

Smart devices to future-proof safety.

Foreword

Protecting the health and safety of the people who work for you is the ethical thing to do. It also makes good business sense as your people are your greatest asset. But even if you aren't driven by a moral or financial imperative, governments around the world are toughening up on the legislation that protects workers, so it's not something any business can afford to ignore.

But while some threats are obvious, others are invisible and incredibly hard to accurately detect, such as the deadly silica particulates that are the by-product of many industries and manufacturing processes. Silica dust is linked with severe health problems. It has been dubbed the new asbestos and has already been the subject of litigation. Yet it's something that has historically been impossible to monitor in real time.

Our Construction Industry Health & Safety Survey Winter 2021 shows that employers are concerned about safety with nine out of 10 respondents recognising that worker safety is important or very important. But it also revealed that on the ground it can be hard to meet the health and safety challenge, particularly when it comes to dust monitoring, which for a fifth of the respondents accounted for half of their safety budget.

These findings mean it's clear we need a new approach to dust monitoring. One that looks to the future and is inspired by the intelligent tech revolutionising every other aspect of our lives. It's time to act now to tackle danger of silica dust by investing in smarter solutions to protect the air we breathe.



Glyn Jones, CEO, Trolex

The dust problem.

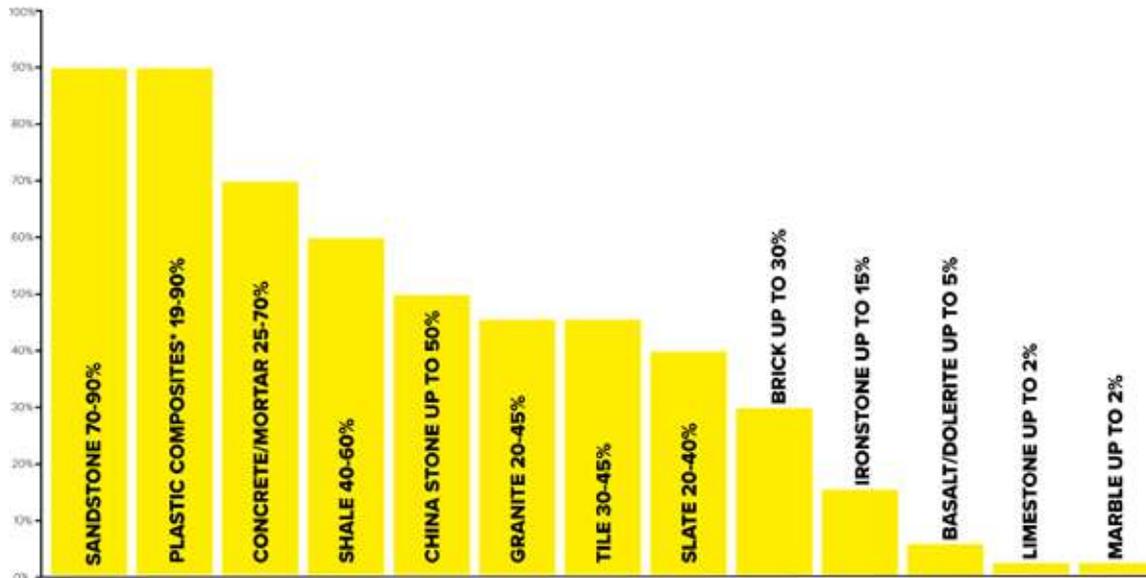
Many industries including construction, mining, manufacturing, quarrying and steel manufacturing, create dust. Workplace dust is quite literally a hazard of many jobs, but it's one that employers must take very seriously.

Main risk employment areas:



Dust and particulates, particularly silica, can have serious implications for health. The worst offender is respirable crystalline silica (RCS). This is a naturally occurring substance found in rocks, stone, clay, sand and materials like bricks and tiles. When those materials are crushed or ground, for example through drilling, sawing or demolition, crystalline silica can be released into the air and become a microscopic menace.

The approximate ranges for the amount of crystalline silica found in materials (based on Health and Safety Executive data).



**Silica is used in products like fillers or composite panels.*

At just 5µm (micrometres) and below, RCS particles are invisible to the human eye, so you can't see them in the air, but when even tiny amounts are inhaled the results can be life threatening. RCS is classified as a 'Group 1' carcinogen, meaning it's a definite cause of cancer in humans. It's linked to lung cancer, silicosis (an irreversible chronic respiratory disease) and chronic obstructive pulmonary disease (COPD).

The problem is widespread across the globe with almost 50 million workers worldwide at risk from RCS inhalation. RCS exposure has been recognised as a serious issue by governments and many are acting to tighten up legislation to protect workers from these deadly dust particles.

In 2020, the US OSHA (Occupational Safety and Health Administration) established a revised National Emphasis Program focused on enforcing the more stringent silica standards introduced in 2016. In Australia the Occupational Health and Safety Amendment (Crystalline Silica) Regulations 2021 introduced new duties for businesses across a range of industries that work with materials containing silica – including quarrying, construction and tunnelling.

Also in 2020, an All-Party Parliamentary Group for Respiratory Health in the UK published the [Silica – the next asbestos](#) report, which calls for new health and safety regulations regarding RCS, to bring it in line with asbestos.

Keeping workers safe is a challenge

The good news is that most employers are aware of their legal, and moral duty to keep their worker's safe and protect their health at work. In Trolex's *Construction Industry Health & Safety Survey Winter 2021*, 92% of the 271 C-level executives in Australia, the UK and US surveyed recognised that worker safety is important or very important.

“[We] keep telling the workers that they must look out for themselves and their fellow workers over and over so it sinks in...but unfortunately they don't always listen.”

Survey respondent, Australia.

But in practice, there are many challenges facing businesses trying to protect their workforce from the danger posed by air pollution, and less than half of the respondents believe that safety is managed well. Half of those surveyed admitted they have no dedicated safety budget, while 45% devote under \$50K to safety per annum. Despite spending on safety not being a priority for many, dust has clearly been identified as a major problem as a fifth of the respondents said they spend more than half their budget on dust monitoring.

Some clear barriers were identified in the Construction Industry Health & Safety Survey Winter 2021 and these included:

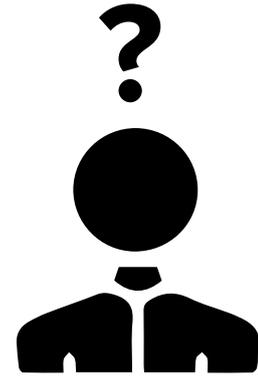
Worker compliance.

For safety measures to be effective workers need to stick to them, which is not always the case. As one respondent from Australia pointed out: “[We] keep telling the workers that they must look out for themselves and their fellow workers over and over so it sinks in...but unfortunately they don't always listen.”



Lack of training, understanding or awareness of health and safety.

Workers and managers frequently don't understand health and safety rules or how to properly enforce them. As a respondent from the US says: "Education is the key. You need to know how to use safety equipment for it work properly." While another from the UK said: "[We must] ensure all employees train in safety for the particular job they are doing". This means giving specific training around particular tasks and risks. As another UK respondent pointed out this requires: "training operatives to understand safety issues better like noise, dust and work at height."



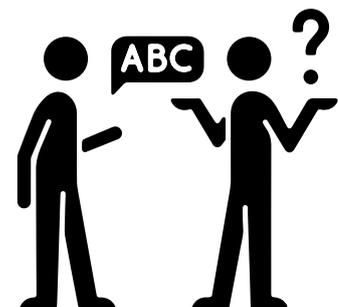
Rules are not always enforced properly or consistently.

For workers to take safety seriously, it requires strict compliance with regulations at all times, including regular checks and supervision onsite. One respondent from Australia said it is vital to "review workplaces more frequently to ensure people are working to standards."



Language barriers onsite.

With many nationalities present on site in a range of industries, instructions on safety can be lost in translation.



These barriers make it challenging for even the most safety-conscious employer to protect the wellbeing of their workers. But failure to comply with regulations can have serious consequences, exposing workers to dangerous dust particulates and opening up the risk of legislation.

Could smart dust monitors offer the solution?

Smart devices are revolutionising everything from healthcare to personal fitness and home security. Wearable devices like the Apple Watch and FitBits allow us to track our activity and monitor key health stats in real time, encouraging us to keep active and healthy. In healthcare smart monitors can track dosage information and reactions, feeding back information to patients and their medical team to improve compliance and help personalise treatments for better outcomes. At home, our Ring doorbell allows us to view visitors to help secure our homes.

“Wearable, real-time technology has the power to revolutionise particulate detection.”

This kind of real-time technology has the power to revolutionise particulate detection. Right now, silica monitoring is a time-consuming process. Gravimetric dust sampling takes hours, results can take weeks to come back and even then they only provide a broad window of time over which dangerous particulates are present in the air. In essence, today you will know if you have a dust problem, but you won't have accurate, real-time data that allows you to pinpoint the problem and implement effective controls to protect workers and reduce harmful particulates in the air.

Opting for a solution that offers real-time dust monitoring, twinned with wearable dust monitors encourages worker compliance. All they have to do is put on their personal particulate monitor, switch it on and they will automatically be alerted to the presence of dangerous particulates, allowing them to take appropriate action, such as putting on PPE. If workers get a clear, audible warning when there is a hazard and only need to wear protection when there is a real danger, rather than for an entire shift, they're much more likely to understand the danger and follow the rules.

Real-time particulate monitoring equipment also enables accurate dust monitoring, so employers can identify the activities or times at which the problem is most prevalent. For example, where traditional dust monitoring can tell you there is a problem, but not where or when it happens, real-time dust detection shows you the exact time and location at which the problem occurs. This may mean that over an eight-hour shift, data will reveal that only the 10 minutes when materials are being transported is hazardous. As such control measures may not need to be as stringent across the whole shift, just during this specific period of time when the risk is present. This has the potential to protect workers' health, while also saving time and money.

Accurate, real-time dust monitoring allows businesses to refine control strategies from what PPE to buy, to when and where dust controls need to be put in place. This could lead to reduced wastage, plus better protection for workers and the public from harmful air pollution.

Making the smart choice

Wearable tech, intelligent, networked devices and data analytics are all serving to improve our world – making life easier, healthier and smarter. Now it's time to get smart about dust monitoring too. Switching to real-time dust monitoring could help to solve many of the challenges facing businesses as they strive to meet increasingly stringent health and safety standards, while still keeping an eye on the bottom line.

Investing in the future of safety now has the potential to save money and lives in the future. Real-time dust detection delivers accurate data, which means problems can be quickly identified and resolved. Personal dust monitors are simple to use and understand, which means they ultimately reduce the cost of training, education and supervision for workers. When combined, these two benefits should ensure improved compliance with regulations, helping to avoid fines, delays and potential future litigation.

Now is the time to future-proof safety by making the smart choice for dust detection and get on top of silica monitoring.

Trolex tackles dust

Discover our [Air X range](#) of dust detection devices to find the right solution for you.



Launching in May 2022, the [Air XS Silica Monitor](#), produced with the support of the Centre for Work Health and Safety, will be the world's first real-time silica monitor with the ability to detect and monitor RCS particulates and deliver data for analysis to help guide the implementation of effective controls to protect workers and meet regulations.

[Find out how you can become an Early Adopter.](#)



The [XD One Personal Dust Monitor](#) is a wearable lightweight dust monitor that can be used all of the time in any conditions. It weighs just 450g and has a battery life of 16+ hours so it can last all shift. It's suitable for use on the body, in-cab or fixed to a pole or wall. It's the simple way to protect workers from dust.



The [Air XD Real-Time Dust Monitor](#) is a real-time, fixed particulate monitor which can detect and monitor dust particulates from 0.38 to 40µm, taking the guess work out of dust detection onsite for a wide range of industries.

Get more information about Trolex's real-time fixed and personal particulate monitoring solutions at www.trolex.com/particulate-monitoring or contact us by phone on +44 (0)161 483 1435 or via email at info@trolex.com.

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