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HEALTH AND SAFETY COMMISSION

Results of Consultation on Proposals for a Workplace Exposure Limit for Respirable Crystalline Silica

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Issue

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

Timing

2. Routine. If agreed, the WEL will come into force on the Common Commencement Date of 1st October 2006.

Recommendation

3. That HSC:

- note the results of the consultation exercise;
- agree HSE's recommendations on the way forward, most notably that the WEL of 0.1 mgm^{-3} be implemented in October 2006;
- agree that ACTS keep under review implementation of the WEL as well as research on exposure measurement to inform discussion on further reduction of the limit.

Background

4. RCS is a naturally occurring mineral present in sands, rocks, stones and clays. The term "respirable" refers to particles that are small enough to be inhaled into the lungs. Dusts containing RCS are found in a wide range of industry sectors including quarries, iron and steel foundries, brick manufacture, potteries, stonemasonry, the industrial sand industry and construction. The estimated number of sites in these sectors varies from 25 (industrial sand industry) to 2000 (quarries), this figure being difficult to determine for construction where an estimated 140,000 employees are regularly exposed to RCS. Within these sectors, companies range in size from small to large, but

the RIA concluded that a WEL of 0.1 mgm^{-3} would not impose a substantially disproportionate burden on small businesses. Costs are likely to be highest in the brickmaking, quarrying and industrial sand industry.

5. Exposure to RCS over a prolonged period can cause silicosis, an irreversible lung disease, the effects of which range from mild to severe depending on the extent of exposure. Severe cases are disabling and can lead to premature death. The current WEL is 0.3 mgm^{-3}, but evidence suggests that there can be up to a 20% risk of developing silicosis with exposures up to this level. The risk falls to 2.5% at exposures of 0.1 mgm^{-3} and 0.5% at exposures of 0.04 mgm^{-3}.

6. The draft consultative document (CD) was discussed by the HSC twice last year (papers HSC/05/55 and HSC/05/73) and published in November 2005, with a closing date of 13 March 2006. As agreed at HSC, the final document recommended a WEL of 0.1 mgm^{-3}, with a view to a further reduction to 0.05 mgm^{-3} in the future, subject to resolution of the measurement difficulties and a regulatory impact assessment.

Argument

7. The responses are summarised in Annex A as are the HSE recommendations. The responses were mainly supportive of the proposed WEL, although some respondents noted that any further reduction would not be feasible; others 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 mgm^{-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 mgm^{-3}, then very low amounts of RCS 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 mgm^{-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.

8. Of those who responded negatively, main concerns tended to relate to:
   a. **Infrequent exposures**: It was noted that exposures in some sectors are periodic leading to lower health risks. Also, certain tasks not carried out on a daily basis can lead to exposures that exceed the proposed WEL. The possibility of using weekly averaging of exposure as a means of allowing for intermittent high exposures was suggested. 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**: Some respondents felt that the WEL proposal is over-precautionary and based on a “worse-case” assessment of risk. It was suggested that the proposal should have been more flexible to accommodate variation in health risk, with 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 that HSE has not taken an over-precautionary approach to health risk assessment.

c. **Accuracy of silicosis incidence data**: It was suggested that this 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. It was also suggested that the statistics on silicosis were inaccurate given they come 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.

9. After consideration of the responses to the CD, HSE has made a number of recommendations detailed in annex A, and recommends that the WEL of 0.1 mgm^{-3} be implemented in October 2006.

Consultation

10. 430 copies of the CD were issued. 31 responses were received, 3 of which were "nil responses". The respondents are listed in section 1 of Annex A.

11. The Advisory Committee on Toxic Substances (ACTS) was consulted on the results of the consultation and the recommendations on 3 May 2006. ACTS concluded that, although it could accept a WEL of 0.1 mgm^{-3}, it did not wish to see loss of momentum on progress towards a WEL of 0.05 mgm^{-3}. To that end, it will be reviewing HSL research on exposure measurement and feedback on implementation of the WEL.

Presentation

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

Enforcement

13. An enforcement initiative is planned to target the high-risk industry sectors beginning this year with stonemasons. Proactive inspections (320 visits) will be carried out nationally on high-risk stonemasonry sites in the last 6 months of this financial year. Similar inspections of brickmakers will be conducted in 07/08, with plans to visit quarries the following year, subject to resources in the new PSA period. Silica has also been factored in to the Occupational Health Management Model for the construction sector as a major aspect of the respiratory disease information.

Working with stakeholders

14. HSE will also be working with stakeholder groups to raise awareness of the new WEL and good practice. A series of presentations at regional meetings of the Quarry Products Association have already begun, with similar events being scheduled with the other stakeholder groups such as the British Aggregates Association, Executive Hire News and the Stone Federation of Great Britain. We are also in discussion with stonemasonry colleges with a view to incorporating silica good practice in the health and safety elements of their courses.

Costs and Benefits

15. The costs and benefits were detailed in the RIA to the CD. For the proposed WEL of 0.1 mgm^{-3}, costs over 60 years (£638 to 650 million) outweight benefits (£209 to 414 million) but this offers the most balanced option: at the current WEL of 0.3 mgm^{-3}, 60-year costs are £5.1 to 5.3 million compared to benefits of £39.4 to £78.8 million, and at the lower WEL of 0.05 mgm^{-3}, the costs are grossly disproportionate to benefits (£3453 to 3603 and £340 to 671 million respectively). The RIA has not been amended following the consultation – for reasons given in paragraph 8 and annex A.

Financial/Resource Implications for HSE

16. 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

17. None.

Other Implications

European

18. The Social Dialogue “Agreement on Workers Health Protection through the Good Handling and Use of Crystalline Silica and Products containing it” was signed in April 2006 by 13 employer and 5 employee organisations. The agreement comes into force in October 2006 for 4 years, after which it will be reviewed every 2 years. Under the agreement, employers, employees and workers’ representatives “will jointly make their best endeavours to implement the good practices at site level in as far as applicable”. The good practices are based on Silica Essentials, supported by more detailed guidance on topics such as training and subcontracting. A committee of employer and employee representatives will settle questions on the application and interpretation of the agreement.

Action

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

Contact

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