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DRAFT

Report Number R007621[DRAFT]

**Workplace Testing Report
Clingcast Metals Pty Ltd, Kirrawee**

Document Information

Client Name: Clingcast Metals Pty Ltd
 Report Number: R007621[DRAFT]
 Date of Issue: 24 June 2019
 Attention: Paul Clingan
 Address: 98 Bath Rd
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 Testing Laboratory: Ektimo Pty Ltd, ABN 86 600 381 413

Report Status

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Ryan Collins
 Client Manager

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1 EXECUTIVE SUMMARY

1.1 Overview

Ektimo was engaged by Clingcast Metals, Kirrawee site to perform workplace monitoring to determine airborne concentrations of Inhalable Dusts Not Otherwise Classified (DNOC) that are of low toxicity, and Metals associated with the foundry process.

Ektimo performed personal monitoring on 3 staff members with testing conducted during the daytime 8-hour shift while they were performing normal duties as follows:

Location	Test Date	Test Parameters
Mouldings Operator	22 May 2019	Inhalable dust, metals
Mouldings and Pouring Operator		
Foundry Operator		

Results were compliant with the relevant workplace exposure standard (WES) and/or Australian Institute of Occupational Hygienists trigger level at the time of sampling.

2 REPORT LIMITATIONS

Air monitoring has its limitations when determining risks from airborne contaminants. Concentrations can vary from day to day and with different tasks/processes. Also, the sample numbers obtained in this report are not numerous enough to obtain powerful statistical significance.

This report's scope is only inhalable dusts of low toxicity and metals. It **does not** consider other possible airborne contaminants that may be present in this workplace.

3 RELEVANT LEGISLATION

3.1 Work Health and Safety Act, 2011

Who has what duties regarding workplace noise exposures?

Officers (as defined in section 9 of the *Corporations Act 2001*) have the duty to show due diligence in matters relating to health and safety. They must ensure that the company complies with the WHS Act and applicable regulations ensuring that the business allocates reasonable resources to eliminate or minimise risks from noise exposure.

Workers must take reasonable care for the health and safety of themselves and others. They must comply with all reasonable instructions, policies and procedures that relate to health and safety.

Section 19 of the *Work Health and Safety Act, 2011* outlines the primary duty of care for the **Person conducting a business or undertaking (PCBU)** to ensure the health and safety of everyone including visitors so far as is reasonably practicable.

Section 274 of the Act notes the use of approved codes of practice and industry standards. Recommendations and guidance material contained in these documents are deemed to be industry best practice and must be adhered to as far as is reasonably practicable.

3.2 Work Health and Safety Regulation, 2017

Section 35 of *the Regulation* requires the PCBU to "eliminate risks to health and safety so far as is reasonably practicable" and "if it is not reasonably practicable to eliminate risks to health and safety— minimize those risks so far as is reasonably practicable". Section 36 of *the Regulation* requires the PCBU to reduce the risk from hazards as far as reasonably practicable by using the hierarchy of controls if the hazard cannot 'reasonably' be eliminated.

4 WORKPLACE EXPOSURE STANDARDS

4.1 Safe Work Australia – 8-hour Time Weighted Average

Test results are compared to SafeWork Australia Workplace Exposure Standards of airborne contaminants. Specifically, the relevant 8-hour Time Weighted Average (TWA) WES expressed as the airborne concentrations of that substance. This document can be found at:

<http://hcis.safeworkaustralia.gov.au/ExposureStandards>

The TWA is a “maximum average airborne concentration of a substance when calculated over an eight-hour working day, for a five-day working week” (Safe Work Australia 2013). Regarding exposure patterns: it is permitted to exceed the TWA during the work shift, as long as there is sufficient time below the TWA to not exceed the total 8 hour average value. If there is a TWA and a STEL value for the substance, the STEL value must also be observed.

Regarding inhalable dusts, there is no specific exposure standard listed in the hazardous chemical information system (HCIS). However, Safe Work Australia have provided additional guidance in the document: “Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants” (Safe Work Australia 2013). This document lists an exposure standard for dust not otherwise specified, on the provision that the dust **does not** contain other hazardous components that have a lower workplace exposure standard, such as respirable crystalline silica. This report **does not** consider other hazardous components that are likely to exist in this workplace. Therefore, Ektimo recommends monitoring for respirable crystalline silica (RCS) and volatile organic compounds in the future.

All results are corrected to STP (standard conditions of temperature and pressure) i.e. 25°C and an atmospheric pressure of 101.325 kPa, unless otherwise specified.

4.2 AIOH Trigger Levels

The Safe Work Australia workplace exposure standards should not be viewed as a definitive line between safe and unsafe workplace atmospheres, and for this purpose trigger levels (that are set at 50% of the relevant workplace exposure standard) should initiate the implementation of control measures to prevent any future increases in airborne contaminant concentrations. The AIOH have recommended that a 5mg/m³ (8 hour time weighted average) for inhalable dust concentration levels should be used to protect worker health and prevent serious health effects (Australian Institute of Occupational Hygienists (AIOH) 2014).

5 WORKPLACE EXPOSURE STANDARD COMPARISON

The table below shows the test results for each tested parameter, at each location compared with the relevant 8 hour time weighted average workplace exposure standard.

All analytes highlighted in **green** are below the 8 hour time weighted average exposure standard or AIOH trigger level for inhalable dusts not otherwise specified (and of low solubility and toxicity).

Contaminant	Units	TWA	AIOH Trigger Level	Mouldings Operator	Mouldings & Pouring Operator	Foundry Operator
				Feng Shusen Detected Values 22/05/19	Martin Fisher Detected Values 22/05/19	Corey Martin Detected Values 22/05/19
Inhalable dust (DNOC)	mg/m ³	10	5	1.8	1.4	1.1
Antimony	mg/m ³	0.5	-	<0.0057	<0.0057	<0.0059
Arsenic	mg/m ³	0.05	-	<0.0023	<0.0023	<0.0024
Beryllium	mg/m ³	0.002	-	<0.00057	<0.00057	<0.00059
Cadmium	mg/m ³	0.01	-	<0.00057	<0.00057	<0.00059
Chromium	mg/m ³	0.5	-	<0.00057	<0.00057	<0.00059
Cobalt	mg/m ³	0.05	-	<0.00057	<0.00057	<0.00059
Lead	mg/m ³	0.05	-	0.0034	0.0034	0.018
Manganese	mg/m ³	1	-	0.0011	0.0023	0.0081
Nickel	mg/m ³	1	-	<0.0011	<0.0011	<0.0012
Selenium	mg/m ³	0.1	-	<0.0057	<0.0057	<0.0059
Tin	mg/m ³	2	-	<0.0023	<0.0023	0.0035
Vanadium (Vanadium Pentoxide as V)	mg/m ³	0.05	-	<0.0011	<0.0011	<0.0012

6 RESULTS

Date	22/05/2019	Client	Clingcast Metals
Report	R007621	Site ID	Moulding Foundry, 98 Bath Rd
Licence No.	-	Location	Kirawee State NSW
Ektimo Staff	Ryan Collins, Aaron Davis, Hamish Proust		
Process Conditions	Morning: Copper Furnace, Afternoon: Cast Iron Furnace		

Inhalable Dust (DNOS)	Mouldings Operator Feng Shusen	Moulding and Pouring Operator Martin Fisher	Foundry Operator Corey Martin
Date	22/05/19	22/05/19	22/05/19
Start/End time	0832-1533	0828-1527	0843-1529
Sample period (min)	421	419	406
	Concentration mg/m ³	Concentration mg/m ³	Concentration mg/m ³
Inhalable Dust (DNOS)	1.8	1.4	1.1

Metals	Mouldings Operator Feng Shusen	Moulding and Pouring Operator Martin Fisher	Foundry Operator Corey Martin
Date	22/05/19	22/05/19	22/05/19
Start/End time	0832-1533	0828-1527	0843-1529
Sample period (min)	421min	419 min	406 min
	Concentration mg/m ³	Concentration mg/m ³	Concentration mg/m ³
Antimony	<0.0057	<0.0057	<0.0059
Arsenic	<0.0023	<0.0023	<0.0024
Beryllium	<0.00057	<0.00057	<0.00059
Cadmium	<0.00057	<0.00057	<0.00059
Chromium	<0.00057	<0.00057	<0.00059
Cobalt	<0.00057	<0.00057	<0.00059
Lead	0.0034	0.0034	0.018
Manganese	0.0011	0.0023	0.0081
Nickel	<0.0011	<0.0011	<0.0012
Selenium	<0.0057	<0.0057	<0.0059
Tin	<0.0023	<0.0023	0.0035
Vanadium	<0.0011	<0.0011	<0.0012

7 TEST METHODS

Parameter	Sampling Method	Analysis Method	NATA Accredited	
			Sampling	Analysis
Inhalable Dust	AS 3640-2009	AS 3640-2009	x	x [†]
Metals	AS 3853.1—2006	Envirolab inhouse Metals-006, Metals-022, Metals-021	x	√ [‡]

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[†] Analysis performed by Ektimo, NATA accreditation number 14601. Laboratory analytical results were reported on 3 June 2019 in report number R007621-Inhalable dust.

[‡] Analysis performed by Envirolab, NATA accreditation number 2901. Results were reported to Ektimo on 12 June 2019 in report number 218996.

8 QUALITY ASSURANCE/ QUALITY CONTROL INFORMATION

A formal Quality Control program is in place at Ektimo to monitor analyses performed in the laboratory and sampling conducted in the field. The program is designed to check where appropriate; the sampling reproducibility, analytical method, accuracy, precision and the performance of the analyst. The Laboratory Manager is responsible for the administration and maintenance of this program.

9 DEFINITIONS

The following symbols and abbreviations may be used in this test report:

NIOSH	The National Institute for Occupational Safety and Health
RPE	Respiratory Protective Equipment
PPE	Personal Protective Equipment
Peak Limitation	For some rapidly acting substances and irritants, the averaging of the airborne concentration over an eight-hour period is inappropriate. These substances may induce acute effects after relatively brief exposure to high concentrations and so the exposure standard for these substances represents a maximum or peak concentration to which workers may be exposed. Although it is recognised that there are analytical limitations to the measurement of some substances, compliance with these 'peak limitation' exposure standards should be determined over the shortest analytically practicable period of time, but under no circumstances should a single determination exceed 15 minutes.
STEL	(Exposure Standard - Short term exposure limit) expressed as airborne concentrations of substances, provides a guideline for which the worker should not be continuously exposed to for more than 15 minutes. A minimum of 60 minutes should be allowed between each exposure and the worker should not be exposed more than four times during the day. Reference: Exposure Standards for Atmospheric Contaminants in the Occupational Environment, 3rd Ed. Worksafe Australia Standard, May 1995.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 25°C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa, unless otherwise specified.
TWA	(Exposure Standard - Time Weighted Average) expressed as airborne concentrations of substances, is an average concentration which provides a guideline value a worker should not be exposed to over an eight hour working day. Excursions above this value are permitted (within STEL limitations) providing these excursions are compensated with equivalent excursions below the standard during the working day. However, because some substances can give rise to acute health effects even after brief exposures to high concentrations, it is evident that excursions above the TWA concentration should be restricted. Reference: Exposure Standards for Atmospheric Contaminants in the Occupational Environment, 3rd Ed. Worksafe Australia Standard, May 1995.
WES	Workplace Exposure Standard.

10 REFERENCES

Australian Institute of Occupational Hygienists (AIOH) 2014, *AIOH position paper on dusts not otherwise specified (DUST NOS) and potential for occupational health issues*, Australian Institute of Occupational Hygienists.
Safe Work Australia 2013, *Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants*, <https://www.safeworkaustralia.gov.au/system/files/documents/1705/guidance-interpretation-workplace-exposure-standards-airborne-contaminants-v2.pdf>