



Environmental Science

Asbestos Dustiness:

Assessment of respirable fibres from soils

Current analytical methods focus on the quantification of all asbestos fibres and asbestos containing material (ACM) within a soil sample, but this does not always give a clear indication of the risk that the asbestos may represent outside of the laboratory testing environment. Here at i2 we are looking to provide the next level of analytical testing to help you make informed decisions and assessment on the risks and how to control or manage your site.

The Next Step in Risk Assessment

Asbestos in soil can be found in a number of forms, bound either in Asbestos Containing Material (ACM), as free fibres or fibre bundles. A standard quantification can tell you the proportional mass of your soil which is asbestos, but it only goes so far in allowing you to judge what kind of a risk that represents. A piece of undamaged cement may give a higher percentage by mass of asbestos, but a smaller percentage of free fibres may present a much higher risk. The next step for testing and assessment is to look at fibre release – how much of that asbestos is actually likely to be released to the air?

Adapting from existing methodology (EN 15051-2:2013 – *Workplace exposure – Measurement of the dustiness of bulk material*), our method looks at the dust that would be released under natural site conditions. Within that, we are focusing on the *respirable* fibres (fibres with a diameter of less than $3\mu\text{m}$, length of at least $5\mu\text{m}$ and an aspect ratio (length to width) of greater than 3) which will penetrate beyond the terminal bronchioles into the gas exchange region of the lungs as these represent the significant risk to human health.

Utilising the Latest Methodology

A representative subsample of soil is rotated for a fixed period inside a sealed metal drum as a constant flow of air is passed through the apparatus. The dust generated is blown through a foam filter allowing the respirable fibres to pass through. These fibres are then caught on a membrane filter which is subjected to fibre counting methodology using Phase Contrast Optical Microscopy (PCOM) as per HSG248.

The number of fibres identified gives us a respirable fibre concentration in fibres/ml of air. Using the concentration of respirable dust collected (mg/m^3) we can correct the fibres/ml air concentration to that at the $4\text{mg}/\text{m}^3$ Workplace Exposure Limit for dust (EH40 HSE UK). This allows for better determination of the risks posed by asbestos on site.

Project Benefits

Used in conjunction with the Identification and Soil Quantification tests this will give you a much more complete picture of how the asbestos is distributed on your site, what risk it may represent and how best to move forward. With competitive rates, including discounts on larger submissions and options for rapid delivery (3 and 5 working days) we can help give you a cost effective solution to managing asbestos on site.

If you require any further information or would like to discuss any element of our Asbestos testing capabilities please contact Will Fardon on 0775 8835 040 or at w.fardon@i2analytical.com

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