WATCH, 14th Meeting, October 2008

Asbestos : conclusion, following drafting by committee members on Friday 24th October and consultation by correspondance between 29 Oct and 15 Nov 08.

WATCH decided that the H&D2000* model is a good reflection of the available data and can be used to estimate lifetime risk of mesothelioma and lung cancer from occupational exposure to asbestos. However, WATCH also advised that the model may be less reliable when extrapolating beyond the exposure ranges for which there are epidemiological data, due to uncertainties in the dose-response relationship at lower levels.

In addition to such uncertainties, the predictions from the model are subject to a number of other uncertainties in the original epidemiological data available including:

- *exposure assessment*, caused by the absence of reliable contemporaneous measurements and by differences in assessment methods between studies
- *cancer diagnosis*, such as completeness of identifying mesotheliomas in the past
- *potential confounding factors*, such as absence of control for smoking in some studies of lung cancer

The H&D2000 model can be used to produce estimated lifetime risks of asbestos-related lung cancer and mesothelioma (the two tumour types combined) per 100,000 individuals, for a 5-year duration of exposure to different concentrations of the various forms of asbestos, from age 30, for example :

fibres/ml.yr (best max/min**)	Crocidolite	Amosite	Chrysotile
10	5600 (3200– 8400)	2300 (960–4000)	56 (23–340)
1	750 (250-1600)	180 (35-570)	6 (1-45)
0.1	120 (24-360)	21 (2-100)	1 (0.1-7)

**Best estimate from the H&D 2000 best-slope model with maximum and minimum estimates based on the range of predictions consistent with the H&D2000 high-slope and low-slope models.

These numbers should not be taken to be reliable absolute risk values

However, WATCH concluded that the model is sufficiently robust to be used to differentiate the relative magnitudes of risk for the different fibre types in different exposure ranges and thereby distinguish between different operations in a manner that is amenable to a control-banding approach.

WATCH recommended that further work be done to develop such a control-banding approach for tasks involving remaining asbestos.

WATCH also discussed the possibility that the H&D model could be used to classify occupational risks into a framework that emphasises proportionality, requiring action that is commensurate with the risk.

WATCH recommends that at a subsequent meeting it should seek to progress the ideas in the three paragraphs immediately above.

* Hodgson, JT and Darnton A (2000). Quantitative risks of mesothelioma and lung cancer in relation to asbestos exposure. Annals of Occupational Hygiene, **44**; 565-602.