Healthy Workplaces

MANAGE DANGEROUS SUBSTANCES

Campaign Guide

#EUhealthyworkplaces

www.healthy-workplaces.eu

European Agency for Safety and Health at Work

Healthy Workplaces

1. Introduction 4

1.1. What is the issue? 4

1.2. What are dangerous substances? 6

1.3. Why is managing dangerous substances so important? 8

1.4. Why is EU-OSHA running this campaign? 10

2. Managing dangerous substances 12

2.1. Establishing a culture of risk prevention 12

2.2. Legislation on dangerous substances 14

2.3. Risk assessment 17

2.4. Practical solutions 19

2.5. Some groups of workers are at particular risk. 21

2.6. Carcinogens and work-related cancer 24

3. The Healthy Workplaces Campaign 2018-19 27

3.1. About this campaign 27

3.2. Who can take part in the campaign? 28

3.3. How to get involved. 29

3.4. The Healthy Workplaces Good Practice Awards 30

3.5. Our network of partners 31

3.6. Further information and resources 32

References and notes 33

1. Introduction

Effective management of safety and health risks in the workplace benefits everyone involved. It is good for workers, good for society as a whole and good for business. Particularly in the case of less visible dangers, taking care of workers' safety and health may be perceived as a burden. This applies especially to small and medium-sized enterprises (SMEs), where resources are limited. However, organisations that do more to protect their workers than is required of them by legislation reap the benefits. Active, participatory safety and health management, which involves workers and has strong commitment from management, makes a business more competitive — for example by reducing sickness absence and improving productivity.

This brochure is an introductory guide to the Healthy Workplaces Campaign 2018-19, 'Healthy Workplaces Manage Dangerous Substances', organised by the European Agency for Safety and Health at Work (EU-OSHA). The campaign aims to raise awareness of the risks posed by dangerous substances in the workplace and to promote a culture of risk prevention to eliminate and, where that is not possible, effectively manage these risks.

1.1. What is the issue?

Workers in many European workplaces are affected by exposures to dangerous substances. In recent decades some substances, such as asbestos (which causes serious and in some cases fatal lung diseases) and vinyl chloride (which causes liver cancer), have been banned, restricted or subjected to strict regulatory control. However, dangerous substances continue to be a major safety and health issue in workplaces. In the second edition of EU-OSHA's European Survey of Enterprises on New and Emerging Risks (ESENER-2), 38 % of enterprises reported that chemical or biological substances in the form of liquids, fumes or dust were present in their workplaces.[1]

According to the European Survey on Working Conditions, in 2015, 18 % of the surveyed workers in the EU reported being exposed to chemical products or substances for at least a quarter of their working time.[2] This figure had barely changed since 2000.

Large enterprises often use more than 1,000 different chemical products, such as paints, inks, glues and cleaners. The products commonly consist of a mixture of several chemical substances. Even small enterprises such as car repair shops can use a similar number. For some sectors, such as the construction industry, tens of thousands of different chemical products are available on the market for a large variety of tasks. Depending on the tasks, a single worker can come into contact with some hundreds of different chemical substances.

Dangerous substances are more common than you think

Sectors in which enterprises reported a particularly high prevalence of dangerous substances in ESENER-2 include:[3]

Agriculture, forestry and fishing	**62 %**
Manufacturing	**52 %**
Construction, waste management, and water and electricity supply	**51 %**

In addition, there is emerging evidence that workers in growth sectors such as social and health care, transport, waste and the recycling industry may experience high levels of exposure to dangerous substances. In all sectors there are typical working tasks that often involve exposure to dangerous substances, such as food preparation (canteens, catering, etc.), cleaning and maintenance. However, no sector is completely free of dangerous substances, and it is vital that employers assess the risks that their workers may face.

According to the Swedish Chemicals Agency, 3 tonnes of dangerous substances (not counting petrol) were used per citizen in Sweden in 1996; in 2014, the figure was 3.7 tonnes.[4]

1.2. What are dangerous substances?

For the purposes of this campaign, a dangerous substance in the workplace is any substance, in gas, liquid or solid form, including aerosols, fumes and vapours, that poses a risk to workers' health or safety.[5] (Biological agents, however, are not included in the scope of the campaign topic.) This includes manufactured chemicals, process-generated substances, such as diesel exhaust or silica dust, and naturally occurring substances used in work processes such as crude oil or flour dust.

Definitions from the Chemical Agents Directive

(a) ***'Chemical agent'***[6] *means any chemical element or compound, on its own or admixed, as it occurs in the natural state or as produced, used or released, including release as waste, by any work activity, whether or not produced intentionally and whether or not placed on the market.*

(b) ***'Hazardous chemical agent'*** *means:*

(i) any chemical agent which meets the criteria for classification as hazardous within any physical and/or health hazard classes laid down in Regulation (EC) No 1272/2008[7] … whether or not that chemical agent is classified under that Regulation;

(ii) any chemical agent which, whilst not meeting the criteria for classification as hazardous…… may, because of its physico-chemical, chemical or toxicological properties and the way it is used or is present in the workplace, present a risk to the safety and health of workers, including any chemical agent that is assigned an occupational exposure limit value under Article 3.

(c) ***'Activity involving chemical agents'*** *means any work in which chemical agents are used, or are intended to be used, in any process, including production, handling, storage, transport or disposal and treatment, or which result from such work.*

Dangerous substances can cause many different types of harm, some of which are potentially very serious. Harm from dangerous substances can arise from a single short exposure, from long-term exposure or from the long-term accumulation of substances in the body. It includes:

- long-term health effects, for example respiratory diseases (e.g. asthma, rhinitis, asbestosis and silicosis), harm to inner organs, including the brain and the nervous system, and occupational cancers (e.g. leukaemia, lung cancer, mesothelioma and cancer of the nasal cavity);
- health effects that can be acute or long term, such as poisoning, skin diseases, reproductive problems and birth defects, and allergies.

Some dangerous substances pose safety risks, such as risk of fire, explosion or suffocation. In addition, dangerous substances normally have several of these properties.

Furthermore, there are different 'pathways' through which workers can be exposed to dangerous substances. Some substances can be breathed in or 'inhaled', while others can also be absorbed through the skin. Workers who do 'wet work' (i.e. using water or solvents that can break down the skin's natural defence barrier) are at particular risk from this exposure pathway. Dangerous substances may also penetrate the body through ingestion, for example when workers eat or drink in their workplace, although it is prohibited, when their workplace is contaminated or when they breathe in particles of dust and swallow them.

Heavy physical work or heat can also increase the risks posed by dangerous substances, because they may increase their uptake.

Among the substances that can cause long-term harm to workers' health are carcinogens, which are found in many work situations. Tackling the risks posed by these substances is a priority for the European Union (EU) under its Occupational Safety and Health (OSH) Strategic Framework 2014-20.[8]

1.3. Why is managing dangerous substances so important?

Legislation on dangerous substances at work is in place throughout the EU. However, the latest Senior Labour Inspectors' Committee (SLIC) inspection campaign on dangerous substances showed that enterprises still encounter serious difficulties in tackling the risks posed by these substances.[9] Even banned substances such as asbestos still pose a risk to workers in some sectors because asbestos has been built into so many buildings, devices and materials.

Furthermore, new challenges for the management of dangerous substances in the workplace are emerging, for example in the area of green jobs (bio-energy production, new types of energy storage) and in relation to the use of innovative materials (e.g. nanomaterials) and technologies with currently unknown health risks (such as 3D printing) and substances recognised as endocrine disrupters (which influence the whole endocrine system and harm reproductive health, cause birth defects, and contribute to the development of obesity and diabetes).

A high proportion of the occupational diseases included in the annexes of the European schedule of occupational diseases are caused by exposure to dangerous substances.[10]

©EU-OSHA/Stanislav Pyte

CASE STUDY

© Shutterstock/Pressmaster

A PREVENTABLE CASE OF SEVERE WORK-RELATED ASTHMA

It's often assumed that 'dangerous substances' refers only to hazardous chemicals. However, the case of a school cook[11] awarded substantial damages after developing severe breathing problems as a result of working with flour shows that all kinds of substances can be dangerous in certain situations. It also demonstrates that the costs of failing to recognise the risks and protect workers from dangerous substances in the workplace can be very high.

The worker was a 46-year-old female school cook whose work involved mixing bread dough using a large mixer in a small, poorly ventilated kitchen. Nothing was done to protect her from the risks posed by inhaling flour dust. She developed breathing problems so severe that she was hardly able to walk and had to sleep sitting up. She was diagnosed with severe asthma.

With the help of her union, the worker made a claim for compensation. The local council, which ran the school, admitted that it had failed to take measures to protect her. The council was liable for damages of GBP 200,000.

The long-term consequences for the worker were serious: she had to take early retirement and her lifestyle was severely restricted by her breathing problems.

Note: In the last years, a number of EU Member States have developed models of good practice for effectively preventing baker's asthma.

1.4. Why is EU-OSHA running this campaign?

Dangerous substances have been on the OSH policy agenda in the EU and in Member States for decades. Nonetheless, it is an area of workplace safety and health where awareness of the variety of possible risks and ways to tackle them is still low.

One common misunderstanding is that only manufactured chemicals — or even chemicals that have a strong smell or immediately apparent dangerous effects — are dangerous substances. Many dangerous substances that workers are exposed to, such as diesel engine exhaust emissions, welding fumes and dusts, are generated by work processes. Others, such as asbestos, crude oil and grain dust come from natural sources. Equally, some food constituents or pharmaceutical products may also present risks to workers.

These dangerous substances may not be labelled with hazard symbols, and information from safety data sheets required by chemicals legislation may not be available. Therefore, in these cases, employers will have to seek other sources of information such as sectoral guidance or safety and health instructions from suppliers. Again, awareness of the risks posed by these substances may be low.

Another widely held but incorrect belief is that the use of dangerous substances has decreased. It is true that many well-known harmful exposures (e.g. to PCB, asbestos and mercury) have been significantly reduced owing to political initiatives, legislation, public pressure and measures from enterprises and social partners. However, there are many less well-known dangerous substances.[12]

In fact, workers in a wide range of jobs may be exposed to a huge variety of dangerous substances in today's workplaces. In 2017 about 129,000 substances were classified according to the Classification, Labelling and Packaging Regulation (CLP).[13] Also in May 2017, more than 10,000 substances were registered in the European Economic Area under REACH (Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals[14]), of which about 40 % were manufactured or imported at volumes over 100 tonnes.[15] In addition, about 5,000 substances were notified under previous chemicals legislation.[16] However, it has to be kept in mind that REACH does not cover dangerous substances that are generated during work operations, such as dust or combustion products.

The misconceptions about the nature and prevalence of work-related exposures to dangerous substances can lead employers and workers to believe incorrectly that tackling harmful exposures is not relevant to their enterprises.

As a result, there is a clear need to raise awareness of the prevalence of dangerous substances, the importance of managing them properly and the best methods for doing so. The Healthy Workplaces Campaign 2018-19 aims to meet that need.

Furthermore, carrying out effective risk assessments of workplace exposures to dangerous substances can seem complicated, as it is regarded as a relatively complex subject.

There is a great variety of guidance available to support enterprises in managing dangerous substances. However, the volume of material and the range of sources can leave those responsible for managing the risks uncertain about where best to look for guidance. Therefore, the campaign aims to improve access to and awareness of the most relevant and widely applicable practical solutions and guidance, as well as disseminating examples of good practice.

2. Managing dangerous substances

2.1. Establishing a culture of risk prevention

The effective management of work-related exposures to dangerous substances is only possible if everyone in the workplace is well informed about the risks and the measures that can be taken to prevent them. A major success factor in preventing accidents and ill health at work is creating a culture of risk prevention, where everyone understands that safety and health is important to the organisation as a whole.

This means that employers need to take steps to actively involve workers in OSH management processes. Employers are required by EU legislation[17] to involve workers in the risk assessment process, provide them with information on what they may be exposed to and the results of health surveillance and workplace measurements and provide training on safety and health issues. They should also encourage workers to protect themselves, discuss their experiences and address shared problems.[18]

When a workplace has established a prevention culture, the management of dangerous substances is integrated into systematic, sound and participative OSH management. Legal obligations are met, of course, but, in addition, preventing harm to workers is an integral aspect of the way the enterprise organises its work and the processes that are used when carrying out the work.

In the following sections, we look at the relevant legislation and some of the key measures and practical solutions that are available to prevent the risks that can arise from dangerous substances.

© EU OSHA/Jim Holmes

How risk factors can interact

In new jobs, for example in the green economy, the usual risks related to dangerous substances often come in new forms.[19]

Special approaches to prevention that take the combined risks into account may be needed. For example, repair work on turbine blades in wind parks involves exposure to solvents, dusts and dangerous ingredients of resins and glues, as well as work at height, in variable weather conditions and in confined spaces.

Therefore, the prevention measures that might usually be used to avoid exposures, such as local exhaust ventilation, may be difficult to apply, and work procedures have to take into account that workers may use other devices such as harnesses or respiratory protective equipment for confined spaces.

2.2. Legislation on dangerous substances

Everyone involved in managing dangerous substances in workplaces needs to be aware of the legislative framework covering dangerous substances in the EU.[20]

The most relevant legislation of all is the OSH legislation that is specifically aimed at protecting workers from health and safety risks in general and of dangerous substances in the workplace (e.g. the OSH Framework Directive, which sets out the basic principles, the Chemical Agents Directive, the Carcinogens Directive, and the directives on limit values). It establishes employers' responsibility to ensure workplace safety and health. Through its incorporation into national legislation, the EU OSH legislation requires employers to carry out risk assessments of all safety and health risks, including the risks from dangerous substances (see section 2.3).

> **'... the employer shall first determine whether any hazardous chemical agents are present at the workplace. If so, he shall then assess any risk to the safety and health of workers arising from the presence of those chemical agents.'**
>
> *Article 4 of the Chemical Agents Directive*

The legislation also sets out a specific hierarchy of prevention measures, which employers are legally obliged to follow. Elimination of risks is at the top of the hierarchy. This is followed by substitution of dangerous substances with less dangerous substances or safer materials or of a process with one that is not hazardous or less hazardous. Next are technological measures, then organisational measures and, finally, personal protective measures (including the use of personal protective equipment, PPE).

This hierarchy is often referred to as the STOP principle:

- **S**ubstitution
- **T**echnological measures
- **O**rganisational measures
- **P**ersonal protection.[21]

The aim is to ensure that risks are tackled at the source and to make collective measures — that is, measures that protect a group of workers in a systematic way — the first priority. It is important that employers are aware that much stricter measures apply for carcinogens (see section 2.6). Member States are entitled to apply additional or more detailed or stringent regulations than those set out in the general principles of the EU OSH directives. Therefore, it is essential that employers consult the relevant national OSH legislation.

Binding (which means that they must be met) and indicative (as an indication of what should be achieved) occupational exposure limit values for dangerous substances are also laid down in European OSH directives. Occupational exposure limits (OELs) for hazardous substances are important information for risk assessment and management. Most EU Member States establish their own national OELs, usually including more substances than the EU directives. However, OELs have been set for only a limited number of the substances currently used in the workplace.

Other regulations and guidelines cover specific aspects such as manufacturing, supplying, transporting and labelling dangerous substances, and these are often relevant to the workplace too. For example, the REACH legislation and the CLP Regulation, aim to ensure the availability of information that is vital for workplace risk assessment. They require chemical manufacturers and suppliers to ensure that standardised safety labels, hazard pictograms and safety data sheets are provided. These provide information on the properties of substances and the hazards associated with them, and guidance on storage, handling and risk prevention.

The REACH and CLP regulations introduced some changes that are connected in important ways with OSH legislation, for example:

- new information in safety data sheets (data from chemical safety reports, exposure scenarios, intended uses);
- restriction and the need for authorisation of use of certain substances;
- new classification and labelling requirements, including new hazard symbols and labels.

As part of the Healthy Workplaces Campaign 2018-19, EU-OSHA aims to promote awareness of these changes and their implications for managing dangerous substances in the workplace. This will be achieved by disseminating information about tools and guidance that support OSH risk assessment and management, as well as substitution, and improving access to resources that provide information about dangerous substances.

© Sven Hoppe - Fotolia

Some key EU directives and regulations

Directive 89/391/EEC (the OSH Framework Directive)
of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work — the 'Framework Directive'

Directive 98/24/EC (the Chemical Agents Directive, CAD)
of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work

Directive 2004/37/EC (the Carcinogens and Mutagens Directive, CMD)
of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work

Regulation (EC) No 1907/2006 (REACH Regulation)
of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency

Regulation (EC) No 1272/2008 (CLP Regulation)
of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

There are also regulations and directives covering specific groups of dangerous substances in the workplace and setting indicative occupational exposure limit values.

https://osha.europa.eu/en/safety-and-health-legislation

2.3. Risk assessment

As the legislation at EU and Member State levels makes clear, workplace risk assessment is an absolutely essential precondition for successful prevention.

In carrying out the assessment of any risk posed by hazardous substances present at the workplace, employers must consider:

- the hazardous properties;
- the possibility of elimination or substitution;
- the information on safety and health that has to be provided by the supplier (e.g. the relevant safety data sheets);
- the level, type and duration of exposure and the number of workers exposed;
- the circumstances of work involving such substances, including the amount;
- any occupational exposure limit values or biological limit values;
- the effects of preventive measures; and
- the conclusions to be drawn from any health surveillance already undertaken.

For SMEs in particular, it is helpful to break the risk assessment process down into steps, which makes it more manageable. A risk assessment for dangerous substances should involve:

1. Making an inventory of dangerous substances in the workplace and those generated by work processes.

2. Collecting information (for chemical products from safety data sheets, for example) on the harm that these substances can cause and the prevention measures recommended by suppliers and manufacturers or in guidance. This information should also be used to inform and train workers and draft workplace instructions for processes and handling substances.

3. Assessing exposure to the identified dangerous substances, looking at the type, intensity, length, frequency and occurrence of exposure to workers, including the combined effects of dangerous substances used together and the related risk.

4. Drawing up an action plan. It should list the steps to be taken, in order of priority, to reduce the risks to workers and should specify by whom, how and by what date each step should be taken. In some countries, for standard working operations such as filling, pumping, drilling, grinding or welding, practical information on tested control techniques is available (direct advice or control guidance sheets).[22]

5. Taking into account any workers that may be particularly at risk and specifying the measures to be taken to protect them and any additional training and information needs.

6. Taking into account workers who may be exposed when doing maintenance or repair work or accidentally, for example to intermediary products in a chemical production process that is usually closed. Workers should know who to contact if things go wrong and how to protect themselves in the event of an incident.

7. The risk assessment should be regularly revised and updated.

Effective risk assessment and prevention require employers to keep themselves and their workers well informed and trained. Workers also need to be consulted on the risk assessment and if there are changes to the substances, products and work processes involved in their jobs. Furthermore, a number of tools have been developed by Member States and other actors to help enterprises to carry out risk assessments.

Helpful tools for carrying out risk assessments and finding recommendations for prevention measures

Instrument	Country	Focus
EU-OSHA's e-tool 'Healthy Workplaces Manage Dangerous Substances'	EU-wide	• Practical tool to help in managing the risks posed by dangerous substances in the workplace • Interactive and user friendly • Offers practical measures to eliminate and minimise risks ***https://eguides.osha.europa.eu/dangerous-substances/***
EU-OSHA's OiRA platform	EU-wide	• Web platform offering free access to interactive and sector-specific risk assessment tools • Some OiRA tools cover the risks posed by dangerous substances, depending on the sector in question • Many of the tools are available in different languages ***https://oiraproject.eu/en***
COSHH Essentials and e-COSHH	United Kingdom, but disseminated widely	• Easy, stepped approach to risk assessment and the factors that identify a suitable control approach • Uses risk matrices to identify appropriate controls • Provides general control approaches and task-specific guidance ***http://www.hse.gov.uk/coshh/essentials/coshh-tool.htm*** Direct advice sheets: ***http://www.hse.gov.uk/coshh/essentials/direct-advice/index.htm***
GISBAU and GISCHEM	Germany	• For the construction, chemicals, metals and other industries • Database complemented by product codes for groups of substances in common usage • Link to a platform for the exchange of safety data sheets ***http://wingisonline.de/*** ***http://www.gischem.de/index.htm***
Stoffenmanager	Netherlands	• For different types of enterprises • Structures relevant knowledge and information • Interactive • Available in six languages • Includes a well-accepted quantitative exposure model ***https://stoffenmanager.nl/***
EMKG (Easy-to-Use Workplace Control Scheme for Hazardous Substances)	Germany	• Practical guidelines for risk management • Support for SMEs • Translates information from safety data sheets and workplaces into practical risk-reducing measures ***http://www.baua.de/en/Topics-from-A-to-Z/Hazardous-Substances/EMKG/EMKG_content.html***
KemiGuiden	Sweden	• For small firms • Interactive tool • Provides tailored advice on risk assessment and control, based on answers to questions concerning the company's situation ***www.kemiguiden.se***
SEIRICH	France	• Interactive tool • Allows for a tailored approach, taking account of different levels of experience and complexity • Offers tailored advice on risk assessment and control, based on answers to questions concerning the company's situation ***http://www.seirich.fr/seirich-web/index.xhtml***

2.4. Practical solutions

A great deal of guidance and many practical tools are available to help in dealing with dangerous substances. Public institutions and authorities, industrial associations and trade unions have produced many tools and guidance materials with the specific goals of supporting enterprises in this area and helping the authorities to enforce the relevant legislation. These range from the general to the more specific. For example, they might focus on how to make decisions on substitution or they might make recommendations for solutions for typical working tasks or in a particular occupation or sector.

As part of the Healthy Workplaces Campaign 2018-19, EU-OSHA has gathered together a collection of these tools, guidance materials and good practice examples, including audio-visual materials, on the campaign website ***(https://healthy-workplaces.eu)***. There are resources to support labour inspectorates, SMEs and workers' representatives, among many others, so it's well worth visiting the site to find out about the help that is on offer.

© Shutterstock/Dagmara_K

Good practice: Elimination

Welding and soldering of domestic pipes exposes welders to dangerous substances in the fumes released. However, welding and soldering can be eliminated by using a pipe-pressing tool, which is a special gripper that joins the pipes under high pressure. Additional advantages such as the speed and ease of this novel solution were crucial for its rapid uptake and helped to make this new technique choice a success.

CASE STUDY

SUBSTITUTION OF A DISINFECTANT IN THE SOCIAL CARE SECTOR

A residential home for the elderly in Spain used a disinfectant to clean the rooms of deceased patients. It contained, among other substances, triclosan and 2-butoxyethanol, potent irritants and toxic. One of the workers who used the product suffered from throat irritation and respiratory problems.

The worker's union representative was informed about the situation and the regional union's safety and health department explained the problem to the employers. The regional union then began to look for alternatives with the assistance of the Spanish Union Institute of Work, Environment and Health (ISTAS).

Several alternatives were assessed and a decision was made to substitute the disinfectant with a product based on didecyldimethylammonium chloride and ethoxylated alcohols. The alternative was not risk-free and had to be handled using adequate protection measures. However, the risks posed by the alternative were less significant. Another benefit was that the replacement product caused less environmental damage.

2.5. Some groups of workers are at particular risk

All workers need to be equally protected from the risks caused by dangerous substances. However, the particular sensitivity or conditions of some groups of workers might be overlooked and they may therefore be more at risk. The risk might be higher because these workers are inexperienced, uninformed or physically more vulnerable, or because they frequently change jobs, or work in sectors where awareness of the issue is low, or because of a higher or different physiological sensitivity (e.g. in young apprentices, or differences between men and women).

Groups exposed to particular risks may include women, young workers, migrant workers, and workers who are less likely to have received training and information (e.g. subcontracted or temporary workers and those working in the informal economy). Sectors in which these groups of workers are often exposed to dangerous substances include agriculture and horticulture, construction, waste management, transport, hairdressing, professional cleaning work, health and social care, and hotels, restaurants and catering. In addition, exposures of workers in certain occupations, for example cleaning and maintenance, waste and wastewater management or emergency and rescue services, vary and are often unpredictable.

The particular needs of these workers have to be taken into account when assessing the risks posed by dangerous substances in a workplace[23] and when setting prevention measures. For example, it's important that they have access to the results of risk assessments, that they are given training and that their participation in decisions on how the risks are managed is ensured.

It is crucial that the risks to which these workers are exposed are not underestimated and that, as for other workers, the principles of risk assessment, substitution and elimination are applied, and the hierarchy of prevention measures respected. Guidance is available for enterprises employing members of vulnerable groups, for example the UK Health and Safety Executive's toolbox for managing the safety and health of migrant workers.[24]

National figures indicate that workers under 25 years of age are exposed to carcinogenic substances more than any other age group.[25]

CASE STUDY

FEMALE WORKERS – GUIDANCE TO ENSURE PERSONAL PROTECTIVE EQUIPMENT IS ADEQUATE

The limited adaptation of PPE to certain groups, particularly women, is a critical workplace health and safety issue.[26, 27, 28]

Personal protective equipment, such as respirators, fall protection harnesses, safety shoes, gloves, hard hats and safety goggles may be too large for many women. This poses both health hazards when respirators don't protect adequately against chemicals, and safety hazards where loose clothing and gloves get caught in machinery. Many women may find the poorly fitting equipment uncomfortable and do not wear it, putting themselves at risk of injury.
To address this particular issue, several guidance documents are available: the Industrial Accident Prevention Association and the Ontario Women's Directorate have developed a directory, the Canadian Centre for Construction Research and Training developed a series of checklists (for equipment for the head and eyes, hearing PPE, gloves, foot protection and bodyguards) that could be used by women workers to assess whether their PPE fitted properly[29] and the UK national trade union centre has published guidance for workers' representatives.[30]

CASE STUDY

YOUNG WORKERS — AN INTERACTIVE DATABASE FOR ORGANIC CHEMISTRY STUDENTS

NOP-online[31] is an example of how an interactive database can support OSH education and training in laboratory safety.[32] It is aimed at students on organic chemistry lab courses, which are obligatory in university curricula in science, medicine and some engineering studies. Typically, in such courses, students learn basic laboratory techniques of synthesis and analysis. Procedures for avoiding toxic substances are not taught in an explicit way.

NOP-online is a collection of descriptions of experiments in organic chemistry. Experiments can be browsed by title, number, working technique, and substance class and reaction type. Students can obtain a detailed description of the substances used in an experiment and those produced by a chemical reaction. This includes information on the safety and health risks and the availability of toxicological data on these substances. Different colours indicate the toxicity and eco-toxicity of the various substances, and whether or not a particular substance has been thoroughly tested for harmful effects. Each experiment description is accompanied by detailed laboratory instructions, advice on safety and analysis procedures and further information on sustainability issues. A final evaluation enables students to compare reactions and the substances that result from them, gaining an insight into the risks associated with each experiment and its mass and energy efficiency.

The website is constantly updated, with users invited to add comments and actively participate in building up the resources. All the information is available in German, English and Italian, and some is also available in Arabic, Turkish, Indonesian, Portuguese and Russian.
http://www.oc-praktikum.de/nop/en-entry

2.6. Carcinogens and work-related cancer

Around 1.6 million people of working age are diagnosed with cancer in Europe each year. The total number of people in the EU estimated to develop cancer as a result of occupational exposure to carcinogens is greater than 120,000 per year, resulting in almost 80,000 deaths per year.[33,34] In fact, according to International Labour Organization (ILO) and EU estimates, carcinogens are the cause of the majority of fatal occupational diseases in the EU.[35]

Many cases of work-related cancer are preventable: for example, in Britain an estimated 8,000 workers die from occupational cancer each year due to past exposures to carcinogens at work. However, in future many of these cases can be prevented using a mixed intervention approach to improve compliance with current occupational exposure limits.[36]

There are hundreds of dangerous substances classified as carcinogens to which workers may be exposed,[37] and in fact some of the substances to which workers are most frequently exposed are carcinogenic. Specific studies show high exposures to carcinogens. The Australian Work Exposures Study, for example, found that, in 2011/12, about 37 % of participants were exposed to at least one occupational carcinogen in the workplace.[38]

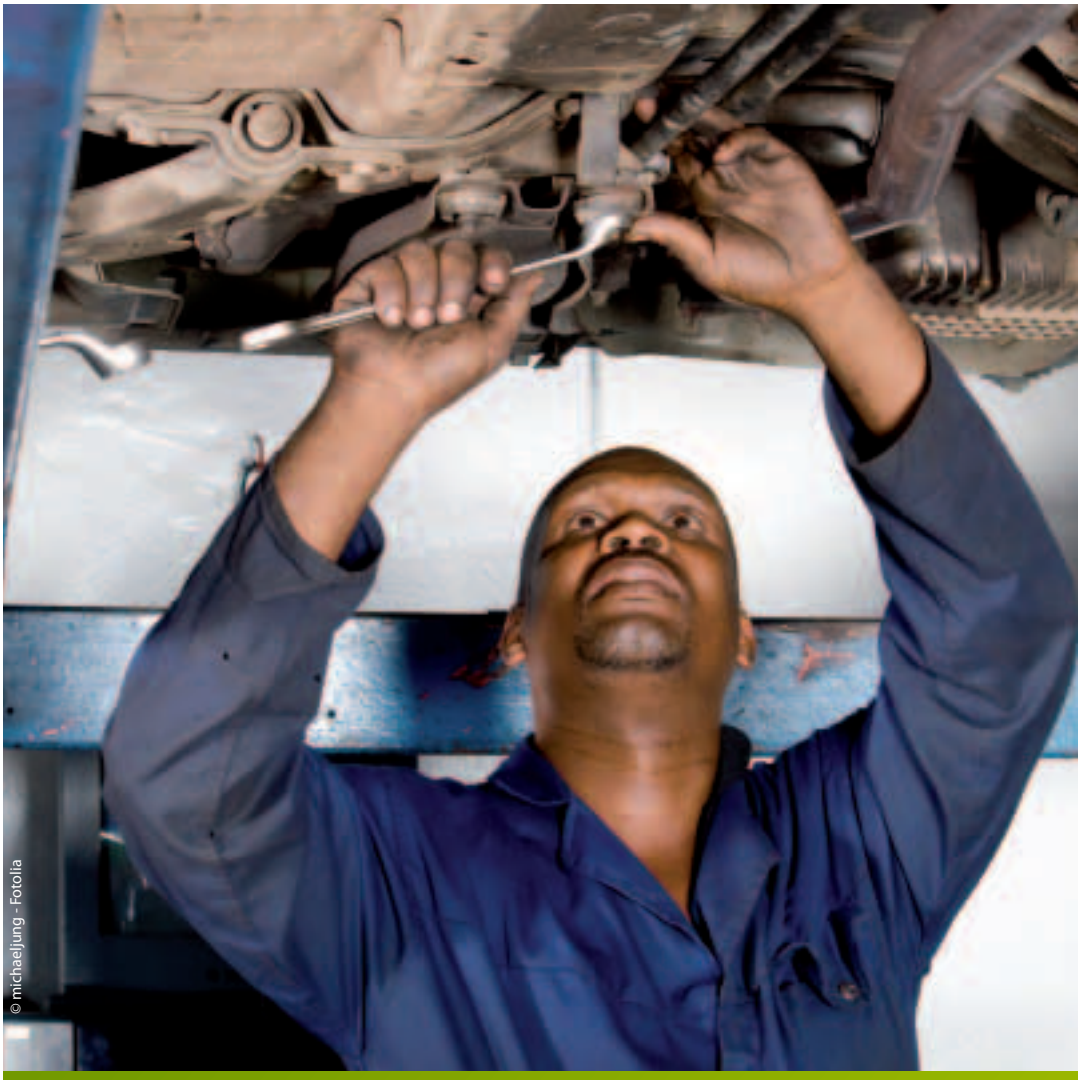
In addition, some of the carcinogens identified in workplaces are generated by work processes themselves and are therefore not covered by the REACH legislation and its processes based on safety data sheets and communication up and down the supply chain. For these carcinogens, other ways of promoting prevention and raising awareness have to be sought. Recent successes in limiting exposure to tobacco smoke at work is a good example of how combined efforts can reduce exposures considerably.

A French study[39] found that young workers and maintenance workers are more exposed and likely to be exposed to several carcinogens at the same time. It also found that the substances to which workers are significantly exposed are those for which control measures are difficult to implement. This is because they are process generated, for example combustion products such as diesel exhaust emissions, welding fumes, soot and tar, bitumen, and respirable crystalline silica.[40]

Workers in particular occupations may also be at increased risk of exposure to carcinogens, for example, welders, painters, hairdressers and nurses.

It is important that employers are aware that, under EU legislation, particularly stringent measures must be taken to prevent harm caused by exposure to carcinogens at work. These are in addition to those required for other dangerous substances. The extra measures include strict substitution requirements, working in a closed system, recording exposures and stricter information and documentation requirements.

The direct costs of carcinogen exposure at work across Europe are estimated at EUR 2.4 billion per year.[41]



© michaeljung - Fotolia

Roadmap on Carcinogens

In 2016, the Netherlands Presidency of the Council of the EU put the prevention of exposure to carcinogens at the top of its OSH priority list. It initiated a covenant on joint cooperation between EU-OSHA, the European social partners, the European Commission and the labour ministries of the Netherlands and Austria.

The signatories pledged to draw up a Roadmap on Carcinogens, an action scheme with the aims of raising awareness of the risks, identifying smart solutions and sharing good practices.

EU-OSHA is helping to promote the scheme, including through the Healthy Workplaces Campaign 2018-19.

Find out more about the plans for action at **https://osha.europa.eu/en/themes/dangerous-substances/roadmap-to-carcinogens.**

CASE STUDY

RESPIRABLE CRYSTALLINE SILICA ON CONSTRUCTION SITES — EUROPEAN GUIDANCE FOR LABOUR INSPECTORS

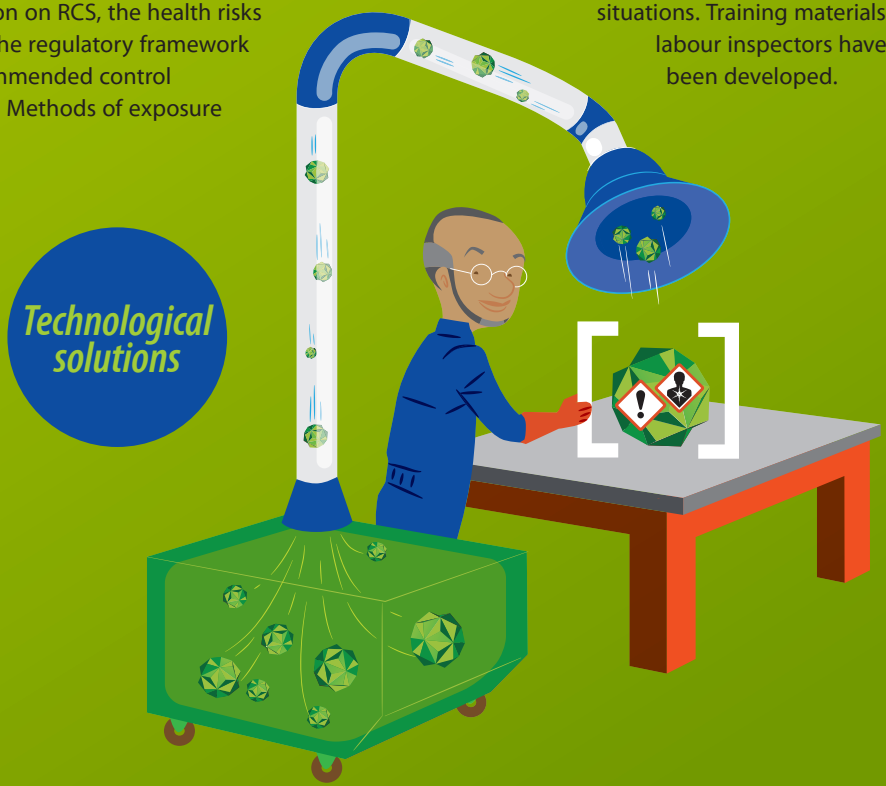
The Senior Labour Inspectors' Committee (SLIC) has published guidance for national labour inspectors, developed by its SLIC Chemex group, on addressing risks to workers caused by exposure to respirable crystalline silica (RCS)[42] on construction sites.[43, 44]

RCS is widely encountered in EU workplaces in a number of industry sectors including quarrying, brickmaking and construction, and it is known to cause serious illnesses such as silicosis, chronic obstructive pulmonary disease (COPD) and lung cancer. The construction sector is the focus of the guidance document because of the prevalence of RCS in that sector and because of its high risks in terms of potential for exposure and the large number of workers potentially exposed.

The guidance provides national labour inspectors with background information on RCS, the health risks it poses, the regulatory framework and recommended control measures. Methods of exposure control include eliminating RCS from the process, adapting the process to reduce emissions into the work area (e.g. by using water to keep dust from becoming airborne or by using local ventilation) and using respiratory PPE.

It recommends actions where potential high, medium or low health risks from RCS may be encountered, depending on the extent and level of controls implemented by the employer at the time of inspection. The measures recommended follow the hierarchy of prevention measures and include important examples of relevant control measures.

A number of task sheets concentrating on typical work situations provide practical information for labour inspectors on the ground; they include pictures of poor and good practices, and give advice on how to proceed in certain situations. Training materials for labour inspectors have also been developed.



3. The Healthy Workplaces Campaign 2018-19

3.1. About this campaign

Despite efforts at EU, national and sectoral levels to limit work-related exposures to dangerous substances, Europe's workers still experience exposures, which may cause and contribute to health problems, diseases and fatalities.

The Healthy Workplaces Campaign 2018-19 aims to help tackle this problem by achieving five strategic objectives:

1. Raising awareness of the importance and relevance of managing dangerous substances in European workplaces by providing facts and figures on exposures to dangerous substances and their impact on workers.
2. Promoting risk assessment, elimination and substitution, and the hierarchy of prevention measures by providing information on practical tools and good practice examples.
3. Raising awareness of the risks linked to exposure to carcinogens at work by supporting the exchange of good practices as a signatory to the covenant committing to the Roadmap on Carcinogens.
4. Targeting groups of workers with specific needs and higher levels of risk, for example as a result of their limited knowledge about dangerous substances, by providing facts and figures and good practice information.
5. Increasing awareness of policy developments and the legislative framework by providing an overview of the existing framework and existing guidance.

An EU-OSHA-led campaign can make a significant contribution in many of these areas. Above all, however, it will build partnerships to ensure that scientific and practical knowledge is brought together and 'translated' into practical solutions for managing the risks posed by dangerous substances in the workplace.

The Healthy Workplaces Campaign aims to achieve its goals through intermediaries who can help EU-OSHA to reach the campaign's beneficiaries in workplaces throughout Europe. EU-OSHA will develop a range of resources that can be used and adapted by Member States, partner organisations and enterprises, as well as organising some key activities and events. These will include the Healthy Workplaces Good Practice Awards (see section 3.4).

EU-OSHA will also host the final event of the campaign, the Healthy Workplaces Summit, which offers a chance for the networks and partners who have contributed to the campaign to reflect and build on the achievements and lessons of the previous two years.

Key dates

Campaign launch
April 2018

European Weeks for Safety and Health at Work
October 2018 and 2019

Healthy Workplaces Good Practice Exchange event
1st quarter of 2019

Healthy Workplaces Summit
November 2019

3.2. Who can take part in the campaign?

We encourage all interested organisations and individuals to join us in the campaign, but it aims in particular to work with the following groups of intermediaries to spread the word:

- EU-OSHA's focal points and their networks;
- social partners (European and national);
- sectoral social dialogue committees;
- policy-makers (European and national);
- large enterprises, sectoral federations and associations of SMEs;
- European institutions and their networks (Enterprise Europe Network);
- European non-governmental organisations;
- OSH professionals and their associations;
- the OSH research community;
- labour inspectorates and their associations;
- the media.

3.3. How to get involved

There are many practical ways of getting involved and supporting this campaign:

- raising awareness by disseminating and publicising the campaign materials;
- organising events and activities, for example workshops and seminars, training courses, competitions;
- promoting the substitution principle and the hierarchy of prevention measures;
- using and promoting the practical tools and other resources for managing dangerous substances in the workplace;
- sharing good practices for the prevention of risks posed by dangerous substances in the workplace;
- taking part in the Healthy Workplaces Good Practice Awards;
- getting involved in the European Weeks for Safety and Health at Work each October in 2018 and 2019;
- becoming an official campaign partner (open to pan-European or international organisations);
- becoming a national campaign partner (open to organisations operating at national level);
- becoming a campaign media partner (open to national or European media outlets);
- keeping in touch and up to date via the campaign website ***(https://healthy-workplaces.eu)*** and our social media outlets — find us on Facebook, Twitter and LinkedIn.

Official campaign partners undertake to promote the campaign and support it in practical ways. In return, the campaign partnership offer brings a number of benefits, including taking part in good practice exchange events and other networking opportunities. Find out more on the campaign website.

3.4. The Healthy Workplaces Good Practice Awards

The Healthy Workplaces Good Practice Awards recognise outstanding and innovative workplace safety and health practices. In this way, they demonstrate the benefits to businesses of adopting good OSH practices.

All organisations in Member States, candidate countries, potential candidate countries and members of the European Free Trade Association (EFTA) are welcome to submit entries.

Entries should demonstrate:

- employers and workers working together to manage the risks posed by dangerous substances in the workplace and to promote a strong culture of risk prevention;
- successful implementation of interventions;
- measurable improvements in workplace safety and health;
- sustainability of interventions over time;
- interventions that are transferable to other organisations in different sectors or countries.

EU-OSHA's network of focal points collects entries and nominates national winners for entry to the pan-European competition. The Good Practice Awards competition begins at the same time as the campaign is launched. The winners are announced at a ceremony, held in the second year of the campaign, to celebrate the achievements of the participants.

3.5. Our network of partners

Our partnerships with key stakeholders are crucial to the success of our campaigns. We rely on the support of a number of partnership networks:

- **National focal points:** all Healthy Workplaces Campaigns are coordinated at the national level by EU-OSHA's network of focal points.
- **European social partners:** the social partners represent the interests of workers and employers at the European level.
- **Official campaign partners:** 100 pan-European and international enterprises and organisations support the Healthy Workplaces Campaign as campaign partners.
- **Media partners:** the Healthy Workplaces Campaign is supported by an exclusive pool of journalists and editors across Europe who are dedicated to promoting workplace safety and health. Leading European OSH publications raise awareness of and promote the campaign. In return, the media partnership offer raises the profile of publications and allows partners to connect with EU-OSHA's networks and stakeholders across Europe.
- **Enterprise Europe Network:** the EEN advises and supports SMEs across Europe to take advantage of business opportunities and new markets. As a result of its long-standing cooperation with EU-OSHA, the EEN has a network of national-level OSH Ambassadors in 30 European countries, and they play an active role in promoting the Healthy Workplaces Campaign.
- **EU institutions and their networks:** in particular the holders of the Presidencies of the European Council.
- **Other EU bodies with a particular interest in the campaign topic:** the European Chemicals Agency (ECHA), the European Environment Agency (EEA), the European Food Safety Authority (EFSA), the Executive Agency for Small and Medium-sized Enterprises (EASME), the European Institute for Gender Equality (EIGE), Eurofound and the Joint Research Centre (JRC).

Find out more about our partners on the campaign website ***(https://healthy-workplaces.eu).***

3.6. Further information and resources

Visit the campaign website (***https://healthy-workplaces.eu***) to find a wide range of campaign materials designed to help you promote and support the campaign. These include:

- The campaign leaflet and a flyer for the Healthy Workplaces Good Practice Awards;
- PowerPoint presentations, posters, infographics and other materials;
- the campaign toolkit — advice on running your own campaign and resources to support you;
- the latest animated videos featuring Napo and colleagues raising awareness of issues related to dangerous substances, including classification, labelling and packaging of chemicals, tobacco smoke, and dust;
- a practical e-tool for the management of dangerous substances in the workplace;
- a database of case studies, instruments and tools, audio-visual materials and other good practice materials collected from around Europe;
- a series of short infosheets on priority topics related to dangerous substances;
- links to useful sites.

Keep in touch and up to date with our activities and events through our social media outlets — find us on Facebook, Twitter and LinkedIn.

References and notes

(1) Summary — Second European Survey of Enterprises on New and Emerging Risks (ESENER-2), EU-OSHA, 2015, p. 5. Available at: *https://osha.europa.eu/sites/default/files/publications/documents/esener-ii-summary-en.PDF*

(2) Sixth European Working Conditions Survey, Overview Report, Eurofound, 2016, p. 43. Available at: *https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1634en.pdf*

(3) ESENER-2 — Overview Report: Managing Safety and Health at Work, EU-OSHA, 2016, p. 18. Available at: *https://osha.europa.eu/sites/default/files/ESENER2-Overview_report.pdf*

(4) *http://www.miljomal.se/Miljomalen/Alla-indikatorer/Indikatorsida/Dataunderlag-for-indikator/?iid=69&pl=1&t=Land&l=SE*

(5) See also EU-OSHA, 'Dangerous substances': *https://osha.europa.eu/en/themes/dangerous-substances*

(6) The EU legislation uses the term 'chemical agents' to cover single substances, mixtures and process-generated substances

(7) CLP regulation: Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures; see also *https://echa.europa.eu/regulations/clp/understanding-clp*

(8) *http://ec.europa.eu/social/main.jsp?catId=151*

(9) SLIC, Final report on the SLIC inspection campaign 'Risk assessment in the use of dangerous substances, 2010-2011' (unpublished).

(10) Commission Recommendation 2003/670/EC of 19 September 2003 concerning the European schedule of occupational diseases. Available at: *http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32003H0670*

(11) HSE (UK Health and Safety Executive), 'School cook can hardly walk': *http://www.hse.gov.uk/coshh/casestudies/cook.htm*

(12) Currently (July 2017), the US Chemical Abstracts Service Registry lists more than 130 million organic and inorganic substances and 67 million protein and DNA sequences. The Registry is updated with approximately 15,000 additional new substances daily: *https://www.cas.org/about-cas/cas-fact-sheets*

(13) *https://echa.europa.eu/information-on-chemicals/cl-inventory-database*

(14) See *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006R1907-20140410*

(15) ECHA Registration statistics, data as at 15 May 2017: *https://echa.europa.eu/documents/10162/5039569/registration_statistics_full_en.pdf/* In 2018, in a third round of registrations ECHA will receive the dossiers for chemicals with a manufacturing or import volume of between 1 and 100 tonnes and is expecting to register 25,000 substances: *https://echa.europa.eu/press/press-material/pr-for-reach-2018*

(16) Substances notified under Directive 67/548/EEC (NONS) prior to the introduction of REACH are considered registered.

(17) 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, particularly Articles 9, 10 and 11.

(18) Kim Y., Park J. and Park M., 2016, 'Creating a culture of prevention in occupational safety and health practice', Safety and Health at Work (SH@W), 7, pp. 89-96. Available at: *http://dx.doi.org/10.1016/j.shaw.2016.02.002*

(19) *https://osha.europa.eu/en/topics/green-jobs https://osha.europa.eu/en/topics/green-jobs*

(20) See Keen C., 'Dangerous substances (chemical and biological', OSHwiki: *https://oshwiki.eu/wiki/Dangerous_substances_(chemical_and_biological)#Hierarchy_of_control*

(21) See Article 6 of Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work. Available at: *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31998L0024*

(22) See the UK HSE for direct advice sheets (*http://www.hse.gov.uk/coshh/essentials/*) and BAUA (*http://www.baua.de, under Topic section, EMKG*).

(23) See Webster J., 'Groups at risk', OSHwiki: *https://oshwiki.eu/wiki/Groups_at_ris*k

(24) *http://www.hse.gov.uk/toolbox/workers/migrant.htm*

(25) OSH in figures: Young workers — Facts and figures, EU-OSHA, 2007. Available at: *https://osha.europa.eu/en/tools-and-publications/publications/reports/7606507*

(26) Mainstreaming gender into occupational safety and health practice, EU-OSHA, 2014. Available at: *https://osha.europa.eu/es/tools-and-publications/publications/reports/mainstreaming-gender-into-occupational-safety-and-health-practice/view*

(27) Larmour J. and Peters J., 2010, WES safety clothing and footwear survey, Women's Engineering Society. Available at: *http://www.wes.org.uk/sites/default/files/WES%20safety%20survey%20results%20March%202010.pdf*

(28) *https://www.ioshmagazine.com/article/more-half-women-say-ppe-prevents-them-doing-their-job*

(29) *http://www.iapa.ca/pdf/2006_ppe_women.pdf; http://elcosh.org/document/1198/d001110/Personal+Protective+Equipment+for+Women+-+Addressing+the+Need.html*

(30) Personal protective equipment and women: Guidance for workplace representatives, TUC, 2017. Available at: *https://www.tuc.org.uk/sites/default/files/PPEandwomenguidance.pdf*

(31) *http://www.oc-praktikum.de/nop/en-entry*

(32) Mainstreaming occupational safety and health into university education, EU-OSHA, 2010. Available at: *https://osha.europa.eu/en/tools-and-publications/publications/reports/mainstream_osh_university_education*

(33) *https://roadmaponcarcinogens.eu/about/the-facts/*

(34) Jongeneel W. P., Eysink P. E. D., Theodori D., Hamberg-van Reenen H. H. and Verhoeven J. K., 2016, Work-related cancer in the European Union: Size, impact and options for further prevention, RIVM Letter Report 2016-0010.

(35) Nenonen N., Hämäläinen P., Takala J., Saarela K. L., Lim S. L., Lim G. K., Manickam K. and Yong E., 2014, Global estimates of occupational accidents and fatal work-related diseases in 2014, Workplace Safety & Health Institute, Singapore.

(36) Hutchings S., Cherrie J. W., Van Tongeren M. and Rushton L., 2012, 'Intervening to reduce the future burden of occupational cancer in Britain: what could work?', Cancer Prevention Research, 5(10), pp. 1213-1222.

(37) The EU legislation covers more than 270 carcinogenic, mutagenic or reprotoxic (CMR) substances in category 1 (A&B) and more than 150 in category 2, while the International Agency for Research on Cancer classifies more than 460 agents (not only chemicals) in categories 1 and 2 (A&B), See Stepa R. A., Schmitz-Felten E. and Brentzel S., 'Carcinogenic, mutagenic, reprotoxic (CMR) substances', OSHwiki: *https://oshwiki.eu/wiki/Carcinogenic,_mutagenic,_reprotoxic_(CMR)_substances*

(38) Carey, R., Driscoll, T. R., Peters, S. M., Glass, D. C., Reid, A., Benke, G. and Fritschi, L., 2014, 'Estimated prevalence of exposure to occupational carcinogens in Australia (2011-2012)', Occupational and Environmental Medicine, 71, pp. 55-62.

(39) Cavet M. and Léonard M., 2013, 'Les expositions aux produits chimiques cancérogènes en 2010', Dares Analyses No 054.

(40) Exposure to carcinogens and work-related cancer: A review of assessment methods, EU-OSHA 2014. Available at *https://osha.europa.eu/de/tools-and-publications/publications/reports/report-soar-work-related-cancer/view.*

(41) Roadmap on Carcinogens website: *https://roadmaponcarcinogens.eu/about/the-facts/*

(42) 'Crystalline silica' refers to a group of naturally occurring minerals in stone, rocks, sands and clays; they are common components in construction materials. Cutting, breaking, crushing, drilling, grinding or abrasive blasting of silica-containing materials produces airborne dust containing a range of sizes of crystalline silica particles, some of which can be inhaled. The finest particles are those that can penetrate to the gas exchange region of the lungs, where they cause damage. These particles are respirable crystalline silica (RCS) and are invisible under normal lighting conditions.

(43) Guidance for National Labour Inspectors on addressing risks from worker exposure to respirable crystalline silica (RCS) on construction sites, SLIC 2016. Available at: *https://osha.europa.eu/en/guidance-national-labour-inspectors-on-addressing-risks-from-worker-exposure-to-respirable-crystalline-silica*

(44) *https://oshwiki.eu/wiki/Respirable_Crystalline_Silica*

Europe Direct is a service to help you find answers to your questions about the European Union.

Freephone number (*): 00 800 6 7 8 9 10 11
(*) The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

More information on the European Union is available on the Internet (http://europa.eu).

Luxembourg: Publications Office of the European Union, 2018

Print	ISBN 978-92-9496-412-0	doi:10.2802/02788	TE-06-17-018-EN-C
Web	ISBN 978-92-9496-416-8	doi:10.2802/81793	TE-06-17-018-EN-N

© European Agency for Safety and Health at Work, 2018
Reproduction is authorised provided the source is acknowledged.

For reproduction or use of any photo that do not belong to EU-OSHA, permission must be sought directly from the copyright holder.

The photographs used in this publication illustrate a range of work activities. They do not necessarily show good practices or compliance with legislative requirements.

The **European Agency for Safety and Health at Work (EU-OSHA)** contributes to making Europe a safer, healthier and more productive place to work. Set up by the European Union in 1994 and based in Bilbao, Spain, the Agency researches, develops and distributes reliable, balanced and impartial safety and health information, networking with organisations across Europe to improve working conditions.

EU-OSHA also runs the 2-year-long **Healthy Workplaces Campaigns,** backed by the EU institutions and the European social partners, and coordinated at the national level by the Agency's network of focal points. The 2018-19 campaign, **Healthy Workplaces Manage Dangerous Substances,** aims to raise awareness of the risks posed by dangerous substances in the workplace and to promote a culture of risk prevention.

European Agency for Safety and Health at Work

C/Santiago de Compostela 12
48003 Bilbao, SPAIN
Email: information@osha.europa.eu

www.healthy-workplaces.eu

Publications Office