

TRADE UNIONS IN COLLABORATION

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Пыль Damm  
**Dust**



About the risks at your workplace



**fackförbund i samverkan**  
Byggnads Elektrikerna Fastighets Målarna Seko

# A little dust never killed anyone... or has it?

**IT DEPENDS ON HOW YOU LOOK AT IT**, what you mean by “little” and the kind of dust you are dealing with.

**But the fact remains:**

**Yes, dust can kill you.**

**ONE OF THE DISEASES** you can get from dust is silicosis which is caused by crystalline silicone dioxide, i.e. silica, tridymite or cristobalite dust, a type of dust found on construction sites.

**LIKE RUSSIAN ROULETTE** but a slower, painful death. Silicosis, also known as “black lung” or “miner’s lung”, is an incurable disease that also significantly increases the risk of TBC infection. It normally takes more than 10 years to develop silicosis after being exposed to silicone dioxide. The latency period, i.e. the period from when you are exposed to a hazardous substance until the symptoms are noticeable, is normally more than twenty years. That is why it is a deceptive disease that is difficult to detect on time. So why take a chance when your life is at stake? ■



# Risks on the **increase**

In the 1960s and 70s, in a bid to eradicate silicosis, extensive measurements were performed, particularly of the silica content at workplaces in several industries. The goal was to eradicate silicosis completely.

**THE REGULATIONS CHANGED**, information material appeared produced and public information campaigns were conducted. The number of deaths from silicosis dropped quite sharply but in the late 1990s and the early 2000s, new cases of silicosis were reported.

The investigations that were carried out also covered other chemical health risks, wood dust, asbestos, mineral wool and softeners as well as silica dust. A number of technological solutions were developed, mostly using mobile extraction systems on the construction side. Unfortunately they were often heavy and impractical. Fairings and dust separators gained more widespread use and are still used today.

**100**  
deaths every year  
due to chemical or  
biological substances.

**DESPITE THE PUBLIC INFORMATION** campaigns and the new regulations, the disease has not been eradicated and new cases have been reported in recent years. The biggest difference-maker is public knowledge about the risks. Unfortunately some of this knowledge is disappearing, partly because the problem is less widespread today than in the 1960s and 70s when the measurements and information campaigns were needed the most. But the risks have not disappeared altogether, they may even be making a return.

**COPD IS ON THE INCREASE** among construction workers, according to a study published just a few years ago. Construction projects under time pressure and drier, more encapsulated construction/work environments could be one of the causes. Many sub-contractors complain that the phase from bidding to execution is often very short. The same applies to advance planning on construction sites. A growing

number of contractors are also performing more strictly demarcated tasks, which means they have to travel from site to site to execute their part of the construction process.

**MEASUREMENTS THAT HAVE BEEN** performed mainly in Repair, Reconstruction and Retrofit projects (ROT) but also in new construction projects show high levels of dust – so high, in fact, that they exceed the permitted hygienic limit. According to this and other reports from the Swedish Work Environment Authority, these high levels of dust is probably one of the reasons why COPD is on the increase among construction workers.

**NEW CASES** of the disease are still being reported in the construction industry. From 2002–2005, some 100 people a year reported an occupational illness caused by chemical and biological substances. With the labour market in its current state, particularly in the construction industry which has a large proportion of sub-contractors and occasionally also questionable employment terms, there may be a large number of illnesses that are unrecorded.

## **COPD, CANCER AND MINER'S LUNG**

**MOST OF US TODAY** know about the adverse effects of dust on your health. The larger particles of dust mainly cause irritation in your nose and larynx but those that contain allergenic substances can also cause allergies and asthma. Certain larger particles such like coarse fibres from mineral wool, are a skin irritant. Large particles of wood dust can also cause cancer.

**THE SMALL PARTICLES** are the most dangerous. When it comes to dust found on construction sites, the most serious health risks – irrespective of substance – are the particles that are small enough to reach into the lung's capillaries and air sacs. The body has difficulty getting rid of these particles. We exhale some of the particles while others are carried into the body by other means. It is the particles that accumulate in the lungs, however, that do the most damage, particularly if they are insoluble and remain in the lungs for a prolonged period.

**RESPIRABLE DUST** that contains silica can cause cancer and silicosis. COPD is another disease that is caused by dust. ■

**The biggest health risk** is presented by particles that are so small they can reach the lung's capillaries and air sacs.

## **FACTS**

Far fewer companies perform dust measurements today. From 1990–2004 virtually no measurements of the dust content at construction workplaces were performed. According to the Swedish Work Environment Authority, only one in three construction companies systematically investigated the risks in their work environment. Almost half the smaller construction companies also lacked occupational health care. Larger companies are often insured which means that 85% of the employees in the construction industry have occupational health care.

# The smallest particles do the most damage

Dust fractions\*, limits and particles: to the layman this may sound like a foreign language. And in some cases the particles are so small that they are invisible to the naked eye. Some are so small that they can penetrate deep into our respiratory tract, down to the air sacs. In other words it is the smallest components that put you at risk of developing a serious illness. This is why it is so important to know where the biggest risks can be found.

**THE ONLY WAY** to find out where the risks are and know how to avoid them, is to read previous measurements and investigation reports. And to continue systematically investigating the risks in the work environment, i.e. to measure and measure again.

You do not have to be an expert on particles and chemistry, but it is a good idea to grasp some of the basics. After all, it is your and your workmates' health that is at stake.

**\*Fraction:**  
chemical, with several,  
-a subset.

**DUST FRACTIONS** are the dust's chemical components/particles. The size of the particles depends on the material and which processing tools you are using. In a work environment context, dust can be divided into three categories: *inhalable dust*, *respirable dust* and *total dust*.



PHOTO: ADBESTOCK

**INHALABLE DUST** are the particles that you breathe in through your nose and mouth.

**TOTAL DUST** is the fraction of the dust (chemical component of the dust) that you capture when you take samples using a cartridge sampler. In other words it is not simply the total amount of airborne dust.

**RESPIRABLE DUST** is the quantity of dust that you breathe in and which penetrates deep into the respiratory tract, all the way down to the air sacs.

**THE SMALLEST PARTICLES** cause the most damage. Respirable silica is one, and it can be found in respirable dust. It can be analysed in a laboratory, or the silica content estimated in a sample. It is only the respirable silica dust that is considered hazardous, the silica dust that collects in the upper respiratory tract is not considered more hazardous than any other kind of dust.

**TO BE 100% CERTAIN** about the dust content at your workplace you need to measure the air particles. You can do this by carrying measuring equipment on your shift. To get the most accurate result possible you need to measure for at least 75% of the work time. ■

**75**  
percent of the work time  
should be measured to  
determine exactly how  
much airborne dust there  
is at the workplace.

# The experts who identify and map out the risks

The Centre for Occupational and Environmental Medicine is tasked with reducing ill-health caused by the risks in occupational and public environments. A spectrum of professional groups including doctors, occupational and environmental hygiene specialists, chemists, biologists are employed to identify and prevent the risks in occupational and surrounding environments.

**MARIE LEWNÉ** is head of the Department of Occupational Medicine. It performs case reviews and maps out risks, information campaigns, training and conducts. The centre takes patients referred by health care centres, occupational health care or specialist clinics.

The department analyses the diseases caused by occupational or other environments. Its occupational hygiene specialists perform inspection visits at workplaces to look at the equipment and work routines in place.

“We talk to the managers and safety officers to get to the bottom of the causes of a patient’s illness and to help ensure the patient can continue working there,” says Marie Lewné.

“Some employees ‘clean’ their clothes by blowing the dust off with compressed air.”

**MARIE LEWNÉ**

Certified occupational hygiene specialist and doctor of medicine. Head of the Occupational Medicine Department, at the Centre for Occupational and Environmental Medicine, Stockholm County Council



PHOTO: PRIVATE

“They are planned meetings with the patient and employer and we also encourage the safety officer to be present. These meetings are often very productive,” she says.

“**THIS DEPARTMENT** is part of the county council and anyone in the county of Stockholm can turn to us. The occupational health care services frequently contact us to provide or renew certificates of employability, or to recommend that an employee not continue at a certain job,” she says. Certificates of employability are issued by authorised physicians and are required according to the Swedish Work Environment Authority’s regulations on silica, both in the old regulations and the ones that came into effect in November 2015.

There are many different types of dust, both in terms of particle size, which substances are contained in the dust and thereby how hazardous it is. Many larger particles irritate the respiratory tract but the smaller particles, particularly the smallest ones, penetrate the lungs.

Some of the most hazardous substances such as asbestos are prohibited today, but that doesn’t mean you will not be exposed to them during your working day.

In old plants that were built before some of these materials were prohibited, the risks remain, which is important to remember when it is time for renovation.

**LEAD IS ONE SUCH SUBSTANCE.** Its use is prohibited today but it was previously used in the form of red lead for painting boats and bridges and conservation workers risk getting



→ exposed to it (lead paint). It is therefore painters in particular who need to be extra attentive.

**WOOD DUST IS MORE COMMON** and the risks vary depending on the type of wood used. Dust from hard types of wood entails a higher risk than soft types of wood. Dust from deciduous trees, native and non-native, entails a bigger risk of nasal cancer. Spruce and pine – soft wood types that can cause respiratory problems – are handled at most construction sites.

When it becomes dampness, wood dust and other organic material can also contain mould spores which can cause health problems.

When it comes to insulation material such as glass wool, stone wool and plasterboard, there is no evidence to suggest that they are carcinogenic.

**SILICA**, which is present in all bedrock and can therefore be found in all stone material, as well as concrete, which is widely used in buildings. Silica can cause silicosis/ miner's lung.

**SILICOSIS**, which is a very serious lung disease, results in the stiffening of the patient's lungs, making it difficult to oxygenate the blood. It takes a long time to develop, often 20–30 years.

“Today it is a relatively rare disease in Sweden due to the large number of strict rules that regulate the handling of material containing Silica. It is so rare that even the doctors sometimes have difficulty in making the correct diagnosis and perhaps even miss cases of silicosis in Sweden today,” she says.

Silicosis is a disease that develops after working many years, particularly where there are low levels of silica dust. But there are also more recent examples of the disease's rapid onset. At a company in Turkey, for instance, the employees sand-blasted jeans to give them a worn look. Silica levels were so high that several of the employees developed the disease in just a few years. So it is important to keep track of the silica levels in the air.

“Dust from hard types of wood entails a higher risk than soft types of wood.”

MARIE LEWNÉ



# OCCUPATIONAL AND ENVIRONMENTAL MEDICINE

An occupational and environmental medicine clinic treats patients who have diseases that are suspected of being related to the occupational or surrounding environment. The clinics answer questions from the general public, authorities, municipalities, health care and companies. Questions concern the work environment, the public environments and ill-health. They also provide advice to pregnant women about the risks for the foetus at work or in the home.

**There are eight** occupational and environmental medicine clinics in Sweden to cover the whole country's needs. The clinics employ physicians, ergonomic specialists, counsellors, psychologists, occupation and environmental hygiene specialists, occupational health nurses and behavioural scientists. You need a referral from a doctor in order to visit an occupational and environmental medicine clinic.

**A medical case review** can consist of several stages depending on the needs:

- **DOCTOR'S VISIT**
- **WORKPLACE INSPECTION VISITS**
- **ASSESSMENT BY AN ERGONOMIC SPECIALIST, OCCUPATIONAL HYGIENIST OR PSYCHOLOGIST**
- **INFORMATION ABOUT IMPROVEMENT MEASURES FOR THE WORK AND SURROUNDING ENVIRONMENT**
- **CONSULTATION REPLY WITH ASSESSMENT OF CAUSAL CHAINS**



PHOTO: COLOURBOX

## Where do I turn?

If you fall ill because of work you should inform your employer. The employer is obligated to report an occupational injury. You can also turn to the occupational health care service (talk to your employer about the company's agreement) or your health care centre. In certain cases, the doctor can send a referral to an occupational and environmental medicine clinic for further investigation.

As an employer or manager you can turn to an occupational and environmental medicine clinic if you have questions about work environment and health.

## Contact the occupational and environmental medicine clinic in the following cities:

Gothenburg, Linköping, Skåne (Lund), Stockholm, Sundsvall, Uppsala and Örebro

You will find links and contact details here:  
<http://www.arbetsmiljoupplysningen.se/Vem-gor-vad/Arbets--och-miljomedicinska-kliniker>

→ The only safe way to determine if there is airborne Silica is to measure the air content. Employers are responsible for getting it done. The old requirements in the Swedish Work Environment Authority which obligated the employer to measure and send the results to the Swedish Work Environment Authority, has been replaced with a risk assessment requirement. The new rules came into effect in November 2015.

The most effective way to reduce the risk of exposure to dust is to contain it from spreading. Vacuum cleaning, for instance, is preferable to dry-sweeping. Dry-sweeping causes the finest particles of dust to circulate instead of being swept up. And it is precisely the smaller particles that are the most hazardous.

“Dry-sweeping causes the finest particles of dust to circulate instead of being swept up. And it is precisely these small particles that are the most hazardous.”

MARIE LEWNÉ

When the working day is over it is time to get changed and go home. This is where many people forget the risks. They take off their protective masks and brush the dust off. Some clean their equipment or their clothes by blowing it off with compressed air. This just whips up a cloud of dust, which is not to be recommended.

To put these risks into proportion, you could say that smoking is a much bigger health risk. But more people are aware of the risks, and for the smokers it is an individual choice. The risks at the workplace are harder to detect as they are not always visible to the naked eye. You need to know where they can be found.

**ASTHMA IS ANOTHER VERY COMMON PROBLEM** among construction workers today. We do not know for certain that common construction dust causes asthma, but dust can in any case be a severe problem for asthma sufferers. Many people’s asthma is made worse and they need more medicine. If you work with certain thermosetting plastics, on the other hand, that contain diisocyanates or cyanoacrylates, there is a very real risk of developing asthma.

It is basically the same with silica as with asbestos. As long as the material is in one piece, it is not a hazard. But once you start to drill or cut into it, it breaks into smaller pieces and forms dust. It is these particles that are particularly hazardous, she says. ■



PHOTO: ADOBESTOCK

The use of lead is prohibited today. But conservation workers can be confronted with it in lead paint.

## FACTS

**Read more about dust** in the Work Environment Authority's regulations.

**Silica** (AFS 2015:2).

**Hygienic limits** (AFS 2015:7)

**Chemical hazards in the working environment**

(AFS 2011:19, revised and reprinted in AFS 2014:43)

**Occupational medical supervision** (AFS 2005:6)

All the regulatory documents are available for download at the Work Environment Authority's website – [www.av.se](http://www.av.se)

# Unhealthy competition and differing rules

For the members of the Swedish Building Maintenance Workers' Union, work tasks can vary considerably. Everything from property maintenance, cleaning of offices or homes of private individuals, to demolishing and remediating buildings.

**THIS MEANS** that the risks of encountering the most hazardous types of dust vary depending on the task. Nicklas Skogsbäck is a decontamination specialist and safety officer. He describes how the same task can be given different names, both financially and in the regulations for protective equipment.

“All dust is bad for you, particularly in large quantities. Air is the only thing you should let into your lungs,” says Nicklas Skogsbäck. He also points out that the dust from offices and private homes is not as dangerous. It does not contain the hazardous substances that are normally found in such large quantities in construction dust and does not present any immediate risks.

If, on the other hand, you work in remediation and demolition, the risks increase significantly. This also goes for construction clearance. In both cases, there is a large or very large quantity of dust which can contain a number of hazardous particles.

Nicklas mentions that when remediating a building from mould, for example, certain sections need to be removed, demolished or in some cases even cut away. Large quantities of airborne dust is created during demolition and cutting.

“All dust is bad for you, particularly in large quantities. Air is the only thing you should have in your lungs.”

**NICKLAS SKOGSBÄCK**

Decontamination worker and safety officers  
The Swedish Building Maintenance Workers' Union



PHOTO: PRIVATE

For companies in the “cleaning and remediation” category, the rules regarding protective equipment are not as strict as for those in the “remediation and demolition” category. In the latter alternative, the company needs to comply with construction regulations rather than cleaning regulations. In both cases, the employees perform roughly the same task but with different requirements on both general and personal protective equipment.

“The competition becomes unsound when there are differing sets of rules,” says Nicklas. “It is often cheaper to hire a cleaning and remediation firm instead of a company that performs remediation and demolition services.”

The knowledge about dust and its risks varies considerably. Particularly when it comes to which protective equipment you need and what you are entitled to ask for. Company policy and level of seriousness largely determines how aware the employees are about the kind of protective equipment that should be used.

In companies that have a serious work environment ethic, all the necessary protective equipment is usually in place and the knowledge of how to use it is conveyed to the employees

For groups that are exposed to higher risks, such as in demolition and remediation, a breathing mask should be used at all times, preferably the half mask with P3 filter. Protective overalls similar to those used for asbestos remediation are also recommended.

With construction clearance and demolition work in combination with remediation, dust traps and sluices

“In construction clearance and demolition in combination with remediation, dust traps and sluices should be set up.”

NICKLAS SKOGSBÄCK



—> should also be set up. Unfortunately not all companies do this, but with every employee that asks for it, the work environment will improve both for the employee and the client for whom the work is being conducted.

Another step towards a better work environment is to inform the clients about the risks.

If it is unadvisable to enter a room after a demolition, there must be a reason why dust traps and sluices should be used. It may take a bit more time and cost a bit more. But it is about people's health, both for those performing the work and the clients.

#### **PROTECTIVE EQUIPMENT YOU ARE ENTITLED TO**

The requirements on protective equipment vary depending on the risks you are exposed to. You should ask to receive the correct equipment and use it. It does not matter how the task is categorised, it is the work that you perform that matters. In general, protective equipment can be divided into the following categories.

“Ask for the correct equipment and use it.”

NICKLAS SKOGSBÄCK

**IF YOU ARE** a property maintenance professional, cleaning homes or offices:

In property maintenance, when cleaning offices and homes where there is no contact with construction dust, you do not normally need breathing protection. But protective clothing is recommended to keep you clean from dirt, protective gloves and appropriate shoes.

**IF YOU ARE** a cleaning and remediation professional (including demolition):

As soon as your work brings you into contact with construction dust in some form, in a construction clearance job or in conjunction with a demolition and remediation, there should be access to personal protective equipment such as protective overalls, protective shoes and, above all, proper breathing protection. Dust traps and in some cases also dust sluices should be available depending on the workplace. Contact your nearest safety officer if you have any questions or if your company has not provided the correct equipment from the start. ■



# A healthy corporate culture and planning reduces the risks

Dust is a common problem for electricians, and the majority of it is construction dust which can contain hazardous substances. According to the Swedish Work Environment Act, the work environment should be designed to stimulate good physical and psychological health. In our industry, this means among other things that the workplace is clean and accessible when we start work, but this varies greatly in practice.

**ONE OF THE PROBLEMS** is that electricians frequently visit a large number of different workplaces and construction sites. All these work environments differ enormously from one workplace to the next, says Daniel Lundblad, electrician and regional safety officer at the Swedish Electricians' Union.

“At a construction site, the site manager plays a crucial role in this setup. Some site managers have things well organised, while others are surrounded by chaos. It also depends on the kind of culture that has evolved at the workplace. Some site managers make a point of ensuring that each professional group cleans up after itself. If you

“In unannounced inspection visits at least 80% of all construction sites receive criticism about dust.”

**DANIEL LUNDBLAD**

Electrician och regional safety officer  
Swedish Electricians' Union



PHOTO: PRIVATE

have this kind of culture at the workplace, everything is in good order and the work environment improves. But if you relax these routines, it's the wild west from start to finish," he says.

“It's all a question of planning. A good time plan paves the way for a better scheduling and work procedure. Sometimes, particularly at many smaller companies, there is no time planning. Different professional groups work virtually on top of each other and the work environment falls to the bottom of the list of priorities,” he says.

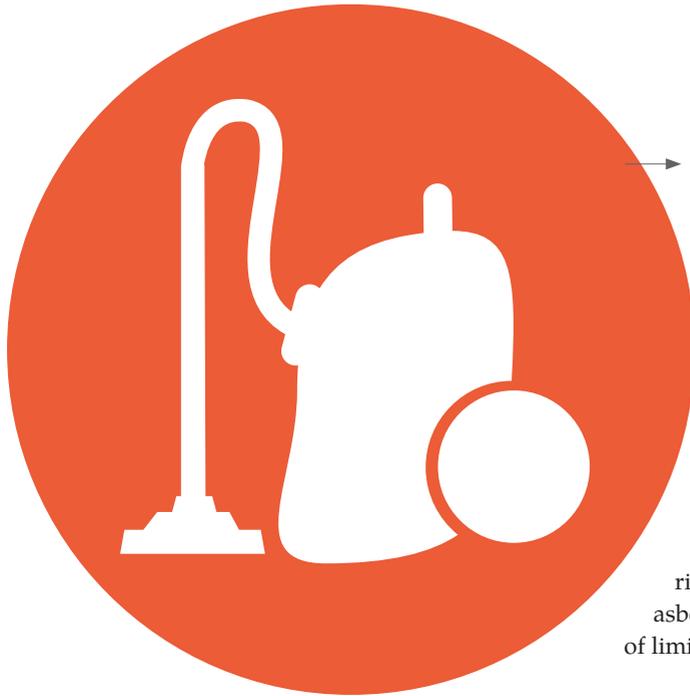
**TIME PRESSURE** on construction projects is in many cases the chief culprit. It causes planning to fall by the wayside

Work environment thinking arrives too late in the process and short-term financial interests are the key priority. There is a school of thought that says you should buy equipment “just in case”, like a fence or a handrail, instead of thinking preventively. What is the cost if someone falls and injures themselves? How would that affect the project, the company and the individual worker?

The same philosophy applies when minimising dust. It can take a bit longer if part of the workplace is being encapsulated and sluices are being used.

Naturally, the long-term costs are much higher if a person is injured or ill, but with time pressure on construction projects and constrained economic frameworks, the thinking leans towards short-term financial gain.

**KNOWLEDGE ABOUT DUST** and its risks is limited, as opposed to asbestos which a lot of people know is hazardous, even →



→ though a lot of people do not know that asbestos can be found in many other places than just asbestos sheets or pipe bends.

“My experience from our training at school is that we were not informed about the risks from dust as much as the risks from electricity or asbestos. Perhaps because of limited awareness about it.”

**ONE TIP IS** to view and handle all dust as carcinogenic.

Dust that contains silica must not be allowed to spread. When drilling in concrete, a module with a vacuum dust collector can be connected.

“Large companies often buy machinery that comes with a vacuum dust collector module. They have accepted the regulations and follow them. Corporate culture often determines whether or not they are actually used by the employees. Some companies rent the machinery when they need it. But many leasing businesses have not kept up with the new regulations to the same extent. Whenever you rent machinery, you therefore have to ask if it comes with a vacuum dust collector, it does not come automatically,” he says.

Corporate culture influences the attitude that exists among the employees. A strong safety ethic affects the way you treat the risks and therefore the attitudes and approaches to them.

“If an apprentice’s supervisor uses a vacuum dust collector, is it highly likely that the apprentice will use one too, but unfortunately the reverse can also apply.”

“When you rent machinery, you need to ask for a vacuum dust collector for it.”

DANIEL LUNDBLAD

**RISK AWARENESS** has nothing to do with age. Some people are aware of the risks exist while others treat them indifferently. It doesn't matter if you are 20 or 50-60 years old. It is a question of differing attitudes; some people tend to shrug it off and think "it won't happen to me."

Maybe it is because of the slow inset of the disease after you are exposed to hazardous substances. You do not notice them directly but it can take years before the symptoms appear. This is the difference to the risks from electrical current, where the serious consequences are immediate, he says.

**DANIEL LUNDBLAD ALSO TALKS ABOUT** the situation at companies that have attitudes and corporate cultures where work environment is not a priority. If there is construction dust permanently at a workplace there is a risk that it will be accepted as normal by the workers. But it is better to address the problem with the site manager, instead of letting the anger and frustration build up inside you.

"Unfortunately the problems are sometimes shrugged off and people develop attitudes along the line of 'I will soon be on my way to a new site so I don't care.' Workers can also be apprehensive about being made to feel like a tell-tale for having called the union. Situations sometimes arise that are perceived as psychological bullying by those who have called and reported a work environment problem."

"That is why unannounced inspection visits are the best alternative," says Daniel. "Just spontaneously visiting a construction site and checking on the situation. Then you get the correct picture of the way things stand."

**IN UNANNOUNCED INSPECTION** visits at least 80% of all construction sites receive criticism about the dust. Sometimes it is enough to discuss the matter with the person in charge of the construction, sometimes it is reported to the electric company.

A few ways to tackle the problems. According to Daniel there are several ways to tackle these problems once a project is in progress. Let's start by asking three simple questions.



"Unfortunately the problems are sometimes shrugged off and people develop attitudes along the lines of 'I will soon be on my way to a new site so I don't care.'"

DANIEL LUNDBLAD

## FACTS

The agreements and the rules regarding health inspections depend on which trade union you belong to and which area you work in. You should read what it says about occupational health care in your collective agreement or talk to your safety officer to find out what applies in your case.

→ Do we electricians have to be in the same room as someone who is drilling, sawing or cutting? With efficient planning you can minimise the number of people who are exposed to dust.

Can we contain the spread of dust more effectively, by covering in plastic, putting up dust curtains and sluices?

**LAST BUT NOT LEAST**, when we need to be in the same room as another professional group that is drilling or cutting. Or when we perform this kind of work ourselves, then personal protective equipment such as a face mask/ open-air mask are essential.

Other groups in the electricians' union that do not work on construction sites are also exposed to dust but to different degrees. We often think of dust clouds that are created when we drill or cut into concrete. But there are other risks, with wood dust, for example.

"Silica can be found in all concrete. It is worth remembering that the client's health may also be at risk."

DANIEL LUNDBLAD

**SERVICE ELECTRICIANS VISIT** a large number of different workplaces, sometimes also private homes.

Part of the electrician's job is to make a good impression on private clients, to be service-minded. This may involve using as little machinery as possible or containing the dust by covering the work area in plastic sheeting because it takes time.

But silica can be found in all concrete. It is therefore a good idea to remember that the client's health is at stake too. In fact, your risk awareness is a bonus for the client rather than a time-consuming necessity.

"Electricians who service machinery on a rock pulverising facility, for instance, often work in very dusty environments where the silica content can be very high. If there is no possibility of performing the service work in a building away from the dust, you should wear both protective clothing and face mask," he says. ■



PHOTO: P-M FALEKE

# FACTS

If you suspect there are hazardous substances or an unmistakable health risk in your work environment, you should first talk to your supervisor; the employer always has the overall responsibility for the work environment.

If nobody listens to you or if nothing is done, you should go to your safety officer who can help you. If you do not have a safety officer at your workplace, then contact your nearest regional safety officer.

# Our work environment is affected by other professional groups

Dust is fairly common in the painting industry, says Jan-Åke Öberg, work environment officer at “Målarettan” painters’ union. For a painter, it is mainly the sanding that creates dust. The risk of silica is fairly low, unless you are sanding all the way down to the concrete.

**IN GENERAL RESPECTS**, it is not the painters’ own work which contributes to the most hazardous particles of dust, even though at certain stages of the painting, dust clouds are created, which can be sufficiently irritating and unhealthy for the respiratory tract and lungs.

Paint does not contain silica. One of the larger paint suppliers, on the other hand, noted that a putty sample contained 0.001–0.005% silica which is minute. The permitted limit for silica is 3%.

First and foremost, you should be attentive to other professional groups, he explains. During construction or renovations projects, the painter’s work environment is affected when demolition, cutting, drilling and sanding work is in progress.

**IT IS IMPORTANT** that each professional group cleans up after itself. Cleaning procedures are outlined in the Swedish Work Environment Authority’s regulations on *Silica – stone dust in work environments*. The person who commissions a construction or civil engineering project should appoint a suitable construction environment coordinator for the planning and projecting. The construction environment coordinator ensures that the work environment rules are followed at every stage, from planning and projecting to the construction of the building or plant.



PHOTO: DAN COLEMAN

“If there is visible dust when you first arrive at a new workplace you should ask for it to be cleaned as there is a risk of the dust containing silica.”

**JAN-ÅKE ÖBERG**

Regional safety officer  
Swedish Painters' Union section 1



PHOTO: PRIVATE

“If there is visible dust when you first arrive at a new workplace you should ask for it to be cleaned as there is a risk of the dust containing silica,” he says. Workplace procedure varies from one construction company to the next. One of the factors that often prove decisive is the company’s approach to *Systematic Work Environment Management (SAM)*, he says.

When it comes to good, purpose-designed protective equipment, workplaces vary, both in terms of the equipment that is available and how it is used. This depends largely on how goal-oriented the employees are when it comes to the work environment. The most important items of protective equipment are a vacuum dust collector with dust filter, gloves and half mask with dust filter.

**THE KNOWLEDGE AMONG PAINTERS** varies when it comes to when or not to use a vacuum dust collector. Particularly during the first sanding when many use a block. Many tend to think, “I’ll just do that little bit...” unaware that there may be silica in the concrete walls. On the other hand, dust collectors are often used with the long-necked sanding machine, he says.

“When the companies and members get a visit from the regional safety officer they usually welcome it. Particularly at workplaces where there is a lot of dust. In most cases, the employers react positively to the visits, they receive tips and advice,” he says.

Time pressure on construction projects is one of the reasons for the deteriorating orderliness and cleaning routines. ■

## FACTS

### SWEDISH WORK ENVIRONMENT ACT

Chapter 3 section 7  
General obligations

At every stage of the planning and design of building and civil engineering works, architects, designers and other participants shall, within the framework of their duties, ensure that work environment perspectives are taken into account with regard to both the construction phase and future use.

# Work environment expertise is lost with each generation shift

In the civil engineering sector, roads and railways, the dust-related risks are high. Large quantities of material are processed by machinery operators who work with many different types of material. This includes stone material or contaminated soil that can be found on industrial sites. Björn-Inge Björnberg, ombudsman at the Union of Service and Communication Employees' (Seko) describes the typical work environment for Seko's members.

**MACHINE OPERATORS' WORKPLACES** create a lot of dust. When they work with the materials or load and unload them, they whip up clouds of dust. The machine's driving cabin should be air tight and the air intakes should be equipped with filters. There are many different types of filters and it is important to use the right one. Unfortunately many workers operate their machines with the door open, which means they have no protection at all.

"We are concerned about the health of the machine operators," says Björn-Inge Björnberg.

"It is important to perform a risk management analysis right at the start of the project. Unfortunately this does not happen often enough and it is due to lack of foresight. But it is something that you as an employee have the right to ask for," he says.

“The operator’s cabin should be air-tight and have an air filter. Unfortunately many workers operate their machines with the door open, which means they have no protection at all.”

**BJÖRN-INGE BJÖRNBERG**

Ombudsman for road, rail, energy and telecoms contractors,  
the Union of Service and Communication Employees



PHOTO: ANNA LEDIN WIRÉN

**WITH MILLING OLD ASPHALT** and concrete becoming more common, a lot of dust is being generated, both by the milling but also particles of rubber from the vehicle tyres. It is important to take care of the vacuum dust equipment that the milling machine is fitted with. And to empty it and use it correctly. In certain situations, you are regularly to wear a mask. It is important to have the right protective equipment.

**THERE ARE ALSO** significant risks associated with tunnelling work, railway and road tunnels and indoor work. To minimise the risks in these kinds of works, surfaces should be cleaned before starting work. There should also be a proper supply of fresh air. In certain cases you should measure the air particles to provide source documentation for risk assessments.

“There is much greater awareness of the risks when it comes to dry-sweeping and maintenance of road tunnels, etc. This is due to a more active work environment management in this industry. In these cases, water spraying, closed doors and good ventilation is relatively common,” he says.

**KNOWLEDGE ABOUT DUST** and its risks varies both among professional groups and companies. Training is needed at every level, but there is greater variation in how companies provide the training. In general, larger companies are slightly better than smaller ones, both in work environment matters and when it comes to risk analyses and spreading the information internally. Clients who commission a job from the contractor should take greater responsibility

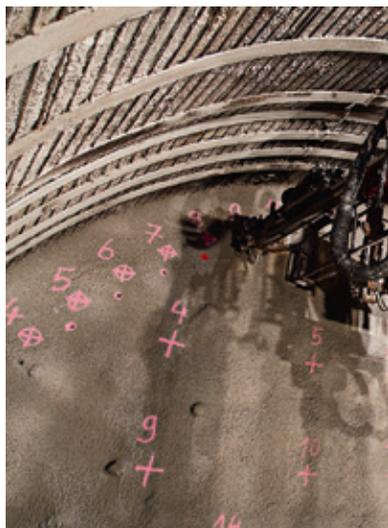
“To minimise the risks in these kinds of works, surfaces should be cleaned before starting work.”

BJÖRN-INGE BJÖRNBERG





PHOTO: ADOBESTOCK



—▶ because they are not only ordering a job to be done but are also being confronted with all kinds of hazardous particles, dust from the plant.

“It is common to see people cutting into stone slabs and stone material without protection. If you observe them working from a distance you can often see a large cloud of dust around them,” he says.

“We need clearer main contractor responsibility.”

BJÖRN-INGE BJÖRNBERG

**GRAVEL HANDLING**, asphaltting and pulverising is always dusty work. It is not enough to measure the air once and think it’s OK; there could be a new delivery of gravel that contains new substances. That is why it is better to treat all gravel handling as risk handling.

“Systematic work environment management improved occupational environments in the 1970s, 80s and 90s. There was better cooperation on work environment issues then there is today. With the 1940s generation going into retirement, we are seeing a generation shift and those born in the 1970s and 80s don’t have the same work environment focus,” he says. “It is harder to find candidates for the position of safety officer. There are many new entrepreneurs but limited work environment awareness.”

**WHEN IT COMES TO** upper-secondary school programmes, not enough time is devoted to occupational environment



PHOTO: COLOURBOX



PHOTO: ADOBESTOCK

studies. If there is more teaching about work environment that there is in the syllabus, this is often due to the teachers' own interest in the subject.

“In university study programmes in engineering and business administration, occupational environment studies are not a mandatory subject in the curriculum. The work environment training that graduate engineers receive at the workplace today come from courses at companies where they are or have been employed. We are also seeing a generation shift and new executives without any form of work environment training under their belts.” Björn-Inge is concerned about this trend and continues:

“Executives need to be better at occupational environment issues, and they must also be better at informing their employees about the risks, and build up the expertise across the whole workforce. Today there are significant shortcomings.”

**WORKPLACE INTRODUCTIONS BEFORE NEW PROJECTS IS THE EMPLOYER'S OBLIGATION.** There are also many sub-contractors today and it is much harder to get people to serve as safety officer at these companies. 60% of the work is performed by sub-contractors. That is why greater main contractor responsibility is needed. And supervision also needs to be stepped up, he concludes. ■

**60**  
**PERCENT**

of the work is performed by sub-contractors.

## FACTS

The hygiene limit may not exceed 0.1 mg per cubic metre. To find out how much silica there is in the air you need to wear a particle measuring device on your clothes.

# The rules are in place **but attitudes need to change**

The amount of dust in the construction industry depends on the job that needs to be done. All professional groups create dust, and unfortunately the cleaning often falls by the wayside. More groups work simultaneously: demolition workers, carpenters, painters, electricians and pipe fitters. There is plenty of time for the professional groups to clean up when everybody is there at the same time.

**KJELL STRÖMLIND**, ombudsman in the Swedish Construction Workers' Union and work environment officer, describes the work environment situation in the construction industry, particularly the problems relating to dust. Time pressure, poor planning and attitudes towards work environment and protective equipment, are some of the problems ever-present in the industry.

“Attitudes need to change. It is not only asbestos or fall protection that is a hazard,” says Kjell Strömlind. And attitudes is one of the fundamental problems.

“There is dust everywhere in the construction industry. In repair, reconstruction and retrofit projects and public housing construction projects there is a lot of drilling, cutting and sanding. Concrete contains silica. In larger projects, the concrete is mixed outdoors in large concrete mixers, but when you are dealing with smaller areas, it is mixed indoors in bucket with a stirrer,” he says.

“Silica should be treated with the same respect as asbestos. The most exposed workers are demolition workers and hole punchers. Old floor mats being removed can contain asbestos. Tiles, adhesive, and liquid putty contain silica among other things. Read the product data sheets to find out what the product you are using contains. Not as much is known about wood dust. Apart from the possibility of mould and dampness,

## \* **Substitute agreements**

If a company concludes a collective agreement directly with a trade union instead of being a member of a trade or employer organisation, this is called a substitute agreement.

“Property companies that sign framework agreements should have a clear policy about what is required.”

**KJELL STRÖMLIND**

Ombudsman, work environment officer and regional safety officer, Swedish Construction Workers' Union



PHOTO: PRIVATE

not many people think about the risks. Floor renovation creates which creates dust if you do not have a good vacuum dust collector. Carpenters, who in interior design work use a range of materials, are generally poorly informed about the risks from hard types of wood.”

One of the reasons why not more people ask for the correct protective equipment is that they think, ‘someone else will do it, he says.

Today many workers come from staffing companies. Jobs today are not as secure as they were. Knowledge about the risks in the work environment has deteriorated and there is no standard approach The work environment rules, both rights and obligations, apply to everyone equally. But not everyone has the courage or willingness to ask for the right protection because they are afraid of losing their job.

“The attitudes of building contractors, project managers and workers to use the right protection is the decisive factor. Municipalities and property companies also need to start planning differently. As it is today, everybody is working under pressure and all professional groups need to work at the same time. Property companies that sign framework agreements should have a clear policy about what is required. First and foremost it is the municipalities and county councils that are the worst when they should be setting a good example instead,” he says.

Architects and engineers have, if they’re lucky, a couple of hours devoted to work environment in three years of university studies, which means that planning for a good work environment is not a natural part of the systematic work environment management. They therefore have to attend work environment



→ training later at the companies where they are employed. Both the knowledge about work environment courses and the willingness to attend them can vary from one company to the next

Parties in the *Central Work Environment Council for the Construction Industry* (BCA), Swedish Construction Workers' Union, Seko, the Swedish Association of Managers, and the Swedish Construction Federation, have a basic course in work environment which all works supervisors should attend. Companies who are affiliated to one of the trade organisations receive information about these courses from the Swedish Construction Federation. Companies with substitute agreements\* get information from Swedish Construction Workers' Union in the region the company is based in. Those without collective agreements receive no information about the courses. The basic course lasts for four days.

"The most important aspect of *Systematic Work Environment Management*, is that the safety officer joins the project at an early stage, that the safety officer is present at the start-up meeting. It is fairly rare but it happens at some companies," he says.

Today there are plenty of machines with vacuum dust collectors that are simply to connect. When companies buy new equipment, they are usually offered different package solutions which include dust collectors.

"Sometimes good new tools are provided in the service vehicle. But unfortunately quite a few, mainly older people, are unwilling to change. 'I have been using this Hiltin for 30 years and it works.' In these cases it can be difficult for managers, particularly young, relatively inexperienced managers to be firm and demand that it be used. But it is the employer's responsibility and you need to convince even the most uncooperative workers to replace machinery and equipment, perhaps even by removing the old machinery," he says.

"We also need to be better at getting the professional groups to cooperate. Instead of whining and blaming each other, each group must make sure that it cleans and vacuums the dust after it finishes. But this also requires more time. More inspectors are also needed in the country, there are far too few," he says.

Not only is the worker's health at risk. Personnel facilities are not always used the way they should be. Many workers go home in dirty work clothes and come home to their families and children wearing clothes with hazardous substances on them. ■

"The attitude of building contractors, project managers and workers towards using the right protection is the decisive factor."

KJELL STRÖMLIND

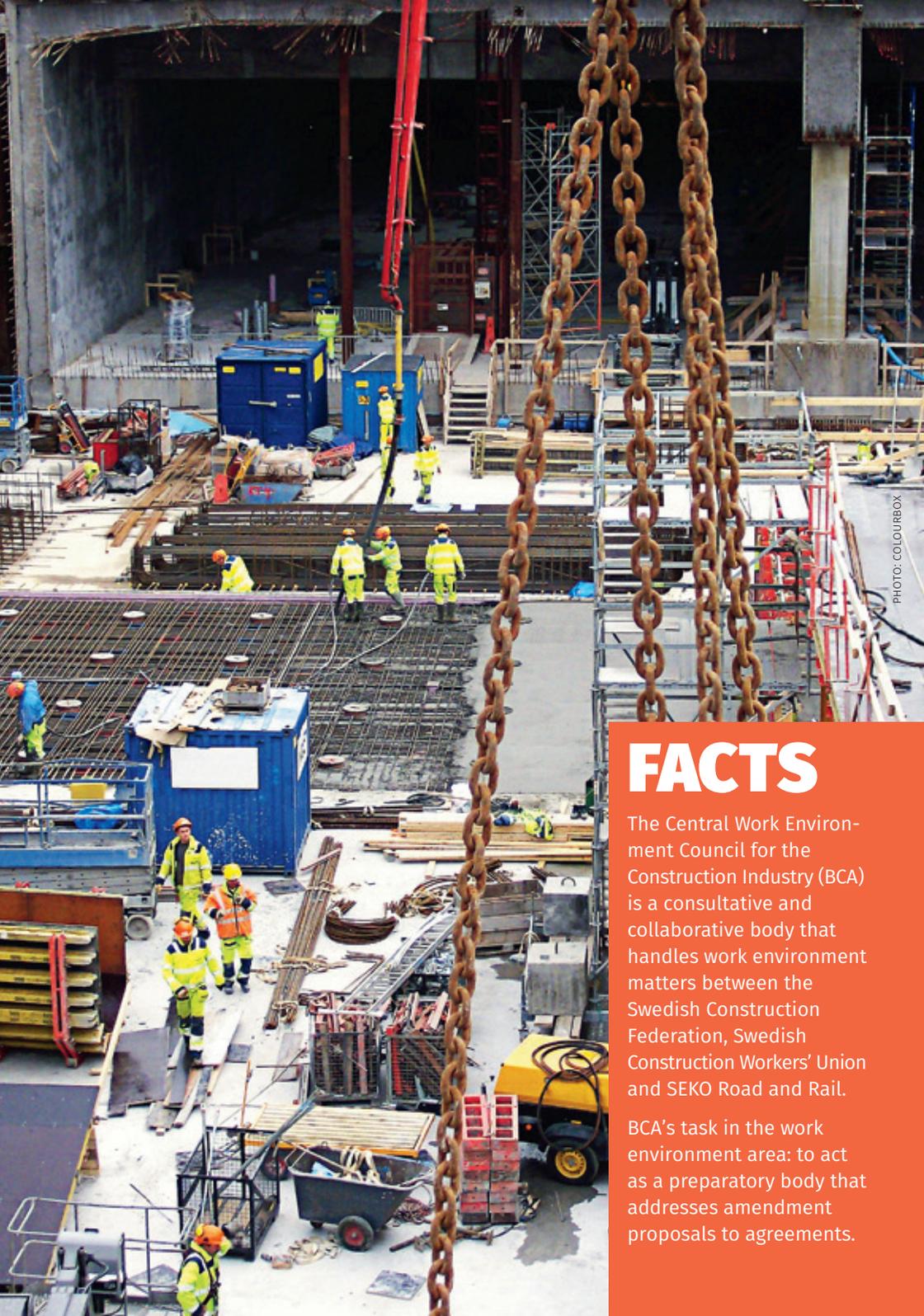


PHOTO: COLOURBOX

# FACTS

The Central Work Environment Council for the Construction Industry (BCA) is a consultative and collaborative body that handles work environment matters between the Swedish Construction Federation, Swedish Construction Workers' Union and SEKO Road and Rail.

BCA's task in the work environment area: to act as a preparatory body that addresses amendment proposals to agreements.

# A strand of hair can cause a leak

Pontus Ahllwy works at Sundström Safety AB, a company that develops and manufactures protective equipment such as breathing protection and other protective masks. He is an expert on filters and breathing protection, part of his job is to provide technical support for salespeople and end-users.

**AS PART OF HIS JOB** he visits different companies, meets safety officers and employers and inspects the premises with regard to protective equipment.

Pontus also holds training courses at companies.

“Often I know in advance what substances the company is exposed to and can customise the training programme to its specific needs. My job is to inform them about the risks that exist, but also explain why they should use breathing protection and how the equipment should be handled,” he says.

“A lot of people are uncomfortable about wearing face protection because it feels strange. A helmet, on the other hand, is much more natural accessory and it is quite easy to make people understand why you should wear a helmet, a hammer could fall on your head,” he says.

“With protective masks it is different. The training classes we arrange largely focus on helping people to understand that breathing protection is a preventative function in the long-term. You may not notice that the body is affected until 5, 10 or 20 years later. When you step on a nail, you notice it straightaway,” he says.

“You may not notice that the body is affected until 5, 10 or 20 years later. When you step on a nail, you notice it straightaway”

PONTUS AHLWY

“Cleaning and servicing is important. If you don’t change the filter or clean your equipment, it will not work.”

**PONTUS AHLLWY**

Technical expert  
Sundström Safety AB



PHOTO: SUNDRÖM SAFETY

Most people understand the risks associated with a dusty environment. But it is what you cannot see that is the killer. Workplace measurements are not performed as frequently as they should be. They should be carried out every time you start a new job.

Breathing protection is the last stage in protective equipment. First you should try to contain the dust as much as possible, there are different types of vacuum dust collector.

Protective masks should be individually fitted. There are a range of sizes and models, both for women and men. As well as the fit, there is also a hygiene factor as with any form of headwear, if someone is a smoker or snuff user, or has a cough, the bacteria will be inside the mask.

**THE TRAINING** focuses largely on which mask you should use for which jobs and how to use it properly: how to put it on and take it off, how to store it and how to care for it.

Cleaning and service is important. If you forget to change the filter or clean your equipment, it will not work.

There is a membrane in the mask in which a single strand of hair can cause a leak. It is important to replace the filters on time and at the right intervals.

When mechanical filters are full you notice it. Electrostatic particle filters continue to work until they fill up, after this they let the particles go straight through. But you can still breathe and you won't notice it to the same extent when it is full. That is why these filters should be marked.



**Full mask with back-up filter**

A breathing device with a compressed air connection which provides a continuous flow of air.



- **R (REUSABLE)** – Filter that you can use for several shifts.
- NR (NOT REUSABLE)** – To be used for one 8-hour shift, then disposed of.

**BREATHING PROTECTION** must be kept in its proper place, but they are often left out in the shopfloor. Once the dust finally settles during the night it will also be inside your mask, he explains.

In addition to training, regular follow-ups are an important factor. The employer could be arranging them or someone from our organisation will come out and arrange it. Not only will new employees require training, it can be difficult to remember things that you do not do so often, like some of the tasks relating to replacements and maintenance, for instance.

Larger companies often have a service department that takes care of all the maintenance and filter replacements. At smaller companies this opportunity may not exist. One solution could be to have a shared day, where everyone goes through their protective equipment and helps each other when they have forgotten how to do something.

**A FEW TIPS** on how to avoid inhaling hazardous dust.

- Review your work flow and work process before you start.
- Wear your personal protection before you enter the workplace and remove it after you leave. There is dust everywhere, not just around your own work corner.

#### Fan with visor and helmet

A battery-powered fan sucks the air through a filter and directs it to a part of your face.

**SOME PEOPLE** occasionally use compressed air to clean their tools and clothes, and do so after they have removed their protective masks. This is not very smart. Breathing protection should never be blow-cleaned.

The employers usually know what you need in the way of protection. Sometimes it is a challenge getting everyone to use that protection. In many cases is a matter of absent-mindedness. Someone else is working a few metres away and you end up “contaminating” each other.

Dust mainly affects the lungs. Most people know about →

“Pick it up a level when it comes to use breathing protection instead of taking the risk.”

PONTUS AHLWY





PHOTO: SUNDRÖM SAFETY

# FACTS

## Different types of masks and filters.

**For shorter jobs** with a low workload, a backpressure mask can be used, i.e. half and full masks with changeable filters. Choose the gas and/or particle filter according to what you will be exposed to.

**Longer projects** with a higher workload often require a fan-assisted breathing protection. A battery powered fan sucks the air through the filters and directs it to a part of the face detachable visor, helmet or hood or a half or full mask.

**A high workload** and pollution with advance warning characteristics are examples of situations where compressed air device with hose is appropriate. Compressed air is taken from a compressor via a purification filter and hose to a belt-fitted control valve, then half mask, full mask or helmet, visor or hood.

→ asbestos, because there are strict rules, but not everyone is equally familiar with the risks involving silica.

A lot of the people who are exposed to stone dust, which contains silica, do not think about it. Examples include those who work in gravel pits who sometimes drive with the door open. Silica can also be found in paving stones and sometimes when people cut stone at a construction site, they use hearing protection but not breathing protection.

Resin that is found in wood dust can cause allergies if not handled correctly. It is better to use protection to avoid getting asthma than waiting until it is too late. Wood and mould spores can also form gases. In remediation work, different agents are used for killing mould, they are sprayed over the top and are not good for the lungs.

Gas filters only protect against gases and vapours. Particle protection only protects against particles. You can combine them to get both. When a plastic mat which is stuck to a concrete floor with contact adhesive needs to be removed, you need both particle protection and a gas filter, but usually people only think about the concrete dust.



### Half mask with particle filter

Particle filter protection is needed when working with aerosols, silica and wood dust, fibre glass, adhesives, wet particles in adhesives or spray paint.

**PARTICLE FILTER PROTECTION IS NEEDED** when working with aerosol, silica and wood dust, fibreglass, adhesives, wet particles in adhesive or spray point. Another example is PCB remediation, when you cut away, the air heats up, forming both particles and gases.

“Workers on a site may know which chemicals there are, but not exactly which protection is needed. There are regulations in the industry about the protection that should be used. But sometimes the rules need to be stricter and clearer,” he says.

This is what we have; what does the safety data sheet say we need?

“Pick it up a level when it comes to use breathing protection instead of taking the risk,” he recommends. ■

Read more at:  
[www.srsafety.se](http://www.srsafety.se)

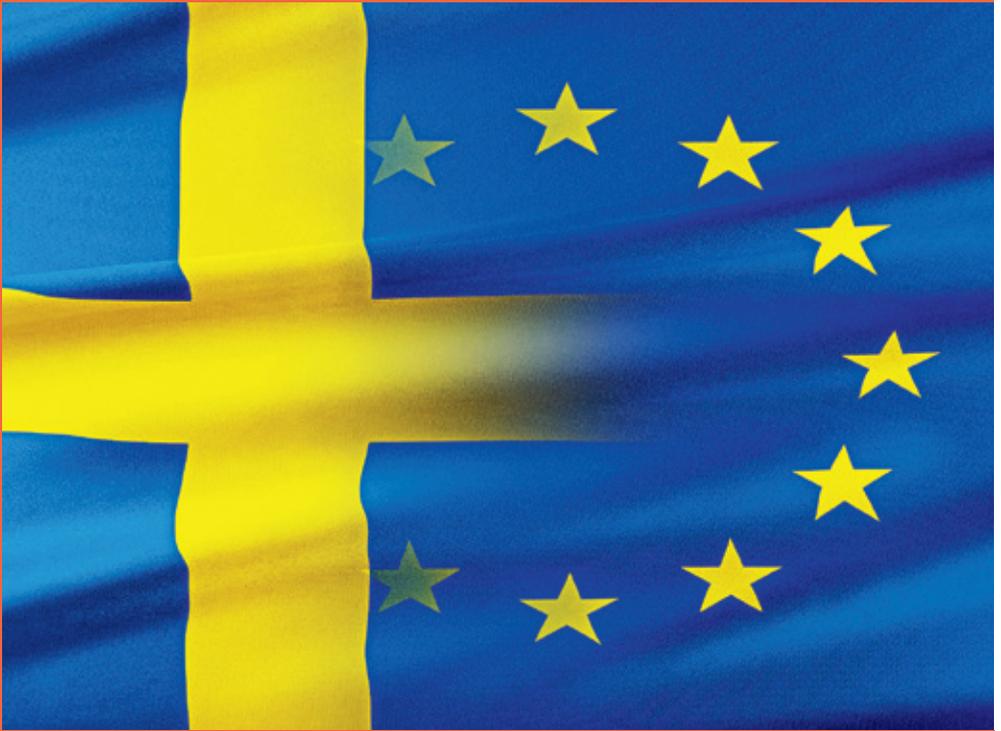


PHOTO: ADOBESTOCK

## COMPETITION ON EQUAL TERMS

**A large share of responsibility** rests with the client, but to eliminate these problems the competition must be on equal terms. The work environment must be given a clear place in the contract terms and conditions. It must also be measurable to avoid becoming a couple of rows in an order document which cannot subsequently be checked. Approaches and guidelines need to be changed in general and in the construction industry in particular. Knowledge needs to increase both among companies that take on the contracts, the employees who perform the task, but also the clients.

**The expression** "There's no such thing as a free lunch" is very appropriate in this context. Nothing is for free, and this is a

lesson we should all learn. Naturally an improved work environment and reduced risks cost the company in the form of better equipment, better planning and maybe longer construction times. But this is a cost that we must weigh against people of working age developing diseases and becoming unfit for work, which are also costs. There is also the matter of personal suffering both the victim and their nearest and dearest. With competition on equal terms it will be harder to dump prices at the expense of the work environment and the employees.

**It is time** to organise the sets of rules, take decisions, lobby the lawmakers (our politicians), and to change the attitudes and raise the level of awareness.

# Do not take risks – your health is at stake

**IT IS EASY TO ANTICIPATE** how a broken power cable or rickety scaffolding can present a risk. But with dust, a lot of it is invisible to the naked eye. And in many people's way of thinking, what you can't see cannot hurt you. You could compare this to radioactive radiation; you can't see that either but we still take the risks very seriously.

We all occasionally find dust balls at home, but compared with construction dust they are relatively harmless and we are quick to think "A little dust never killed anybody."

With this brochure we have tried to describe in brief the finding of many years of measurements, research and reports at detailed level.

**SOME OF THESE DISEASES** take a long time to develop and discover. And when they have been discovered some of them incurable. So the answer is: *Yes, people have actually died from a little dust.* That is why it is important that we continue to pursue our work environment management initiative and develop it even further.

**CONTACT YOUR** local or regional safety officer if you are in doubt or need help. ■

Read more at: **www**

■ byggnads.se ■ sef.se ■ fastighets.se  
■ malareforbundet.se ■ seko.se

