

Advisory Committee on Toxic Substances Paper		ACTS/07/2008	
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## ADVISORY COMMITTEE ON TOXIC SUBSTANCES

### Respirable Crystalline Silica (RCS) - Carcinogenicity

#### A Paper by Lydia Harrison

Cleared by Steve Coldrick on 23 June 2008

#### Issue

1. At the last ACTS meeting on 15 November 2007, HSE was asked by members to put forward a paper on silica dust to the next meeting.

#### Timing

2. Routine. However, members are asked to indicate whether they wish to return to this topic at a subsequent meeting given the limited time for members to consult and develop views ahead of this meeting.

#### Recommendation

3. That members note the developments described in the paper and give their views on those processes with the highest risk of exposure to RCS dust, where the health and safety 'system' should focus its efforts in anticipation of developments from the EU. This would be helpful to steer future European Commission discussions and the work of the DRP.

#### Background

4. An HSE/WATCH assessment of the carcinogenicity of RCS in 2002, concluded that occupational exposure to RCS had caused lung cancer in humans; and considered variability with exposure situation, silicosis etc. ACTS agreed that, although not definitive, it is strongly suggestive that there is an increased risk of lung cancer only in those workers who have developed silicosis. The HSC considered the position on RCS at its meetings in April 2005, September 2005 and July 2006 and was informed that there is evidence that exposure to RCS can result in lung cancer in those with silicosis. A workplace exposure limit (WEL) for the dust RCS of  $0.1 \text{ mg m}^{-3}$  was agreed and HSE's approach to raising awareness of and compliance with this limit, through the

respiratory disease project part of the Disease Reduction Programme, was also supported.

5. The International Agency for Research on Cancer (IARC) has stated its opinion that “crystalline silica inhaled in the form of quartz or cristobalite from occupational sources” is carcinogenic to humans (Group 1) (IARC Monograph 68) In making its overall evaluation, the IARC Working Group noted that carcinogenicity in humans was not detected in all industrial circumstances studied, and that carcinogenicity may be dependent on inherent characteristics of the crystalline silica, or on external factors affecting its biological activity or distribution of its polymorphs.
6. The European classification and labelling system, both in its present and future form adopting the globally harmonised system, applies to substances or preparations placed on the market. It cannot be applied to process generated substances such as flour dust, rubber fume, or diesel exhaust, and it cannot be used to identify processes where there is potential for silicosis. The classification and labelling system is not, therefore, relevant for RCS except where a silica product placed on the market is, or contains, the IARC or other authoritative description of what is considered to be a carcinogen. So in general the classification and labelling system is unlikely to provide a useful way forward for addressing carcinogenicity of RCS in the workplace.
7. However, the Carcinogens and Mutagens Directive (2004/37/EC) provides an alternative approach. The definition of carcinogen in this Directive covers both:
  - substances and preparations classified as category 1 or 2 carcinogens (category 1A and 1B under the GHS); and
  - substances preparations or processes listed in Annex I of the Directive.
8. Annex I of the Carcinogens and Mutagens Directive (2004/37/EC) lists substances, preparations and processes considered to be carcinogenic. Examples of entries in the list are manufacture of auramine, and work involving exposure to hardwood dusts. Presently, there is no mention of processes in which silica dust is generated.
9. HSE presently has no formal position on whether or how RCS should be included in either Annex I or III of the Carcinogens and Mutagens Directive.

## **Argument**

10. The European position on RCS has been to adopt the Social Dialogue “Agreement on Workers Health Protection through the Good Handling and Use of Crystalline Silica and Products containing it” (SDA). The associated guidance covers almost every possible task in the industry sectors and advice is included on dust monitoring, health surveillance, training and research. The construction industry is not covered by the SDA but guidance on controlling exposure to silica in construction industries in Great Britain is provided in HSE’s “COSHH Essentials” which has specific guidance for this sector.
11. The European Commission is currently planning to revise the Carcinogens and Mutagens Directive, and is looking to appoint a contractor to carry out an impact

assessment of likely amendments. This work is expected to be carried out during 2009 and among the issues that may be presented to the potential contractor for consideration are additions to Annex I – including RCS, diesel engine exhaust emissions, rubber process dust and mineral oils. The review will also cover the list of binding limits values in Annex III of the Carcinogens and Mutagens Directive, which presently has only three entries - benzene, vinyl chloride monomer and hardwood dusts. An outcome of the review could be the inclusion of other substances including RCS.

12. Any changes to the Annexes of the Carcinogens and Mutagens Directive would, of course, be subject to negotiation. If agreed and subsequently adopted, Member States will be required to implement any changes into national law. If RCS were to be listed in Annex I it would, in Great Britain, become subject to the requirements in regulation 7(5) of COSHH, and if it were to be included in Annex III the entry in HSE's publication EH40 (Workplace Occupational Exposure Limits) would be adjusted accordingly.
13. HSE firmly supports the SDA, not least because this is in line with HSE's current policy initiatives to improve protection for workers exposed to RCS. HSE's own guidance is already available through its "COSHH Essentials" sheets and HSE inspectors are actively promulgating this advice with relevant industries using processes that expose workers to RCS.
14. HSE's "COSHH Essentials" currently has 59 separate guidance sheets available covering 8 industry sectors, including construction, in which workers are exposed to RCS. Hyperlinks to those sheets covering processes involving silica and construction, are appended to this paper at Annex 1. ACTS Members have been provided with a typical example of a guidance sheet for each sector.
15. HSE is continuing to work with high risk industry sectors to raise awareness of the WEL agreed by HSC and the associated "Essentials" good practice advice that is freely available. This work has included partnership initiatives such as a series of seminars organised by the Quarries Products Association and a supply chain project to reduce exposure to RCS from the cutting of kerbs, blocks and paving. There have also been enforcement interventions for stonemasons and the brick making industry, with quarrying planned for later this year. HSE has already taken, and will continue to take, action under the respiratory disease project to ensure compliance with the WEL and to drive down levels of exposure to RCS to prevent silicosis (and any lung cancers associated with silicosis).

### **Link to HSC Strategy**

16. Members' views would be helpful to steer future EU discussions and the work of the DRP.

### **Communication Plan**

17. Not applicable.

### **Evaluation Plan**

18. Not applicable.

## **Consultation**

19. Staff from the following teams have been consulted: International Chemicals Unit; Disease Reduction Division and Corporate Specialist Division.

## **Costs and Benefits**

20. Not applicable.

## **Financial/Resource Implications for HSE**

21. Not applicable.

## **Environmental implications**

22. Not applicable.

## **European implications**

23. As discussed in the paper.

## **Other implications**

24. None identified.

## **Action**

25. See 'Recommendation'.

## **Contact**

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## **Annex 1**

Links to guidance sheets on HSE website. "COSHH Essentials" publications:

<http://www.hse.gov.uk/pubns/guidance/index.htm>

'Silica specific' guidance sheets:

Brick/tile work (8) - <http://www.hse.gov.uk/pubns/guidance/bkseries.htm>

Ceramics (6) - <http://www.hse.gov.uk/pubns/guidance/crseries.htm>

Construction (5) - <http://www.hse.gov.uk/pubns/guidance/cnseries.htm>

Foundries (12) - <http://www.hse.gov.uk/pubns/guidance/fdseries.htm>

Manufacturing (5) - <http://www.hse.gov.uk/pubns/guidance/mnseries.htm>

Quarries (12) - <http://www.hse.gov.uk/pubns/guidance/qyseries.htm>

Slate works (6) - <http://www.hse.gov.uk/pubns/guidance/slseries.htm>

Stonemasons (5) - <http://www.hse.gov.uk/pubns/guidance/stseries.htm>

A typical example from each of the above sectors has been provided. These are:

Bk2 – 'Sand handling and screening'

Mn1 – 'Making products that include silica flour'

Cn8 – 'Tunnelling and shaft sinking'

Cr4 – 'Kiln loading (placing) and unloading'

Fd7 – 'Fettling small castings'

St2 – 'Rotary tools – boring and polishing'

Qy1 – 'Rock drilling'

Sl1 – 'Primary sawing'