# Will the Silica Agreement foil EU legislation?

On 25 April 2006, European chemical and metallurgical industry unions struck a deal with the employers in a range of industries on protecting the health of workers exposed to crystalline silica dust. But the European building workers' union refused to join the negotiations or sign the autonomous agreement. This article looks at the health problems stemming from occupational exposure to silica dust, the contents of the agreement, and why some opted in while others shunned it. It concludes with our analysis of the negotiations set against the background of the current revision of the European Carcinogens Directive.

Free silica or silicon dioxide ($SiO_2$) is found in both the crystalline and non-crystalline states (amorphous[1]). The three commonest forms of crystalline silica are quartz, tridymite and cristobalite. Quartz is the most commonly found in nature (12% of the weight of the Earth's crust) and is a main constituent of many rocks and soils. While some very high quality synthetic quartz crystals are produced industrially (optics, electronics), almost all quartz for industrial use is extracted from sedimentary rocks (sand). Tridymite and cristobalite are not common in nature and so unlike quartz are not much used. However, cristobalite (and much more rarely tridymite) may be formed when mineral wools, sand and amorphous silica are heated at high temperature.

When inhaled, crystalline silica dust is deposited in the respiratory system. The point of deposition depends on the particle size: the largest particles are deposited in the nasopharyngeal region (upper airway passages – nose and throat) and eliminated by the organism, while the smallest (alveolar or respirable) penetrate to the trachea, bronchi and alveolar ducts (windpipe, upper and lower lung areas) which in humans leads to the development of silicosis.

The WHO describes this irreversible pulmonary disease as one of the oldest known occupational diseases[2]. The form and severity in which silicosis manifests itself depend on the type and extent of exposure to silica dusts[3]. It may be acute (massive exposure causing death within 1 to 3 years), accelerated onset (developing within 5 years of exposure), chronic (displaying symptoms only after several years' exposure, or even long after the last exposure) or asymptomatic (showing up only on x-rays). In later stages, the condition becomes disabling and is often fatal. Frequent causes of death in those affected are pulmonary tuberculosis (a complication from secondary infection by harmless bacteria), and respiratory insufficiencies due to massive fibrosis and emphysema.

Crystalline silica also plays an undoubted part in the development of cancer in humans. Consistent epidemiological findings support an increased risk of bronchopulmonary cancer among people with silicosis[4]. The mechanism of this relationship is not yet fully understood. However, epidemiologic studies have produced contradictory findings that have not so far explained the relationship between cancer and silica *per se*, i.e., in the absence of silicosis.

The most recent European statistics on recognised occupational diseases in the Member States[5] reveal that in the EU-15, 218 workers died from silicosis in 2001, and that 803 new cases were recognised for the same reference year. These figures are sure to be well below the actual number of cases, as it is a matter of record that occupational diseases are under-reported.

## The European regulatory framework and preliminaries to negotiations

EU countries already have measures to reduce exposure to silica dust based on Community directives in their national legislation, including having adopted occupational exposure limits (OELs). Some countries – notably the Netherlands and Denmark – have also classified crystalline silica as a carcinogen. These changes were brought in after the International Agency for Research on Cancer (IARC) decided in 1996 to include crystalline silica (inhaled in the form of quartz or cristobalite from occupational sources) in the group of substances recognised as carcinogenic to humans (Group I)[6].

At Community level, crystalline silica is still not listed in Annex 1 of Directive 67/548 which lays down the rules on labelling and classification of dangerous substances. The working group tasked with keeping this directive under review last addressed the issue of silica in 1998, deciding that silica was not to be regarded as a priority for classification under Annex 1 of the Directive[7]. In a written contribution ahead of the October 1998 meeting, the European silica producers association (Eurosil) called for a revision of the directive to allow the use of other classification criteria[8]. No further action has been taken on the labelling and classification of crystalline silica since then. All the European Chemicals

[1] Describes a mineral in the non-crystalline state, i.e., lacking an ordered atomic structure (e.g., opal, obsidian).
[2] See: www.who.int/mediacentre/factsheets/fs238/en.
[3] Toxicology data sheet No. 232, INRS. Downloadable on www.inrs.fr/htm/ft232.pdf.
[4] Pelucchi *et al.*, Occupational silica exposure and lung cancer risk: a review of epidemiological studies 1996-2005, *Annals of Oncology*, 2006 17 (7):1039-1050.
[5] Statistics in focus, 15/2004, Eurostat, 2004.
[6] Monographs on the evaluation of the carcinogenic risk of chemicals to humans. Silica, some silicates, coal dust and para-aramid fibrils, vol. 68, Lyon, International Agency for Research on Cancer, 1997.
[7] The October 1998 meeting minutes can be downloaded from the ECB website: http://ecb.jrc.it/classlab/SummaryRecord/5598r2_sr_CMR1098.doc.
[8] Eurosil, Crystalline silica position paper, 25 September 1998. Document ECBI/47/98.

Bureau (ECB), which provides scientific and technical support to the European Commission on dangerous chemicals, has done is to publish non-confidential information collected from industry on the firms concerned, production sites and other data on toxicity in particular[9] under Regulation 793/93[10]. In this ECB document, industry takes issue with the IARC findings and the relationship between cancer and exposure to silica. The question is whether the impending revision of the classification system under REACH and the Global Harmonized System[11] will provide a new framework within which to give practical effect to the obligations on labelling, drawing up safety data sheets and controlling the concentrations of airborne crystalline silica in workplaces.

The EU's Scientific Committee for Occupational Exposure Limits (SCOEL), produced an initial version of its recommendations for crystalline silica in June 2002, prompting a fresh response from the silica industry. The liaison office of the European ceramic industries called it unacceptable for a uniform value to be proposed without taking account of the diversity of silica species and argued that the recommended OEL of 0.05 mg/m³ was not measurable[12]. The silica producers organisation, Eurosil, also began lobbying on a number of fronts on the possible impacts of lowering Member States' existing exposure limits, publishing a socio-economic study and mortality study in the silica industries in Great Britain, and compiling a Good Practices document for discussion with stakeholders[13]. Eurosil also hosted a meeting of experts in Florence in September 2003, to which members of SCOEL were invited.

SCOEL took various comments on board, but did not change its proposed exposure limits. It finalized its proposals at a meeting held in June 2003, at which the Commission impressed upon it that any future activity on setting an exposure limit for crystalline silica would have to include social partner consultations. The Commission also pointed out that the treaty permitted the social partners to negotiate agreements which could be adopted by a Council Decision, and that such an agreement could be an alternative to adopting a directive. The meeting was also told that Eurosil would be hosting a workshop on the needs for research into the health aspects of silica. It was agreed that any members of SCOEL who attended the workshop would do so as experts, and not as members of the committee.

Eurosil then began considering the conclusion of a multisector Social Dialogue Agreement under article 139 of the Treaty as an alternative to "inappropriate" regulation[14] on the basis of a draft "prevention practises" document. In September 2004, the employers' organisation initiated a silica platform linking together ten employers' associations, and set consultations in train with the mine and chemical, metallurgical and building workers' federations (EMCEF, EMF and EFBWW). A number of the employers' associations which were not recognised social partners were granted recognition by the Commission specifically for the purpose. In the end, the official negotiations were joined by all the employers' associations, except for the European Construction Industry Federation (FIEC), while on the union side, the EFBWW stood aloof from the discussions.

[9] IUCLID Dataset, created 18 Feb 2000 – European Chemicals Bureau.
[10] Council Regulation (EEC) No. 793/93 of 23 March 1993 on the evaluation and control of the risks of existing substances. The aims of this regulation include evaluating of the risks of existing substances to man, including workers and consumers, and to the environment, in order to ensure better management of those risks within the framework of Community provisions.
[11] On which, see http://ec.europa.eu/enterprise/reach/ghs_en.htm.
[12] CERAME-UNIE, Comments concerning the SCOEL position for an OEL for respirable crystalline silica (RCS) dusts, Doc. CU/S-02.35, 20 December 2002.
[13] IMA Annual Report 2002-2003, p. 8.
[14] IMA Annual Report 2003-2004, p. 16.

## What does the agreement provide?

The agreement's [a] main aim is to minimise exposure to respirable crystalline silica [b] at work by applying Good Practices in order to prevent, eliminate or reduce the health risks to exposed workers. It also aims to increase knowledge of the potential health impacts of respirable crystalline silica and about Good Practices.

It applies to the production and use of crystalline silica and to products containing it, but also covers related ancillary activities like handling, storage and transport.

The agreement specifies that "employers and employees, and the workers' representatives, will jointly make their best endeavours to implement the Good Practices at site level". The list of Good Practices contained in Annex 1 of the agreement will be adapted and updated on an ongoing basis. The Good Practices relate to risk assessments and controls on workers exposed to respirable crystalline silica, monitoring the effectiveness of measures taken and health surveillance of employees, as well as training for workers.

A monitoring system will be installed at each site [c] to determine, in association with the company works' council and the workers' reps if necessary, whether the Good Practices are being applied or not.

A monitoring committee (the Council), comprised of equal numbers of workers' reps and employers, will deal with issues relating to the application and interpretation of the agreement. It will also report on how the agreement is being applied by industry sectors and submit its report to their members, the European Commission and the national workers' health and safety authorities.

The agreement will come into effect six months after its signature for a period of four years, and will then be automatically extended for further periods of two years. Should future European legislation on crystalline silica be proposed, the agreement's signatories will meet to examine the consequences for the agreement.

The agreement has been signed by: APFE, BIBM, CAEF, CEEMENT, CERAME-UNIE, CEMBUREAU, EMCEF, EMF, EMO, EURIMA, EUROMINES, EURO-ROC, ESGA, FEVE, GEPVP, IMA-Europe, UEPG.

a. Full version available on http://ec.europa.eu/employment_social/news/2006/apr/silica_agreement_en.pdf.
b. Respirable crystalline silica is defined as the mass fraction of inhaled crystalline silica particles penetrating to the unciliated airways.
c. A site is an operational entity at which respirable crystalline silica occurs, e.g. production site or use site.

## Pass notes on Treaty articles 138 and 139

Article 138 of the EC Treaty provides for European-level management and labour to be consulted on all the employment and social policy matters set out in article 137. There are two compulsory phases in the procedure: the Commission first consults the social partners on the possible direction of Community action; then, it consults them on the content of the proposed measure.

When consulted, however, the social partners may inform the Commission that they wish to use the article 139 procedure of negotiating an agreement between themselves in the area concerned. If they go down this road, they must normally conclude their agreement within nine months. They can then choose between two distinct types of implementation. The agreement can either be made legally binding by a Council Decision (turning it into a Directive), or contractually binding if the social partners undertake to implement it themselves. It is then known as an "autonomous" agreement. The social partners can also negotiate an agreement off their own bat, not initiated by the Commission, as they did with the crystalline silica agreement.

The participants in the intersectoral social dialogue – the ETUC, UNICE (private sector employers), UEAPME (small and medium-sized firms) and CEEP (public sector employers) – have so far concluded three agreements with the force of directives: those on parental leave (1996), part-time work (1997) and fixed-term employment contracts (1999).

They have also signed autonomous agreements on telework (2002), work-related stress (2004) a framework of action on life-long learning (2002) and a framework of action on gender equality (2005).

At sectoral level, the European industry federations (affiliated to the ETUC) also negotiate with their employer counterparts in the sectoral social dialogue committees (SSDC). These are voluntary bodies first set up in January 1999, tasked with developing and supporting the social dialogue at sectoral level. 32 SSDC have been created to date, and have adopted over 360 joint texts between them, mainly joint requests to the Council or Commission (common opinions, declarations, resolutions, recommendations, etc.), with only few mutual undertakings*. A mere five agreements have been negotiated under article 139 of the Treaty – three directly related to the sectoral implementation of the 1993 Working Time Directive in the transport sectors, the other two on training and working time in the railway industry.

This makes the crystalline silica agreement the sixth agreement to be signed at sectoral level under article 139 of the EC Treaty.

* P. Pochet, *Le dialogue social sectoriel, une analyse quantitative*, Chronique internationale de l'IRES, n° 96, September 2005.

## Negotiating against the background of the Carcinogens Directive revision

In March 2004, the European Commission set about updating Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work. This included consulting the social partners under the EU Treaty provisions for their opinion on possible changes[15]. One of these was whether occupational exposure limits should be set for other carcinogens, because while different countries had their own statutory OELs for many carcinogens, exposure limits were established at Community level under the Directive for only three substances[16].

After several months' negotiations, an agreement was finally signed on 25 April 2006 by 15 European employers' organisations and two European industry federations for the chemical (EMCEF) and metallurgical industries (EMF)[17]. The signatories to the agreement could potentially cover up to 2 million workers across Europe.

One view argues that the industry-initiated negotiations with the unions were mainly a bid to avoid having an exposure limit set at a level lower than that in force in some European countries and a Community recognition of crystalline silica as being a human carcinogen. This put the issue of what effect the agreement might have on the adoption of an exposure limit at the centre of the debate with the trade unions from the off. Any provision that might lead to the agreement being cancelled if an OEL was adopted was finally dropped, with the parties instead agreeing to evaluate the situation together should future Community legislation be proposed.

## What repercussions will the agreement have?

At European level, the agreement can be described as a "first" on several counts. It is the first intersectoral agreement, i.e., across multiple industry sectors. Interestingly, while some signatories were already involved in the European social dialogue through the sectoral social dialogue committee of the extractive industry, the signatories from the foundry industry have at present no body through which to take part

[15] See ETUC positions on http://hesa.etui-rehs.org/uk/dossiers/files/20-Res-ConsultCancerRep-gb.pdf.
[16] Benzene, vinyl chloride monomer and hardwood dust. More information: *HESA Newsletter*, No. 29, March 2006, p. 12. Downloadable at: http://hesa.etui-rehs.org > Newsletter.
[17] http://ec.europa.eu/employment_social/news/2006/apr/silica_agreement_en.pdf.

in the sectoral social dialogue. The other new aspect lies in the fact that unlike the agreements signed at intersector level (telework, stress), this agreement contains no reference to a Commission measure, only to existing Community legislation.

By sending out a positive message about its readiness to adopt Good Practices, industry is probably hoping to avoid (or put off?) crystalline silica being classified as a human carcinogen in the European legislation, and an OEL adopted for it at Community level with its attendant obligations on labelling, drawing up safety data sheets and controlling airborne crystalline silica concentrations in workplaces which could add to the costs and complexity of producing, processing and the industrial use of the countless products that contain crystalline silica.

The two union signatories argue that the agreement will enable the early implementation of practical measures to reduce workers' exposure to crystalline silica dust. The union signatories do not see the agreement as a bar to silica's classification in the European dangerous substances list, or the adoption of a Community OEL. Indeed, both measures are desired and seen as fitting in perfectly with the agreement. The EFBWW does not take the same view, and refused to join the agreement which it sees as standing in the way of the early adoption of Community legislation. The building workers' union argues that the only way to give effective protection to all European workers who are exposed to crystalline silica is to bring in legislation first, and then fill it out with sectoral agreements if need be.

The Commission itself is solidly behind the initiative, which fits in with its policy of promoting and supporting the Community level social dialogue, especially at sectoral level[18]. The agreement also chimes with the Commission's current aim of lightening the legislative burden on industries and supporting voluntary measures[19].

However, since the agreement does not cover all the workers who are exposed to crystalline silica dust[20], the Commission could well find itself having to bring in legislation on it to ensure that the principles of framework directive 89/391 on workers' health and safety are carried out.

## Our take on the agreement

Autonomous agreements can lead to improvements in workers' health and safety. But as the document recently adopted by the union representatives on the Luxembourg Advisory Committee on Safety and Health[21], fully endorsed by the ETUC, points out "it would be mistaken to see either industry or inter-industry collective bargaining as an alternative to legislation (...) Collective bargaining supplements and facilitates the implementation of legislation".

As to its contents, the agreement has several things to commend it. One is the introduction of a system

### EMF and EFBWW: for or against the agreement?

To find out exactly why the European industry federations decided to join or shun this voluntary agreement, we talked to Bart Samyn, Deputy General Secretary of EMF (pro) and Harrie Bijen, General Secretary of EFBWW (anti).

**Why did you sign – or not sign – the agreement with the employers on respirable crystalline silica?**

**B.S. –** EMF signed up because we see the agreement as a great opportunity for practical improvements in risk prevention and health and safety surveillance for workers exposed to silica dust. And it could act as an adjunct to any future Commission initiatives in the field.

**H.B. –** EFBWW decided not to join the agreement on the grounds that it could stop respirable crystalline silica being included in the European list of carcinogens. We also do not see how it can be easily applied in the construction industry, which is nearly 95% made up of small and medium-sized firms.

**Should respirable crystalline silica be included in the European list of carcinogens and should it be covered by the Carcinogens Directive?**

**B.S. –** We still want it put on the Carcinogens List, so that the agreement can be topped-up by legislation. But then, we would have to look at how that legislation would affect our agreement, especially if it involves additional enforcement measures.

**H.B. –** This is exactly what we are asking the Commission for. We strongly believe that having the same clear legal basis in all Member States is the best way to protect all workers who are exposed to crystalline silica dust.

**Would workers in your sector be better protected if employers had to comply with a European occupational exposure limit value (OELV) for respirable crystalline silica?**

**B.S. –** Most European countries already have an OELV for respirable crystalline silica, of course. But an OELV is effective only if there is machinery to enforce it. The agreement we signed provides for that machinery. So, we are not against the idea of a Community OELV, which would certainly be extremely useful, but cannot be the only solution.

**H.B. –** Absolutely, and we think the indicative value of 0.05 mg/m$^3$ recommended by SCOEL in 2003 should be used as a basis of discussion for working out the Community OELV.

[18] Commission Communication of 12 August 2004, Partnership for change in an enlarged Europe – Enhancing the contribution of European social dialogue. COM(2004) 557 final.

[19] See on this: "Soft law and voluntary measures: the deregulator's new clothes", *TUTB Newsletter*, No. 26, December 2004, p. 25-27. Downloadable at: http://hesa.etui-rehs.org > Newsletter.

[20] The building workers' federation refused to sign the agreement, meaning that it will not apply to the large number of European construction workers. The ILO estimates that the construction industry employs more than 2 million people in Europe. See: Encyclopaedia of Occupational Health and Safety, 4th edition, 1998 (www.ilo.org/public/english/support/publ/encyc/index.htm).

[21] Vogel, L., and Paoli, P., *New scope for the Community health and safety at work strategy 2007-2012*, ETUI-REHS, July 2006.

## Industries where workers are exposed to crystalline silica

The industries covered by the Agreement are set out in Annex 5. They are listed below with a short description of how they are connected with crystalline silica.

• **Aggregates**
Aggregates are granular materials used in construction. The most common natural aggregates are sand, gravel and crushed rock. The free silica content of these materials varies widely.

• **Ceramics industry**
The ceramics industry uses silica as a main constituent in the manufacture of tableware, sanitary ware, wall and floor tiles, bricks, roof tiles, etc.

• **Foundries**
The foundry industry's products are steel or metal castings produced by pouring molten metal into moulds which are wholly or partly made of bonded silica sand.

• **Glass industry**
Silica sand is the major ingredient in all types of glass: bottles, jars, mirrors, windscreens, fibreglass, optical glass, etc.

• **Industrial minerals and metalliferous minerals industries**
Industrial minerals (e.g., bentonite, borate, diatomite, gypsum, talc, etc.) contain variable amounts of crystalline silica, as do certain metal ores (mercury, silver, lead, zinc, chromium, copper, iron, gold, nickel, etc.).

• **Cement industry**
Cement is the basic construction material for building and civil engineering structures. Silica is one of the ingredients (13 to 14%) essential to the manufacture of cement.

• **Mineral wool**
Of the various kinds of mineral wool, only glass wool (used in thermal and acoustic insulation, fire protection) is of concern with regard to crystalline silica as it is manufactured using sand.

• **Natural stone industry**
Stone in its natural state is a common building material. Silica dust can be produced in quarries or during stone processing and implementation.

• **Mortar industry**
Mortar consists of a mix of fine aggregate with one or more binders and additives. It has a range of applications in the construction industry.

• **Precast concrete industry**
Precast concrete is a building material widely used worldwide. It is made of a mix of cement, aggregates, additives and water.

But as well as those in the Annex 5 list, workers in other industries are also potentially exposed to respirable crystalline silica dust: the **construction industry** (which uses most of the materials manufactured by the listed industries), the **jewellery industry** (stone cutting and polishing); **dental prosthesis manufacture** (sandblasting, polishing, grinding), **synthetic quartz crystals manufacture** (optics and electronics).

to monitor the application of the Good Practices that involves the workers themselves. Another is the employers' pledge to provide regular training on implementing the Good Practices. The agreement also urges employers to see that the Good Practices are applied by subcontractors working on their sites. Also, Annex 2 of the agreement (dust monitoring protocol) should at last make it easier to collect data on dust exposure levels in the different workplaces, which is important so that firms can gauge how well they are meeting OELs in force in national legislation and for monitoring the progress that is supposed to made in reducing exposure.

Its failings include the fact that, despite citing the importance of strict compliance with the general principles of Framework Directive 89/391 and Chemicals Directive 98/24, the agreement contains no provision to encourage the replacement of crystalline silica by safer alternatives whenever possible[22], even though examples of crystalline silica substitution have already been reported[23]. Another major failing is that the Good Practices defined in Annex 1 neither set hard targets for exposure levels, especially for countries with no exposure limits, nor provide for the transmission of information on risk management for products containing crystalline silica intended for downstream users.

## Conclusions

Any assessment of how many European workers are covered by the agreement and what improvements it has delivered in terms of reducing exposure to crystalline silica dust will have to wait for the first report on application of the agreement, which should be in 2008.

The benefit that European legislation on crystalline silica would have compared to an agreement would be to cover all exposed workers and improve risk management by promoting the search for substitutes, imposing a single EU-wide OEL, and improving the transmission of information along the supply chain through labelling and safety data sheets.

The signing of this agreement in the context of the Carcinogens Directive revision could, however, give fodder to those within the Commission who want to put off legislating on crystalline silica. But were such legislation to materialize, then provided the agreement remains in force, it could very well generate synergies that would bring in new signatories.

Whatever else, in light of the response given in the first phase of consultations on updating the Carcinogens Directive, the ETUC's response to the Commission in the second phase of consultations is likely to demand EU recognition for the human carcinogenicity of respirable crystalline silica and the adoption of a revised OEL. ■

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[22] Although article 11 of the agreement offers the half-hearted possibility for the parties to "make recommendations as to research ... on safer products or processes".

[23] That most often cited in the literature being substitution by steel shot or other non-silica-containing abrasives (aluminium oxide) which are less dangerous alternatives to sand in abrasive blasting operations. See: "Health effects of occupational exposure to respirable crystalline silica", *NIOSH Hazard Review*, April 2002, no. 2002-129, p. 101-103; and Fiche toxicologique (toxicology data sheet) no. 232, INRS.