Kelvin Williams
Occupational Hygiene Consultancy

Newport City Council
Civic Amenity Site – Asbestos Cell

Airborne Fibre Monitoring

November 2015

Reference: R001/054/15

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Report issue:	Final
File number:	054/15
Reference number:	R001

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November 2015

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Airborne Fibre Monitoring

1. Introduction

1.1 At the request of Mr Gwyn Jones of Newport City Council, airborne fibre monitoring has been carried out at the Civic Amenity Site, Docksway, Newport.

1.3 The monitoring was carried out by Mr Kelvin Williams, Chartered Occupational Hygienist, and included several site visits through July and August 2015.

2. Background

2.1 We are informed that Newport City Council are establishing an "asbestos cell" at the Civic Amenity Site. Prior to establishment of the cell and commencement of operations, Newport City Council wish to collect data on background airborne asbestos fibre concentrations for future reference.

2.2 Further to discussion with Newport City Council, it was agreed that airborne fibre monitoring would be carried out from two points at the boundary of the site near the asbestos cell area and at one point inside the asbestos cell area.

3. Methodology

Sampling

3.1 Air samples were collected from the locations illustrated on the site plan given in Appendix 1. Photographic illustrations of the sampling locations on the asbestos cell and south boundary are provided in Appendix 2.

3.2 In brief, air was drawn at a known rate, and for a known period of time through gridded 0.8um mixed cellulose ester membrane filters.

3.3 Air sampling was carried out on four occasions at approximately fortnightly intervals with a view to providing results from a range of conditions.

Analysis

3.4 Each membrane filter was ashed in a low temperature plasma asher. The residue from each plasma ashing was recovered using filtered, distilled water and filtered through a 25mm, 0.2µm pore size polycarbonate filter. A portion of each filter was excised and mounted on a 13mm aluminium stub, coated with gold and examined by Scanning Electron Microscopy.

3.5 Each filter was searched systematically at 2000x magnification until an area of 1mm^2 had been examined or 50 whole fibres found. All respirable fibres (aspect ratio >3:1, length

>5µm and diameter <3µm and including fibres in contact with particles >3µm diameter) detected were analysed by Electron Dispersive X-Ray Spectrometry and identified as closely as possible, by comparing morphology and composition with standard reference materials.

3.6 The method used for analysis is based on Asbestos International Association, Recommended Technical Method No. 2 (RTM2, AIA 1984) and International Standards Organisation (2002), International Standard 14966.

Methodology References

Asbestos International Association. (1984). Method for the determination of airborne asbestos fibres and other inorganic fibres by Scanning Electron Microscopy. Recommended Technical Method No. 2 (RTM2)

AIA, London. International Standards Organisation (2002). International Standard 14966. Ambient Air: Determination of numerical concentration of inorganic fibrous particles-Scanning electron microscopy method.

General

3.7 Observations were made on weather conditions and activity prevailing at the time of sampling.

4. Results

4.1 The sampling schedule, together with description of weather conditions, is given in Table 1 below.

Table 1 – Sampling schedule

Date	Sample	Location	Weather / Comments
17/7/15	1/54/15	On asbestos cell	Dry Wind: westerly 19 mph Temperature 19°C No activity in Scott Palletts Vehicles active across asbestos cell
	2/54/15	South: boundary to Scott Palletts	
	3/54/15	West: access road beside lagoon	
30/7/15	4/54/15	On asbestos cell	Dry Wind: north westerly 9 mph Temperature 20°C No activity in Scott Palletts Vehicles active across asbestos cell
	5/54/15	South: boundary to Scott Palletts	
	6/54/15	West: access road beside lagoon	
17/8/15	7/54/15	On asbestos cell	Dry Wind: easterly 9 mph Temperature 22°C No activity in Scott Palletts Vehicles active across asbestos cell
	8/54/15	South: boundary to Scott Palletts	
	9/54/15	West: access road beside lagoon	
26/8/15	10/54/15	On asbestos cell	Dry Wind: westerly 14 mph Temperature 16°C No activity in Scott Palletts Vehicles active across asbestos cell
	11/54/15	South: boundary to Scott Palletts	
	12/54/15	West: access road beside lagoon	

4.2 The airborne fibre monitoring results are described in Table 2 below.

Table 2 – Airborne Fibre Monitoring Results

Sample No.	Volume (l)	[1] No. of Resp. Fibres Found	[1] No. of Fields Searched	Total Fibre Conc^{n} (fml^{-1})	AMX Fibre Conc^{n} (fml^{-1})	CMX Fibre Conc^{n} (fml^{-1})	MMMF Conc^{n} (fml^{-1})	NAM Fibre Conc^{n} (fml^{-1})
1/54/15	600	1	300	<0.0006*	ND<0.0006*	ND<0.0006*	<0.0006*	ND<0.0006*
2/54/15	600	3.5	300	0.0007	ND<0.0006*	ND<0.0006*	<0.0006*	<0.0006*
3/54/15	600	0	300	ND<0.0006*	ND<0.0006*	ND<0.0006*	ND<0.0006*	ND<0.0006*
4/54/15	640	0	300	ND<0.0006*	ND<0.0006*	ND<0.0006*	ND<0.0006*	ND<0.0006*
5/54/15	640	0	300	ND<0.0006*	ND<0.0006*	ND<0.0006*	ND<0.0006*	ND<0.0006*
6/54/15	640	0	300	ND<0.0006*	ND<0.0006*	ND<0.0006*	ND<0.0006*	ND<0.0006*
7/54/15	720	0	300	ND<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*
8/54/15	720	0	300	ND<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*
9/54/15	720	0	300	ND<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*
10/54/15	720	0	300	ND<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*
11/54/15	720	2	300	<0.0005*	ND<0.0005*	ND<0.0005*	ND<0.0005*	<0.0005*
12/54/15	720	1	300	<0.0005*	ND<0.0005*	ND<0.0005*	<0.0005*	ND<0.0005*

AMX-Amphibole Asbestos **CMX** – Chrysotile Asbestos **MMMF** – Machine Made Mineral Fibre **NAM**-Non Asbestos Mineral **ND** – None Detected

When no fibres of a given type are detected, the fibre concentration can be reported as less than the concentration equivalent to three fibres (the one sided upper 95% confidence limit of the Poisson distribution). Therefore, when 0, 1 or 2 fibres are detected, 2.99 is used in the calculation of fibre concentrations. It expresses the 95% confidence detection limit for airborne fibre concentrations. When a volume of 600 litres is used the 95% confidence limit is 0.0006 fml^{-1} for the number of fields searched.

5. Discussion

5.1 No asbestos fibres were detected during the analysis of any of these samples.

5.2 UKAS accreditation for this work is limited to results obtained directly from the analysis.

5.3 Any organic fibres present on the original samples would be destroyed during plasma ashing.

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Appendix 1 - Site Plan Illustrating Sampling Locations

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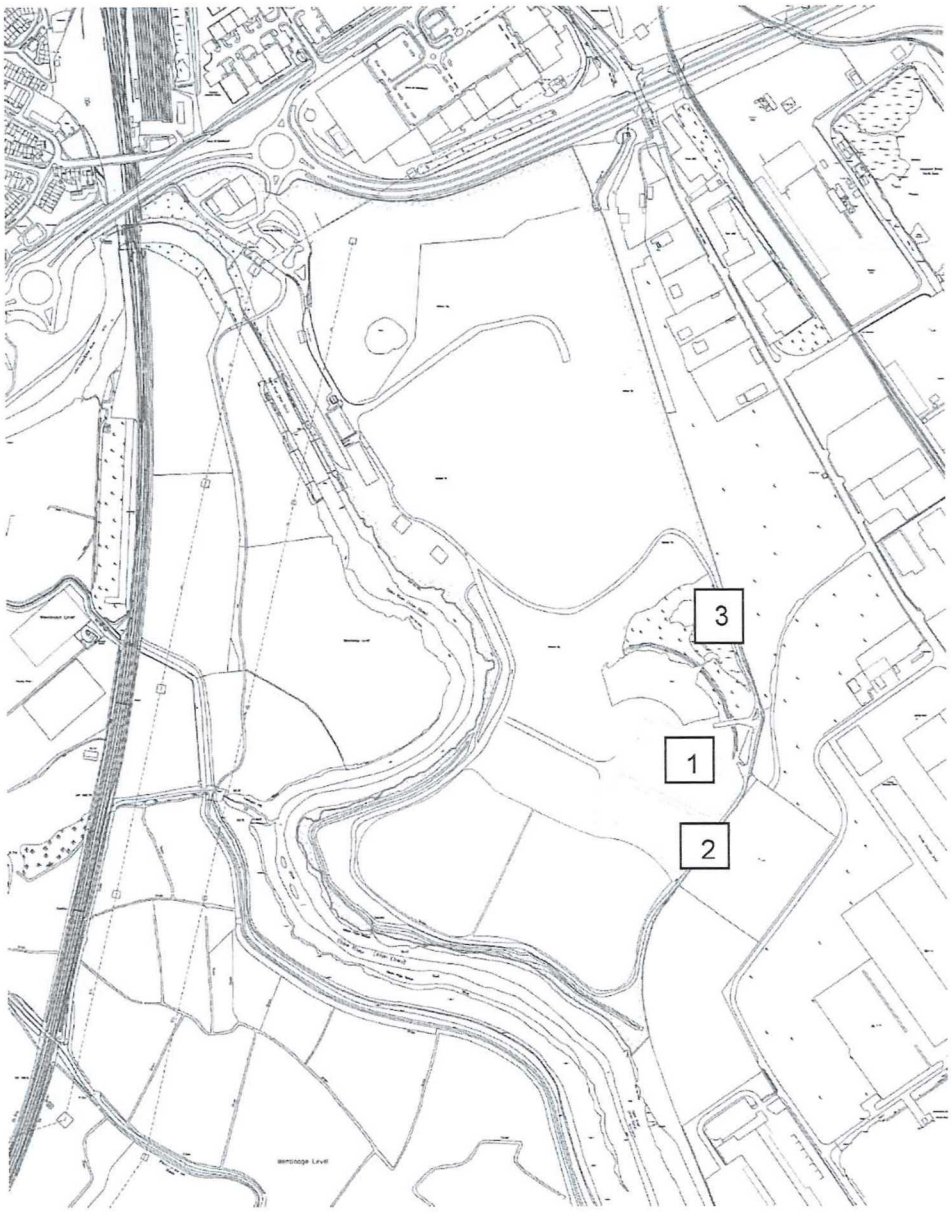
Civic Amenity Site: Docksway



Key to sample locations

1. On asbestos cell
2. South: boundary to Scott Palletts
3. West: access road beside lagoon

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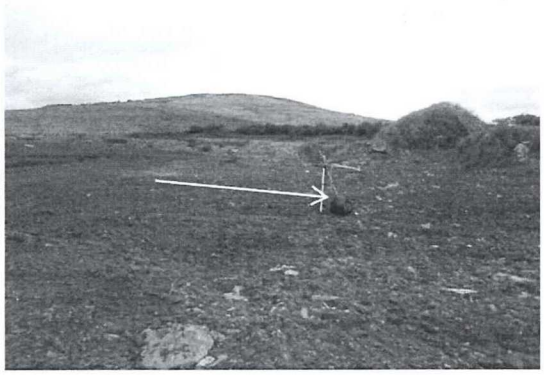
Appendix 2 – Photographic Illustrations

Photograph 1 – Sampling location on asbestos cell



Photograph 2 – Sampling location: south boundary to Scott Palletts