

Comments/Critique of Millette and Hays, 1994 method for settled dust:

Chapter 8 deals with resuspension of settled dust, to estimate potential aerosol exposures

.PCM PLM TEM ??

.Beard , 1991, presented hypothetical room . one gram dust with 0.1% asbestos and fibers 1um diam and 15um length settled on each square meter of room with 8 ft ceiling. Surface concentration would be 3260 f/cm² [3260x10,000 f/m²] [= assumption of 32,600,000 f/gram of 0.1% asbestos, or [3x10¹⁰] 32,600,000,000 fibers/gram of 100% asbestos fibers of that dimension] [OK for such large fibers, for ease of calculation] [for chrysotile with diameter of 0.1 diam or less the number would be >3x10¹³ f/gram]. Assuming 100% of fibers become airborne:

<u>Fiber dimensions</u>	<u>Surface Conc.</u>	<u>Airborne Conc.</u>	<u>K-factor (A/S)</u>
1 x 15 um fibers	3260 f/cm ²	13 f/cm ³	13/3260 = 4x10 ⁻³
0.1 x 5 um fibers	979,400 f/cm ²	4017 f/cm ³	4017/979,400 = 4x10 ⁻³

calculated concentrations can be easily adjusted for <100% re-entrainment and/or for different concentrations of asbestos in the dust

⇒implies and serves to emphasize that analyses which do not detect fibers or report them as <0.1% may still contain large numbers of settled fibers, with potential for high airborne concentrations of fibers.

K-factor is A/S , where A is airborne conc and S is surface conc.

For various cleaning activities with asbestos, K factor is in the range 10^{-5} to 10^{-6} cm^{-1}

But in some situations it may be closer to 10^{-3}

Multiplying the K -factor by the settled dust concentration gives an estimate of the predicted airborne value during a specific activity

Examples

<u>Surface conc.</u>	<u>K-factor</u>	<u>Predicted airborne concentration</u>
1000 f/cm ²	10^{-5}	0.01 f/cm ³
	10^{-4}	0.1 f/cm ³
	10^{-3}	1.0 f/cm ³
10,000 f/cm ²	10^{-5}	0.1 f/cm ³
	10^{-4}	1.0 f/cm ³
	10^{-3}	10.0 f/cm ³

BOTTOM LINE: K -Factor would have to be determined specifically for each situation, so its value for risk assessment is quite limited, except perhaps for ‘worst case scenario’ estimation.