



TSP EXCEEDANCE REPORT

MONITORING PERIOD

27-28TH NOVEMBER 2010

Revision	Prepared	Reviewed	Approved	Date	Description
1	M. Tarusello	C. Magana		29/12/2010	
2	M. Tarusello	C. Magana		30/12/2010	

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1. INTRODUCTION

The Esperance Port Sea and Land (ESPL) laboratory results from MPL Laboratories detailing the following dust concentrations;

- 91 µg TSP/m³ at site 1 from 1417 on the 27th of November 2010 to 1458 on the 28th of November 2010
- 95 µg TSP/m³ at site 4 from 1358 on the 27th of November 2010 to 1443 on the 28th of November 2010
- 100 µg TSP/m³ at site 1 from 1459 on the 28th of November 2010 to 1418 on the 29th of November 2010 and
- 98 µg TSP/m³ at site 4 from 1444 on the 28th of November 2010 to 1402 on the 29th of November 2010

This is in excess of ambient concentration targets for dust as TSP as referred to in **Table 1** below.

Table 1: Emission Concentration Targets from DEC Licence Number L5099/1974/12 issued to EPSL on 6 January 2009.

Emission	Ambient concentration target
Nickel in air	0.14 µg/m ³
Dust as PM ₁₀	50 µg/m ³
Dust as TSP	90 µg/m ³

EPSL received an interim laboratory report from MPL via email and officially became aware of the exceedance on the 23rd of December 2010. The interim Laboratory report was issued due to delays with the analysis of the PVC papers used in the trials EPSL have been conducting to analyse for total organic carbon in air via combustible dust analysis. A copy of the correspondence from MPL is attached as **Appendix A** detailing the reasons for the delayed results and the final laboratory report is also included as **Appendix B**.

1.1 Relocation of Site 4

EPSL relocated site 4 from Panorama Place to Bostock Street on the 3rd of November 2010. The owner of the property where the monitoring station Site 4 was located requested that the equipment be removed (**Figure 1**).

2. INVESTIGATION

2.1 Date and time of the exceedance

The recorded TSP concentration exceeded the emission concentration target (**Table 1**) according to the Licence L5099/1974/12 for the monitoring period of **1358 on the 27th of November 2010 to 1418 on the 29th of November 2010**. This will be referred to as the 'exceedance period'. The TSP values analysed by MPL laboratories for the High Volume Air Sampler (HVAS) were for the 27th to the 28th of November at:

- Site 1 - 91 µg/m³
- Site 4 - 95 µg/m³

And for the 28th to the 29th of November at:

- Site 1 - 100 µg/m³
- Site 4 - 98 µg/m³



Figure 1: Location of HVAS/TEOM monitoring sites 1 to 4, HVAS monitoring site 5.

2.2 Port Activities

The following shipping activities were occurring at the Port during the exceedance period:

- Marine Vessel (MV) Emma Bulker was alongside Berth 2 unloading Urea between 0542 hours on the 23rd to 1606 hours on the 27th of November 2010
- Marine Vessel (MV) CHS Bright was alongside Berth 3 loading Iron Ore Fines and Lump between 0048 hours on the 25th to 0918 hours on the 28th of November 2010
- Marine Vessel (MV) Frisia Aller was alongside Berth 2 unloading empty containers and loading Ni concentrate containers between 0818 hours on the 28th to 0548 hours on the 30th of November 2010

Other activities include:

- 53,356 tonnes of iron ore averaged across 6 trains delivered to the Port;
- 239 tonnes of nickel concentrate across 4 trucks delivered to Port in kibbles*.

2.3 Meteorological Activities

The prevailing wind directions during the exceedance period are shown in **(Figure 2)**. 14% of the wind was NE, 21% was ENE, 26% was E, 19% ESE, 15% SE. The highest hourly wind speed average for the period was 13.9 m/s blowing from an easterly direction between 1600 and 1700 hours on the 28th of November 2010, described as a strong wind in the 'Beaufort Wind Force Scale' (BOM 2010). For the exceedance period the average wind speed was 8.6 m/s (31 km/hr).

*Each truck can carry up to 8 kibbles which is a total of about 64 tonnes of product.

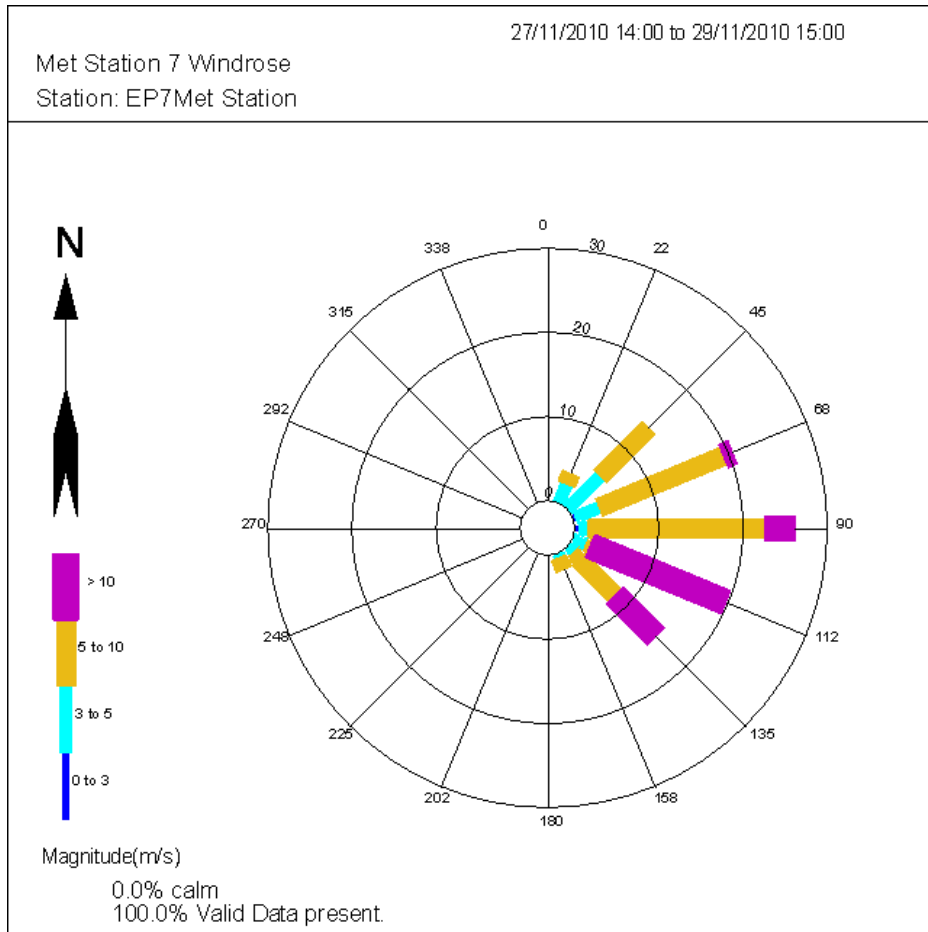


Figure 2: Wind rose for the monitoring period 1400 hrs 27/11/2010 to 1500 hrs 29/11/2010. Raw data source: EP7 monitoring station, Berth 3.

2.4 Reason for exceedance

The strong winds most conducive to causing dust during the exceedance period were from the E to ESE wind arc, putting the Esperance Port Beach and Berth 1 upwind of site 1 and CBH/Summit lease areas and the Ports' Shed 3 upwind of site 4.

The source of the dust for site 1 is likely to be the Esperance Port Beach since there was no ship loading activities taking place at Berth 1.

The source of dust for site 4 is likely to be from the Port as indicated by the wind direction but how much is attributed to the Port's unsealed surfaces (most of which have been treated for dust suppression) and other sources is not clearly defined.

Other activities that are deemed to be of minimal dust impact are Berth 2 loading and unloading containerised nickel, Berth 3 loading iron ore and as well as general Port traffic.

We are not aware of any unusual activity from CBH or Summit and are not aware of any dust management program from unsealed surfaces on these premises. As the landlord EPSL will request these companies commit to a dust management strategy for their non-sealed surfaces.

EPSL had implemented the watering down of the unsealed surfaces within the Port on the 25th and 26th of November and as it had rained 0.8ml on the 27th of November 2010 no further watering was deemed necessary for this day. The watering of the road would have helped reduce the dust impact and the residual dust binding agent used by the Port would have also helped reduce dust. The Port implemented dust control strategies by using the dust binding agent “Dustex” since the 26th of February 2010. The Port has applied several maintenance coats since this initial application and completed another application of the dust binding agent Dustex on the 1st December 2010.

Iron ore and nickel concentrates did not contribute significantly to TSP exceedance at Site 1 and 4 given:

- Fe varied only from 1.4% to 2.3% of total TSP
- Nickel varied only from 0.01% to 0.02% of total TSP and, no bulk nickel concentrate ship loading occurred.

3. CONCLUSIONS

The TSP exceedences at site 1 of 91 and 100 $\mu\text{g}/\text{m}^3$ between 27/11/2010 and 29/11/2011 are likely to have resulted from “strong” (>10 m/s) easterly winds, mobilising dust from the Esperance Port Beach area. The TSP exceedences at site 4 of 95 and 98 $\mu\text{g}/\text{m}^3$ between 27/11/2010 and 29/11/2011 are likely to have resulted from “strong” (>10 m/s) east south-easterly winds, mobilising dust from the unsealed surfaces between EPSL areas local to iron ore Shed 3, the Summit and CBH lease areas.

EPSL already has a dust management strategy on its unsealed areas. EPSL will endeavour to pursue lessees (CBH and Summit) to request that a dust management strategy be implemented on non-sealed surfaces by CBH and Summit, the occupiers of their respective lease areas.

APPENDIX A MPL EMAIL CORRESPONDENCE

Delay of results

Monika Buerger [mbuerger@mpl.com.au]

You forwarded this message on 24/12/2010 9:47 AM.

To: Claudia Magana

Hi Claudia,

The on the COC requested TAT of 48hrs cannot be met for routinely received batches of high volume filters. This TAT needs to be agreed on in each case. Generally, the usual TAT is 4-5 working days due to booking the job in, 24 hrs conditioning of the filters, repeatedly weighing of the filters in a 2hrs time frame, preparation, digesting, analysing and reporting.

The majority of the 24 filters received on Monday 13/12/10 were analysed on Friday 17/12/10.

The analysis request for 6 filters of this batch was also for total organic carbon analysed as combustible dust. This procedure delays the analysis by up to 1-2 days. The metal analysis can only be carried out after the analysis for combustible dust is finalised.

Unfortunately, we experienced problems with the ICP when the preparation and digest of these filters were carried out.

Additional factors for the delay of the report were staff shortage in the week 13-16/12/10, lack of experience with the new filter type and extremely high workload at this time of the year.

An Interim Report could have been sent earlier but had not been considered. We apologise.

Kind regards

Monika Buerger
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Thank you.

APPENDIX B MPL LABORATORY REPORT



Part of the EnviroLab Group



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 EnviroLab Services (WA) Pty Ltd ABN 53 140 099 207

CERTIFICATE OF ANALYSIS 107709

Client:
Esperance Ports - Sea and Land
 PO Box 35
 Esperance
 WA 6460

Attention: C Magana

Sample log in details:

Your Reference: **Dust Analysis**
 No. of samples: **24 High Volume Filters**
 Date samples received: **13/12/10**
 Date completed instructions received: **14/12/10**
 Location:

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
 Samples were analysed as received from the client. Results relate specifically to the samples as received.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: **21/12/10**
 Date of Preliminary Report: **23/12/10**
 Issue Date: **29/12/10**

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Results Approved By:


 Dr Monika Berger
 Supervisor - Micro, Asbestos, Dust

Client Reference: Dust Analysis

Combustible Dust	UNITS	PQL	107709-19	107709-20	107709-21	107709-22	107709-23
Your Reference:	--	--	PVCHV6	PVCHV7	PVCHV8	PVCHV9	PVCHV10
Location	--	--	Site 4	Site 3	Site 2	Site 4	Site 3
Date Sampled			27/11/10	27/11/10	27/11/10	30/11/10	30/11/10
Dust	mg/liter	0.1	160	77	69	110	110
Dust in Air	mg/m ³	0.1	95	47	42	70	69
Combustible Dust	mg/liter	0.1	106	62	17	55	58
Combustible Dust in Air	µg/liter	0.1	64	3.8	11	36	38
Iron	µg/liter	20	2,300	2,600	2,600	1,800	1,700
Iron in Air	µg/m ³	0.01	1.4	1.6	1.6	1.2	1.1
Nickel	µg/liter	5	18	20	24	20	12
Nickel in Air	µg/m ³	0.002	0.010	0.010	0.010	0.010	0.010
Lead	µg/liter	5	<5.0	<5.0	<5.0	<5.0	<5.0
Lead in Air	µg/m ³	0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Lithium	µg/liter	5	<5.0	9.0	<5.0	<5.0	8.0
Lithium in Air	µg/m ³	0.002	<0.002	0.010	<0.002	<0.002	0.010
Sulfur	µg/liter	50	460	420	380	480	320
Sulfur in Air	µg/m ³	0.03	0.28	0.26	0.23	0.31	0.21

Combustible Dust	UNITS	PQL	107709-24	107709-26
Your Reference:	--	--	PVCHV11	Lab Blank (PVC filter)
Location	--	--	Site 2	
Date Sampled			30/11/10	
Dust	mg/liter	0.1	100	[N/A]
Dust in Air	mg/m ³	0.1	64	[N/A]
Combustible Dust	mg/liter	0.1	42	[N/A]
Combustible Dust in Air	µg/liter	0.1	27	[N/A]
Iron	µg/liter	20	2,300	NA
Iron in Air	µg/m ³	0.01	1.5	[N/A]
Nickel	µg/liter	5	25	<5.0
Nickel in Air	µg/m ³	0.002	0.020	[N/A]
Lead	µg/liter	5	<5.0	<5.0
Lead in Air	µg/m ³	0.003	<0.003	[N/A]
Lithium	µg/liter	5	<5.0	<5.0
Lithium in Air	µg/m ³	0.002	<0.002	[N/A]
Sulfur	µg/liter	50	310	67
Sulfur in Air	µg/m ³	0.03	0.20	[N/A]

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Client Reference: Dust Analysis

Metals in High Volume Filters	UNITS	PQL	107709-1	107709-2	107709-3	107709-4	107709-5
Our Reference:	--	--	EAP 163	EAP 164	EAP 165	EAP 166	EAP 167
Your Reference:	--	--	Site 1	Site 5	Blank	Site 4	Site 3
Location:	--	--	27/11/10	27/11/10		28/11/10	28/11/10
Date Sampled							
Dust	mg/liter	0.1	150	64	4.4	150	96
Dust in Air	µg/m ³	0.1	91	39	[NA]	98	63
Iron	µg/liter	20	3,500	820	220	2,800	3,000
Iron in Air	µg/m ³	0.01	2.1	0.50	[NA]	1.8	1.9
Nickel	µg/liter	5	15	<5.0	<5.0	25	22
Nickel in Air	µg/m ³	0.002	0.010	<0.002	[NA]	0.020	0.010
Lead	µg/liter	5	5.8	<5.0	<5.0	5.8	5.8
Lead in Air	µg/m ³	0.003	<0.003	<0.003	[NA]	<0.003	<0.003
Lithium	µg/liter	5	7.0	<5.0	<5.0	5.0	6.0
Lithium in Air	µg/m ³	0.002	<0.002	<0.002	[NA]	<0.002	<0.002
Sulfur	µg/liter	50	3,300	1,500	670	4,900	2,900
Sulfur in Air	µg/m ³	0.03	2.0	0.93	[NA]	3.2	1.9

Metals in High Volume Filters	UNITS	PQL	107709-6	107709-7	107709-8	107709-9	107709-10
Our Reference:	--	--	EAP 168	EAP 169	EAP 170	EAP 171	EAP 172
Your Reference:	--	--	Site 2	Site 1	Site 5	Blank	Site 4
Location:	--	--	28/11/10	28/11/10	28/11/10		29/11/10
Date Sampled							
Dust	mg/liter	0.1	98	150	67	4.9	120
Dust in Air	µg/m ³	0.1	64	100	43	[NA]	72
Iron	µg/liter	20	2,800	2,800	790	270	3,200
Iron in Air	µg/m ³	0.01	1.9	1.8	0.51	[NA]	1.9
Nickel	µg/liter	5	27	16	<5.0	<5.0	26
Nickel in Air	µg/m ³	0.002	0.020	0.010	<0.002	[NA]	0.020
Lead	µg/liter	5	7.8	5.2	<5.0	<5.0	5.0
Lead in Air	µg/m ³	0.003	0.010	<0.003	<0.003	[NA]	<0.003
Lithium	µg/liter	5	5.0	6.0	<5.0	<5.0	6.0
Lithium in Air	µg/m ³	0.002	<0.002	<0.002	<0.002	[NA]	<0.002
Sulfur	µg/liter	50	2,900	1,900	1,600	700	4,600
Sulfur in Air	µg/m ³	0.03	1.9	1.2	1.0	[NA]	2.7

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Client Reference: Dust Analysis

Metals in High Volume Filters	UNITS	PQL	107709-11	107709-12	107709-13	107709-14	107709-15
Our Reference:	--	--	EAP 173	EAP 174	EAP 175	EAP 176	EAP 177
Your Reference:	--	--	Site 3	Site 2	Site 1	Site 5	Blank
Location:	--	--	29/11/10	29/11/10	29/11/10	29/11/10	
Date Sampled							
Dust	mg/liter	0.1	73	90	89	66	2.7
Dust in Air	µg/m ³	0.1	44	55	54	41	[NA]
Iron	µg/liter	20	1,800	2,200	2,100	1,300	250
Iron in Air	µg/m ³	0.01	1.1	1.3	1.3	0.78	[NA]
Nickel	µg/liter	5	12	26	9.8	<5.0	<5.0
Nickel in Air	µg/m ³	0.002	0.010	0.020	0.010	<0.002	[NA]
Lead	µg/liter	5	<5.0	<5.0	<5.0	<5.0	<5.0
Lead in Air	µg/m ³	0.003	<0.003	<0.003	<0.003	<0.003	[NA]
Lithium	µg/liter	5	<5.0	5.0	5.0	<5.0	<5.0
Lithium in Air	µg/m ³	0.002	<0.002	<0.002	<0.002	<0.002	[NA]
Sulfur	µg/liter	50	2,300	3,300	2,500	1,400	890
Sulfur in Air	µg/m ³	0.03	1.4	2.0	1.5	0.87	[NA]

Metals in High Volume Filters	UNITS	PQL	107709-16	107709-17	107709-18	107709-25
Our Reference:	--	--	EAP 178	EAP 179	EAP 180	Lab Blank (glass fibre filter)
Your Reference:	--	--	Site 1	Site 5	Blank	
Location:	--	--	30/11/10	30/11/10		
Date Sampled						
Dust	mg/liter	0.1	59	53	0.50	[NA]
Dust in Air	µg/m ³	0.1	38	33	[NA]	[NA]
Iron	µg/liter	20	920	620	220	250
Iron in Air	µg/m ³	0.01	0.58	0.39	[NA]	[NA]
Nickel	µg/liter	5	<5.0	<5.0	<5.0	<5.0
Nickel in Air	µg/m ³	0.002	<0.002	<0.002	[NA]	[NA]
Lead	µg/liter	5	<5.0	<5.0	<5.0	<5.0
Lead in Air	µg/m ³	0.003	<0.003	<0.003	[NA]	[NA]
Lithium	µg/liter	5	<5.0	<5.0	<5.0	<5.0
Lithium in Air	µg/m ³	0.002	<0.002	<0.002	[NA]	[NA]
Sulfur	µg/liter	50	1,400	1,300	660	800
Sulfur in Air	µg/m ³	0.03	0.86	0.84	[NA]	[NA]

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Method ID	Methodology Summary
WILA B4	Airborne samples analysed according to AS 2985 for Respirable Dust or AS 3640 for Inhalable Dust. Sample results based on volume data supplied by client. Samples tested as received, accreditation does not cover sampling.
WILA B17	Metals in soil and water by ICP-OES.

Report Comments:

INS: Insufficient sample for this test; NT: Not tested; PQL: Practical Quantitation Limit; <: Less than; >: Greater than
 RPD: Relative Percent Difference; NA: Test not required; LCS: Laboratory Control Sample; NR: Not requested
 NS: Not specified; NEPM: National Environmental Protection Measure
 DOL: Sample rejected due to particulate overload

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spike and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and Speciated Phenols is acceptable.

Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and Speciated Phenols.

APPENDIX C DAILY WINDROSE

