

**HSE**

**ELT RECYCLING, BURTON, SA**

**INHALABLE AND COMBUSTIBLE (RUBBER) DUST  
MONITORING**

**HJ.213548.SAa**

**October 2024**

Health Safety Environment Australia Pty Ltd

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17 October 2024

Reference No: HJ.213548.SAa

Joe Pedicini  
Principal Consultant  
Environmental Projects  
Level 3, 117 King William Street, Adelaide, SA 5000

Email: [Joe.Pedicini@environmentalprojects.au](mailto:Joe.Pedicini@environmentalprojects.au)

Dear Joe,

**INHALABLE AND COMBUSTIBLE (RUBBER) DUST MONITORING FOR END-OF-LIFE  
TYRE SOLUTIONS, BURTON, SA.**

Thank you for the opportunity to provide consultancy services for End-of-Life Tyre (ELT) Recycling.

The positional inhalable and combustibile (rubber) dust monitoring report conducted at End-of-Life Tyre (ELT) Recycling, Burton, SA is attached for your reference.

Should you have any queries regarding this work, please don't hesitate to contact us.

Yours sincerely,



Prepared by: Mr. Alex Corbally-Vaselli  
Occupational Hygiene Consultant  
Occupational Hygiene & Risk Management  
BSc (Psychological Science)



Reviewed by: Dr. Michael Tkaczuk  
Principal Occupational Hygienist  
BSc(Hons) PhD, Grad Dip Occup Health MAIOH COH

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## 1. INTRODUCTION

Health Safety Environment Australia Pty Ltd was requested by Joe Pedicini, Principal Consultant of 'Environmental Projects' to carry out positional inhalable dust, and combustible dust monitoring for the tyre recycling facility, ELT Recycling, located at 2 -12 Hookina Road Burton, SA. This was requested as a result of Environmental Protection Agency (SA EPA) having concerns of fugitive rubber dust escaping the open west end of Warehouse B during tyre shredding processes. The monitoring was undertaken on the 5<sup>th</sup> September 2024, 24<sup>th</sup> and 26<sup>th</sup> of September 2024 by Mr. Alex Corbally-Vaselli, Occupational Hygiene Consultant for Health Safety Environment Australia.

The combustible fraction of dust measures the portion of the material that can ignite and burn when exposed to heat, which is particularly relevant for organic materials such as rubber. Rubber dust, when airborne in sufficient concentrations, can behave similarly to other combustible dusts, posing significant safety hazards, making this type of sampling essential for assessing environmental risks, explosion risks and ensuring compliance with environmental and safety regulatory requirements.

## 2. SCOPE OF WORK

Health Safety Environment Australia provided an Occupational Hygiene Consultant who undertook the following scope of work during normal operations, this included:

### **Inhalable and Combustible (Rubber) Dust Monitoring:**

- Mobilise/Demobilise to the Burton site.
- Undertake positional inhalable and combustible dust monitoring at perimeter locations of Warehouse B where tyre shredding process takes place.
- The monitoring was repeated over three workdays, covering a majority of the work shift.
- Allowances will be made for up to two (2) field blanks per batch, resulting in a total of six samples and 2 blanks over the three sample days.

This report was prepared, and details the monitoring methods, observations of work practices at the site including the interpretation of the inhalable dust, and combustible dust (rubber dust) results with respect to level of risk.

### **3. SAMPLING METHODOLOGY**

All sampling and assessment work was undertaken in accordance with the relevant Australian Standards and state regulatory requirements.

#### **3.1 Inhalable and Combustible Dust Monitoring**

Inhalable dust and combustible dust samples will be collected following the requirements of AS3640-2009. SKC personal air-sampling pumps are set at a flow rate of 2.0 +/- 0.2 L/min with the air sample drawn through IOM inhalable dust sampling heads containing a pre-weighed (5.0 µm nominal pore size) 25 mm 5 µm PVC filter. Flow rates were checked prior to, and at the completion of the sampling period using a calibrated rotameter. Results will be determined gravimetrically at MPL Laboratories NATA accredited Perth laboratory under a chain of custody.

### **4. BACKGROUND INFORMATION**

#### **4.1. Inhalable Dust**

Inhalable dust refers to airborne particles small enough to enter the nose or mouth during normal breathing, potentially causing respiratory and systemic health issues. Inhalable dust includes particles up to 100µm in size, though most inhaled particles are below 30µm. Safe Work Australia sets the exposure limit for inhalable nuisance dust (dust without a specific health hazard) at 10 mg/m<sup>3</sup>, as an 8-hour Time-Weighted Average (TWA). In industrial environments such as rubber manufacturing or processing, inhalable dust may contain particles of rubber, which can have adverse health effects depending on the particle composition and size. The control of inhalable dust is essential in preventing long-term respiratory conditions like chronic bronchitis or occupational asthma.

#### **4.2. Combustible Rubber Dust**

Combustible dust refers to fine airborne particles that can ignite and cause explosions when exposed to sufficient heat and oxygen. Rubber dust, a byproduct of processing rubber materials, is considered a combustible dust and can pose significant fire and explosion hazards if not properly controlled. While rubber is a synthetic material, its combustible fraction behaves similarly to organic combustible dusts (such as wood or grain), especially when it becomes finely divided.

Rubber dust explosions occur when fine rubber particles become suspended in the air at a concentration high enough to ignite. When these conditions are met, an ignition source (such as heat, static electricity, or friction) can trigger a dust explosion. These explosions are a serious safety hazard, particularly in enclosed areas with poor ventilation.

The Health and Safety Executive (UK) Control of Substances Hazardous to Health (COSHH) Regulations 2002 provides an exposure limit of 6 mg/m<sup>3</sup> for rubber dust measured as a combustible dust, which is used as a benchmark in our assessment. Additionally, Safe Work Australia sets the limit for general nuisance inhalable dust at 10 mg/m<sup>3</sup>, further guiding dust control measures in the workplace.

## **5. WORKPLACE EXPOSURE STANDARDS**

The criteria used in the assessment of occupational exposure to airborne contaminants are based on Exposure Standards as listed in Safe Work Australia's publication 'Workplace Exposure Standards for Airborne Contaminants' December 2019 & update for respirable Quartz July 2020 and the "Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants". All exposure standards are based on the personal sampling of chemical substances in the breathing zone of the worker.

The response of the body from exposure to substances and mixtures depends on the nature of the substance, the health effects it can cause, and the amount of the substance or mixture absorbed by the body. Individuals also have differing abilities to metabolise chemicals which can cause considerable variation in the toxic effects between people. The extent to which a person is exposed depends on the concentration of the substance or mixture in the air, the amount of time exposed and the effectiveness of controls.

Exposure standards do not identify a dividing line between a healthy or unhealthy working environment. Natural biological variation and the range of individual susceptibilities mean some people might experience adverse health effects below the exposure standard. Therefore, exposure standards should not be considered as representing an acceptable level of exposure to workers. They establish a statutory maximum upper limit.

Where there is no mandatory exposure standard established in Australia, other established exposure standards or action levels should be used by a PCBU to assist minimising exposure to chemicals.

Sections 17 and 19 of the WHS Act together require that exposure to substances in the workplace is kept As Low As is Reasonably Practicable (ALARP).

The exposure standards are represented using one of three forms:

- Eight (8) hour Time-Weighted Average (TWA)
- Peak limitation or
- Short-Term Exposure Limit (STEL, 15-minute TWA).

The relevant Safe Work Australia exposure standards are presented below in Table 1

**Table 1: SafeWork Australia Occupational Exposure Standards**

Contaminant	Safe Work Australia WES (8-hour time-weighted average )
Inhalable Dust	10 mg/m <sup>3</sup>
Combustible Dust*	6.0 mg/m <sup>3</sup>

\*No Australian Exposure Standard; however, the Health and Safety Executive (UK) Control of Substances Hazardous to Health (COSHH) Regulations 2002 provides an exposure limit of 6 mg/m<sup>3</sup>

## 6. OBSERVATIONS AND COMMENTS

**Table 2: Weather conditions on the day of monitoring at Burton, SA.**

Date: 05/09/2024			
Rain	Min Temperature	Max temperature	Wind Speed (km/h)/ Direction
0.2 mm	17.1 C	29.8 °C	11 km/h, Northwest

Date: 24/09/2024			
Rain	Min Temperature	Max temperature	Wind Speed (km/h)/ Direction
2.0 mm	11.3 C	24.5 °C	4 km/h, North, Northeast

Date: 26/09/2024			
Rain	Min Temperature	Max temperature	Wind Speed (km/h)/ Direction
0.0 mm	7.0 C	17.0 °C	15 km/h, Northwest

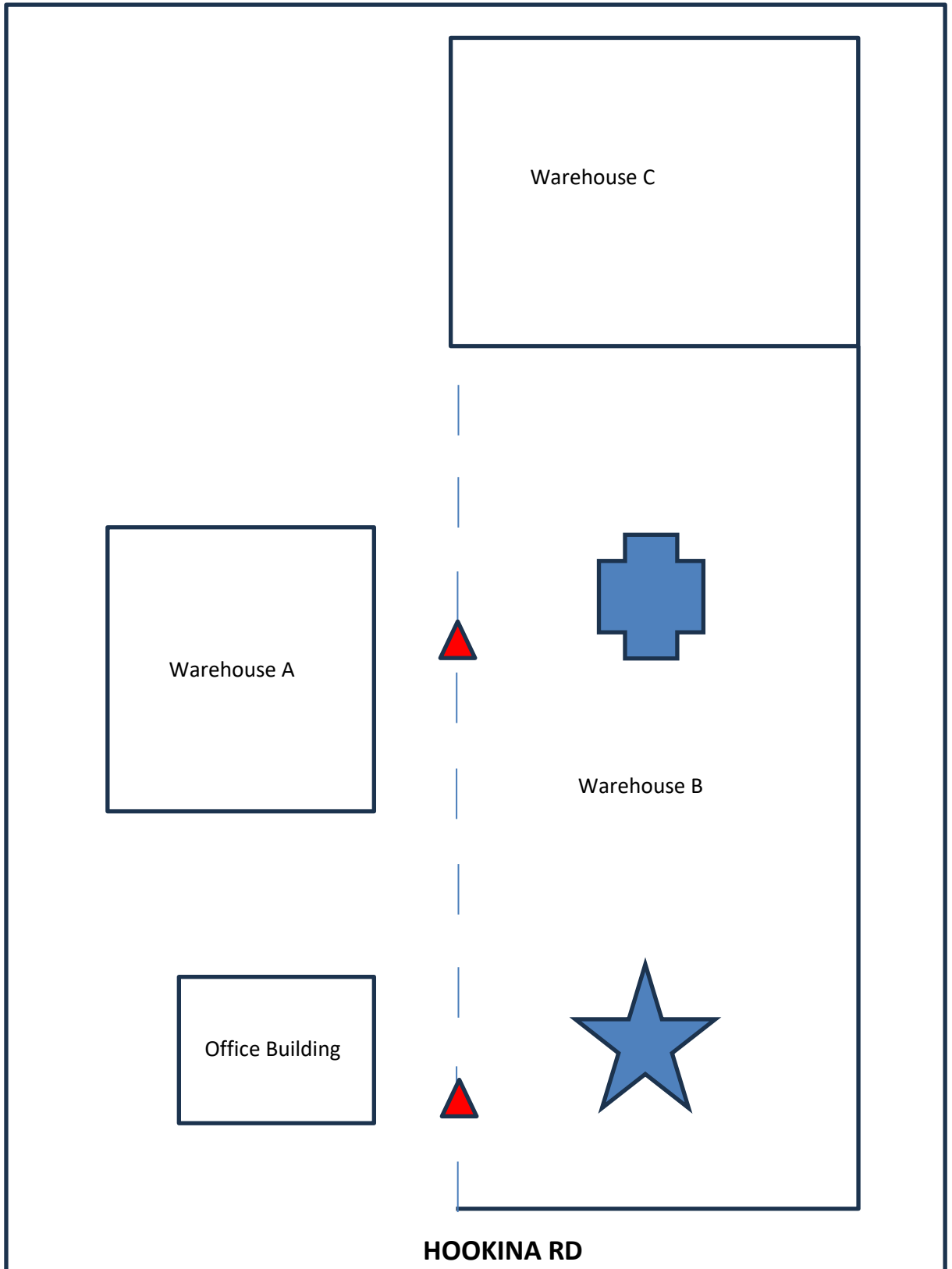
The weather conditions were mostly fine with slight showers on the 24<sup>th</sup> September 2024. On the 5<sup>th</sup> September winds were north-westerly (wind blowing in the direction away from the open side of the shed), and on the 24<sup>th</sup> & 26<sup>th</sup> September 2024, they were northeasterly (wind blowing in the direction into the open side of the shed).

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**Figure 1. Site Map of ELT Recycling with Sample Locations (Same for Each Day of Monitoring)**

- LEGEND**
-  Coarse Rubber Shredder
  -  Fine Rubber Shredder
  -  Positional Air Sampler



The coarse rubber-shredder was operating frequently across the shift on all days of monitoring (approximately 8-hours), and the fine rubber-shredder operated less frequently (approximately 2 hours per shift). The recycled tyres are used for a range of purposes such as road asphalt and thermal decomposition into oil.

Visual observations suggested negligible amounts of fugitive dust was visible during the shredding process, with the shredded/granulated rubber (approx. 1–10mm in size) appearing too large to become fugitive. The floor surface contained granulated and larger shredded pieces of rubber that were cleaned at the end of day, finer black particulate was not noticeable on the floor or surfaces within the work area.

## 7. MONITORING RESULTS

The following table displays the concentration of positional inhalable and combustible dust samples taken on the Western Perimeter of Warehouse B at ELT Recycling, Burton on the 5<sup>th</sup>, 24<sup>th</sup> and 26<sup>th</sup> September 2024. The certificates of analysis are attached in Appendix B.

**Table 3: Inhalable and Combustible Dust Concentrations Measured at ELT Recycling on the 5<sup>th</sup>, 24<sup>th</sup> and 26<sup>th</sup> September 2024.**

Location / Date	Sample ID	Monitoring Period (mins)	Inhalable Dust Conc. (mg/m <sup>3</sup> )	Combustible Dust Conc. (mg/m <sup>3</sup> )
Warehouse B, Perimeter, Southwest Corner, adj. Coarse Shredder, 05/09/2024	IHSEB24	425 mins	<0.10	<0.10
Warehouse B, Perimeter, Southwest Corner, adj. Fine Shredder, 05/09/2024	IHSE47	428 mins	<0.10	<0.10
Warehouse B, Perimeter, Southwest Corner, adj. Coarse Shredder, 24/09/2024	IHSE25	406 mins	0.26	<0.10
Warehouse B, Perimeter, Southwest Corner, adj. Fine Shredder, 24/09/2024	IHSE219	408 mins	0.17	<0.10
Warehouse B, Perimeter, Southwest Corner, adj. Coarse Shredder, 25/09/2024	IHSE133	468 mins	0.28	<0.10
Warehouse B, Perimeter, Southwest Corner, adj. Fine Shredder, 25/09/2024	IHSE107	464 mins	0.17	<0.10
<b>SafeWork Australia 8-hour Time Weighted Average</b>			<b>10</b>	<b>6*</b>

\*No Australian Exposure Standard; however, the Health and Safety Executive (UK) Control of Substances Hazardous to Health (COSHH) Regulations 2002 provides an exposure limit of 6 mg/m<sup>3</sup>

Based on the dust monitoring conducted over the three separate days, it shows none of the inhalable or combustible dust results are above the exposure standard or the action level and that all results were negligible. All combustible dust results were below the limit of quantification of 0.10 mg/m<sup>3</sup>.

## **8. CONCLUSION**

The dust monitoring conducted at ELT Recycling conducted in September 2024 showed that both inhalable and combustible rubber dust levels were well below the exposure limits set by Safe Work Australia and the UK COSHH guidelines. All combustible dust results were below the limit of quantification, indicating negligible dust concentrations during the tyre shredding process. Visual observations supported these findings, as there was no noticeable fine particulate in the work area. Therefore, the risk of exposure to harmful levels of rubber dust was minimal, and no immediate action is necessary.

## 9. APPENDIX A: SITE PHOTOS



Image showing western perimeter of Warehouse B open.



Image of northern end of Warehouse B where fine shredding /granulation of rubber is undertaken.

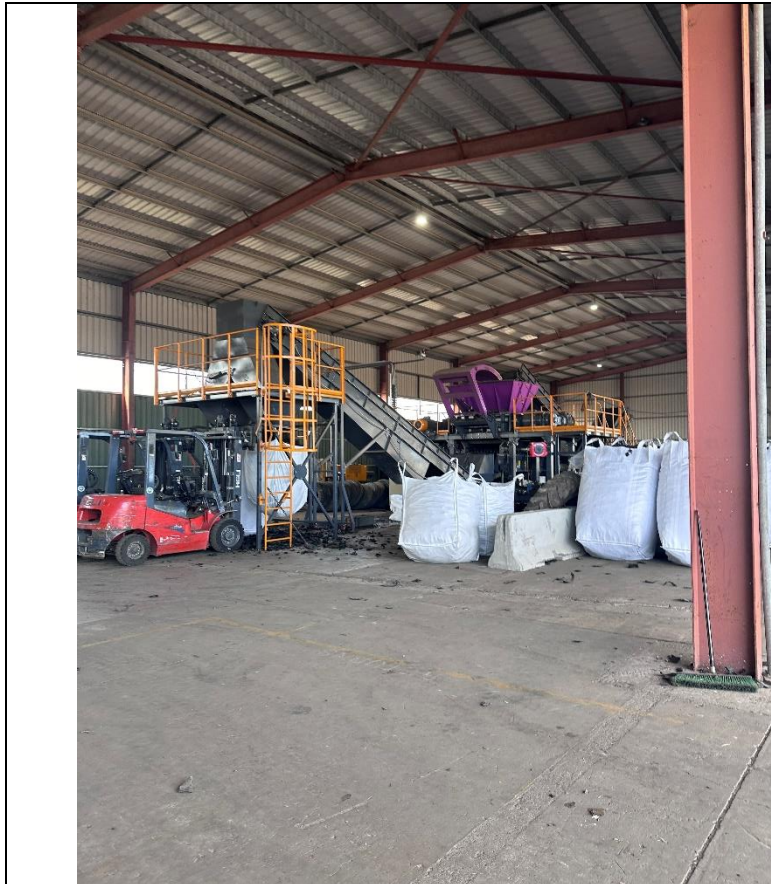


Image of Southern end of Warehouse B where fine shredding /granulation of rubber is undertaken.

## **10. APPENDIX B: CERTIFICATE OF ANALYSIS**

## Certificate of Analysis PFI0639

### Client Details

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<b>Client</b>	Health Safety Environment Pty Ltd - HSE (Adelaide)
<b>Contact</b>	Alex Corbally-Vaselli
<b>Address</b>	155 Sir Donald Bradman Dr, HILTON, SA, 5033

### Sample Details

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<b>Your Reference</b>	HJ.213548.Saa
<b>Number of Samples</b>	6 Air, 2 Filter
<b>Date Samples Received</b>	10/09/2024
<b>Date Instructions Received</b>	10/09/2024

### Analysis Details

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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.  
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

### Report Details

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<b>Date Results Requested by</b>	17/09/2024
<b>Date of Issue</b>	17/09/2024

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**Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with \*.**

### Authorisation Details

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<b>Airborne Dust Approved By</b>	Thomas Edwards
<b>Results Approved By</b>	Thomas Edwards, OHL Supervisor
<b>Laboratory Manager</b>	Michael Kubiak

# Certificate of Analysis PFI0639

## Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PFI0639-01	IHSE140	Air	09/09/2024	10/09/2024
PFI0639-02	IHSE136	Air	09/09/2024	10/09/2024
PFI0639-03	IHSE132	Air	09/09/2024	10/09/2024
PFI0639-04	IHSE26	Air	09/09/2024	10/09/2024
PFI0639-05	IHSE13	Air	09/09/2024	10/09/2024
PFI0639-06	IHSEB24	Air	09/09/2024	10/09/2024
PFI0639-07	IHSE177	Filter	09/09/2024	10/09/2024
PFI0639-08	IHSE82	Filter	09/09/2024	10/09/2024

## Sample Information

Sample ID	Filter ID	Flow Rate (L/min)	Time Sampled (min)	Air Volume (m3)
IHSE140	IHSE140	[NA]	[NA]	0.8120
IHSE136	IHSE136	[NA]	[NA]	0.8140
IHSE132	IHSE132	[NA]	[NA]	0.8340
IHSE26	IHSE26	[NA]	[NA]	0.8360
IHSE13	IHSE13	[NA]	[NA]	0.9520
IHSEB24	IHSEB24	[NA]	[NA]	0.9580
IHSE177	IHSE177	[NA]	[NA]	[NA]
IHSE82	IHSE82	[NA]	[NA]	[NA]

## Sample Comments

General Comment Samples 1-5: Gravimetric and Combustible dust results not available due to filters received not being pre-weighed by MPL.

# Certificate of Analysis PFI0639

## Inhalable Dust (Air)

EnviroLab ID	Units	PQL	PFI0639-06
Your Reference			IHSEB24
Date Sampled			09/09/2024
Dust	mg/m3	0.10	<0.10

# Certificate of Analysis PFI0639

## Inhalable Dust (Filter)

EnviroLab ID	Units	PQL	PFI0639-07	PFI0639-08
Your Reference			IHSE177	IHSE82
Date Sampled			09/09/2024	09/09/2024
Dust	mg	0.040	<0.040	<0.040

# Certificate of Analysis PFI0639

## Combustible/Non-Combustible Dust (Air)

Envirolab ID	Units	PQL	PFI0639-06
Your Reference			IHSEB24
Date Sampled			09/09/2024
Combustible Dust*	mg/m3	0.10	<0.10

# Certificate of Analysis PFI0639

## Combustible/Non-Combustible Dust (Filter)

Envirolab ID	Units	PQL	PFI0639-07	PFI0639-08
Your Reference			IHSE177	IHSE82
Date Sampled			09/09/2024	09/09/2024
Combustible Dust*	mg	0.040	<0.040	<0.040

# Certificate of Analysis PFI0639

## Method Summary

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Method ID	Methodology Summary
DUST-004_COMB	Gravimetric determination of Inhalable dust as per AS3640 and Respirable dust as per AS2985. In-House method for the determination of combustible (organic) dust based on ashing the sample at 600DegC for 2hrs.
INORG-100	Gravimetric determination of Inhalable dust as per AS3640. NSW Resources Regulator have licenced (MLA0017505) Envirolab/MPL for the Analysis of Inhalable & Respirable Dust and Respirable Crystalline Silica.

# Certificate of Analysis PFI0639

## Result Definitions

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Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

## Quality Control Definitions

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### Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

### 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.

### 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.

### 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.

### Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

# Certificate of Analysis PFI0639

## Laboratory Acceptance Criteria

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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 batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

## Miscellaneous Information

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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10\*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

# Data Quality Assessment Summary PFI0639

## Client Details

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<b>Client</b>	Health Safety Environment Pty Ltd - HSE (Adelaide)
<b>Your Reference</b>	HJ.213548.Saa
<b>Date Issued</b>	17/09/2024

## Recommended Holding Time Compliance

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No recommended holding time exceedances

## Quality Control and QC Frequency

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QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	Yes	No Outliers
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

# Data Quality Assessment Summary PFI0639

## Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Gravimetric Dust   Air	6	09/09/2024	17/09/2024	17/09/2024	Yes
Gravimetric Dust   Filter	7-8	09/09/2024	17/09/2024	17/09/2024	Yes
Combustible Dust   Air	6	09/09/2024	17/09/2024	17/09/2024	Yes
Combustible Dust   Filter	7-8	09/09/2024	17/09/2024	17/09/2024	Yes

## Certificate of Analysis PFJ0074

### Client Details

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<b>Client</b>	Health Safety Environment Pty Ltd - HSE (Adelaide)
<b>Contact</b>	Alex Corbally-Vaselli
<b>Address</b>	155 Sir Donald Bradman Dr, HILTON, SA, 5033

### Sample Details

---

<b>Your Reference</b>	HJ.213548.Saa
<b>Number of Samples</b>	5 Air
<b>Date Samples Received</b>	01/10/2024
<b>Date Instructions Received</b>	01/10/2024

### 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.  
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

### Report Details

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<b>Date Results Requested by</b>	08/10/2024
<b>Date of Issue</b>	08/10/2024

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### Authorisation Details

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<b>Airborne Dust Approved By</b>	Thomas Edwards
<b>Results Approved By</b>	Thomas Edwards, OHL Supervisor
<b>Laboratory Manager</b>	Michael Kubiak

# Certificate of Analysis PFJ0074

## Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PFJ0074-01	IHSE47	Air	30/09/2024	01/10/2024
PFJ0074-02	IHSE25	Air	30/09/2024	01/10/2024
PFJ0074-03	IHSE219	Air	30/09/2024	01/10/2024
PFJ0074-04	IHSE133	Air	30/09/2024	01/10/2024
PFJ0074-05	IHSE107	Air	30/09/2024	01/10/2024

## Sample Information

Sample ID	Filter ID	Flow Rate (L/min)	Time Sampled (min)	Air Volume (m3)
IHSE47	IHSE47	[NA]	[NA]	0.7960
IHSE25	IHSE25	[NA]	[NA]	0.7980
IHSE219	IHSE219	[NA]	[NA]	0.8080
IHSE133	IHSE133	[NA]	[NA]	0.8080
IHSE107	IHSE107	[NA]	[NA]	0.8120

# Certificate of Analysis PFJ0074

## Inhalable Dust (Air)

EnviroLab ID	Units	PQL	PFJ0074-01	PFJ0074-02	PFJ0074-03	PFJ0074-04	PFJ0074-05
Your Reference			IHSE47	IHSE25	IHSE219	IHSE133	IHSE107
Date Sampled			30/09/2024	30/09/2024	30/09/2024	30/09/2024	30/09/2024
Dust	mg/m3	0.10	<0.10	0.26	0.17	0.28	0.17

# Certificate of Analysis PFJ0074

## Combustible/Non-Combustible Dust (Air)

Envirolab ID	Units	PQL	PFJ0074-01	PFJ0074-02	PFJ0074-03	PFJ0074-04	PFJ0074-05
Your Reference			IHSE47	IHSE25	IHSE219	IHSE133	IHSE107
Date Sampled			30/09/2024	30/09/2024	30/09/2024	30/09/2024	30/09/2024
Combustible Dust*	mg/m3	0.10	<0.10	<0.10	<0.10	<0.10	<0.10

# Certificate of Analysis PFJ0074

## Method Summary

---

Method ID	Methodology Summary
DUST-004_COMB	Gravimetric determination of Inhalable dust as per AS3640 and Respirable dust as per AS2985. In-House method for the determination of combustible (organic) dust based on ashing the sample at 600DegC for 2hrs.
INORG-100	Gravimetric determination of Inhalable dust as per AS3640. NSW Resources Regulator have licenced (MLA0017505) Envirolab/MPL for the Analysis of Inhalable & Respirable Dust and Respirable Crystalline Silica.

# Certificate of Analysis PFJ0074

## Result Definitions

---

Identifier	Description
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NEPM	National Environment Protection Measure
NS	Not specified
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<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

## Quality Control Definitions

---

### Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

### 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.

### 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.

### 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.

### Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

# Certificate of Analysis PFJ0074

## Laboratory Acceptance Criteria

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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 batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

## Miscellaneous Information

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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10\*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

# Data Quality Assessment Summary PFJ0074

## Client Details

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<b>Client</b>	Health Safety Environment Pty Ltd - HSE (Adelaide)
<b>Your Reference</b>	HJ.213548.Saa
<b>Date Issued</b>	08/10/2024

## Recommended Holding Time Compliance

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No recommended holding time exceedances

## Quality Control and QC Frequency

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QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	Yes	No Outliers
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

# Data Quality Assessment Summary PFJ0074

## Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Gravimetric Dust   Air	1-5	30/09/2024	07/10/2024	07/10/2024	Yes
Combustible Dust   Air	1-5	30/09/2024	08/10/2024	08/10/2024	Yes