Control of Silica

The quarrying industry must demonstrate its credentials, says the Quarry Products Association, if European Agreement is to be seen to work. Martin Isles, the QPA's health & safety director, and chairman of UEPG's Health & Safety Committee, explains why an innovative European 'Social Dialogue Agreement' gives industry the chance to influence its own destiny

European legislators are often blamed for imposing seemingly over-restrictive legislation, only for some EU national regulators to exacerbate matters by 'gold-plating' the EU's edicts. However, neither situation pertains to the control of respirable crystalline silica (RCS). Indeed, an innovative European Agreement between employers and trade unions has opened the door for a more flexible approach across a range of industries. For this new-style challenge to be successful in fending off specific European legislation, the quarrying industry must play its part by producing evidence of continuous improvement to convince the European Commission that industry's efforts are sufficient and 'adequate'.

Social Dialogue success

It is, literally, a breath of fresh air for the UK quarrying industry (one among 15 different industries) to be afforded the rare opportunity to control its own destiny, so far as regulatory control is concerned, by utilizing a practical alternative to potentially punitive legislation. For mainstream UK quarrying, this opportunity has been facilitated by the QPA's support for the European Aggregates Association (UEPG) and its active involvement in a lengthy Brussels-based negotiation process, facilitated and funded by the European Commission. The successful outcome of this process was the signing, in April 2006, of a ground-breaking multi-sectoral EU Social Dialogue Agreement[1] between a range of European extractives and consumer industries along with their European trade union counterparts. The importance of the Agreement was underlined by the signatures made in the presence of Vladimir Spidla, the EU Commissioner for Employment, Social Affairs and Equal Opportunities.

Scope and objective

The signatory organizations currently represent the aggregates, cement, ceramics, foundry, glass fibre, special glass, container glass, flat glass, industrial minerals, mineral wool, natural stone, mining, mortar and precast concrete sectors. The Agreement is open for further signatures in the future. It is worthy of note that the Health and Safety Executive (HSE) were one of three official observing organizations during the negotiations and that much of the guidance reflects their influence, expertise and standing within Europe. The objective of this major legal Agreement is simply to work towards the elimination of silicosis as an industrial disease.

The Agreement

Entitled 'The Agreement on Workers' Health Protection through the Good Handling and Use of Crystalline Silica and Products containing it', the Agreement is structured as follows (Articles 1 to 15 respectively): Objectives; Scope; Definitions; Principles; Good Practices; Monitoring; Reporting & Improvement; The Council & Secretariat; Confidentiality; Health Surveillance; Research & Data Collection; Duration & Revision; Change of Parties; Miscellaneous; and Entry into Effect. Detailed information on the Agreement is available at www.nepsi.eu or, alternatively, at www.Safequarry.com (click on 'Hot Topics' and type 'silica' into the 'keyword search' box).

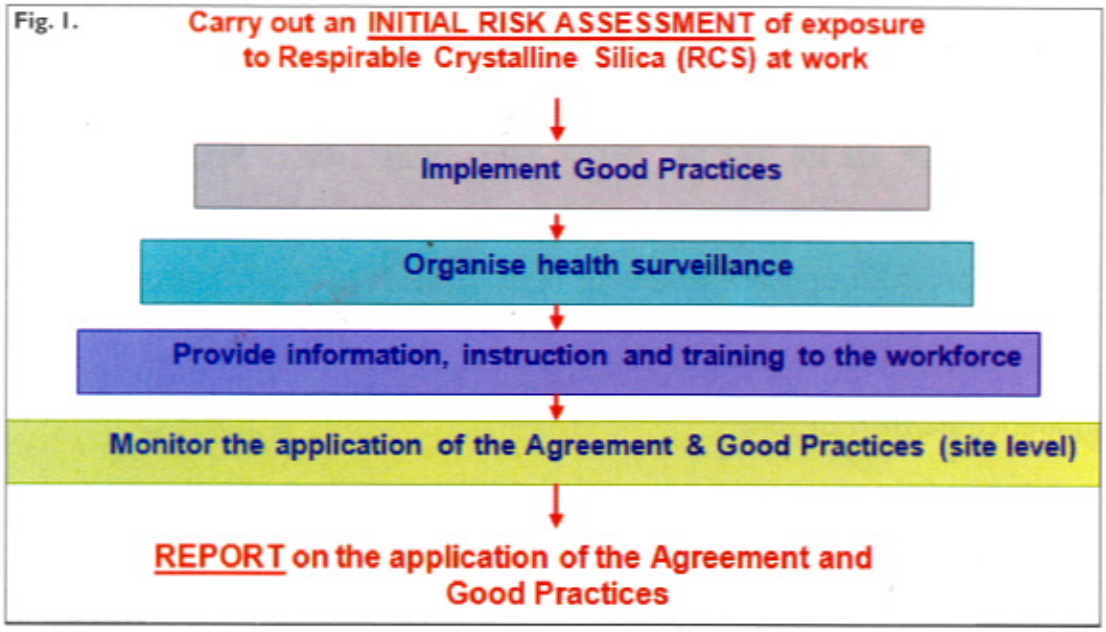
The following documents are included as annexes to the Agreement:

Annex 1. Good Practices (Good Practice Guide)
Annex 2. Dust Monitoring Protocol
Annex 3. Reporting Format
Annex 4. List of Research Projects
Annex 5. Descriptions of Industries
Annex 6. The Council – The Secretariat
Annex 7. Procedure for the Adaptation of the Good Practices
Annex 8. Health Surveillance Protocol for Silicosis

The main provisions of the Agreement are summarized in figure 1, the whole process being initiated by site a risk assessment of exposure to RCS. ➤

Respirable crystalline silica – the cause of silicosis

Fig. 1.



Risk assessment should be carried out for all levels of exposure, even extremely low levels, and for all levels of crystalline silica content.

Good practices

The main instrument for the application of the Agreement is the Good Practice Guide, which includes an introduction on crystalline silica and the risk-assessment procedure. A series of task sheets provide detailed guidance with technical recommendations as to ways of reducing exposure to RCS.

The Agreement is viewed as being clearly preferential to the alternative imposition of an EU Directive with unnecessarily low exposure limit values. Although the Agreement applies to all 27 European Union countries, a fundamental tenet is that national occupational exposure limits apply. Thus, for the UK, this means the HSE/HSENI Workplace Exposure Limit (WEL) of 0.1mg/m³ (8h time weighted average).

Reporting process

This represents the crucial basis on which the outcome will be judged by the European Commission. Reporting is biennial – commencing in 2008 – and presents a tough challenge in that the method of data collection, consolidation and summarizing has to be designed to cope with 15 distinct industries across 27 EU countries, and involves 23 official EU languages. The contractor chosen to deliver the web-based multilingual software is Customised Mapping, led by David Yelland, who also acts as the QPA's database manager. The deadline for the delivery of the software is 1 January 2008. Data collection will commence in March/April 2008. The reporting sequence has to begin on site, with progressive consolidation, to preserve confidentiality, as indicated in figure 2.

In due course, guidance will be given on company-level reporting; country-level reporting; and European sector-level reporting. The remainder of this paper, however, is devoted to site-level reporting, which is central to the ability of the signatory industries to influence their regulatory future, insofar as RCS is concerned.

Guidance for site reporting

For the initial (2008) site reporting, all QPA members' UK quarries will be required, individually, to complete a straightforward web-based questionnaire comprising 17 questions under the following six headings:

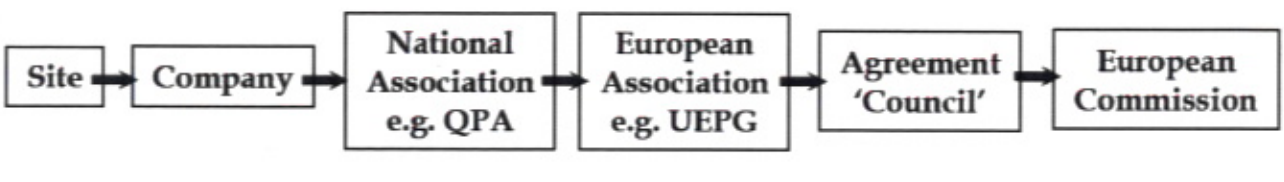
- General Site Information
- Exposure Risk
- Risk Assessment & Dust Monitoring
- Health Surveillance
- Training
- Good Practices

From the data that each site enter, key performance indicators (KPIs) will be calculated, automatically, to indicate the percentage of employees covered by the Agreement, who are potentially exposed to RCS at the site. Remarks and explanations will be able to be included in a final 'free text' box at the end of the reporting questionnaire.

Each 'site report' will, therefore, consist of three parts:

- Answers to the questions under the six headings listed above; ➤

Fig. 2.



Dust Monitoring & Control

Some typical methods used to reduce silica dust emissions

- The resulting KPIs;
- Remarks included in the 'free text' box.

For the 2008 initial reporting, all sites where aggregates are produced and/or handled are in scope, ie quarries (all types of rock and sand and gravel) as well as aggregates depots and wharves. It is emphasized that even if crystalline silica is not present or generated (in respirable form) during processing, the initial reporting must still be completed, but on this one occasion (2008) only. In the case of nil crystalline silica, '0' should be inserted under the 'Exposure Risk' heading and an explanatory note should be provided in the Key Notes 'free text' box. For this category of site, no further reporting will be needed beyond 2008.

It is vital, therefore, that risk assessment and reporting should be carried out for all levels of exposure, even extremely low levels, and for all levels of crystalline silica content. Periodic review is necessary.

It is suggested that QPA member companies and site managers should familiarize themselves, in advance, with the questions, as set out below, commencing with question 5.

'General Site Information' questions

1. Provide the name of the company (legal entity) to which the site belongs.
2. Select the country where the site is located.
3. If the site includes activities covered by more than one of the 15 industry sectors in-scope of the Agreement, then the report should relate to the largest activity on site.
4. Provide the name of the site.
5. Select '1' if valid recent data on exposure risk, risk assessment, dust monitoring, health surveillance, training and good practices have been collected and are available. Select '0' if no data at all is available.
6. Indicate the total number of employees working at the site, including administrative staff, part-time and fixed-term employees etc (as defined in Article 3.2 of the Agreement). Contractors should not be included. For guidance on how to work with contractors, refer to Task Sheet 2.1.20 in the Good Practice Guide (this can be viewed online at: www.Safequarry.com; click on 'Hot Topics' and type 'task sheets' into the 'keyword search' box.

'Exposure Risk' question

7. Indicate, from among the total number of employees working at the site provided above (6), the number of employees potentially exposed to RCS. Employees subject to minor exposure, short periods of exposure or already subject to prevention and protection measures should also be included.

'Risk Assessment & Dust Monitoring' questions

8. From among the number of employees potentially exposed to RCS (7), insert the number of employees for whom the risk assessment procedure provided in Part I of the Good Practice Guide (or equivalent UK provision) has been completed.
9. From among the number of employees potentially exposed to RCS (7), insert the number of employees for whom dust exposure data is available. For guidance on dust monitoring, refer to the Agreement's Annex 2: 'Dust Monitoring Protocol'.
10. From among the number of employees potentially exposed to RCS (7), insert the number of employees for whom the results of a risk assessment indicated that they should be made subject to the specific Health Surveillance Protocol for Silicosis provided in Annex 8 of the Agreement.

'Health Surveillance' questions

11. From among the number of employees potentially exposed to RCS (7), insert the number of employees currently undergoing generic health surveillance (eg under company commitments or national legislation).
12. From among the number of employees potentially exposed to RCS (7), insert the number of employees currently undergoing the Health Surveillance Protocol for Silicosis provided in Annex 8 of the Agreement.

'Training' questions

13. From among the number of employees potentially exposed to RCS (7), insert the current number of employees provided with information, instruction and training on the General Prevention Principles, as outlined in chapter 4 of Part I of the Good Practice Guide annexed to the Agreement (and defined in the national transpositions of Council Directive 89/391/EEC, available on the European Network sections of the European Agency for Safety and health at Work – OSHA – http://osha.europa.eu/OSHA).
14. From among the number of employees potentially exposed to RCS (7), insert the current number of employees provided with information, instruction and training on the Task Sheets in Part II of the Good Practice Guide annexed to the Agreement or any equivalent protection measures.

'Good Practices' questions

15. Indicate whether technical measures (eg provision of dust collection, suppression,

containment systems) were applied on site by selecting '1' if yes or '0' if no, from the drop-down list.

16. Indicate whether organizational measures (eg good practices illustrated by the Task Sheets in Part II of the Good Practice Guide annexed to the Agreement) were applied on site by selecting '1' if yes or '0' if no, from the drop-down list.
17. Indicate whether personal protective equipment (PPE) is distributed and used on site, where necessary, by selecting '1' if yes or '0' if no, from the drop-down list (Task Sheet 2.1.15 of the Good Practice Guide gives recommendations on PPE).

Key Notes

The Key Notes 'free text' box allows for the insertion of any relevant remarks on the application of the Agreement at site level.

Spirit of the Agreement

It should be noted that the Good Practice Guide states that efforts should be focused on minimizing potential personal exposure to respirable crystalline silica in the workplace. Thus, the spirit of the Agreement is that such efforts should be made even if the site's performance, in this regard, is within occupational exposure limits imposed by national legislation; in the UK's case, this means inside the current Workplace Exposure Limit (WEL).

Judgement

Assessing whether the objective is being met will be the European Commission (EC), who will evaluate progress as indicated by periodic reporting by the employers.

The Agreement does not require the reporting of technical results from dust monitoring, but companies are advised that they may wish to undertake such monitoring, first to satisfy themselves that they are controlling their operations adequately and, secondly, to provide tangible evidence if challenged.

The EC will be looking to the Agreement to provide evidence of continuous improvement being made by the 15 industries across the 27 EU member states. These industries have been afforded the chance to influence their own destiny. The UK aggregates industry must ensure that it rises to this challenge.

HSE to target the control of RCS in quarries

During 2008/09, the Health and Safety Executive will be targeting British quarries, with a view to spotlighting the adequacy of their performance in controlling risks related to respirable crystalline silica.

Not sure about silicosis?

For those new to (or unfamiliar with) the industries involved, silicosis is a lung disease caused by inhaling damaging amounts of respirable crystalline silica (RCS).

This new EU Agreement aims to:

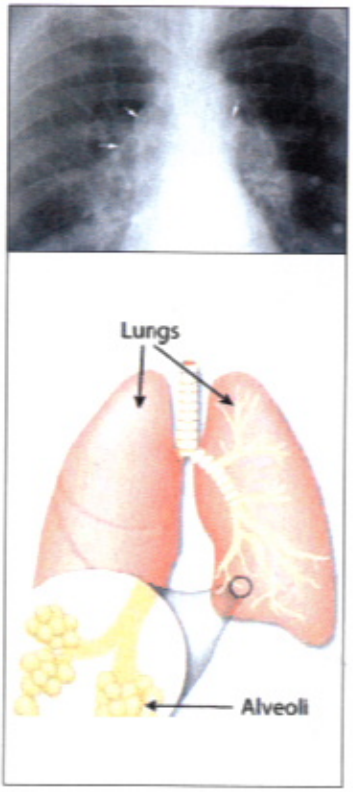
- Protect the health of the whole workforce;
- Minimize exposure to RCS by applying good practices;
- Increase knowledge of the potential health effects of RCS; and about good practices.

'Respirable' refers to particles that are small enough to reach the alveoli, which are the smallest components within the lung where gas exchange takes place. Excessive exposure of the lung to RCS can lead to the development of silica nodules and scar tissue, causing irreversible lung damage.

Practical measures

Sites should consider taking appropriate measures to minimize – and where possible prevent – the release of respirable crystalline silica. Measures to be considered include:

—plumbed-in industrial vacuum equipment
—provision and maintenance of high-quality seals and efficient dust extraction
—optimizing containment of dust during powder transfers
—provision of stand-alone dust extraction for separate buildings
—customized, well-maintained, atomized dust suppression. ■



Excessive exposure of the lung to RCS can lead to the development of silica nodules and scar tissue, causing irreversible lung damage

References

1. Article 139 of the EC Treaty provides the possibility for employers and employees' representatives to enter into contractual relations by signing the European Social Dialogue Agreements.

Footnote

The QPA is represented, via the European Aggregates Association (UEPG), on the Brussels-based Agreement Council by Martin Isles as chairman of the UEPG Health and Safety Committee.

Sites should consider measures to minimize the release of RCS, such as plumbed-in industrial vacuum equipment

Silicosis - The Legislative Context

The authors, Simon Matthews and Alastair Clough, are insurance and safety, health and environmental lawyers, respectively, in the mining and minerals team at DLA Piper

Silicosis is the oldest known industrial disease. It was first recognized by legislation in the Workmen's Compensation Act 1925, which facilitated the Various Industries (Silicosis) Scheme of 1931 – a government-funded scheme to compensate for death, disability or inability to work arising from the contraction of silicosis. Dust suppression was first required by the Mines & Quarries Regulations 1938.

Prior to 1989, however, and the introduction of the Control of Substances Hazardous to Health Regulations (COSHH), only a 'recommended' workplace exposure limit for respirable crystalline silica (RCS) exposure existed. This recommended limit was 0.1mg/m³ (8h time weighted average). When COSHH was introduced in 1989 an Occupational Exposure Standard (OES) of the same amount was provided for, subject to further advisory review. Following this review in 1992 a Maximum Exposure Limit (MEL) of 0.4mg/m³ was implemented, which was adjusted to 0.3mg/m³ in 1997.

In 2002 the Scientific Committee on Occupational Exposure Limits, whose purpose is to provide scientific advice to the European Commission, issued a recommendation that, to control against silicosis, the occupational exposure limit would need to be below 0.05mg/m³. It should be noted, however, that this recommendation was based purely on health issues, and other matters such as practicability, cost and technical measurement constraints were not considered.

In 2005 the term Workplace Exposure Limits (WEL) replaced Maximum Exposure Limits (MEL) and Occupational Exposure Standards (OES), although the limit remained at 0.3mg/m³.

The Health and Safety Commission (HSC) consulted on proposals to amend the WEL early in 2006. The consultation stated that evidence suggested that long-term exposure at the then limit would eventually result in up to a 20% risk of developing silicosis, while exposure at 0.1mg/m³ reduced the risk to 2.5%. Following this consultation the WEL was reduced to 0.1mg/m³ from October 2006. It is interesting to note that the relevant limit for respirable dust arising from Portland cement, limestone and marble has remained at 4mg/m³, highlighting the entirely different category into which RCS is placed compared to other known quarry dusts.

Under COSHH employers need to assess the risks of their activities and ensure that the exposure of their employees to substances hazardous to health is either prevented or, where this is not reasonably practicable, adequately controlled by applying protection measures appropriate to the activity. The legislation notes that controls shall only be treated as adequate if the WEL is not exceeded and good practice principles set out within the legislation are applied.

The good practice principles include issues such as the design and operation of the processes to minimize the emission of substances; the development of control measures taking account of all potential exposure routes; the use of control measures proportionate to the health risk; the provision of suitable personal protective equipment; and informing and training employees on the risks and control measures. Specific guidance in respect of silica in quarries has been provided by the HSE in the form of good practice guidance notes, which can be found on the HSE's website. HSE inspectors will use such guidance in assessing compliance with COSHH. As noted in Martin Isles' article (see pages 17–21), this guidance influenced the good practice guides which were prepared as part of the Social Dialogue Agreement, which are explained further in that article.

While there have been calls from some quarters for a further reduction in the WEL, one of the key barriers to any such reduction is the ability to obtain accurate measurements, particularly in the case of relatively short-term sampling periods. At the time of the 2006 consultation the HSE acknowledged the difficulties associated with low-level exposure measurements, although the HSC did subsequently confirm that the Advisory Committee on Toxic Substances would continue to review research on exposure measurement in the context of potentially progressing towards a lower WEL. It also announced that an enforcement initiative would be undertaken, starting with the stonemasonry sector in 2006/2007. A number of enforcement notices have been served in that sector during this period, and it is understood that the HSE intends to extend the enforcement initiative into the quarrying sector from April 2008. ▮