



Licensee: Perilya Broken Hill Limited

Environmental Protection Licenses: 2688 and 2683

Locations: Southern, Northern and Potosi Operations

Dust and Lead Monitoring Using Dust Gauges and High Volume Air Sampler

Methods

Dust Gauges

Nineteen, Standard Deposit Dust Gauges (SDDG) have been placed at strategic locations around Broken Hill. These gauges monitor dust and lead for a maximum of 31 days, at which time the matter collected in the bottles is analysed by a NATA accredited laboratory. This method of sample collection is consistent with the Australian/New Zealand Standard: AS/NZS 3580.10.1:2003.

SDDG are used primarily to establish long term trends and to investigate localised dust fall. The sample collected is not restricted in particle size, everything that falls within the funnel reports to the collection bottle. This dust is categorised as nuisance dust. This procedure has been widely used in Australia for over 40 years. The data collected using SDDG is not directly comparable to data obtained with High Volume Air Samplers (Standards Australia 2003) because the SDDG is assessing nuisance dust whereas the High Volume Air Samplers collect dust of a much smaller micron that has different health impacts.

In accordance with EPLs 2688 and 2683 the upper limit for dust levels on an annual basis is $6\text{g/m}^2/\text{month}$. The following report shows monthly results as well as annual reportable levels of dust levels. Analysis of results on a monthly or weekly basis per site can show isolated occurrences of elevated levels however this data is reported upon annually. Isolated occurrences of elevated levels require attention but must be considered on an annual basis.

High Volume Air Sampler

Four High Volume Air Samplers (HiVol) are placed within the Southern, Northern and Potosi Operations to allow assessment of dust and associated lead levels. The HiVols collect a sample of air during a 24 hour period every sixth day and is designed to collect all particles less than $50\mu\text{m}$. The sample collected is heavily influenced by weather conditions and nearby activities.

This sampling method is consistent with the Australian/New Zealand Standard: AS/NZS 3580.9.3:2003.

In accordance with EPLs 2688 and 2683 the reportable annual averaged level of lead is $0.5\mu\text{g}/\text{m}^3$ and total suspended particulates (TSP) is $90\mu\text{g}/\text{m}^3$. This report presents all data collected during the month, at times levels may be elevated due to isolated occurrences however the results are assessed on an annual basis as per the National Environment Protection Council requirements. Perilya has been advised to report these incidences to the EPA although the measurement of TSP, dust and lead is on an annual basis rather than monthly. Given this advice, it is reasonable to expect that levels will occasionally be elevated while not being in breach of licence conditions.

High Volume Air Sampling

Samples submitted for analysis: 02/05/2012

Results received: 04/06/2012

Sampling Point	Method	Monitoring frequency required by licence	Sampling Dates	Pollutant	Unit	Limit	Measurement		
12	High Volume Air Sampler	6 day cycles	1.5.12	Total suspended particulates	µg/m ³	90	37		
			7.5.12	Total suspended particulates	µg/m ³	90	26		
			13.5.12	Total suspended particulates	µg/m ³	90	25		
			19.5.12	Total suspended particulates	µg/m ³	90	21		
			25.5.12	Total suspended particulates	µg/m ³	90	46		
			31.5.12	Total Lead	µg/m ³	0.5	0		
			1.5.12	Total Lead	µg/m ³	0.5	0.4		
			7.5.12	Total Lead	µg/m ³	0.5	0.1		
			13.5.12	Total Lead	µg/m ³	0.5	0.4		
			19.5.12	Total Lead	µg/m ³	0.5	0.2		
			25.5.12	Total Lead	µg/m ³	0.5	0.5		
			31.5.12	Total Lead	µg/m ³	0.5	0.0		
			Averaged reporting period required by National Environment Protection Council						
		Annual	May 2011 - May 2012	Total Lead	µg/m ³	0.5	0.2		

Observations:

Elevated levels were not recorded during May 2012.

High Volume Air Sampling

Samples submitted for analysis: 02/05/2012

Results received: 04/06/2012

Sampling Point	Method	Monitoring frequency required by licence	Sampling Dates	Pollutant	Unit	Limit	Measurement		
13	High Volume Air Sampler	6 day cycles	1.5.12	Total suspended particulates	µg/m ³	90	65		
			7.5.12	Total suspended particulates	µg/m ³	90	34		
			13.5.12	Total suspended particulates	µg/m ³	90	12		
			19.5.12	Total suspended particulates	µg/m ³	90	23		
			25.5.12	Total suspended particulates	µg/m ³	90	31		
			31.5.12	Total suspended particulates	µg/m ³	90	15		
			1.5.12	Total Lead	µg/m ³	0.5	1.5		
			7.5.12	Total Lead	µg/m ³	0.5	0.3		
			13.5.12	Total Lead	µg/m ³	0.5	0.0		
			19.5.12	Total Lead	µg/m ³	0.5	0.1		
			25.5.12	Total Lead	µg/m ³	0.5	0.1		
			31.5.12	Total Lead	µg/m ³	0.5	0.2		
			Averaged reporting period required by National Environment Protection Council						
		Annual	May 2011 - May 2012	Total Lead	µg/m ³	0.5	0.2		

Observations:

Elevated results of lead were recorded on 01/05/2012 at sample point 13. This day was the hottest for the month and there had been northerly winds on this day and the day before that would have deposited dust on the road. This dust would have originated from the mine and the surrounds which contain lead within the dust. Sample point 13 is located nearby to a road that is highly used by heavy trucks. Their movement on the roads also creates dust which is recorded by the sampler.

High Volume Air Sampling

Samples submitted for analysis: 02/05/2012

Results received: 04/06/2012

Sampling Point	Method	Monitoring frequency required by licence	Sampling Dates	Pollutant	Unit	Limit	Measurement
26	High Volume Air Sampler	6 day cycles	1.5.12	Total suspended particulates	µg/m ³	90	35
			7.5.12	Total suspended particulates	µg/m ³	90	21
			13.5.12	Total suspended particulates	µg/m ³	90	13
			19.5.12	Total suspended particulates	µg/m ³	90	18
			25.5.12	Total suspended particulates	µg/m ³	90	27
			31.5.12	Total Lead	µg/m ³	0.5	0
			1.5.12	Total Lead	µg/m ³	0.5	0.1
			7.5.12	Total Lead	µg/m ³	0.5	0.0
			13.5.12	Total Lead	µg/m ³	0.5	0.1
			19.5.12	Total Lead	µg/m ³	0.5	0.1
			25.5.12	Total Lead	µg/m ³	0.5	0.2
			31.5.12	Total Lead	µg/m ³	0.5	0.0
		Averaged reporting period required by National Environment Protection Council					
		Annual	May 2011 - May 2012	Total Lead	µg/m ³	0.5	0.1

Observations:

Elevated levels were not recorded during May 2012.

High Volume Air Sampling

Samples submitted for analysis: 02/05/2012

Results received: 04/06/2012

Sampling Point	Method	Monitoring frequency required by licence	Sampling Dates	Pollutant	Unit	Limit	Measurement		
27	High Volume Air Sampler	6 day cycles	1.5.12	Total suspended particulates	µg/m ³	90	81		
			7.5.12	Total suspended particulates	µg/m ³	90	55		
			13.5.12	Total suspended particulates	µg/m ³	90	10		
			19.5.12	Total suspended particulates	µg/m ³	90	16		
			25.5.12	Total suspended particulates	µg/m ³	90	18		
			31.5.12	Total suspended particulates	µg/m ³	90	12		
			1.5.12	Total Lead	µg/m ³	0.5	0.5		
			7.5.12	Total Lead	µg/m ³	0.5	0.1		
			13.5.12	Total Lead	µg/m ³	0.5	0.0		
			19.5.12	Total Lead	µg/m ³	0.5	0.1		
			25.5.12	Total Lead	µg/m ³	0.5	0.0		
			31.5.12	Total Lead	µg/m ³	0.5	0.0		
			Averaged reporting period required by National Environment Protection Council						
		Annual	May 2011 - May 2012	Total Lead	µg/m ³	0.5	0.1		

Observations:

Elevated levels were not recorded during May 2012.

Dust Gauge Sampling Monthly Results

Point no.	Month	Monitoring frequency	No. of days of exposure	Deposited Dust (g/m ² /month)	Total Lead (g/m ² /month)
4	May-12	Monthly	28	NR	NR
5	May-12	Monthly	28	3.4	0.004
6	May-12	Monthly	28	1.3	0.007
7	May-12	Monthly	28	NR	NR
8	May-12	Monthly	28	NR	NR
8	May-12	Monthly	28	NR	NR
8	May-12	Monthly	28	2.6	0.010
9	May-12	Monthly	28	3.0	0.007
10	May-12	Monthly	28	5.1	0.002
11	May-12	Monthly	28	0.3	0.002
15	May-12	Monthly	28	1.1	<0.001
16	May-12	Monthly	28	3.9	<0.001
17	May-12	Monthly	28	0.9	<0.001
18	May-12	Monthly	28	0.7	<0.001
19	May-12	Monthly	28	1.6	<0.001
20	May-12	Monthly	28	< 0.1	0.001
21	May-12	Monthly	28	0.5	<0.001
22	May-12	Monthly	28	1.6	0.005
23	May-12	Monthly	28	0.7	0.002
24	May-12	Monthly	28	4.0	0.002
25	May-12	Monthly	28	< 0.1	<0.001

NR: No result due to bottles being smashed in transit for analysis

Observations:

Elevated levels were not recorded during May 2012.

Dust Gauge Sampling Annual Average

Point no.	Reporting frequency	Averaged Deposited Dust (g/m ² /12 month period)	Averaged Lead (g/m ² /12 month period)
4	Annual	1.6	0.021
5	Annual	3.1	0.008
6	Annual	1.45	0.004
7	Annual	1.36	0.014
8	Annual	2.97	0.014
9	Annual	4.29	0.008
10	Annual	4.78	0.007
11	Annual	1.74	0.026
15	Annual	5.4	0.073
16	Annual	3.41	0.064
17	Annual	1.81	0.033
18	Annual	2.08	0.051
19	Annual	2.77	0.031
20	Annual	1.92	0.059
21	Annual	2.48	0.039
22	Annual	0.68	0.012
23	Annual	0.1	0.038
24	Annual	1.5	0.004
25	Annual	1.88	0.021

Observations:

The period of 2011- May 2012 has not resulted in elevated levels.