Memo

To Graham Revell, HSL Fibres Section

From Mark Piney, W&SW SG

Dear Graham

Respirable asbestos fibre release from AIB due to drawing pin damage

1 Thanks for all the work you have done so far. As you have pointed out there are a lot of variables that can affect the results. As we discussed earlier today I think we have been a bit mesmerised by the technique developed by Robin Howie and we need to stand back and re-assess what we are trying to find out.

2 What is of interest and importance is the number of respirable airborne asbestos fibres released when drawing pins are stuck into and pulled out of AIB. What is needed is a fair and more-or-less repeatable test to airborne respirable asbestos fibres.

3 Looking at the results of your earlier tests when you used the device devised by Robin Howie and your adapted cowl as a vacuum cleaner I believe that both methods probably overestimate respirable airborne asbestos fibre release. As you point out this is partly because the test method hoovers fibres out of the pins holes but I believe there may be at least two other mechanisms which increase the recorded fibre numbers on the sample filters. The hoovering will tend to suck up particles and bits of AIB which are not respirable. These bits will then tend to become broken up by the action of the hoovering process. I suppose what I am saying is that the hoovering method, while at first sight a fair test method, is liable to produce inflated results i.e. higher results than more gentle method of sampling.

Standing back and considering what we want to discover by means of the tests I think the aim and the objectives of the investigation are:

Aim To assess, by quantitative and other means, the degree of respirable airborne asbestos fibre release and the damage caused when AIB is punctured by drawing pins (and drilled?)

Objectives

1 To develop a simple, reproducible test method for pin insertion and removal and a realistic method of measuring airborne respirable asbestos fibre release.

2 To develop simple qualitative ways of assessing damage to AIB and release of fine airborne dust
3 To apply the methods, in a repeatable way, to examine the release of airborne respirable asbestos fibres from AIB under different circumstances.

4 To draft a report with an agreed layout and content at the completion of the test series

Tests

Test 1 Horizontal AIB of known density and bulk composition held horizontal. An asbestos cowled sampler with pin attached (centrally is possible) used to make holes in AIB. Two test distances from AIB surface to mouth of cowl – 2.5 cm and 5.0 cm. Tests repeated three times for each distance to check on the repeatability of the test method. Holes well spaced and not overlapping. Number of holes per test? Not sure but will leave that up to you. Depends upon the number of airborne, respirable asbestos fibres released per hole and the sensitivity of the sampling and analytical method.

Test 2 Same as for 1 but with holes made in close-together groups, say, four per group.
Comment 1: I think this approach is preferable to simply stabbing the same area repeatedly in that the damage can be, to an extent, reproducible and the method can be described.
Comment 2: I would expect the results of these tests to be less reproducible than Test 1.

Final comments Once the results of Tests 1 and 2 are available it may be useful to consider further tests. These could include comparative tests with other forms of disturbance. I am particularly interested in how many more airborne, respirable fibres are released by drilling AIB with a small diameter drill. We could also consider reproducing Test 1 but use a cyclone sampler instead of a cowled sampler. And there may be other useful tests which come to mind. But before doing these further tests lets see and review what Tests 1 and 2 reveal.

Regards

Mark