Workers' health protection through social dialogue: the NEPSI Agreement on crystalline silica

Andy Price – NEPSI Technical Committee Chair

Carcinogens Conference, Dublin
29 October 2026

Crystalline silica SiO_2 – the basics



Widespread

12% of Earth's Crust

Present in almost all extracted minerals

Useful

Essential component in many products

e.g. glass, ceramics, foundry, paints, plastics, construction products

Risk Factor

Respirable crystalline silica (RCS)

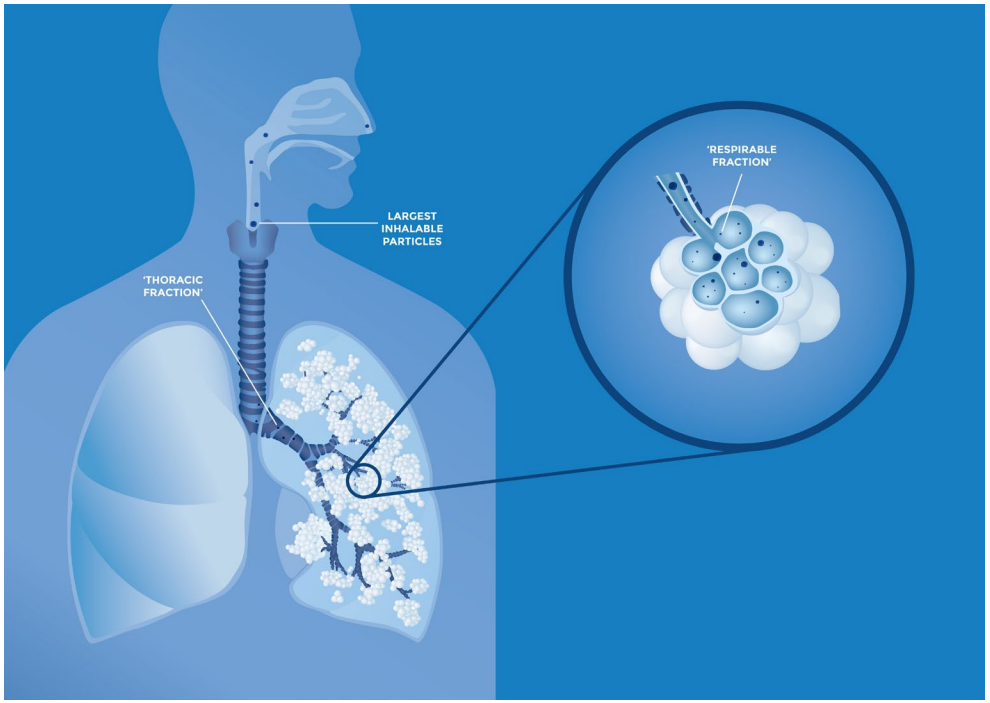
Respirable dust fraction of crystalline silica, generated by energetic physical work processes

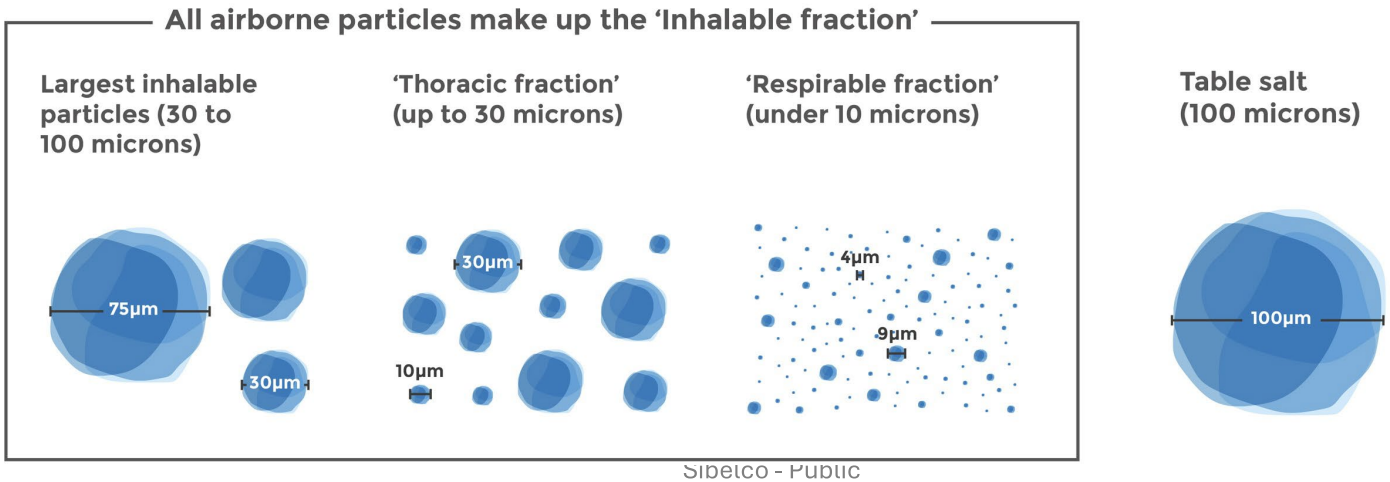
→ RCS can enter the deep lungs by inhalation and cause inflammation (silicosis, lung cancer)

An occupational health risk

Long-term exposure to RCS dust concentrations above legal limits can cause silicosis and a higher risk of lung cancer is also observed.

The dust created during industrial processes contains many different sized particles. Only the very smallest – the "respirable fraction" – pose a risk to workers when inhaled regularly at high concentrations





NEPSI - European Silica Network

- In 2006: first European multisectoral Social Dialogue Agreement “Workers' Health Protection Through the Good Handling and Use of Crystalline Silica and Products Containing it”
- Signed by the European trade union **IndustriALL** and 19 employer organisations
- NEPSI focuses on good practice implementation in workplaces, to reduce workers’ exposure to respirable crystalline silica dust. The NEPSI Good Practice Guide draws examples from many companies.
- Signatories commit to measuring implementation of the agreement every two years
- NEPSI demonstrates the added value of European social dialogue: employers and trade unions jointly translating legislation into practical workplace solutions, improving workers’ health protection through shared ownership, sector-specific expertise, monitoring, and continuous improvement.
- NEPSI celebrated its 20th Anniversary during October 2026

NEPSI – Employer signatory sectors in 2026

1. Aggregates Europe– European Aggregates Association
2. AStA Worldwide – *Association of engineered stones manufacturers*
3. BIBM – International Bureau for Precast Concrete
4. CEEMET – European Tech and Industry Employers
5. Cement Europe – European Cement Association
6. Cerame-Unie – European Ceramic Industry Association
7. EFF – *European Foundry Federation*
8. EMO – *European Mortar Organization*
9. ERMCO – European Ready-Mixed Concrete Organisation
10. EURIMA – European Insulation Manufacturers Association
11. EUROGYPSUM – European Association of Plaster and Plaster Product Manufacturers
12. EUROMINES – *European Association of Mining Industries*
13. EUROROC – *European Federation of Natural Stone Industries*
14. EXCA – *European Expanded Clay Association*
15. ECSPA – European Calcium Silicate Producers Association
16. FEVE – *European Container Glass Federation*
17. GlassFibreEurope – European Glass Fibre Producers Association
18. Glass for Europe – *Trade association for Europe's flat glass sector*
19. IMA-Europe – European Industrial Minerals Association

Extractive Industries, Ceramics, Foundry, Glass, Mineral Wool, Engineered Stone, Construction Products

NEPSI KPI reporting every two years

Consolidated Report: ALL REPORTS NEPSI										
	2008	2010	2012	2014	2016	2018	2020	2022	2024	2026
Section 1: General Information										
Number of sites:	5237	6691	7257	7511	7846	9081	10797	11310	10707	9169
Number of Reported Sites:	4737	5789	6367	6268	6530	7741	9093	9802	9176	9169
% of Reported Sites:	90.5%	86.5%	87.7%	83.5%	83.2%	85.2%	84.2%	86.7%	85.7%	100.0%
Number of Reported Employees:	427875	462215	498583	464786	458048	466289	376394	412531	391184	375810
Key Performance Indicators										
% of Employees potentially exposed to respirable crystalline silica:	40.6%	41.2%	40.6%	40.6%	39.9%	41.5%	42.9%	43.2%	41.2%	42.1%
% of Employees potentially exposed to RCS covered by risk assessment:	88.3%	91.0%	91.8%	93.4%	95.2%	95.7%	97.1%	96.2%	95.7%	95.9%
% of Employees potentially exposed to RCS covered by exposure monitoring:	61.8%	66.8%	69.7%	71.5%	74.5%	78.1%	86.1%	84.3%	84.5%	87.2%
% with risk assessment requiring Health Surveillance Protocol for Silicosis:	37.3%	34.5%	36.4%	38.5%	41.6%	42.5%	45.6%	45.0%	48.4%	48.6%
% covered by generic health surveillance:	88.1%	88.7%	90.4%	89.5%	91.1%	91.8%	90.5%	86.2%	83.8%	87.1%
% covered by Health Surveillance Protocol for Silicosis:	33.3%	32.7%	34.7%	36.6%	40.1%	41.4%	44.1%	41.8%	44.7%	45.3%
% covered by information, instruction and training on General Principle:	74.6%	83.5%	84.5%	88.4%	90.0%	89.2%	94.3%	91.9%	91.6%	91.0%
% covered by information, instruction and training on Task Sheets:	43.8%	56.9%	61.0%	66.3%	68.5%	66.4%	74.5%	74.9%	73.8%	78.6%
Additional Key Performance Indicators										
% of those identified as requiring Health Surveillance Protocol for Silicosis covered	89.1%	95.0%	95.2%	95.1%	96.3%	97.3%	96.7%	92.9%	92.3%	93.1%

NEPSI 2026 KPI report conclusion

THE SIGNATORIES REPRESENT:

9,170
industrial sites across the EU



375,800
employees

42% of all employees
are at risk of exposure to RCS and are followed by health surveillance for silicosis when required



96% of exposed employees
are covered by a specific risk assessment



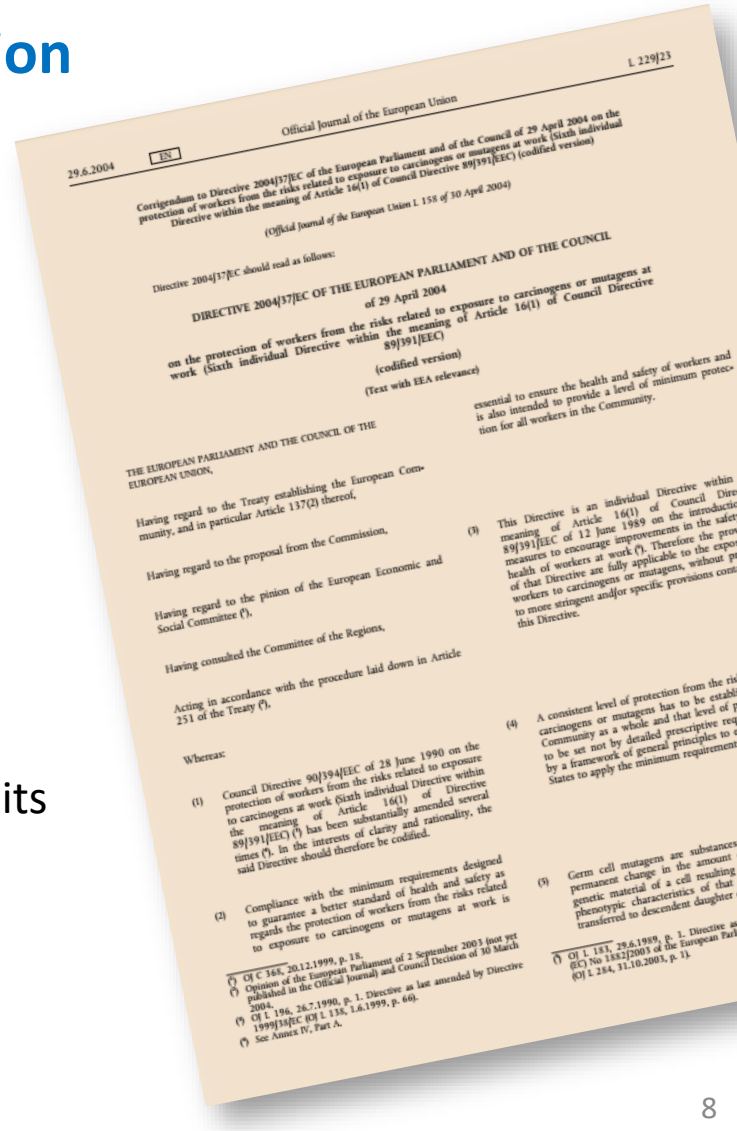
87% of exposed employees
are covered by specific exposure monitoring



EU Law - CMD

European Union – workers' health protection

- Amendment to Carcinogens and Mutagens Directive, adopted in January 2018 (2017/2398), applies to exposure to RCS generated by a work process
- Two-year transposition period for Member States
- EU Binding OEL of 0.1 mg/m^3 (8hr TWA)
- Re-evaluation of EU Binding OEL is ongoing
- Member States can still apply or decide for stricter limits


29.6.2004 EN Official Journal of the European Union L 229/23

Corrigendum to Directive 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (Sixth individual Directive within the meaning of Article 16(1) of Council Directive 89/391/EEC) (codified version)

(Official Journal of the European Union L 158 of 30 April 2004)

Directive 2004/37/EC should read as follows:

DIRECTIVE 2004/37/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 29 April 2004

on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (Sixth individual Directive within the meaning of Article 16(1) of Council Directive 89/391/EEC)

(codified version)

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 137(2) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee (1),

Having consulted the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 251 of the Treaty (2),

Whereas:

(1) Council Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (3) has been substantially amended several times (4). In the interests of clarity and rationality, the said Directive should therefore be codified.

(2) Compliance with the minimum requirements designed to guarantee a better standard of health and safety as regards the protection of workers from the risks related to exposure to carcinogens or mutagens at work is essential to ensure the health and safety of workers and is also intended to provide a level of minimum protection for all workers in the Community.

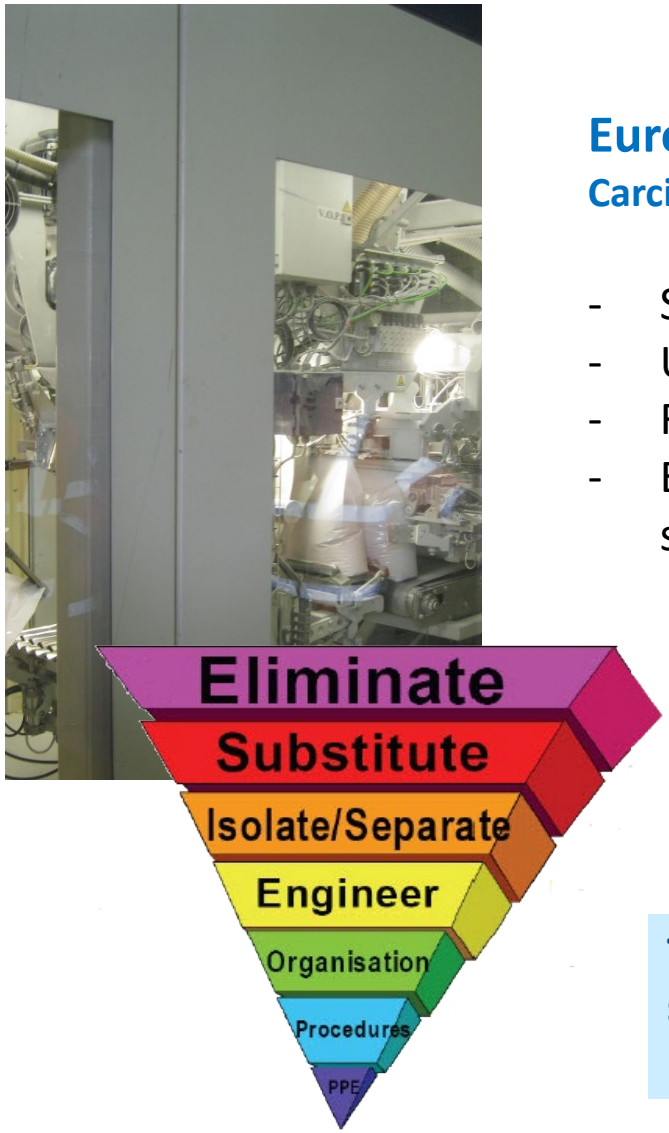
(3) This Directive is an individual Directive within the meaning of Article 16(1) of Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (5). Therefore the provisions of that Directive are fully applicable to the exposure of workers to carcinogens or mutagens, without prejudice to more stringent and/or specific provisions contained in this Directive.

(4) A consistent level of protection from the risks related to carcinogens or mutagens has to be established throughout the Community as a whole and that level of protection is not to be set not by detailed prescriptive requirements but by a framework of general principles to enable the Member States to apply the minimum requirements in a coherent manner.

(5) Germ cell mutagens are substances which induce permanent change in the amount or structure of the genetic material of a cell resulting in changes in the phenotypic characteristics of that cell when transferred to descendent daughter cells.

(1) OJ C 368, 20.12.1999, p. 18.
(2) Opinion of the European Parliament of 2 September 2003 (not yet published in the Official Journal) and Council Decision of 30 March 2004.
(3) OJ L 196, 26.7.1990, p. 1. Directive as last amended by Directive 1999/38/EC (OJ L 138, 1.6.1999, p. 66).
(4) See Annex IV, Part A.
(5) OJ L 183, 29.6.1989, p. 1. Directive as amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council (OJ L 284, 31.10.2003, p. 1).

NEPSI complements legislation



European Union – workers' health protection

Carcinogens and Mutagens Directive

- Substitution of processes generating RCS dust
- Use of enclosed systems to minimise exposure
- Reduce exposure as far below the OEL as possible
- Extra requirements for workplace hygiene and health surveillance

The NEPSI Good Practices support successful CMD implementation, protecting workers from disease

NEPSI complements legislation

DIRECTIVE 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work

Important Recital 19 in Directive 2017/2398:

Guides and examples of good practice such as the Social Dialogue "Agreement on Workers' Health Protection Through the Good Handling and Use of Crystalline Silica and Products Containing it" (NEPSI) are **valuable and necessary instruments to complement regulatory measures and in particular to support the effective implementation of limit values**, and should therefore be given serious consideration.

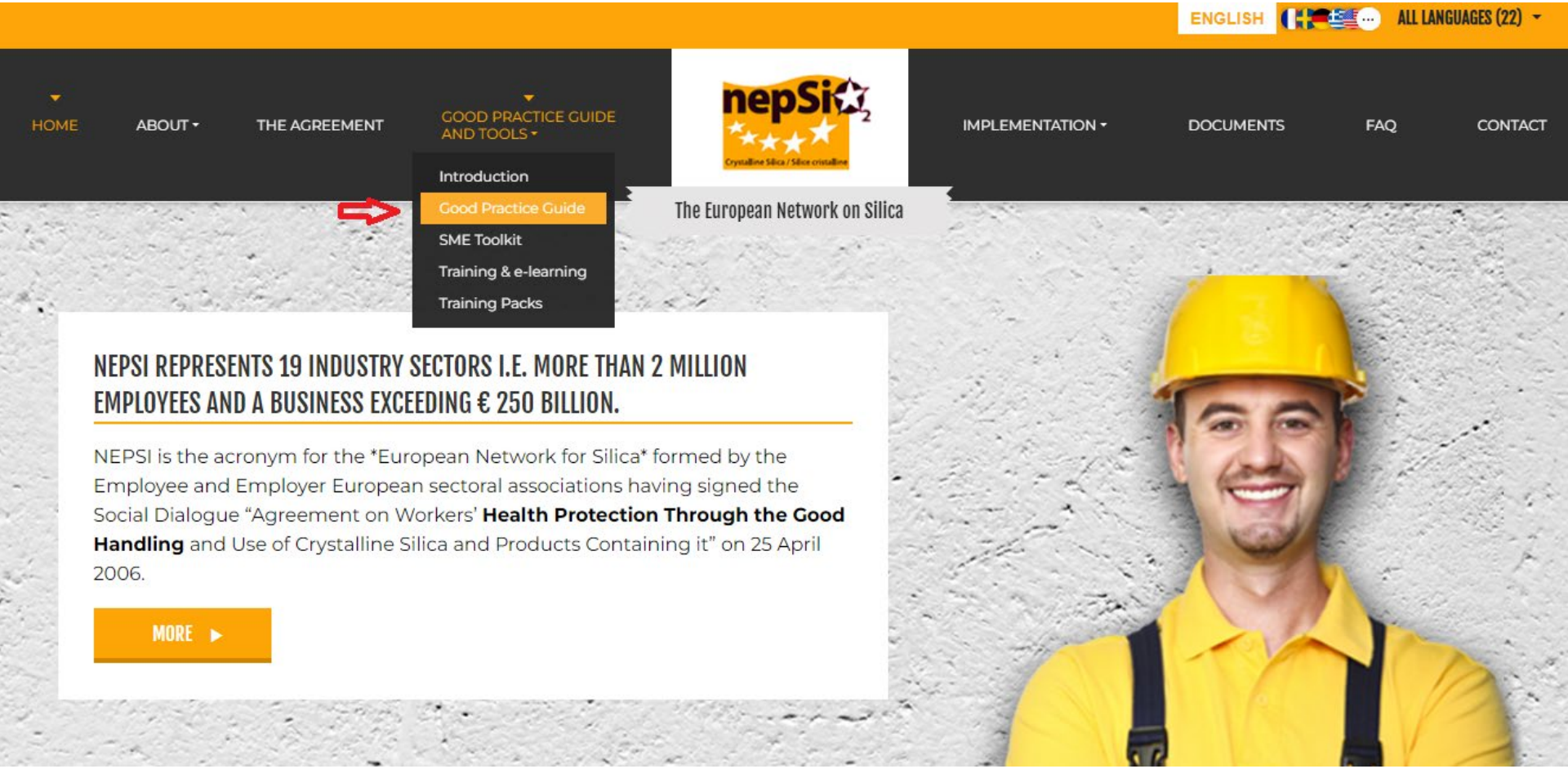
Article 13a in Directive 2019/130:

Social partners' agreements

"Social Partners agreements possibly concluded in the field of this Directive shall be listed on the EU-OSHA website. That list shall be regularly updated."

NEPSI Good Practice Guide www.nepsi.eu

Accessible via https://guide.nepsi.eu/



Part 1: The essentials, theory

1.1 WHAT IS SILICA?

Silica is the name given to a group of minerals composed of silicon and oxygen, the two most abundant elements in the earth's crust. In spite of its simple chemical formula, SiO_2, silica exists in many different forms. Silica is found commonly in the crystalline state but occurs also in an amorphous (non-crystalline) state. Crystalline silica is hard, chemically inert and has a high melting point. These are prized qualities in various industrial uses.

This Good Practice Guide only covers three of the different forms of crystalline silica, i.e. the mineral quartz, cristobalite and tridymite. It does not cover amorphous silica, fused silica or other silicate minerals. Quartz, cristobalite and tridymite are often referred to as types of "free" crystalline silica because the crystalline silica is not chemically combined.

Quartz is by far the most common form of crystalline silica. It is the second most common mineral on the earth's surface and it is found in almost every type of rock i.e. igneous, metamorphic and sedimentary. Since it is so abundant, quartz is present in nearly all mining operations. Irrespective of industrial activities, respirable crystalline silica is naturally present in the environment.

Cristobalite and tridymite are not abundant in nature. However, they are found in some igneous rocks. In industrial circumstances, cristobalite is also obtained when quartz is heated (to temperatures in excess of 1,400°C), for example during the production and use of refractory materials. Cristobalite is also formed when amorphous silica or vitreous silica is heated at high temperature.



2.2 ACTIVITIES INVOLVING USE OF CRYSTALLINE SILICA CONTAINING MATERIALS



AGGREGATES

Aggregates are a granular material used in building and infrastructure construction. Nearly 3 billion tonnes of aggregates are produced and used in Europe annually. However, a majority of operators in the sector are small and medium sized enterprises. A typical site provides direct employment for 7 to 8 persons. The aggregates industry operates in around 23,000 extraction sites with over 130,000 employees in the EU.

The most common natural aggregates are sand, gravel and crushed rock, from rocks of different geological origin, and with a wide range of free silica content (from 0% to 100%).

Subject to the individual risk assessments to be carried out under this Agreement, the sites with deposits with a high content of crystalline silica are more relevant. Nevertheless even in such cases, the risks of respirable crystalline silica exposure for workers are normally low, with low number of cases of silicosis reported.

The content of crystalline silica in recycled and manufactured aggregates will vary depending on the composition of the material they are produced from.

CALCIUM SILICATE MASONRY UNITS

Calcium silicate masonry units are produced by mixing sand, lime and water. This mixture of natural ingredients is moulded into shape by mechanical or hydraulic presses. After moulding, the "green" material is hardened in an autoclave. In these autoclaves steam is introduced at pressures of 8 to 16 bars to raise the temperature up to approximately 200 °C. After some hours of autoclaving the units have developed their final properties, especially the strength, and are ready for packing and dispatch. Dust generation can mainly occur in raw material handling and shaping mechanical treatments.

120 plants in 7 European countries produce calcium silicate masonry units.



Copyright Erich Spahn/Bundesverband Kalksandsteinindustrie e.V

This illustration identifies the different sections of the lung. The larynx (mentioned in the diagram above) lies between the pharynx (upper part of the airway) and the trachea (windpipe). The pulmonary alveolar region is made up of approximately 300 million alveoli, or air sacs.

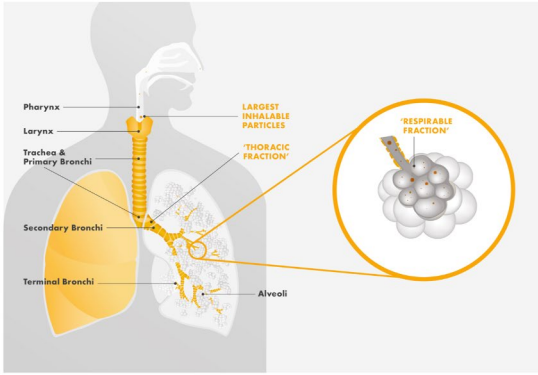


Diagram showing the different parts of the lung.

Sibelco - Public

Dust Control Techniques



GOOD HYGIENE / HOUSEKEEPING

Washing work clothes and vacuuming up dust produced by processes stops dust accumulating over time – a clean workspace is a safe one



WATER

Keeping processes wet prevents dust becoming airborne by capturing particles with water



ENCLOSURE

Conducting RCS producing processes in a sealed environment prevents dust exposure at the source



PROTECTIVE EQUIPMENT

PPE (e.g. Face masks) protects workers from dust when all other control measure are insufficient to control exposure risks



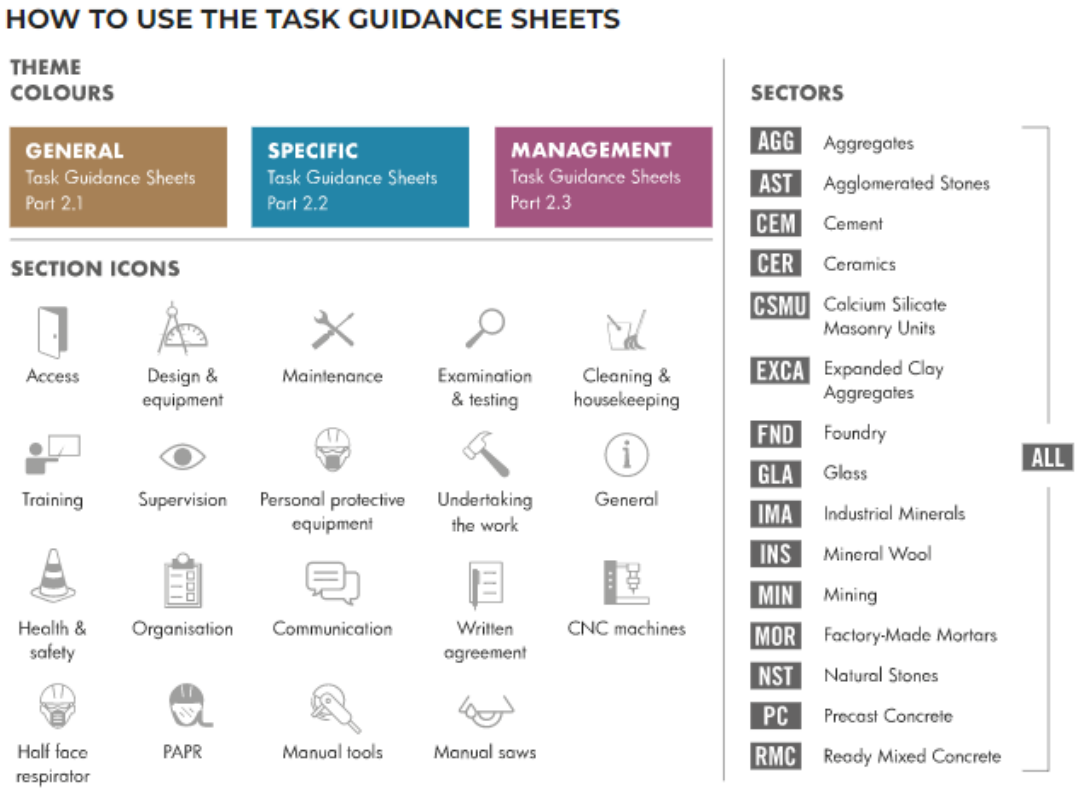
EXTRACTION / VENTILATION

Capturing RCS at source, before we are exposed to it, and replacing contaminated air with clean air.

Part 2: Task Guidance Sheets

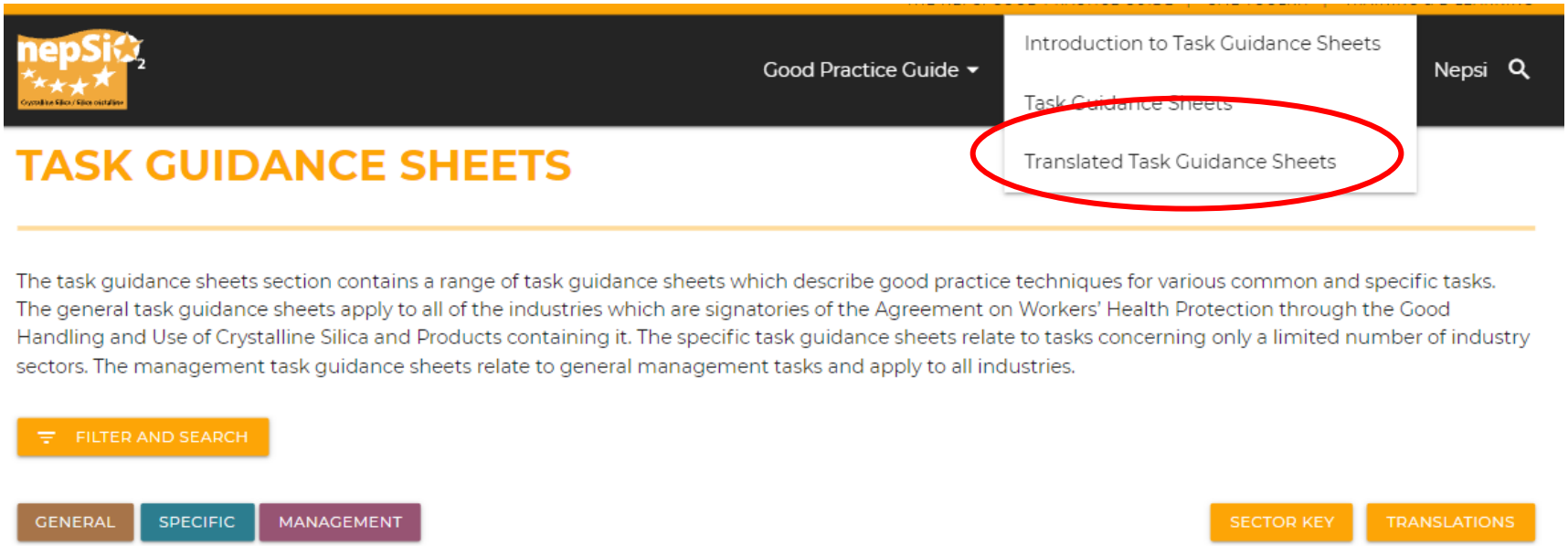
Sheets by task or workstation detailing the control measures to minimise exposure to RCS: collection of 70 different sheets

- Each sheet provides information to help **employers** ensure that their workspaces are designed, equipped and can be used safely when carrying out the tasks to be performed.
- For **employees**, each sheet includes a checklist of good practices that, when implemented, reduce exposure to RCS for their routine work activities.



Part 2: NEPSI Good Practice Guide

Accessible via: http://guide.nepsi.eu/sheets/



Examples of Task Sheets

General

GENERAL 2.1.15

GUIDANCE FOR EMPLOYERS ON CONTROLLING EXPOSURE TO RCS IN THE WORKPLACE

GOOD PRACTICES FOR PERSONAL PROTECTIVE EQUIPMENT (PPE)

This activity covers the use and maintenance of PPE for workers exposed to respirable crystalline silica dust.

The use of PPE should be seen as a last resort, to be used only when all reasonable engineering and organisational control measures have been implemented and have failed to provide adequate control of exposure.

ACCESS

Restrict access to the work area to authorised personnel only. Work areas where the use of personal protective equipment is mandatory should be clearly demarcated through the provision of appropriate signage.

DESIGN AND EQUIPMENT

- Personal protective equipment must comply with the relevant Community provisions on design and manufacture with respect to safety and health. All personal protective equipment must be provided by the company and it must carry a CE mark.
- Employer must specify what equipment is needed for the task.
- Where PPE is used, a programme should be established covering all aspects of the selection, use and maintenance of the equipment.
- PPE should be selected on the basis of performance (e.g. protection factor), comfort and durability.
- Where it is necessary to wear more than one item of PPE, ensure that those items are compatible with each other.
- Protective clothes (overalls) must be used during all dusty tasks. Dark colours may be used to help indicate dust contamination. Your workwear supplier will be able to advise you of appropriate clothing.
- Use the pictograms in the workplace to explain where the use of PPE is required.





MAINTENANCE

- Ensure equipment used in the task is maintained as advised by the supplier in efficient working order and in good repair.
- **Protective clothes (overalls) should NOT be taken home. They should be cleaned by the employer.**

EXAMINATION AND TESTING

- Visually check PPE daily for signs of damage. If used infrequently, then check it before each use.
- Check effectiveness of respiratory protective equipment before use. Seek advice from the supplier on appropriate fit testing methods.
- Keep records of inspections for a suitable period of time which complies with national laws (minimum five years).
- Put in place measures to control the risk of bacterial growth within water sources used across site, focusing most on systems where water droplets will be generated.

ALL

Specific

SPECIFIC 2.2.37

GUIDANCE FOR EMPLOYERS ON CONTROLLING EXPOSURE TO RCS IN THE WORKPLACE

GOOD PRACTICES FOR RESPIRATORY PROTECTIVE EQUIPMENT FOR THE SLAB INDUSTRY

This task guidance sheet provides good examples use of respiratory protective equipment (RPE) in a case by case approach in all parts of typical fabrication plants of slabs, installation sites and related work areas to increase worker protection from respirable crystalline silica.

ACCESS

Restrict access to the work area to authorised personnel only.

GENERAL

- Risk assessment must be carried out to determine whether existing controls are adequate. If necessary, respiratory protective equipment (with the appropriate protection factor) should be provided and worn.
- Choose the appropriate respiratory protective equipment according to the respirable crystalline silica level, in consultation with an occupational health and safety professional, and considerations in the "When to use" sections below.
- When it is necessary to use more than one item of PPE, make sure that these items are compatible with each other.
- Use respiratory protective equipment according to the supplier's instructions.
- Keep records of use, training and maintenance.
- Use a properly fitting respirator (half face or disposable mask) that creates a tight seal.
- Perform a medical/occupational health assesment to ensure that fabricators are able to work with respiratory protective equipment.



Using respiratory protective equipment does not exempt the employer from controlling the level of respirable crystalline silica or from bringing it to below the required Occupational Exposure Limit.

Management

GUIDANCE FOR EMPLOYERS ON CONTROLLING EXPOSURE TO RCS IN THE WORKPLACE

MANAGEMENT 2.3.1

GOOD PRACTICES FOR DUST MONITORING

This sheet provides advice on how to implement dust monitoring in order to assess personal exposure levels to respirable crystalline silica dust.

ACCESS

Restrict access to the work area to authorised personnel only.

DESIGN AND EQUIPMENT

Both personal and static measurements can be used jointly as they are complementary. It is up to the experts designated by the employers and the employees' representatives to opt for the more adequate solutions, while respecting the national and European provisions.

The following general requirements (taken from the European Standards EN 689 and EN 1232) should be followed:

- Define a monitoring strategy: choose appropriate sampling equipment, define the job functions to be monitored, identify the appropriate personnel who will carry out the sampling and analysis, plan the dates of the measurement campaign.
- Use sampling equipment that conforms to European Standard EN 481. Use a recognised analytical technique to measure respirable crystalline silica: X-ray diffraction or infrared spectroscopy.
- The persons carrying out the sampling and analysis must be appropriately trained and experienced.
- In the case of crystalline silica, it is the respirable dust fraction that is of concern for its health effects. Therefore the respirable dust fraction should be collected.
- In the case of personal sampling, the sampling equipment must be worn by the worker and the sampling head must be positioned in the worker's breathing zone (less than 30cm from the mouth and nose area).
- Sampling duration should be as close as possible to a full working shift in order to ensure that samples are representative.
- Collect sufficient number of samples per campaign for each job function in order to get a follow up of each worker. Take into account variation of work activities on different days e.g. cleaning work is often done on Fridays.
- Inform the workers that dust monitoring will be undertaken and the reasons for it. This will help to ensure full co-operation. Inform them of the results of the dust monitoring.
- Record information during the sampling, including: date, job function, worker's name, shift length, sample flow rate and duration, work activities and working practices, weather conditions, personal protective equipment worn, comments on dust control measures, production process, tonnage rate etc.
- Check the correct operation of the sampling equipment (including the flow rate) at regular intervals during the shift and keep records of these checks.

Keep full documentation on the dust monitoring campaigns and adopt a quality system as described above.





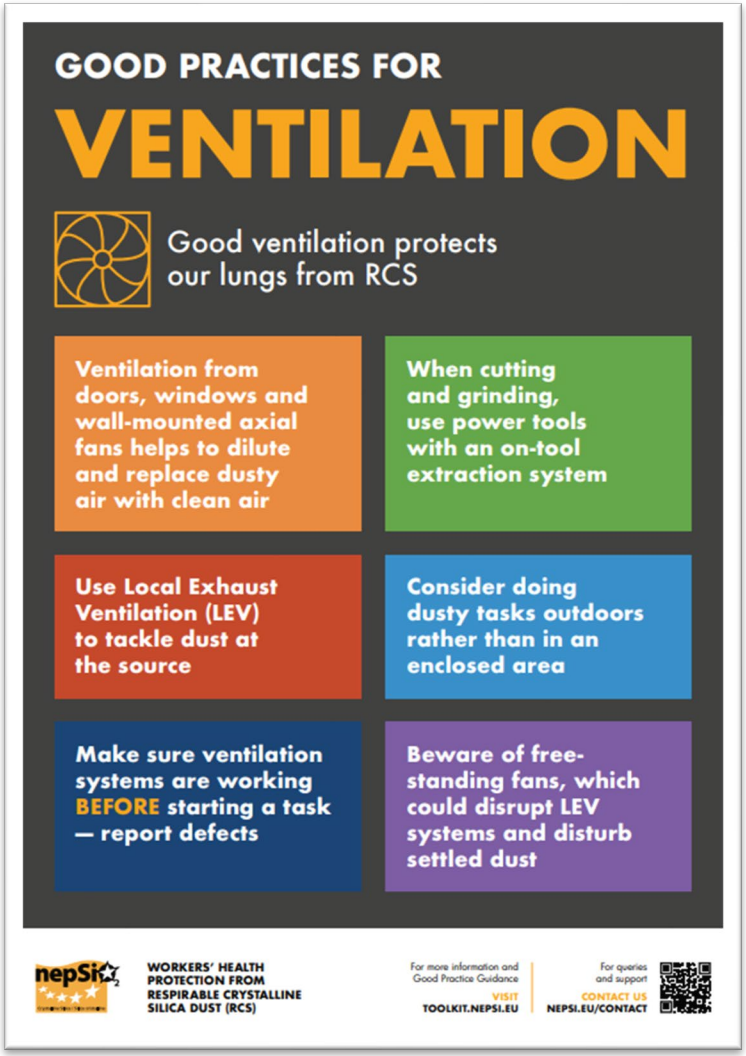
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Sibelco - Public

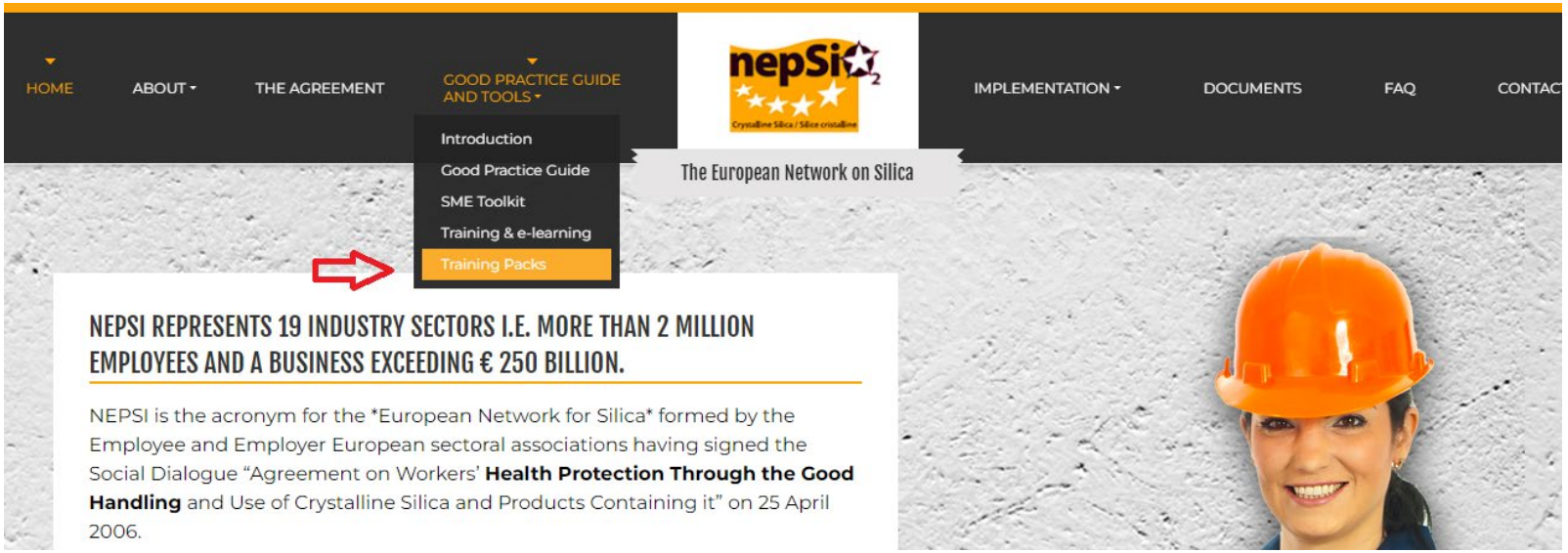
Toolkit for micro enterprises and SMEs

Accessible via: https://toolkit.nepsi.eu/

- **Shorter version of Good Practice Guide**
- **8 NEPSI Good Practice Posters**
  - Ventilation
  - Wet processes
  - Enclosure of dusty processes
  - Personal Protective Equipment
  - General housekeeping
  - Dust exposure monitoring
  - Keep your lungs clean
  - Dust monitoring check list



Training on RCS Awareness and Good Practices



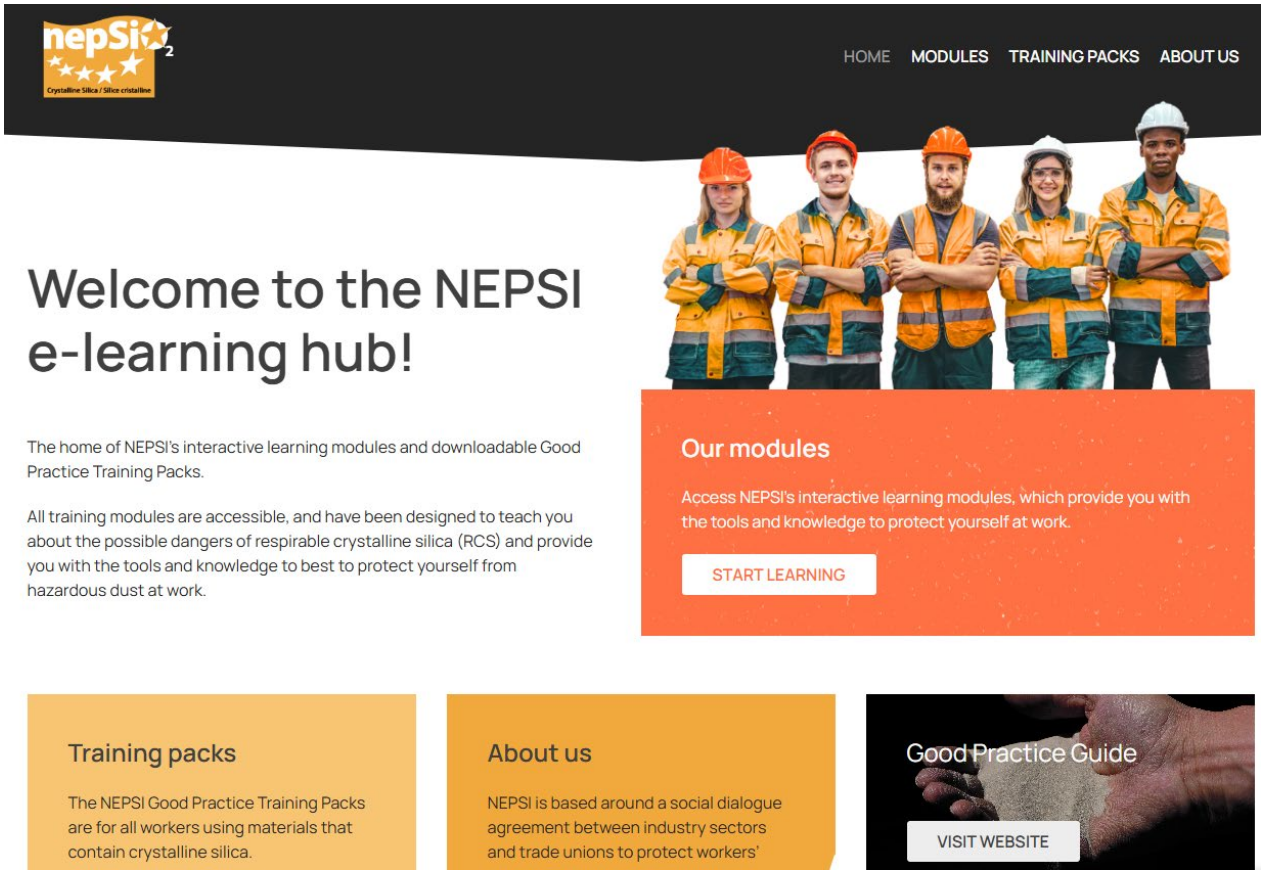
- **Introduction to RCS**
- **Basic Good Practices**
- **Bag Emptying**
- **Cutting Grinding Sanding**
- **Enclosed Handling Systems**
- **Enclosure of Processes**
- **General Ventilation**
- **Maintenance Service Repairs**
- **PPE**
- **Systems of Packaging**
- **Wet Processes**
- **Cleaning / Hygiene**
- **Dust Exposure Monitoring**

13 Training Packs in PowerPoint

NEPSI e-learning platform

https://training.nepsi.eu/

- **Modular** and modern design
- **Voluntary** learning – there are no mandatory worker requirements, no scoring and no penalties
- Open access – it is possible for **anyone** to take the training



NEPSI e-learning platform



Modules

Our training modules have been designed for you to learn about the possible dangers of respirable crystalline silica (RCS) and how best to protect yourself from hazardous dust at work.

Modules are not graded, and there are no time limits, although each module will contain quiz questions. Each module should take around 20 minutes to complete. Once you start a module, you must complete it to obtain your certificate. If you leave the process part way through, you will need to start again.

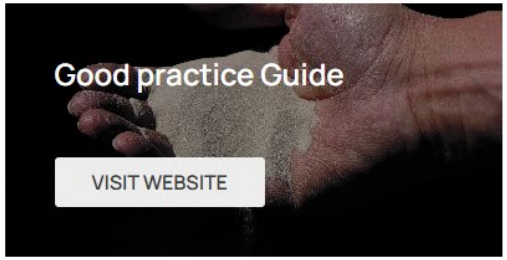
— Introduction to Crystalline Silica and Good Practices

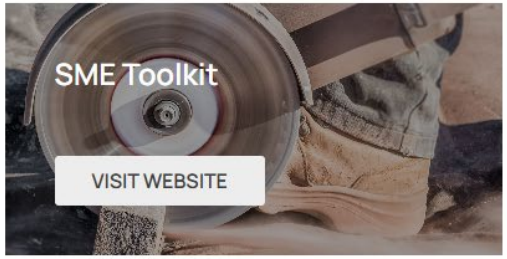
Learn how to recognise the risks present in your workplace and identify the practices in place to limit possible exposure to RCS.

BEGIN MODULE

+ Control of Silica Dust in Specific Activities

+ DIY and Mobile Work Without Dust





NEPSI e-learning platform

Workstation: Bagging

Click on the hotspots for pop up information about that part of the image.

There are five hotspots to find, once you've read them all, move on!



NEPSI current projects

NEPSI PROPAGATION is a three-year project that includes:

- **National seminars** in Belgium, Bulgaria, Portugal, Ireland (2027)
- Development of the new **e-learning module(s)**
- Update of **good practices**
- Development of a **website** on national initiatives, exchanging experiences and good practices



NEPSI – a long-term commitment

NEPSI celebrated its 20th anniversary on 14 October 2026 in presence of the European Commission and European Parliament recognising NEPSI's principles and tools as fundamental for workers' improved protection on the ground.



NEPSI forms part of the solutions and Good Practices of the ***Roadmap on Carcinogens - S.T.O.P. Carcinogens at Work*** *initiative and website*

S.T.O.P. CARCINOGENS AT WORK

NEPSI good practices are also highlighted on the EU-OSHA website

Healthy Workplaces

European Agency for Safety and Health at Work

Healthy Workplaces MANAGE DANGEROUS SUBSTANCES 2018-19

NEPSI – a long-term commitment



NEPSI is still going strong after 20 years and its future is assured thanks to the commitment of the industries and workers involved, and of the European Commission and related institutions



Co-funded by the European Union

Thank-you for your attention