane (nominal 12 vppm)).

Isocyanates

To a non-accredited method based on MDHS 25/3,1999 "Organic Isocyanates in Air" (HSE) & NIOSH 5521, using equipment as in US EPA Method 26a. A metered volume of air is extracted through a min-impinger sampling train containing 1-(2-methoxyphenyl 1)-piperazine in toluene at 1l/min. (to ensure full absorption of isocyanates. The resultant solution is concentrated and analysed by high performance liquid chromatography (HPLC) with ulta-violet detection. A blank sample is also prepared, subject to the same handling procedure, and submitted for analysis. analysis was performed by RPS Laboratories, Manchester M5 3EZ - see Page 4. Results were then blank corrected, and emission concentrations calculated as in MDHS 25/3 above.

Date 28/06/04

From 10:05 to 10:20

Hourly Mean

Volatile organic compounds	vppm	7.2	mg/m³	11.7

From 10:20 to 10:35

Hourly Mean

Volatile organic compounds	vppm	9.0	mg/m³	14.5

From 10:35 to 10:50

Hourly Mean

Volatile organic compounds	vppm	4.8	mg/m³	7.8

From 10:50 to 11:05

Hourly Mean

Volatile organic compounds	vppm	8.3	mg/m³	13.5

Sampling Detection limits

Volatile organic compounds	vppm	0.1	mg/m³	0.2

Zero and Span Gas Details

Species	units	value	Cylinder reference
Volatile organic compounds	vppm	16.5	P2851ZD396068

Table 1. VOC's - Continuous analysis data.

EMISSION TEST RESULTS

Client Trelleborg Ltd.
Site Coventry
Plant Desma M/C No. 3
Date 29th June 2004

Holbrook Lane
Coventry
West Midlands
CV6 4QX

ALcontrol Laboratories
Emission Monitoring Group
Templeborough House
Mill Close
Rotherham
S60 1BZ

Tel: 01709 841103
Fax: 01709 841024

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company **Trelleborg Ltd.**
Site **Coventry**
Plant **Desma M/C No. 3**

The report presents the atmospheric emissions from the tests undertaken on : **29th June 2004**
The results were measured from the sample positions downstream of the arrestment plant.
The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm³	Uncertainty +/- mg/Nm³	Detection limits for ND values mg/Nm³	Mass emission g/h
Isocyanates (Test 1)	ND	-	0.00002	ND
Isocyanates (Test 2)	ND	-	0.00003	ND
TOC (Test 1)	22.5	1.06	-	604
TOC (Test 2)	22.2	1.05	-	598

* at Ref	0	°C	as found	%Moisture
Conditions	101.3	kPa	as found	%Oxygen

Where applicable
Oxides of nitrogen results are expressed as nitrogen dioxide
VOC results are expressed as total carbon
Dioxins/furans expressed as upper limit values (TEQ)

Throughout Report:

*	Reference conditions (see above)	Nm³ 273 K, 101.3 kPa
**	Analysis not required	# - UKAS accredited only
ND	Non detectable	## - Not Accredited
s - Subcontracted laboratory analysis, see page 4		
N/A	Not applicable	

UKAS TESTING
1783

All tests included in this report are accredited under UKAS and MCERTS accreditation schemes unless otherwise stated. Opinions and interpretations expressed herein are outside the scope of MCERTS and UKAS accreditation.

MCERTS

CERTIFICATE

This is to certify that, to the best of our knowledge and belief, the results contained within this Report are a true and fair reflection of the plant operation during the time of the tests.

Job Number:	**051a01**
Report Number:	R/04-196
Plant Designations:	Desma M/C No. 3
Test Personnel	Sunil Salpekar (MCERTS Level 1 MM02 119)
Date of tests:	29th June 2004
Site Address:	Holbrook Lane Coventry West Midlands CV6 4QX

Prepared by: Ben Tranmer (MCERTS Level 2 MM02 113)

Checked by: Sign [redacted] ..... Print [redacted] Position Technical Administrator

Authorised by: Sign [redacted] ..... Print [redacted] Position Project Manager

Date: 16 August 2004

SUB-CONTRACTED LABORATORY ANALYSIS

ALcontrol Laboratories has, with your approval, used the following sub-contracted laboratories for the laboratory analyses referenced below:

Laboratory:	RPS Laboratories
Table Numbers:	3&4
Accreditation:	UKAS accredited testing laboratory Number 0605

Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propane (nominal 12 vppm)).

Isocyanates

To a non accredited method based on IOSH 5521 using sampling equipment as in US EPA Method 26a. Metered volume of gas extracted through a multi mini-impinger train containing 1-(2-methoxyphenyl1)-piperazine in tolune solution and subsequent analysis by high performance liquid chromatography (HPLC)

Monitoring Objectives

The monitoring was undertaken to check compliance with authorised emission limits.

All monitoring procedures were carried out to the MCERTS requirements under the ALcontrol Laboratories quality system to ISO 17025: 2000.

Monitoring was undertaken for the listed emissions from the following sampling positions:

Emission	Sampling Location
Isocyanates	Desma M/C No. 3
Volatile organic compounds	Desma M/C No. 3

Comments on monitoring procedures

All monitoring procedures performed correctly with no problems.

The velocity and temperature profile at the sampling location met the requirements of BS EN 13284-1: 2001.

Plant operating conditions

The plant was operating normally during the tests.

Monitoring Timetable

Emission	Start Time	Finish Time	Date
Isocyanate (Test 1)	14:58	15:28	29/06/2004
Isocyanate (Test 2)	15:30	16:00	29/06/2004
Volatile organic compounds (Test 1)	14:58	15:28	29/06/2004
Volatile organic compounds (Test 2)	15:28	15:58	29/06/2004

RESULTS DISCUSSION

All results are as presented in Tables 1-4.

Test Measurements and Derived Data

Date 29/06/2004

From 14:58 to 15:13

		Hourly Mean		
Volatile organic compounds	vppm	13.1	mg/m³*	21.3

From 15:13 to 15:28

		Hourly Mean		
Volatile organic compounds	vppm	14.6	mg/m³*	23.7

From 15:28 to 15:43

		Hourly Mean		
Volatile organic compounds	vppm	14.7	mg/m³*	23.8

From 15:43 to 15:58

		Hourly Mean		
Volatile organic compounds	vppm	12.8	mg/m³*	20.7

Sampling Detection limits

Volatile organic compounds	vppm	0.1	mg/m³*	0.2

Zero and Span Gas Details

Species	units	value	Cylinder reference
Volatile organic compounds	vppm	16.5	P2851ZD396068

Table 1. VOC's - Continuous analysis data.

Preliminary readings taken before sampling

Line	A		B		C		D	
Traverse Data (D)	Temperature (°C)	h mm w.g.	Temperature (°C)	h mm w.g.	Temperature (°C)	h mm w.g.	Temperature (°C)	h mm w.g.
1								
2	22	2.75	22	2.86				
3	22	3.16	22	3.37				
4	22	3.67	22	3.26				
5	22	3.98	22	3.67				
6	22	4.39	22	4.18				
7	22	4.69	22	4.49				
8	22	4.69	22	4.59				
9	22	4.28	22	4.08				
10	22	3.98	22	3.98				
11	22	3.37	22	3.06				
12								
Total Ta =	220		Total Tb =	220	Total Tc =		Total Td =	

1. Tp = (Ta + Tb + Tc + Td)/(Number of traverse points) + 273 = 295 K

2. Permitted range = 0.95Tp - 273 to 1.05Tp - 273 7 to 37 °C

3. Axial flow of gases along traverse A :Yes B :Yes

4. a) Highest pitot static reading = 5 4. b) Lowest pitot static reading = 3

5. Ratio a/b = 1.7 Highest permitted ratio = 9/1

   Satisfactory leak check Yes Angle of maximum flow established Yes

   Any local negative flows No

   Is minimum pitot reading >5Pa Yes Duct dimensions 0.64 m

6 Average Stack temp = 22 °C

7 Average Pitot Reading = 4.17 mm w.g

8 Calibration Constant (Cp) = 1.00

Duct Static Gas Pressure	kPa	-0.131
Barometric Pressure	kPa	99

Average velocity	8.266	m/s
Average flow rate	5.290	m³/s
Average flow rate	7.466	Nm³/s

Table 2. Isocyanate/VOC's:- Preliminary data.

Date	29/06/2004
Start time	14:58
Finish time	15:28

	UNITS	Impinger 1	Impinger 2	Impinger 3 (Drop Out)	Impinger 4 (Silica Gel)
Start volume	ml	100	100	0	150
Start meter reading	m^3	66.0830			
Meter temperature	°C	22.0			
Finish meter reading	m^3	66.2040			
Finish volume	ml	95	85	0	163
ACID GAS	UNITS	Sample Impinger conc.	Sample Wash conc.	Blank Impinger conc.	Blank Wash conc.
Isocyanate	mg/l	**0.0002**	**0.0002**	**0.0002**	**0.0002**

Wash vol. 200 ml

		Emission	Detection limit
Isocyanate	mg/Nm	0	0.00002

Date of analysis	09/07/2004

Numbers in bold indicate detection limits

Table 3. Isocyanate emissions, Test 1.

Date	29/06/2004
Start time	15:30
Finish time	16:00

	UNITS	Impinger 1	Impinger 2	Impinger 3 (Drop Out)	Impinger 4 (Silica Gel)
Start volume	ml	100	100	0	150
Start meter reading	m^3	66.2040			
Meter temperature	°C	22.0			
Finish meter reading	m^3	66.3000			
Finish volume	ml	96	88	0	161
ACID GAS	UNITS	Sample Impinger conc.	Sample Wash conc.	Blank Impinger conc.	Blank Wash conc.
Isocyanate	mg/l	**0.0002**	**0.0002**	**0.0002**	**0.0002**

Wash vol. 200 ml

		Emission	Detection limit
Isocyanate	mg/Nm	0	0.00003

Date of analysis	09/07/2004

Numbers in bold indicate detection limits

Table 4. Isocyanate emissions, Test 2.

BUNDLE 'A'

EMISSION TEST RESULTS

Client Trelleborg Ltd.
Site Coventry
Plant Desma M/C No. 3
Date 29th June 2004

Holbrook Lane
Coventry
West Midlands
CV6 4QX

ALcontrol Laboratories
Emission Monitoring Group
Templeborough House
Mill Close
Rotherham
S60 1BZ

Tel: 01709 841103
Fax: 01709 841024

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company **Trelleborg Ltd.**
Site **Coventry**
Plant **Desma M/C No. 3**

The report presents the atmospheric emissions from the tests undertaken on : **29th June 2004**
The results were measured from the sample positions downstream of the arrestment plant.
The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm³	Uncertainty +/- mg/Nm³	Detection limits for ND values mg/Nm³	Mass emission g/h
Isocyanates (Test 1)	ND	-	0.00002	ND
Isocyanates (Test 2)	ND	-	0.00003	ND
TOC (Test 1)	22.5	1.06	-	194
TOC (Test 2)	22.2	1.05	-	192

* at Ref	0	°C	as found	%Moisture
Conditions	101.3	kPa	as found	%Oxygen

Where applicable
Oxides of nitrogen results are expressed as nitrogen dioxide
VOC results are expressed as total carbon
Dioxins/furans expressed as upper limit values (TEQ)

Throughout Report:

*	Reference conditions (see above)	Nm³ 273 K, 101.3 kPa
**	Analysis not required	# - UKAS accredited only
ND	Non detectable	## - Not Accredited
s	- Subcontracted laboratory analysis, see page 4	
N/A	Not applicable	

Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propane (nominal 12 vppm)).

Isocyanates

To a non-accredited method based on MDHS 25/3,1999 "Organic Isocyanates in Air" (HSE) & NIOSH 5521, using equipment as in US EPA Method 26a. A metered volume of air is extracted through a min-impinger sampling train containing 1-(2-methoxyphenyl 1)-piperazine in toluene at 1l/min. (to ensure full absorption of isocyanates. The resultant solution is concentrated and analysed by high performance liquid chromatography (HPLC) with ulta-violet detection. A blank sample is also prepared, subject to the same handling procedure, and submitted for analysis. analysis was performed by RPS Laboratories, Manchester M5 3EZ - see Page 4. Results were then blank corrected, and emission concentrations calculated as in MDHS 25/3 above.

Date 29/06/04

From 14:58 to 15:13

Hourly Mean

Volatile organic compounds	vppm	13.1	mg/m³	21.3

From 15:13 to 15:28

Hourly Mean

Volatile organic compounds	vppm	14.6	mg/m³	23.7

From 15:28 to 15:43

Hourly Mean

Volatile organic compounds	vppm	14.7	mg/m³	23.8

From 15:43 to 15:58

Hourly Mean

Volatile organic compounds	vppm	12.8	mg/m³	20.7

Sampling Detection limits

Volatile organic compounds	vppm	0.1	mg/m³	0.2

Zero and Span Gas Details

Species	units	value	Cylinder reference
Volatile organic compounds	vppm	16.5	P2851ZD396068

Table 1. VOC's - Continuous analysis data.

SUMMARY

ISOCYANATES, DESMA Machine No 3

Run Number	Run 1	Run 2		Blank
Date	29.6.04	29.6.04		
Start Time	14:58	15:30		
Stop Time	15:28	16:00		
Stack Temperature, C	22	22		
Sample Rate, l/min	4	4		
Sample Volume, m3	0.121	0.096		
Stack Velocity, m/s	8.3	8.3		
Stack Flow Rate, m3/s	2.4	2.4		
Mass of Isocyanates	<0.0002	<0.0002		<0.0001
Mass of Isocyanates, blank corrected	<0.0002	<0.0002		
Isocyanates (as -NCO)	**<0.00002**	**<0.00003**	**mg/m^3**	
Isocyanates(as-NCO)	<0.00001	<0.00001	Kg/hr	

Client **Trelleborg Ltd.**
Site **Coventry**
Plant **Desma M/C No. 3**
Date **29th June 2004**

QUALITY CONTROL

Equipment Used	ID Number
Airflow PVM Micromanometer	P104
Pitot Tube	PT59
Temperature Indicator	TK03
Stack Thermocouple No	TS157
Barometer	P108

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EMISSION TEST RESULTS

Client Trelleborg Ltd.
Site Coventry
Plant Desma M/C No. 1/2
Date 22nd July 2004

Holbrook Lane
Coventry
West Midlands
CV6 4QX

ALcontrol Laboratories
Emission Monitoring Group
Templeborough House
Mill Close
Rotherham
S60 1BZ

Tel: 01709 841103
Fax: 01709 841024

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company **Trelleborg Ltd.**
Site **Coventry**
Plant **Desma M/C No. 1/2**

The report presents the atmospheric emissions from the tests undertaken on : **22nd July 2004**
The results were measured from the sample positions downstream of the arrestment plant.
The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm³	Uncertainty +/- mg/Nm³	Detection limits for ND values mg/Nm³	Mass emission g/h
Isocyanates (Test 1)	ND	-	0.00004	ND
Isocyanates (Test 2)	ND	-	0.00004	ND
TOC (Test 1)	5.3	0.36	-	73
TOC (Test 2)	15.6	0.72	-	214

* at Ref Conditions	0	°C	as found	%Moisture
	101.3	kPa	as found	%Oxygen

Where applicable
Oxides of nitrogen results are expressed as nitrogen dioxide
VOC results are expressed as total carbon
Dioxins/furans expressed as upper limit values (TEQ)

Throughout Report:
* Reference conditions (see above) — Nm³ 273 K, 101.3 kPa
** Analysis not required — # - UKAS accredited only
ND Non detectable — ## - Not Accredited
s - Subcontracted laboratory analysis, see page 4
N/A Not applicable

CERTIFICATE

This is to certify that, to the best of our knowledge and belief, the results contained within this Report are a true and fair reflection of the plant operation during the time of the tests.

Job Number:	**051a01**
Report Number:	R/04-195
Plant Designations:	Desma M/C No. 1/2
Test Personnel	Sunil Salpekar (MCERTS Level 1 MM02 119)
Date of tests:	22nd July 2004
Site Address:	Holbrook Lane Coventry West Midlands CV6 4QX

Prepared by: Ben Tranmer (MCERTS Level 2 MM02 113)

Checked by: Sign [redacted] Print [redacted] Position Technical Administrator

Authorised by: Sign [redacted] Print [redacted] Position Project Manager

Date: 16 August 2004

SUB-CONTRACTED LABORATORY ANALYSIS

ALcontrol Laboratories has, with your approval, used the following sub-contracted laboratories for the laboratory analyses referenced below:

Laboratory:	RPS Laboratories
Table Numbers:	3&4
Accreditation:	UKAS accredited testing laboratory Number 0605

Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propane (nominal 12 vppm)).

Isocyanates

To a non accredited method based on IOSH 5521 using sampling equipment as in US EPA Method 26a. Metered volume of gas extracted through a multi mini-impinger train containing 1-(2-methoxyphenyl1)-piperazine in tolune solution and subsequent analysis by high performance liquid chromatography (HPLC)

Monitoring Objectives

The monitoring was undertaken to check compliance with authorised emission limits.

All monitoring procedures were carried out to the MCERTS requirements under the ALcontrol Laboratories quality system to ISO 17025: 2000.

Monitoring was undertaken for the listed emissions from the following sampling positions:

Emission	Sampling Location
Isocyanates	Desma M/C No. 1/2
Volatile organic compounds	Desma M/C No. 1/2

Comments on monitoring procedures

All monitoring procedures performed correctly with no problems.

The velocity and temperature profile at the sampling location met the requirements of BS EN 13284-1: 2001.

Plant operating conditions

The plant was operating normally during the tests.

Monitoring Timetable

Emission	Start Time	Finish Time	Date
Isocyanate (Test 1)	11:18	11:52	22/07/2004
Isocyanate (Test 2)	10:37	11:07	22/07/2004
Volatile organic compounds (Test 1)	10:05	10:35	22/07/2004
Volatile organic compounds (Test 2)	10:35	11:05	22/07/2004

RESULTS DISCUSSION

All results are as presented in Tables 1-4.

Test Measurements and Derived Data

Date 22/07/2004

From 10:05 to 10:20

Hourly Mean

Volatile organic compounds	vppm	1.9	mg/m³*	3.1

From 10:20 to 10:35

Hourly Mean

Volatile organic compounds	vppm	4.6	mg/m³*	7.5

From 10:35 to 10:50

Hourly Mean

Volatile organic compounds	vppm	8.6	mg/m³*	13.9

From 10:50 to 11:05

Hourly Mean

Volatile organic compounds	vppm	10.7	mg/m³*	17.3

Sampling Detection limits

Volatile organic compounds	vppm	0.1	mg/m³*	0.2

Zero and Span Gas Details

Species	units	value	Cylinder reference
Volatile organic compounds	vppm	16.5	P2851ZD396068

Table 1. VOC's - Continuous analysis data.

Preliminary readings taken before sampling

Line	A		B		C		D	
Traverse Data (D)	Temperature (°C)	h mm w.g	Temperature (°C)	h mm w.g	Temperature (°C)	h mm w.g	Temperature (°C)	h mm w.g
1								
2	20	0.71	20	0.61				
3	20	0.92	20	1.02				
4	20	0.82	20	0.82				
5	20	1.33	20	1.43				
6	20	0.71	20	0.71				
7	20	0.71	20	0.61				
8	20	1.53	20	1.73				
9	20	1.22	20	1.12				
10	20	2.35	20	2.55				
11	20	3.06	20	2.86				
12								
Total Ta =	200		Total Tb =	200	Total Tc =		Total Td =	

1. Tp = (Ta + Tb + Tc + Td)/(Number of traverse points) + 273 = 293 K

2. Permitted range = 0.95Tp - 273 to 1.05Tp - 273 5 to 35 °C

3. Axial flow of gases along traverse A :Yes B :Yes

4. a) Highest pitot static reading = 3 4. b) Lowest pitot static reading = 1

5. Ratio a/b = 5.0 Highest permitted ratio = 9/1

   Satisfactory leak check Yes Angle of maximum flow established Yes

   Any local negative flows No

   Is minimum pitot reading >5Pa Yes Duct dimensions 0.64 m

6 Average Stack temp = 20 °C

7 Average Pitot Reading = 1.06 mm w.g

8 Calibration Constant (Cp) = 1.00

Duct Static Gas Pressure	kPa	-0.397
Barometric Pressure	kPa	99.7

Average velocity	4.161	m/s
Average flow rate	2.663	m³/s
Average flow rate	3.800	Nm³/s

Table 2. Isocyanate/VOC's:- Preliminary data.

Date	22/07/2004
Start time	11:18
Finish time	11:52

34 Mins

	UNITS	Impinger 1	Impinger 2	Impinger 3 (Drop Out)	Impinger 4 (Silica Gel)
Start volume	ml	100	100	0	150
Start meter reading	m^3	66.3000			
Meter temperature	°C	19.0			
Finish meter reading	m^3	66.3600			
Finish volume	ml	100	100	0	156

ACID GAS	UNITS	Sample Impinger conc.	Sample Wash conc.	Blank Impinger conc.	Blank Wash conc.
Isocyanate	mg/l	**0.0002**	**0.0002**	**0.0002**	**0.0002**

Wash vol. 200 ml

		Emission	Detection limit
Isocyanate	mg/Nm	0	0.00004

Date of analysis	05/08/2004

Numbers in bold indicate detection limits

Table 3. Isocyanate emissions, Test 1

Date	22/07/2004
Start time	10:37
Finish time	11:07

	UNITS	Impinger 1	Impinger 2	Impinger 3 (Drop Out)	Impinger 4 (Silica Gel)
Start volume	ml	100	100	0	150
Start meter reading	m³	66.3600			
Meter temperature	°C	23.0			
Finish meter reading	m³	66.4200			
Finish volume	ml	100	100	0	156

ACID GAS	UNITS	Sample Impinger conc.	Sample Wash conc.	Blank Impinger conc.	Blank Wash conc.
Isocyanate	mg/l	**0.0005**	**0.0005**	**0.0005**	**0.0005**

Wash vol. 200 ml

		Emission	Detection limit
Isocyanate	mg/Nm	0	0.00004

Date of analysis	05/08/2004

Numbers in bold indicate detection limits

Table 4. Isocyanate emissions, Test 2.