

RESPIRABLE CRYSTALLINE SILICA AIR MONITORING REPORT BACKGROUND MONITORING EVENT

12 May 2022

Attention:
Company:
Email:
Address:

s22

SWE Report Reference: C110621-SAM1.v1-03052022
Site Address: Australian National University SA8 Development – Off Clunies Ross Street, Acton ACT
Sampling Date: 03 May 2022
Scope: Monitoring for airborne respirable silica during construction work.
Laboratory: Air Monitoring undertaken by SWE. Analysis undertaken by Envirolab Services Pty Ltd – Sydney.

- 1. Introduction:** Background monitoring for RCS undertaken by SWE is used to assess the TWA concentration of airborne RCS at sampling locations.
- 2. Methods:** Airborne RCS sampling was carried out in general accordance with the *Australian Standard Workplace atmospheres – Method for sampling and gravimetric determination of respirable dust (AS2985-2009)* and SWEs NATA accredited *In-House Method 2 – Air Volume Measurement*. Analysis of samples was outsourced to an NATA accredited laboratory for analysis in accordance with their specified methods.

3. Results:

SWE FILTER ID REF.	LOCATION	VOLUME OF AIR SAMPLED (m ³)	MASS OF RCS DETECTED (Per Filter, mg)	CALCULATED CONCENTRATION OF RCS (mg/m ³)
Safework27.4.22-1 P54.F1	Bld E, ground level, central area.	0.990	<0.01	<0.01
Safework27.4.22-2 P56.F2	Bld D1, Level 4 (L4), central common area adjacent to common stairs.	0.976	<0.01	<0.01
Safework27.4.22-3 P81.F3	Bld D1, L5, central indoor eastern end of building.	0.958	<0.01	<0.01
Safework27.4.22-4 P92.F4	Bld D1, L5, external eastern end of building, attached to scaffold.	0.954	<0.01	<0.01
Safework27.4.22-5 P93.F5	Bld D2, L3, western end of common hallway, adjacent to stairwell.	0.948	<0.01	<0.01
Safework27.4.22-6 P99.F6	North boundary fence, opp. D1 lift.	0.942	<0.01	<0.01
Safework27.4.22-7 P124.F7	North boundary fence, adjacent to waste bin and college carpark.	0.936	<0.01	<0.01

**RESPIRABLE CRYSTALLINE SILICA AIR MONITORING REPORT
BACKGROUND MONITORING EVENT**

12 May 2022

Quality Assurance / Quality Control

SWE FILTER ID REF.	SAMPLE TYPE	MASS OF RCS DETECTED (Per Filter, mg)
Safework27.4.22-8 Blank.F8	Field Blank	<0.01

4. Conclusion: At the time of assessment, sampling for airborne respirable crystalline silica (RCS) within representative locations of the construction worksite and along northern site boundaries was below the recommended action limit of 0.025mg/m³. Current control measures used within these areas are considered adequate to control respirable silica exposure to general site personnel.

5. Recommendations: It is recommended that the current control measures in place are continued and maintained to minimise the generation of airborne dusts. Current control practices within the assessed areas are sufficient to ensure the airborne RCS exposure level to general site workers is below the current national exposure standard of 0.05mg/m³. When undertaking specific work tasks with silica containing products, air monitoring will be needed to confirm whether the exposure standard for respirable crystalline silica is being exceeded. It is recommended that air monitoring is carried out:

- At least once a year if working with silica containing products,
- If a worker becomes unwell or if a health monitoring report recommends review of control measures,
- If work practices or the types of tools / machines used in the workshop change, and
- If new control measures are implemented or if there are changes to control measures

Kind Regards,

s47F

Senior WHE&S Consultant

Attachments:

Attachment A - Air Volume Measurement Report

Attachment B - Sample Analysis Certificate



CERTIFICATE OF ANALYSIS 294834

Client Details

Client	Safe Work & Environments
Attention	s47F
Address	7/103 Majors Bay Rd, Concord, NSW, 2137

Sample Details

Your Reference	C110621
Number of Samples	8 Filter
Date samples received	05/05/2022
Date completed instructions received	05/05/2022

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 solids and on an as received basis for other matrices.

Report Details

Date results requested by	06/05/2022
Date of Issue	06/05/2022
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Diego Bigolin, Inorganics Supervisor

Authorised By

s47F

s47F Laboratory Manager

Quartz in dust						
Our Reference		294834-1	294834-2	294834-3	294834-4	294834-5
Sample ID	UNITS	Safework 27.4.22-1	Safework 27.4.22-2	Safework 27.4.22-3	Safework 27.4.22-4	Safework 27.4.22-5
Your Reference		P54.F1	P56.F2	P81.F3	P92.F4	P93.F5
Date Sampled		03/05/2022	03/05/2022	03/05/2022	03/05/2022	03/05/2022
Type of sample		Filter	Filter	Filter	Filter	Filter
Date prepared	-	06/05/2022	06/05/2022	06/05/2022	06/05/2022	06/05/2022
Date analysed	-	06/05/2022	06/05/2022	06/05/2022	06/05/2022	06/05/2022
a-Quartz on Filter	µg	<10	<10	<10	<10	<10

Quartz in dust				
Our Reference		294834-6	294834-7	294834-8
Sample ID	UNITS	Safework 27.4.22-6	Safework 27.4.22-7	Safework 27.4.22-8
Your Reference		P99.F6	P124.F7	Blank-F8
Date Sampled		03/05/2022	03/05/2022	03/05/2022
Type of sample		Filter	Filter	Filter
Date prepared	-	06/05/2022	06/05/2022	06/05/2022
Date analysed	-	06/05/2022	06/05/2022	06/05/2022
a-Quartz on Filter	µg	<10	<10	<10

Total Suspended Particulates						
Our Reference		294834-1	294834-2	294834-3	294834-4	294834-5
Sample ID	UNITS	Safework 27.4.22-1	Safework 27.4.22-2	Safework 27.4.22-3	Safework 27.4.22-4	Safework 27.4.22-5
Your Reference		P54.F1	P56.F2	P81.F3	P92.F4	P93.F5
Date Sampled		03/05/2022	03/05/2022	03/05/2022	03/05/2022	03/05/2022
Type of sample		Filter	Filter	Filter	Filter	Filter
Date prepared	-	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022
Date analysed	-	06/05/2022	06/05/2022	06/05/2022	06/05/2022	06/05/2022
Weight of Filter (before)	mg	6.50	5.92	5.91	6.14	6.06
Weight of Filter (after)	mg	6.52	5.93	5.91	6.16	6.17
Total Suspended Particulates	mg	<0.04	<0.04	<0.04	<0.04	0.12

Total Suspended Particulates				
Our Reference		294834-6	294834-7	294834-8
Sample ID	UNITS	Safework 27.4.22-6	Safework 27.4.22-7	Safework 27.4.22-8
Your Reference		P99.F6	P124.F7	Blank-F8
Date Sampled		03/05/2022	03/05/2022	03/05/2022
Type of sample		Filter	Filter	Filter
Date prepared	-	27/04/2022	27/04/2022	27/04/2022
Date analysed	-	06/05/2022	06/05/2022	06/05/2022
Weight of Filter (before)	mg	5.64	5.61	6.16
Weight of Filter (after)	mg	5.64	5.60	6.17
Total Suspended Particulates	mg	<0.04	<0.04	<0.04

Method ID	Methodology Summary
DUST-004	<p>Respirable Quartz (and/or Cristabolite) determined after ashing, redeposition and FTIR determination.</p> <p>The Quartz exposure standard is 50µg/m³, therefore where sampling follows MDHS 101 guidelines and at least 500L of air is sampled, this is equivalent to a dust weight of 25µg/filter. The estimated measurement uncertainty for the laboratory analysis of Quartz is 40% at 25µg at 95% confidence limit (i.e. statistically the true value lies between 15-35µg / filter (30 –70 µg/m³) at 95% confidence). The estimated measurement uncertainty was determined during method validation.</p> <p>Note - air volume measurements are not covered by Envirolab's NATA accreditation.</p>
Inorg-100	<p>Filter/Media Mass - determined gravimetrically. For high volume filters the methodology is in accordance with AS3580.9.3 for TSP or AS3580.9.6 for PM10 where the correct sampler has been used.</p> <p>Filters are desiccated for 24 hours before and after sampling (if pre/post-weighed at Envirolab).</p> <p>Note - air volume measurements are not covered by Envirolab's NATA accreditation.</p>

Client Reference: C110621

QUALITY CONTROL: Quartz in dust				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			06/05/2022	[NT]	[NT]	[NT]	[NT]	06/05/2022	[NT]
Date analysed	-			06/05/2022	[NT]	[NT]	[NT]	[NT]	06/05/2022	[NT]
a-Quartz on Filter	µg	10	DUST-004	<10	[NT]	[NT]	[NT]	[NT]	101	[NT]

Client Reference: C110621

QUALITY CONTROL: Total Suspended Particulates					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			27/04/2022	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Date analysed	-			06/05/2022	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Result Definitions	
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

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.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

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 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.

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 QA/QC tables for details; <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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-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 insufficient in order to satisfy laboratory QA/QC protocols.

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.

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 and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.