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ADVISORY COMMITTEE ON TOXIC SUBSTANCES

Proposed Workplace Exposure Limit for respirable crystalline silica: results of public consultation and recommendations to HSC

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Cleared by Steve Coldrick on 11 April 2006

Issue

1. Results of consultation exercise on a new Workplace Exposure Limit (WEL) for respirable crystalline silica (RCS).

Timing

2. Routine. Results of the consultation will be put to the HSC in July for the WEL to come into force on the Common Commencement Date of 1st October 2006.

Recommendation

3. That ACTS note the results of the consultation exercise and agree the recommendations to HSC on the way forward.

Background

4. Members first considered this topic in November 2004 (ACTS/35/2004) and decided to propose a draft consultative document (CD) to the HSC, recommending a choice of WELs of either 0.1 mgm^{-3} or 0.05 mgm^{-3}. The CD was to acknowledge that it would not be reasonably practicable to control exposure to the lower level across all industry sectors, and that there would be measurement difficulties associated with this level. The HSC considered this proposal but decided that the CD should positively recommend a WEL of 0.1 mgm^{-3} and point out that a lower WEL would be difficult to achieve and difficult to enforce, mainly due to measurement problems. The HSC also noted that the WEL should be reconsidered if measurement techniques improved in the future. Members were informed of the HSC decision in June 2005 (ACTS/21/2005). The CD was revised accordingly and cleared by the HSC on 26 July 2005. It was published in November 2005 with a closing date of 13 March 2006.

Argument

5. The responses are summarised in annex A as are the HSE recommendations. The responses were mainly supportive of the proposed WEL. Of those who responded positively, some felt that the proposed WEL should have been lower and that measurement difficulties were overemphasised. However, HSE is persuaded of the practical difficulties associated with measurement of RCS at low levels of exposure in the region of 0.05 $mg.m^{-3}$. This would be the case particularly when 4-hour samples are taken. In almost all workplace situations where dust containing RCS is generated, other silicate dusts are also present. When air concentrations of RCS are in the region of 0.05 $mg.m^{-3}$ then very low amounts of crystalline silica are collected on sampling filters and interference due to the presence of contaminating silicate materials can lead to difficulty in measurement. The decision to propose 0.1 $mg.m^{-3}$ as a WEL is a balanced judgement that takes account of the need to protect occupational health, but also the costs and practicalities involved.

6. Of those who responded negatively, main concerns could be grouped under the following headings:

    a. **Infrequent exposures:** The Scottish Agricultural College noted that exposures in this sector can be periodic, leading to lower health risks. In a related vein, Network Rail Infrastructure Limited noted that certain tasks in their sector not carried out on a daily basis can lead to exposures that exceed the proposed WEL. Network Rail Infrastructure Limited suggested the possibility of using weekly averaging of exposure as a means of allowing for intermittent exposures. HSE has considered this suggestion but feels it is impractical in terms of compliance and enforcement. Enforcement is conducted on the basis of continued over-exposure because of poor control practice. If control is poor but exposure is only sporadic, advice on improving control would be appropriate (because sporadic exposure could change in the future).

    b. **Variable toxicity:** Moore International Services, the British Ceramic Confederation (BCC), and Network Rail Infrastructure each expressed similar concerns about the WEL proposal being based on a “worst-case” assessment of risk, and it being over-precautionary. Moore International Services and BCC felt that the WEL proposal should have been more flexible to accommodate variation in health risk, and they each asked for relaxation of the WEL in cases where the health risks are shown to be low. This issue was discussed in the CD and the arguments presented remain the same. In short, the CD acknowledges that there may be variation in health risk depending on the circumstances of exposure, and that the silicosis risk estimates presented in the CD are likely to reflect the upper end of the spectrum of toxicity (and hence may be viewed as “worse-case”). However, the risk estimates are based on high quality data that provide the only reliable quantitative dose-response information available on silicosis. Furthermore, the risk estimates are considered to pertain to a wide variety of common workplace tasks that lead to the generation of dust containing RCS. Hence HSE feels that it is justifiable to use these data as the basis for the proposed WEL. Furthermore, there is a lack of suitable quantitative evidence that would allow us to develop industry-specific WELs. There are a number of epidemiological studies that indicate even higher risks of silicosis but these were set aside by HSE because the exposure data were judged to be not

sufficiently reliable, indicating the HSE has not taken an over-precautionary approach to health risk assessment.

c. **Accuracy of silicosis incidence data:** BCC question the data on the incidence of silicosis, and say such data should not be taken at face value. The data are based on the annual number of cases of compensation awarded by the DWP Industrial Injuries Scheme. Each case is verified by chest X-ray, and the amount of compensation awarded is determined by the degree of impairment in lung function. However, not all workers with silicosis will necessarily have access to an occupational physician and some may escape diagnosis. There is also the possibility that others may claim compensation from their employer's insurance liability and may not additionally apply for Industrial Injuries benefit. Hence, this data is more likely to be an underestimate rather than an overestimate of the annual rate of silicosis. BCC also imply an inaccuracy concerning the statistics on silicosis given that it comes under the umbrella term of "pneumoconiosis". HSE does not feel there is any significant cause for concern regarding inaccuracy. In the context of the Industrial Injuries Scheme, pneumoconiosis is a term that covers three specified categories: asbestosis, coalminers' pneumoconiosis, and "other agents". The term "other agents", by default, refers to silicosis. Indeed, when the diagnosis of silicosis is made, the physician will enquire about the patient's occupational history and verify that the patient would have been exposed to silica-containing dusts. The main industry sectors from which the silicosis cases are drawn are given on the HSE statistics website; these also confirm that the causative agent would have been RCS. Even if there were some cases of mixed dust fibrosis captured within the pneumoconiosis "other agents", they still reflect exposure to RCS as well as to other dusts, and so would still be within the relevant sphere of concern.

7. After consideration of the responses to the CD, HSE has made a number of recommendations mainly relating to guidance as detailed in annex A, and proposes to recommend to HSC that the WEL of 0.1 mgm^{-3} be implemented in October 2006.

Link to HSC Strategy

8. This work forms part of the Respiratory Disease Project within HSE's Fit 3 Disease Reduction Programme.

Communication Plan

9. HSE aims to work in partnership with key stakeholders to raise awareness of the WEL, the good practice advice in COSHH Essentials (CE) and the health risks associated with exposures to RCS. The Internet version of EH40 will be revised to include the new WEL, stickers will be appended to existing hard copies, and CE sheets and free leaflets will be updated accordingly. A press notice will be issued nearer the time of the new WEL coming into force. An enforcement initiative is planned to target the high-risk industry sectors beginning this year with stonemasons, to be followed later by brickmakers and quarry workers.

Evaluation Plan

10. The impact of these initiatives will be evaluated as part of the assessment of the impact of the Disease Reduction Programme.

Consultation

11. 430 paper copies of the CD were issued and there were 4 “hits” on the internet version of the document during the consultation period. 31 responses were received, 3 of which were “nil responses”. The respondents are listed in section 1 of annex A.

Costs and Benefits

12. The costs and benefits were detailed in the RIA to the CD. For the proposed WEL of 0.1 mgm^{-3}, quantitative costs over 60 years (£638 to 650 million) outweigh benefits (£209 to 414 million) but there are moral arguments to be considered. The RIA has not been amended following the consultation – for reasons given in paragraph 6 and annex A.

Financial/Resource Implications for HSE

13. Costs will be absorbed within existing budgets. The enforcement initiative will require some re-allocation of resources, but the subsequent opportunity costs are not readily quantifiable.

Environmental implications

14. None

European implications

15. In 2002, the European Scientific Committee on Occupational Exposure Limits recommended that occupational exposure limits for RCS would need to be below 0.05$mg.m^{-3}$ in order to fully protect against silicosis. It was expected that this recommendation would form the basis for European negotiations on a future-binding limit for RCS. However, given the lack of current activity in Europe on the development of binding limits, any action on this may not occur for many years.

Other implications

16. None

Action

17. ACTS is invited to note the results of the consultation exercise and agree HSE’s recommendations on the way forward.

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