



THE KEY HEALTH & SAFETY CHALLENGES FACING THE CONSTRUCTION SECTOR TODAY

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offer solutions for tomorrow

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THE KEY HEALTH AND SAFETY CHALLENGES FACING THE CONSTRUCTION SECTOR TODAY



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EMBRACING INNOVATION, IMPROVING SAFETY

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SUPPORTING SAFER, MORE PRODUCTIVE WORKING PRACTICES

“

There is a very clear rationale behind the construction industry's heightened focus in relation to health and safety. As much as we can work to mitigate risk, by their very nature, building sites remain dangerous places to work.

Regularly working at height, in close proximity to heavy equipment or being exposed to electrical hazards and airborne particles, construction workers face a range of potentially lethal risks day in, day out.

The sector is rightly highly-regulated and, for the clear majority of employers, the health and safety of their staff is a responsibility they feel deeply.

But the industry is also subject to rapid innovation, with new technologies and construction methods being adopted all the time.

That's why health and safety is an ever-evolving concern for employers and employees alike, and it is one that Hilti is continuously looking

to address through the development of new products and technologies that support better, more productive working practices. In order to promote discussion and drive awareness of the issues, we've collaborated at the highest level across the sector to produce this report.

The result is a rounded and insightful snapshot of the current challenges the sector faces, the emerging trends that will drive contractors' thinking in coming years and the new technologies that will transform how people work on site.

It's all part of our #ConstructTheFuture campaign, which aims to provide a platform to discuss and shape the future of construction in the years to come.

I hope you find this report both timely and useful.

”



Matias Jarnefelt,
General Manager
(Northern Europe), Hilti

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CONFRONTING CONSTRUCTION'S HEALTH AND SAFETY CHALLENGES

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OVERVIEW

Construction is one of the biggest sectors in the UK economy, employing 2.4 million people, and it's up to the industry's leaders to ensure these workers go home every evening safe and well.

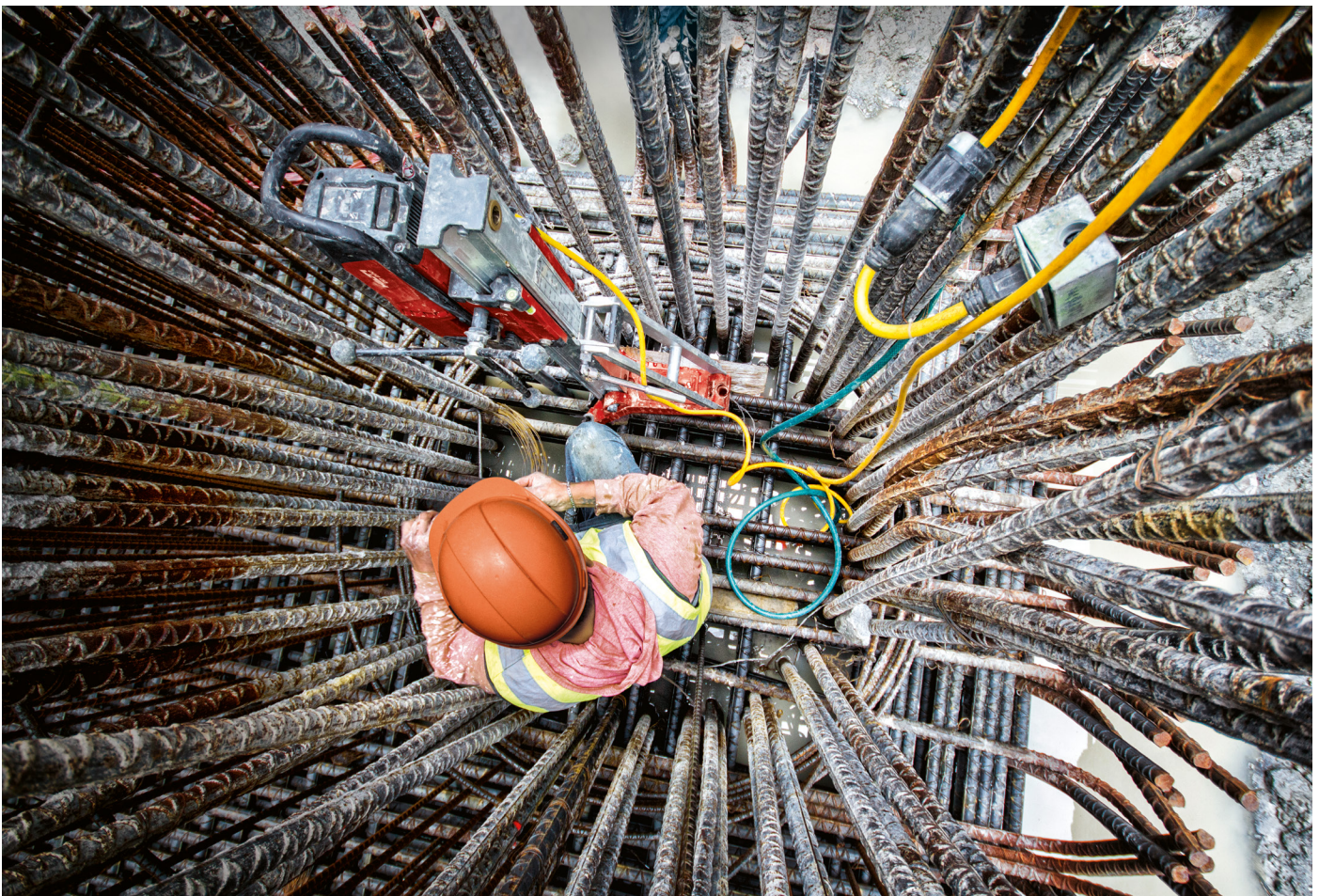
It's an industry that is also hugely diverse, with firms ranging from multinational corporations with tens of thousands of staff to one-man-bands, working on projects from demolition to refurbishment and infrastructure delivery.

In addition to widespread sub-contracting, supply chains are often complex, and the development of new technologies means that working practices are constantly evolving. So, while

innovation continues to create opportunities for improvement, it also brings new challenges to an already multifaceted landscape.

For example, in recent years, ventilated cutting stations designed to reduce dust and noise have become a common sight, but the growing adoption of cordless tools means they are starting, in some cases, to be seen as an inconvenience – prompting risk.

All this means that applying best practice is a cause that remains in constant flux – and the stakes are high.



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SAFETY VS. HEALTH

Tragically, there were **38 fatal injuries** in the construction sector during 2017/18, more than in any other uk industry ¹

Every year, the sector sees around **450 deaths** from lung cancer associated with legacy exposure to silica dust ²

These stats go some way to highlighting the very real need for health and safety to be more widely associated with workers' long-term health rather than simply their physical safety.

Less critical but of equal concern for many business leaders are injuries from accidents and musculoskeletal disorders caused by poor manual handling, which contribute to hundreds of thousands of lost working days every year, and can be life-changing for those they affect ³.

To compound these issues, there are also hidden occupational health hazards constantly at play, which may take years or even decades to become apparent.

It is a view shared by John Saunders, Principal Ventilation Scientist at HSE Bespoke Research

and Consultancy. John divides his time conducting occupational hygiene and health research for regulatory colleagues in HSE and providing consultancy solutions to wider government and industry.

He comments: "Issues like controlling airborne contaminants are low latency – the health risks might not manifest themselves for 10 to 20 years, so fall off the radar because they aren't an immediate concern like a safety risk.

"Fine dust gets into the deep lung and it's an invisible risk. We want more momentum in this area of health. It's particularly difficult for smaller firms to effectively manage and meet the regulations set for all levels."

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SME'S AND SUPPLY CHAINS

While larger players in the construction industry, who tend to fulfil the role of principal contractor, are generally well aware of their legal duties and have robust health and safety strategies in place, recognition of that responsibility is less common among smaller firms.

Indeed, **HSE research** has found that the majority of fatal incidents in the construction sector involve small businesses because larger schemes are generally better controlled than most small projects.⁴

It's an issue that is all too familiar for Catherine Gibson, Tool Hire Managing Director at Travis Perkins, the builders' merchant with more than 2,000 outlets across the UK.

"While many of the contractors we work with have real clarity when it comes to managing risk through their supply chain, we also work with a lot of smaller firms who simply don't have resource, time and understanding they need to meet the expected standards," she says.

She adds: "There remains an issue around how best to communicate key health and safety themes, including dust, hand-arm vibration and noise control, to site level to support these firms."

Some larger contractors are addressing this by working with their suppliers to design out potential dangers including dust by developing safer new building materials while the use of Building Information Modelling is also helping contractors foresee and manage risks throughout the lifecycle of projects.

"While many of the contractors we work with have real clarity when it comes to managing risk through their supply chain, we also work with a lot of smaller firms who simply don't have resource, time and understanding they need to meet the expected standards,"



Catherine Gibson
Tool Hire Managing Director
Travis Perkins



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INVESTING THROUGH UNCERTAINTY

Improving communication ultimately means investing time and resource, and there is a view that the prolonged period of uncertainty that has affected the UK economy has led to reduced internal investment by construction firms. With contractors working on increasingly narrow margins, it has undoubtedly had a knock-on impact on the amount of time businesses dedicate to improving health and safety.

In addition, the industry model where developers pay large fees to managers and consultants who ultimately outsource work to SMEs is also inefficient, squeezing margins at every stage. This can often lead to cash flow issues for smaller subcontractors, which could in part be responsible for the lack of health and safety competence among SMEs.

"Everybody wants something at the lowest possible price," says Martin Coyd OBE, Operations Director for Health, Safety &

Wellbeing at Mace Group. "I'm told 94 per cent of those employed in construction work for companies with fewer than 10 people and half of them are self-employed, bouncing from job to job.

"No one invests in individuals. Unless we can fix that, it's very difficult to move on. You can't plan the work properly from a health and safety perspective."

Acting as a counter-balance to this complex landscape of squeezed margins and limited planning, larger firms are utilising emerging technologies to enable safer ways of working, reducing risk while also boosting efficiency and productivity.

As these technologies continue to gain traction, there remains great potential for them to have a significant impact on health and safety standards across the board as they become embedded in the design and build process.

"From a business perspective, we have to move away from the idea of the main contractor and the subcontractors being separate groups. In effect, if a subcontractor goes onto a site, we view them as our people."



Edward Hawksey
Health and Safety Lead
Novus Property Solutions



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HEALTH AND SAFETY STANDARDS: RAISING THE BAR

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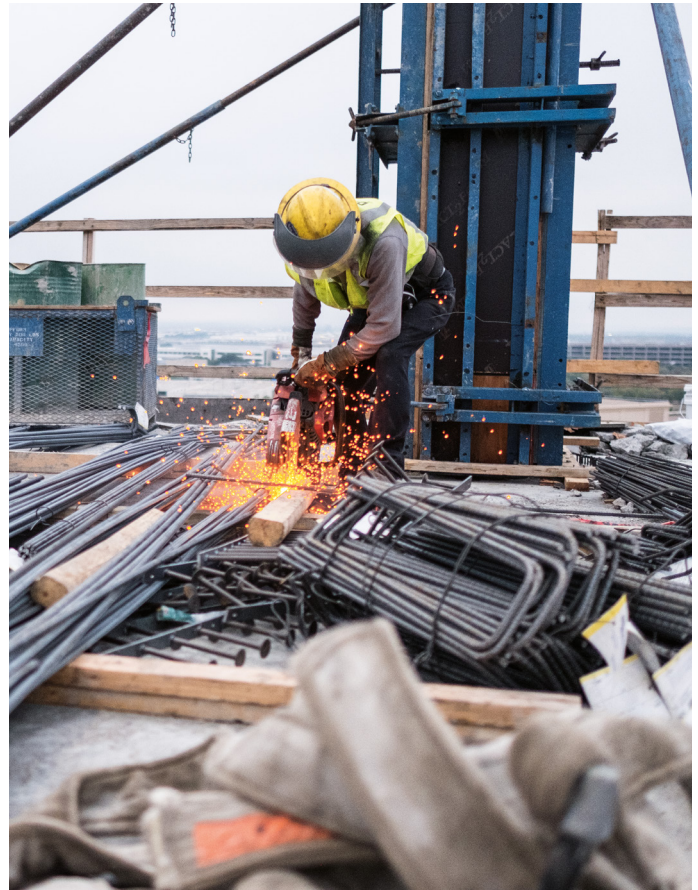
While **regulations and guidance** set out by the HSE, are clear, there remains an admittedly long-standing challenge surrounding awareness, compliance and communication.

For some contractors, there can be a tendency to perceive those enforcing health and safety as disruptive and lacking awareness of the pressures that construction firms are facing, particularly smaller operators.

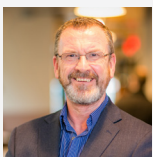
Martin Worthington, SHEQ director at Morgan Sindall, argues the point: SME's, developers and constructors worry quite a lot about how they can meet the relevant standards, which is an obvious area of concern.

“The best way to encourage compliance, best practice and collaborative working among smaller and growing firms is through education, not enforcement alone”

With those comments in mind, an opportunity exists to shift the approach from one based on enforcement and punishment to support and education, in order to give individual workers ownership of the issue and subsequently foster a more professional outlook.



“The best way to encourage compliance, best practice and collaborative working among smaller and growing firms is through education, not enforcement alone”



Martin Worthington
SHEQ Director
Morgan Sindall

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PASSING THE BUCK

This approach also means large contractors taking responsibility for health and safety, not pushing risk down the chain to subcontractors.

Major construction projects, which potentially employ dozens of smaller subcontractors, can be beacons of best practice, giving smaller operators the opportunity to learn better ways of working and uplifting standards across the industry.

Edward Hawksey, Health and Safety Lead at Novus Property Solutions, added: “From

a business perspective, we have to move away from the idea of the main contractor and the subcontractors being separate groups. In effect, if a subcontractor goes onto a site, we view them as our people.

“They are portraying our business, so we should treat them no differently than our own employees and make a conscious effort to educate them on our approach to health and safety.”

CLARITY IN COMMUNICATION

To achieve this with consistency across the board, it's important to make health and safety information accessible, straightforward and more human. If smaller subcontractors don't have the right controls in place, it's incumbent on the wider industry to change that.

“As a construction management company, we're only as good as our supply chain,” comments Martin Coyd. “It's very much a partnership,” he says.

“At Mace we have created a suite of documents, which have become increasingly image-based, to communicate our expectations to our subcontractors.

“We also have the Mace Business School, which shares lots of best practice, and our suppliers are rewarded for participating in that.”

As well as individual businesses taking up the mantle, there's a need for greater cross-industry collaboration to drive up standards. There is already a strong movement within Build UK – the trade body bringing together clients, main contractors and trade associations representing over 11,500 specialist contractors – to create a common health and safety code that will make good practice easier to communicate and has the potential to achieve some consistency across sites.

Collective action can only make for safer working and, as such, it's important that contractors continue to give their backing to such initiatives.

HEALTH AND SAFETY STANDARDS: RAISING THE BAR

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ALTERNATIVE METHODS TO MINIMISE RISK AND INTEGRATE THE LATEST TECHNOLOGY

For those looking to minimise risk associated to drilling onsite, the **Hilti BX 3 cordless direct fastening tool** is perfect for quick and easy fastening to concrete and steel. With no recoil, virtually dust-free fixing and practically no vibration, this well-balanced tool is one of the safest on-site with a Health and Safety Executive points value of just 0.01, minimal noise and no compromise on productivity.

Combined with **Hilti Connect**, the app will tell you how many shots the tool has fired, when it was last serviced and offers smart troubleshooting in case the piston is jammed or any other fault occurs.

For customers who also manage their tools with Hilti's **ON!Track asset management service**, they can assign employee certificates to the tool to confirm which employees have the correct certifications required for safe use on site and can set-up alerts to remind employers when the certificates need to be renewed.



BLOWING THE WHISTLE

But while the HSE and contractors look to stimulate positive change, it's also worth remembering that communication about health and safety is a two-way street.

Awareness of issues – and often solutions – can often come from the person on the ground or, indeed, via data generated by the tool in their hand.

That means building trust and having a mechanism where workers feel they can raise issues with a supervisor without blame.

That doesn't just mean whistleblowing about bad practice, but also praising good practice.

It's also about educating supervisors about the importance of having an ongoing frank and open dialogue with workers about what practices are working well, how they are monitored and reported, and what could be done better.

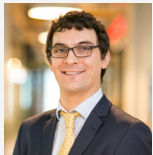
Giving everyone on site an equal voice can help to empower all workers to take responsibility for their and their colleagues' health and safety.

HEALTH AND SAFETY STANDARDS: RAISING THE BAR

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“It’s not a nudge to best practice but a nudge towards standard practice that’s important. Videos can be really useful in helping people to take things seriously and share advice.”

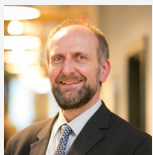


Rico Wojtulewicz
Head of Housing & Planning Policy
National Federation of Builders



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“It is critical that health and safety should be integrated within both the Procurement and the early design stages. Often the selection of materials and components is not thought about early on and it’s all left to the contractor.”



Steve Coppin
Associate Technical Director
Arcadis



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TECHNOLOGY: FACILITATING THE FUTURE OF HEALTH AND SAFETY

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Given the challenges already discussed in this report, innovation has a vital role to play in designing-out risk for construction firms and workers, but it can't be at the expense of practicality.

Done right, it can make sites both safer and more efficient, with productivity gains helping boost profitability and supporting further investment in new technology.

While previously businesses have been deterred from changing their ways of working due to the potential cost and disruption to day-to-day activity, cases of improved productivity and safety from across the industry have encouraged more and more businesses to invest in innovation.

Off-site construction is just one of the methods that is changing the face of the industry. For Steve Coppin, Associate Technical Director at global design, engineering and management consulting company Arcadis, it's a practice which should sit at the very heart of health and safety strategy.

"We could argue that we've already failed if we need to cut or drill and create dust on site when it could be thought through and designed out," he says.

"A growing number of big organisations these days have off-site prefabrication strategies. Part of that is for commercial reasons, but it should also improve health and safety too, avoiding occupational health risks in manual on site work and any unsafe conditions."



TECHNOLOGY: FACILITATING THE FUTURE OF HEALTH AND SAFETY

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WEARABLE TECH IN THE WORKPLACE

Many among us will already be familiar with the benefits of wearable technologies like smart watches that feature software to enable heartrate monitoring and location tracking.

John Saunders from HSE Bespoke Research and Consultancy highlights the potential of mobile technology as a crucial tool to monitor construction workers' fatigue and stress, and as an identifier of when things might be about to go wrong.

Crucially, technology that can monitor dust exposure in real time can also now be embedded in wearables, enabling workers to monitor their exposure to potentially harmful materials in the air.

They can also be connected to a user's mobile device via Bluetooth, sending them an alert if they exceed recommended exposure levels.

He comments: "In the past, this has been prohibitively expensive but, more recently, more cost-effective versions have come onto the market, bringing the price down from around £3,000 to more like £150 per device.

"When the operator sees their personal exposure, it really helps bring home the implications of the heavy use of certain tools, so you can see the benefit of it as a prompt for behaviour change."

CONVENIENT NOT CUMBERSOME

Of course, the issue of dust, particularly from hazardous materials like concrete, is one that equipment manufacturers including Hilti are addressing through technology-led solutions.

Hilti's own dust removal systems are proven to take away up to 99.8% of dust immediately, enabling virtually dust-free drilling and cutting.

Matias Jarnefelt, Hilti's General Manager for Northern Europe, says: "Convenience for the user has to play a big part in creating a fit-for-purpose solution. Protecting from dust can't be cumbersome.

"But removing dust at the source can also drive productivity by simplifying processes, as it removes the need to seal areas off to prevent dust spreading and the subsequent clean up."

Hilti's own dust removal systems are proven to take away up to 99.8% of dust immediately, enabling virtually dust-free drilling and cutting



TECHNOLOGY: FACILITATING THE FUTURE OF HEALTH AND SAFETY

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GETTING THE MESSAGE ACROSS

We have mentioned how important the effective and efficient communication of health and safety information can be, and this is another field where technology has a growing role to play.

Again, equipment manufacturers are taking a lead here.

95% of new Hilti tools come with an integrated **near-field communication (NFC) tag**, much like that in a contactless bank card or electronic key, which works with a dedicated smartphone app.

By touching the tool with a smart phone, users can access safety information immediately, including the full instruction manual, a straightforward user video and, for pipe press and some direct fastening tools, details such as when it was last serviced or repaired and when the next service is due.

Used in conjunction with Hilti's **ON!Track asset management app**, health and safety managers

can digitalise virtually all of the records they need to keep a track of.

The system alerts the user when tools need testing, maintenance or calibration, or if a worker is due to renew qualifications, undertake training or apply for certification, helping prevent equipment malfunction and prevent expensive and dangerous accidents.

This kind of mobile technology is already instinctive for most people, who use it in their everyday lives too.

Travis Perkins' Catherine Gibson adds: "Innovation is a key part of the solution in making things easier for the end user who is exposed to the risk. Often, they want help to understand the issues and identify the solutions that enable them to work safely and efficiently."

"People live their lives with electronic devices at the end of their arms that give them almost instant information. We need to get up to speed with the way that modern life is lived and that should be mirrored in our practices – all the way through the construction process."



Martin Coyd OBE
Operations Director for Health, Safety & Wellbeing
Mace Group



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A VIRTUAL SOLUTION

Looking further into the future, the industry leaders we spoke to were excited by the training potential of virtual reality (VR) and augmented reality (AR) technology.

The delivery of training needs to be tailored to the audience, and, while some can happily absorb complex written information, others respond better to visual representation.

The potential of VR and AR might currently be best understood in the training of users of heavy equipment like excavators.

Using a head-mounted display (as you may find in VR gaming) and realistic controls can create an immersive environment allowing workers to safely learn, practice and assess their skills.

Ultimately, these technologies provide an extremely realistic and portable educational tool that will make up an increasingly important aspect of a blended approach to health and safety training in the future.



LOOKING TO THE FUTURE

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HAZARD DETECTION AND PRODUCT INNOVATION LEAD THE WAY

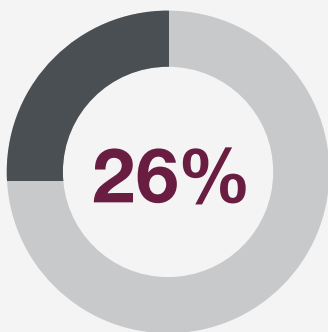
In a recent poll, we discovered that construction professionals expect technology-led hazard detection and product innovation to have the biggest impact on health and safety in the next three years.

Both factors, which include developments such as the use of drones and smart sensors or improved dust and vibration control, accounted for more than two thirds of the vote.

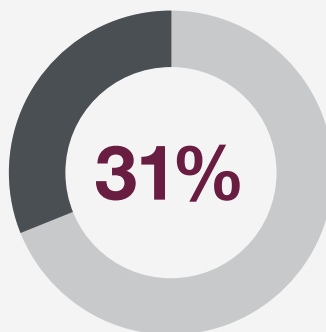
Other developments of note include data monitoring through wearable devices, health and safety training using apps and virtual reality, and the increased use of automation and robotics to reduce human risk.



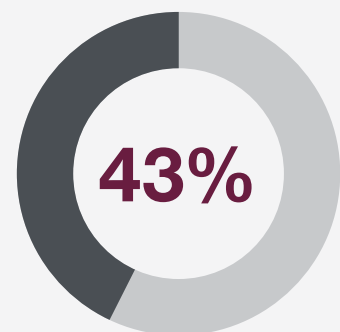
What poses the biggest challenge for contractors looking to improve their performance in relation to Health and Safety?



Availability of effective training and skills



Inconsistent policy communication



Ineffective onsite management and monitoring

LOOKING TO THE FUTURE

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COLLABORATIVE ACTION TO EFFECT REAL CHANGE

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During the process of compiling this report it became clear that all levels of the supply chain face challenges in improving health and safety standards in the construction industry.

That means everyone from specifiers to contractors, and from equipment manufacturers and rental partners to end users.

We're all on a journey, changing construction from a dusty, dirty and often slow-moving industry to something hi-tech, safe, clean and more efficient.

It will undoubtedly take time, but it will ultimately mean better results for businesses and workers.

Be under no illusion – this is an issue that can literally have life or death implications.

The statistics around deaths and injuries on the UK's building sites are sobering, but we all have the power to bring about real change.

Part of the reason why Hilti commissioned this report was to bring the industry together to achieve a common goal.

Hilti is committed to playing its part, and we stand ready to support the wider industry however we can.

”



Matias Jarnefelt,
General Manager
(Northern Europe), Hilti

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FURTHER RESOURCES

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FIND OUT MORE

To find out more, visit our [Health and Safety hub](#) with a whole host of resources to support you to minimise risk onsite and raise awareness of the importance of managing hazards such as dust and vibration including videos from our contributors, blogs and access support from our in-house team of experts.

We also invite you to join the discussion on **Twitter** with **#ConstructTheFuture**

[Check out the Health and Safety hub >](#)

RESEARCH METHODOLOGY

The statistics on pg. 16 were generated by an online survey of Construction Manager readers commissioned by Hilti. Construction Manager is the official publication of the Chartered Institute of Building.

FURTHER RESOURCES

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