WATCH COMMITTEE PAPER			WATCH/2007/ 8
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Exemptions:			

WATCH COMMITTEE

The risks of lung cancer and mesothelioma from relatively low-level exposures to different forms of asbestos

Issue

1. The exploration of what is known of the dose-response relationships for lung cancer and mesothelioma caused by exposure to different forms of asbestos; with a view to identifying what can (and can't) be discerned reliably about the risks at relatively low-level exposures.

Timing Considerations

2. No particular timing issues.

Recommendation

3. WATCH is asked to establish its position on the issues specified in paragraph 15.

Background

4. In the "new and emerging issues" session at the November 2006 WATCH meeting, a high priority issue was deemed to be that of addressing the risks of asbestos-induced cancers from relatively low-level exposures.

5. In this context, "relatively low-level exposures" are exposure levels around and below the current asbestos Control Limit and other regulatory standards, such as Clearance Levels. Given the widespread presence of asbestos-containing materials in our environment, there are various situations that give rise to important questions about the risks involved with exposure at such levels.

6. Dose–response relationships for asbestos-induced cancers have been identified and published, based on the results of individual epidemiology studies or from syntheses of the combined findings of collections of such studies. In recent years a particularly influential analysis in the UK has been that published by two HSE statisticians, John Hodgson and Andrew Darnton (Hodgson & Darnton, 2000). For the groups of workers studied in these investigations, a common feature has been that exposures to asbestos (of different types) were generally at levels appreciably above those that we are now seeking to address. Hence two questions can be posed: what do we know with confidence about the observed dose-response relationships emerging from the available data?; and what is the most scientifically defensible position as regards predicting from such observed data the nature

of the dose-response curve at exposure levels substantially below those covered by the observed data?

7. This is the first time that WATCH, as a government scientific advisory committee, has been asked to address these matters.

Argument

8. WATCH is asked to characterise what can be determined about the dose-response characteristics for two different diseases – lung cancer and mesothelioma – resulting from exposure to each of three different forms of asbestos – chrysotile, crocidolite and amosite, ie six distinct individual relationships.

9. To facilitate WATCH being able to address these six dose-response relationships a substantial body of supporting documentation has been assembled and is supplied as annexes to this cover paper. The annexes are:

Annex 1 - the "Hodgson & Darnton" analysis (Hodgson and Darnton, 2000)
Annex 2 - a somewhat similar analysis performed in the USA by Berman and Crump (2005)
- paper copy not provided, please access via :
http://www.aeolusinc.com/Protocol_TBD_2003.pdf
Annex 3 - a commentary by Andrew Darnton (HSE) comparing the Hodgson & Darnton and Berman & Crump analyses
Annex 4a - a collection of the original epidemiological studies that form the basis for the Hodgson and Darnton, 2000 analyses
Annex 4b - a collection of the original epidemiological studies that form the basis for the Berman and Crump, 2005 analyses that are extra to those used by Hodgson and Darnton
Annex 5 - a commentary by Garry Burdett (HSE HSL) on the quality of the exposure data in these epidemiological studies
Annex 6 - a summary by HSE of the contribution to the issues in this paper that can be offered by the available experimental animal toxicological data
Annex 7 - a recent national case control study of meothelioma by Peto et al - Draft – CONFIDENTIAL until published

10. Several additional ad hoc members with particular knowledge and expertise in asbestos matters have accepted invitations to serve on WATCH at the November 2007 meeting: Julian Peto, Robin Howie, Brian Miller and Jeremy Steele.

11. At the November WATCH meeting brief presentations will be given on each of the key sources of evidence, to ensure that all members begin from a common understanding of the available data and in order to structure the ensuing debate.

Link to HSC Strategy

12. This work relates directly to HSC/E's statutory responsibilities in relation to asbestos; it also has potential relevance for the asbestos strand of the cancer Project within HSE's Disease Reduction Programme.

Consultation

13. There has been no external consultation on this paper.

European Context

14. The regulatory framework for asbestos is EU-wide and it is possible that the output of this work might have some EU applicability.

Action

15. WATCH is asked to consider the information in this package and, with the additional benefit of brief presentations and extensive debate at the November WATCH meeting, to develop what it considers to be the most scientifically robust positions on what can be said about the dose-response relationships for the following:

- lung cancer caused by exposure to crocidolite
- mesothelioma caused by exposure to crocidolite
- lung cancer caused by exposure to amosite
- mesothelioma caused by exposure to amosite
- lung cancer caused by exposure to chrysotile
- mesothelioma caused by exposure to chrysotile

In each case WATCH is asked to make clear:

- the range of exposures for which there are observed data
- the degree of uncertainty surrounding the observed data and risk estimates within the observed data range
- where any conclusions have been arrived at by making predictions of the risk involved with exposures falling outside (below) the exposure range covered by observed data

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