

Construction dust

An industry survey



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Published by IOSH
The Grange
Highfield Drive
Wigston
Leicestershire
LE18 1NN
UK
t +44 (0)116 257 3100
f +44 (0)116 257 3101
www.iosh.co.uk

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Executive summary

Many common construction jobs can create large amounts of dust. This can present significant risks to the health of construction workers. Dust is responsible for a large number of the non-asbestos lung diseases that these workers develop. These diseases include cancer, silicosis, asthma and chronic obstructive pulmonary disorder (COPD). Every year in Great Britain over 500 construction workers are believed to die from lung cancer caused by silica dust alone. That is about 10 people a week.

This survey provides an insight into issues associated with on-site dust risks and how they are controlled. It makes some key findings, many of which paint a negative picture. It found:

- a lack of priority given to this issue by companies;
- poor awareness of the risks among workers;
- little attempt to design out dust risks;
- a poor understanding and use of on-tool extraction;
- an over-reliance on respiratory protective equipment as the main form of control;
- a lack of awareness about face-fit testing;
- inadequate management arrangements to control dust;
- poor worker compliance with the arrangements that are in place; and
- a lack of worker consultation.

However, the picture is not uniformly negative, as there was also generally found to be:

- an improving picture of control through the use of water suppression; and
- better compliance by those who are more informed about the risks and the controls needed.

These main findings are generalisations from the information provided. Analysis of the comments reveals the need for contextualisation. In particular, it highlights that there are some common underlying reasons for the generally poor picture. These include issues associated with risk awareness, industry culture, control use, management arrangements and cost. Again, these issues are not uniformly negative either. The survey highlights the positive attitude of some employers to dust prevention and protection, the practical control solutions that are available, the contribution made by the regulator in pushing the issue and potential cost benefits.

The findings highlight many things that need to be addressed. Together these will be challenging. Equally, however, the survey has indicated that there is some positive direction of travel. These 'green shoots' give optimism that improvements can be made, providing the industry shows a collective will. A number of common themes have emerged as to how this could be achieved:

- continued Health and Safety Executive engagement with industry associations;
- dust campaigns;
- additional guidance; and
- greater involvement of the supply chain.

Given the serious health risks and the impact that these have on the lives of workers, the industry now has to face up to the challenges that this survey highlights.

The industry creates this risk. It now needs to acknowledge it, own it and deal with it.

1 Introduction

Airborne dusts can present significant respiratory risks on construction sites. They are responsible for a large number of the non-asbestos lung diseases that develop, including cancer, silicosis, asthma and chronic obstructive pulmonary disorder (COPD). Every year in Great Britain over 500 construction workers¹ are believed to die from lung cancer caused by silica dust alone. That is about 10 people a week.

Many construction jobs can create large amounts of dust. These include sweeping, grit blasting, soft-strip demolition and the hand-sanding of plaster joints. However, the most common involve the use of power tools such as cut-off saws, grinders, breakers and sanders. These can create very high dust levels, especially if the work is indoors or in an enclosed or poorly-ventilated area.

Dust, respiratory risks and ill-health in general are priority areas for the Health and Safety Executive (HSE) in its dealings with the industry. They also fit into the government's wider industrial strategy for the sector, Construction 2025². This envisages construction by 2025 to be:

'An industry that attracts and retains a diverse group of multi-talented people, operating under considerably safer and healthier conditions, that has become a sector of choice for young people inspiring them into rewarding professional and vocational careers.'

One of the drivers in achieving such a vision is improving the industry's image. Health and safety is an important part of this. In particular, the strategy targets improvements in managing health:

'The UK construction industry has united in its efforts to improve site safety in the last decade...The industry must also bring the same focus to health as it has to safety, to recognise the fact that three times as many working days are currently being lost to ill-health as to occupational injury. In particular, occupational cancers, caused by asbestos and dust containing silica, are all too common in the industry.'

Key parts of the industry have decided to respond to the challenges presented by construction dust risks. They have formed the Construction Dust Partnership (CDP) – see www.citb.co.uk/cdp. The CDP has two main aims:

1. *to raise awareness within the construction industry about lung diseases related to hazardous workplace dust*
2. *to promote the right controls to prevent these diseases, particularly for those undertaking high-risk tasks*

The IOSH Construction Group Committee supports these aims and the wider work of the CDP. This survey was conducted to gather information on attitudes within the industry to construction dust risks and how they are being controlled.

2 Aims and objectives of the survey

Aims

- To gauge current industry knowledge of the risks associated with construction dust and the extent to which appropriate controls are used.
- To act as a baseline for measuring future progress on managing construction dust issues.
- To provide relevant information to stimulate industry debate and action on this topic.

Objectives

- To gather information from the industry on key issues relating to construction dust.
- To analyse this data and produce a report for the IOSH Construction Group Committee to share with the industry.

3 Methodology

A questionnaire was selected as the best means of delivering the aims and objectives. Questionnaires are a practical method of gathering large amounts of information in a cost-effective way. They are also easy to distribute to a wide audience through electronic means. There are additional benefits when interpreting the results. The results can be analysed systematically and the survey design provides both qualitative and quantitative information. This information can also be used to measure change when similar surveys are run in the future.

This particular questionnaire was designed to elicit the views and opinions of those working in the construction industry who are interested in or involved with health and safety. It was not intended to survey the entire construction industry, from operatives to managers to chief executives.

Questionnaire design

The questionnaire was divided into seven sections, covering:

- construction dust risk awareness
- control through design and different work methods
- water suppression
- dust extraction
- respiratory protective equipment
- other control issues
- biographical data

A key consideration was to benchmark against HSE's expected standards³, rather than respondents' perceptions of what these standards might be. Respondents had to answer questions after reading statements provided in the questionnaire.

Respondents were told to answer the questions based on their experiences of how far industry practice as a whole matched the statements given, rather than the perspective of their own organisation or company. This was to ensure that better industry-wide information was obtained.

Questions were answered using a simple rating, making survey completion quick and simple. A free-text box at the end of each section allowed respondents to provide further detail if they wished.

The questionnaire was converted into an internet SNAP survey.

Questionnaire distribution

The survey was hosted by the IOSH website from 17 July to 11 September 2012. An invitation to take part in the survey and an explanatory message containing a link to the online questionnaire were emailed to all members of the IOSH Construction Group known to have active email addresses (numbering about 13,000). To gather as much information as possible, the survey was also open to non-IOSH members. HSE advertised it through its email information bulletin system and CDP members promoted it through their supply chain and contact lists.

Results

In total, 618 responses were received by the closing date. The respondents worked throughout the construction industry. The infrastructure, industrial and commercial sectors had the highest representation. However, 28.5 per cent of respondents worked in 'other sectors' including demolition, tunnelling, nuclear energy, equipment hire and local authority. IOSH members accounted for roughly 80 per cent of the replies received.

Most respondents (61.6 per cent) were health and safety advisors – either in-house or external. The information gathered therefore largely represents the perspectives of health and safety professionals working in the construction industry, rather than the entire construction industry itself. A full breakdown of those who responded is provided in the Appendix.

4 Awareness of construction dust

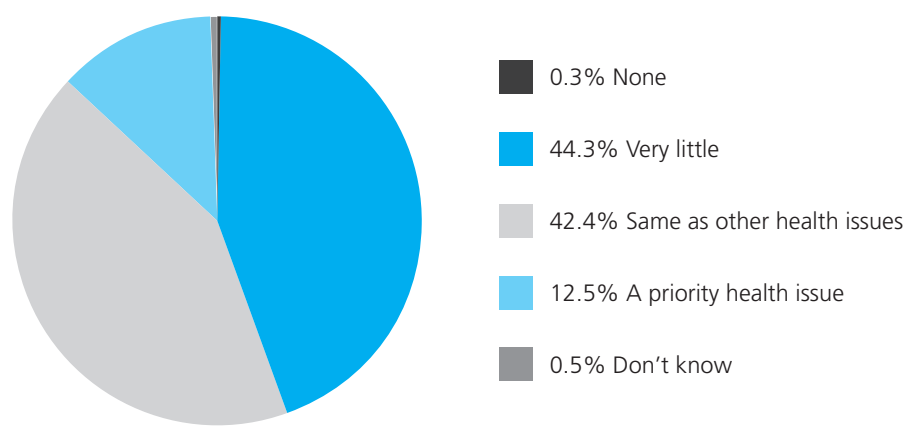
The first section of the survey looked at the issue of risk awareness and prioritisation. Respondents were provided with the following statement.

Based on this statement, respondents gave their views on the following two questions:

‘Construction dust is the most significant risk to workers health after asbestos. Silica dust alone is thought to accelerate the deaths of around 500 construction workers yearly – far greater than those killed by accidents. Many more suffer from a reduced quality of life.’

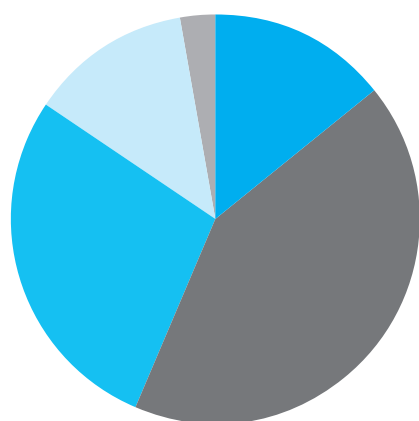
What priority do you think the construction industry currently puts on the control of construction dust risks?

Answer	Number of respondents	Proportion of respondents (%)
None	2	0.3
Very little	274	44.3
Same as other health issues	262	42.4
A priority health issue	77	12.5
Don't know	3	0.5
Base	618	100.0



How aware do you think construction workers in general are of the risks to their health from construction dust?

Answer	Number of respondents	Proportion of respondents (%)
Not aware it is a health problem at all, just a nuisance	89	14.4
Appreciate it is a health issue but no idea of the significance	261	42.2
Have heard of silica, etc, and have some awareness of the risks	172	27.8
Appreciate it is an issue and know the general risks	79	12.8
Fully aware of the risks	17	2.8
Don't know	0	0
Base	618	100.0



- 14.4% Not aware it is a health problem at all, just a nuisance
- 42.2% Appreciate it is a health issue but no idea of the significance
- 27.8% Have heard of silica, etc, and have some awareness of the risks
- 12.8% Appreciate it is an issue and know the general risks
- 2.8% Fully aware of the risks
- 0% Don't know

Dust control as a priority

Only 12.5 per cent of respondents thought that the industry viewed control of dust risks as a priority. In contrast, 44.6 per cent thought that the industry gave little or no priority to the issue, and a similar proportion (42.4 per cent) felt that it received the same priority as other health issues. While this last category indicates that the control of dust risks does register to some degree, it needs to be viewed against the general industry background. The industry has tended to treat safety issues as more important than those relating to health.

A number of themes emerged from the free-text comments that contextualise these statistics.

Employers: Respondents indicated that attitudes vary greatly between employers. Larger companies generally promote much higher standards of dust prevention and protection. The lack of risk control is far greater for small companies and self-employed workers on small projects.

Employees: Dust causes a lower level of concern among employees than the more immediately noticeable dangers of construction, such as falls. Many respondents identified the delayed effect of dust as an important reason for complacency.

"Dust like noise affects people when they are older so they do not perceive it as a significant immediate risk to their wellbeing unlike falls from height, equipment etc."

Culture: The working culture of the construction industry was identified as a major inhibitor to improvements. Respondents identified a number of sub-issues:

- peer-group pressure and a historic acceptance of dust as an expected or normal part of construction work
- dust often being seen as an extension of housekeeping issues rather than a serious health issue in its own right
- a general tolerance of short-term dust exposure, especially when working outdoors, despite the fact that such exposures can still be high-risk
- dust becoming more important when there has been a complaint, implying a reactive rather than proactive approach.

Cost: Dust control is often viewed as labour-intensive, expensive, time-consuming and a nuisance that slows work. 'Time is money'.

Dust awareness among workers

Given this lack of industry prioritisation, it is perhaps unsurprising that workers also do not appear to appreciate the significant health risks from breathing construction dust. Only 15.6 per cent of respondents believed workers are fully aware, or know the general risks, of breathing in construction dust. Over half of responses (56.6 per cent) indicated that workers have no awareness of the health risks or idea of their significance. Over a quarter of responses indicated that workers had some awareness of the risks.

A number of respondents gave further insights into this picture:

"Most people I work with on site just get on with their jobs. Sure, they have PPE and are trained to deal with heights, etc, but dust does not seem to be acknowledged as a big problem."

"Workers can be their own worst enemy through their own ignorance and the failure to realise the harm of dusts, and their perception of a little bit of dust hurts no one, and they do not understand the compounding effects of a lifetime of exposure."

"Construction workers believe all dusts are inhalable and that by blowing their noses they extract the dusts. Very few at all understand the concept of respirable dusts and the chronic debilitating effects it can have on you, especially RCS."

"Having been a trainer for a number of years, construction workers are always surprised at the issue of health hazards dust can cause and wonder why they have not been protected or been made aware before. In our experience the understanding is low and the perception of risk very poor."

"For many construction workers their perception is 'It's only dust what harm can it do. I'll wash it down with a pint.'"

"Most regard it as a simple nuisance issue, it's unpleasant to get it in your throat, up your nose or in your eyes but that's just part of getting the job done."

- **Employers:** Responses differed between those working for larger companies and for smaller companies or self-employed. Different risk perceptions may have a role in this. As one respondent noted:

"When trying to manage a small contractor – stone masonry – the employees were unaware of the risks from dust. I have educated the employees as to the risks from dust; the trouble is their employer is still adamant there are no risks and if any they are low."

- **Age differences:** Many respondents observed that older workers retain outdated risk-awareness attitudes and present more of a challenge to introducing new measures. Some responses indicated that younger workers by contrast generally have a more progressive attitude and are more aware of the risks associated with dust. This was not universal, though. One person noted that:

"Dust is a big issue in the industry both outside and inside for all trades and as such education is always ongoing. However, I am alarmed at how many apprentices are not fully aware of the issue and that their peers don't correct them as it's left to either management or safety advisor[s]."

- **'Green shoots':** While the results show a low level of risk awareness, several responses indicated that this still represented recent improvements. For example, a greater awareness of different dust types like silica was cited. Some comments also praised the work of the HSE on this issue:

"The HSE have run some very good campaigns on silica dust but the industry must remain vigilant and constantly reinforce the message on the health risks."

"The perception of construction workers of the risk has increased in the last year since the initial HSE campaign which has been highlighted, especially with the face-fits being undertaken, etc."

While HSE has not undertaken such a campaign, this may be a general reference to the increased priority with which HSE has put on this issue in recent years.

Conclusion

The survey indicates that controlling dust risks is generally not seen as a priority and that there is poor risk-awareness among the workforce. Despite this low starting point, there are some signs of progress being made, with a number of respondents noticing some recent improvements. This is most likely being driven by the larger sites or contractors and the regulator. However, there is clearly still much work to do and it will take time before the benefits of this work are realised. As one respondent put it, "Everyone needs to get more earnest."

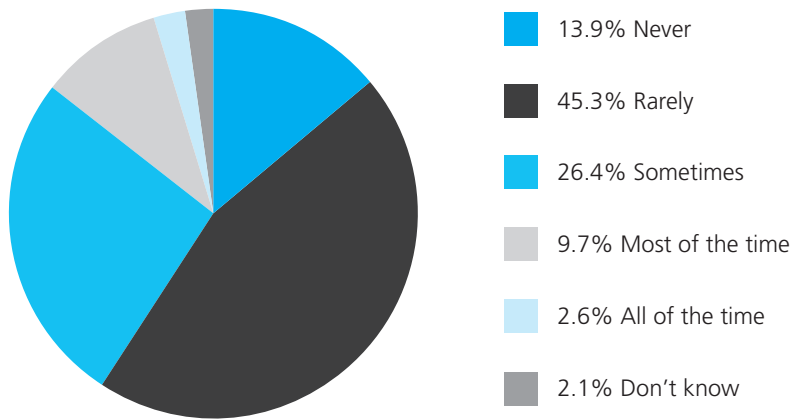
5 Control through design and different work methods

The second section of the survey looked at how effectively the industry was minimising dust risks by either designing them out or using different work methods. Respondents were asked to give their views on two questions with supporting statements.

'The first focus should be on reducing the risk at the design stage. Paving can be planned so that the smallest number of cuts is needed. Different-sized materials can be chosen so that cutting is minimised. Routes for services can be designed in.'

In your experience, how often is this being done where this is possible?

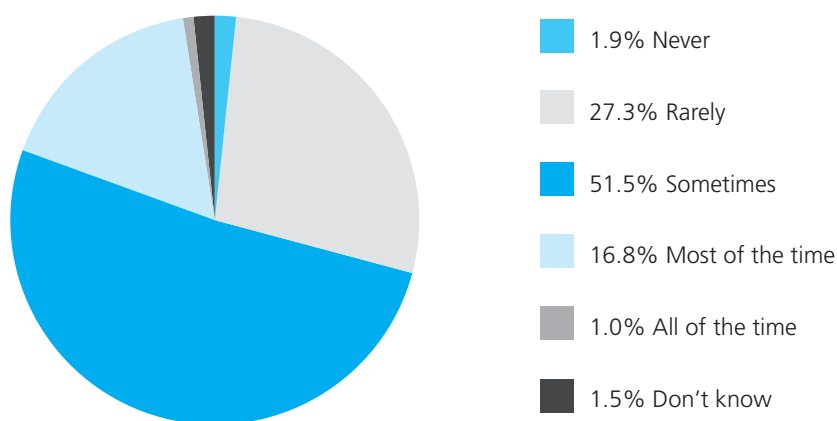
Answer	Number of respondents	Proportion of respondents (%)
Never	86	13.9
Rarely	280	45.3
Sometimes	163	26.4
Most of the time	60	9.7
All of the time	16	2.6
Don't know	13	2.1
Base	618	100.0



'Where a risk remains, this can be reduced by working another way. Cables can be protected and covered with plaster/board instead of chasing. Brackets and cable trays can be directly fixed instead of using drill holes. Block splitters can be used instead of a cut-off saw.'

In your experience, how often is this being done where this is possible?

Answer	Number of respondents	Proportion of respondents (%)
Never	12	1.9
Rarely	169	27.3
Sometimes	318	51.5
Most of the time	104	16.8
All of the time	6	1.0
Don't know	9	1.5
Base	618	100.0



Designing out risk

The majority of respondents (59.2 per cent) indicated that dust risk reduction was never or rarely considered at design stage, and about a quarter (26.4 per cent) sometimes. Only 12.3 per cent thought it was done most or all of the time.

A number of general themes emerged from the free-text comments to contextualise these statistics.

Employers: The results show that in general the application of dust reduction through design is poor. However, as in the previous section, there is a belief that higher standards tend to be applied in larger companies than in smaller organisations. There also seemed to be a split within the design profession itself, with respondents indicating the 'engineering/construction' side of the industry was better informed than architects.

Risk awareness: One of the main reasons given for the lack of design solutions was a poor awareness among the design community of dust risk issues. This reflects the low level of general awareness identified in the previous section.

Legal compliance: The comments about risk awareness were linked to wider concerns about designers' compliance with their duties under the Construction (Design and Management) Regulations 2007 (CDM). Comments included:

"The majority of designers do not consider health or safety risks when designing buildings. They are only interested in its appearance and functionality. CDM is not working!"

"Design in environmental management is way ahead of the game and yet still not taken up by designers at every opportunity. Health and safety considerations rarely feature until the work is in progress or subcontractors are planning the job. There is too much focus on 'this is the way it has always been done' and a lack of vision and education to progress change. The H&S culture is one of covering obligations through paperwork and not one of preventative initiatives through planning."

Respondents suggested a number of underlying reasons for their answers.

- **Aesthetics:** During the design process, aesthetics and functionality are given much greater priority than dust reduction.
- **Cost:** Economic constraints on the industry, with tighter margins and competition for contracts, are a factor in the design stage as well as on-site. Comments included:

"Large organisations can cost-in the design work as they obtain government-level contracts. Smaller companies do not work for such prolific clients and fear they will not win contracts unless they cut costs to the minimum."

"The designer will try his best to consider the issues, but by the time the industry gets to the construction phase the deal has been done to get the job on by any means – as long as it is cheap and hits the programme targets – therefore we probably miss the point from the designer."

- **On-site knowledge:** Design teams do not always understand the practical on-site implications of design solutions. Comments included the following:

"There is always a disconnect between designers' thinking [about] and addressing specific construction risks by assuming a particular method of construction, and the physical work."

"It is debatable whether that many designers (architects in particular) have the construction knowledge to even know that a task required to achieve their design will create dust."

"Practical solutions are not always understood by design teams. It needs background experience input to develop a true pragmatic approach."

"Design always seems to be behind actual working practices."

- **Co-ordination:** Better co-ordination between the design and build phases was cited as an area where improved design solutions could be achieved. However, there are practical barriers to this:

"Very often there is little co-ordination of design between different trades and far too often the needs of the programme out-weigh the practicality of co-ordination, leading to changes to design which in turn create changes to completed works."

- **Culture:** While aesthetics and functionality are prioritised, the survey indicated that there was less attention given to designing out risks because these were 'inevitable', could be dealt with by the contractor, were an afterthought or 'always been done this way'. Comments included:

"It seems that the perception is [that] it is an occupational hazard to be accepted and designers do not seem to feel they can do much about it, and as with many other hazards it is left to the contractor to control."

"Industry designers still seem to be of the opinion that the contractor will 'deal with or get around' the issues on site whereas they should, under CDM, be designing out risks at the design stage."

"Most architects or designers still only consider risk at the end of the design stage and even then it's only to point out controls rather than to design [risk] out."

- **Available solutions:** The lack of available design solutions was commonly cited as a barrier to reducing dust risks. Work on existing buildings was highlighted, especially where structural alterations made design solutions more difficult. Another comment stated that:

"A large proportion of the works which expose people [to risk] are jobs where there is very little design element...e.g. reactive streetworks"

These issues may in turn underpin some of the feelings of 'inevitability' or poor risk awareness or compliance detailed above. Some examples of available solutions do exist^{4,5} but perhaps these need to reach a wider audience.

Alternative work practices

A sizeable minority (29.2 per cent) thought that alternative practices are never or rarely used to minimise dust risk, while 17.8 per cent believe they are used most or all of the time. The majority (51.5 per cent) indicated that such practices are sometimes used. Again, several themes can be identified.

- **Practical alternatives:** Alternative solutions that limit the amount of dust created on-site are available and can be practical. Comments and suggestions included:

"Use of paving patterns that match standard sizes of paving units to minimise requirement for cutting plus use of standard radius kerb units for highway designs and use of standard width footpaths or paving areas."

"Using the cross Laminated Timber (CLT) method of construction significantly reduces dust as no chasing is required."

"Utilising 'standard specials' and 'special specials' for intricate block paving, stone, tiling or brickwork designs also minimises the amount of cutting but requires forethought. Simplification of designs and block layouts, plus allowing on-site closing dimensions rather than strict setting out dimensions between fixed points, will help contractors to work out least cutting options"

- **Cost benefit:** Several respondents highlighted that these dust reduction techniques were a beneficial by-product of efforts to do a job cheaper and/or quicker.
- **Employers:** Large companies are more likely to have arrangements in place or use these methods than smaller ones.

Respondents also indicated a number of barriers to adopting alternative working methods.

- **Design incompatibility:** Design requirements may make it difficult to use alternative techniques. For example, block splitters are more suited to straight cuts and material like concrete paving. Granite slab paving by contrast is commonly specified but often requires the use of a cut-off saw. While contractors are able to factor-in dust reduction work methods, it can be difficult to adjust the design by the time the project reaches the construction stage. Other comments include:

"We try and avoid cutting on-site as much as possible but it is unavoidable because dimensions and drawings are never that accurate and this must be the same for every trade."

"A great deal of the ability to influence design has gone by the time it gets to contractors as materials etc. are specified in the Planning Approval documents with which contractors need to comply."

- **Culture:** The culture of the industry can be a significant barrier, as highlighted by the following comments.

"On a recent project, which was design-and-build, the block sizing was a consideration and the walls and steelwork were set out to match full block sizes... only to have the lead bricklayer decide not to follow the plans and do things 'his way' which meant cuts had to be made anyway."

"It is all about costs. No one is interested in using methods other than those used for years."

Conclusion

The responses indicate that there is no major focus in the industry on minimising dust risks through design, and while some use is made of different work methods, this is by no means universal. The industry seems to be relying on 'reactive' on-site management of dust-creating work situations rather than trying to eliminate or minimise the risk first. That is despite the fact that these measures are an important and very effective part of the overall package of dust control arrangements. As one respondent said, "Designing out risks from dust still has a long way to go."

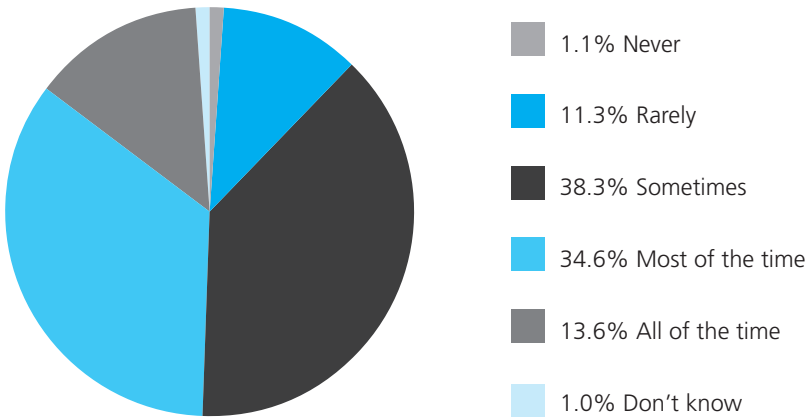
6 Water suppression

The next question in the survey looked at how effectively the industry was controlling dust risks through the use of water suppression.

‘Water can be used with some tasks to effectively damp down the dust. Most modern cut-off saws can be attached to a water supply. The water can come directly from the mains or a portable source such as a hand pressurised freestanding container. Other devices, such as masonry saw benches, can be selected that come with an in-built water reservoir.’

In your experience, how often is a means of controlling dust through water suppression provided to workers for those tasks where there is a risk of dust exposure?

Answer	Number of respondents	Proportion of respondents (%)
Never	7	1.1
Rarely	70	11.3
Sometimes	237	38.3
Most of the time	214	34.6
All of the time	84	13.6
Don't know	6	1.0
Base	618	100.0



Water suppression

The responses show that there is a relatively good focus within the industry on using water suppression as a means of control. Nearly half (48.2 per cent) of respondents felt that means to suppress dust with water are made available either all or most of the time, and a further 38.3 per cent sometimes. Only 12.4 per cent thought that such means are never or rarely provided.

A number of general themes relating to this emerged from the free-text comments.

Employers: Several respondents noted that water suppression was mandatory or commonplace on their sites. Larger employers and fixed sites use it much more frequently than smaller contractors. Poor use of water suppression was also noted in relation to transient sites, like street works. Typical comments included:

"This is standard practice within main contracting sites. On smaller sites, often street works, water dust suppression is not always used."

"Most sites, especially the smaller ones, take no dust suppression measures. The larger sites and UK Construction Group members take it very seriously."

"We provide water bottles for all our company-owned saws. A memo was circulated this year in relation to water suppression and cutting masonry was banned unless water was used. The problem is with sub-contractors, we can't always reach them and they don't always have the equipment."

Effectiveness: Many comments stated that water suppression was effective, simple to use and the easiest way of suppressing dust on site. One response stated that:

"This should be common practice not a complicated process."

Regulator: Reference was made to the positive impact the Health and Safety Executive has had on ensuring that this control has become better embedded within the industry. One respondent noted that:

"Several HSE enforcement actions resulted in a larger [number of] main contractors insisting on water suppression on their sites. This has always been an option but it took HSE profile to embed."

Use: Most of the responses referred to water suppression in relation to cut-off saws, indicating that this was the most common 'in-use' scenario. A few mentions were made of other scenarios where its use is equally applicable. These included demolition, drilling and wheel washes.

Cost: The cost implications of using this method were mentioned several times. Perhaps surprisingly, though, this was often not in connection with increased up-front hire or purchase costs. Instead, it related to time and inconvenience costs associated with use and maintenance issues – see below. This may indicate a greater acceptance of water suppression as a control measure that has to be used no matter what. It is also the first time in the survey that a cost benefit of using a control is mentioned:

"The tool hire company promotes its use – often encouraging its use, as wear to cutters is reduced and will save in the hire cost."

Common themes also emerged to explain the reasons why water suppression is not adopted or effectively implemented.

- **Suitability:** There are a number of work situations where water suppression may not be practical due to the nature of the task or environment – eg working on wood or having to manage slurry inside a live building. Several respondents referred to the use of extraction as an alternative, and this is discussed in the next section.
- **Water supply:** Suppression is only effective if there is enough water for the work. Many comments highlighted problems linked to this and therefore the importance of planning the work. One of the most frequent comments related to cut-off saws and the unreliability of water suppression bottles. Others mentioned the poor capacity of these storage devices, the unavailability of additional water for refilling and the lack of direct water connections on many sites. One also mentioned the potential legionella risks:

"Portable water sources are too lightweight and break easily."

"Portable pressurised water systems simply do not work – they do not have enough capacity, nor do they keep to the operating pressure – mains supply is obviously best but is often unavailable. Inspect most petrol-powered disc cutters and at least half will be covered in dust (water has not been used) and the other half will be plastered in cement (water has been poured in front of the diamond blade). Few (particularly on transient sites) are ever connected to a suitable water supply."

"Mobile workers, where they have the right equipment, rarely have ready access to an adequate water supply. One crew leaving the depot in the morning with a folder full of reactive utility and road works requiring cutting are likely to run out of water before lunchtime unless they also take a bowser. The size of vehicle or trailer may then require authorised diversion or road closure, hence it is too much effort."

"Larger water containers need to be promoted as the smaller ones run out too quickly."

"Where we have local storage for water we need to ensure that adequate controls are in place for managing any bacteria growth in water such as legionella, especially if water is left standing for prolonged periods of time eg. the holiday periods or when plant is returned to storage."

- **Slurry:** Water suppression creates slurry run-off. Comments on the problems of managing this were commonly made. These covered a number of areas including staining, the sequencing of works, environmental impacts and other health and safety risks. Comments included:

"Water is a most effective dust suppression method. However, its use must be monitored as the run-off water could be contaminated. Self-contained systems for masonry saws, road saws, etc., are a good method."

"When water is used for dust suppression, planning is required. Bricklayers will not make a cut using water then use the block or brick straight away. So a cutting list enables a purpose-made bench saw to be set up in a designated fenced-off area on-site. Where the cuts required for that day's work can be done prior to being needed, time can be given for the blocks/bricks to dry."

"The use of water as a means of suppressing dust brings with it another set of risk: wet, contaminated clothing, reduced visibility, slippery surfaces, contamination and damage to surrounding materials and areas, clogging of blades and guards and hygiene issues. In winter, the water can freeze, with further hazards created."

"Quality issues of water damage can impact the dust suppression methods, meaning that cutting is done some distance from the workface, which increases manual handling."

- **Maintenance:** The slurry and site conditions in general bring with them maintenance issues. Poor maintenance causes problems with blocked hoses, nozzles, bottles and dried-on slurry. Respondents often noted problems in these areas.

"The use of in-situ water suppression on cut-off saws can lead to a build-up of damp cement dust inside the guard. This sets hard if not regularly cleaned out, more frequently on hot days, and especially if a hired cut-off saw is used where the operator is perhaps not concerned about the next user when it is off-hired. When a new blade is fitted, the blade then hits the dry concrete causing more heat and noise. It may also upset the balance of the blade with a consequential increase in vibration."

"Not enough care is given to the water bottles and outlet nozzles on the saws. It should be a priority maintenance task."

"A common problem appears to be the hoses or connectors becoming clogged up, making it ineffective. This usually happens when the saw and water supply are disconnected to ease carrying."

"Pressurised water bottles are prone to clogging and require regular maintenance. [We] can't afford to waste time and money doing that."

- **Culture:** Respondents noted that implementing water suppression effectively depends on good management and supervision to make sure that it is used. It is not something that operators would generally choose to use. There were several reasons for this: a culture of not using water suppression, the hassle of using this method and the view that a 'one-off' cut is a lot of trouble for short periods of dust exposure which are of little risk. Comments include:

"I'd say that management try to enforce water dampening, rather than workers choosing to use water."

"It's rarely used even where it is provided. Just too much trouble."

"There is still a culture of using hand-held saws without water."

"I feel that on induction we will talk about it to the workers and it will be discussed at the pre-job briefings and in the risk assessment. But the worker still needs to be overseen by the supervisors to ensure that the cumbersome extra kit required is actually used. We always plan to use it, but..."

"Even though the equipment is provided to the operatives and they are trained in their use and maintenance, 8 out of 10 times when seeing the activity performed the suppression is either missing or not working properly, yet the operatives continue the work instead of highlighting the problem to their managers."

Conclusion

The responses indicate a more positive approach in the industry on minimising dust risks through water suppression, driven in part by larger sites and the regulator. However, its adoption is not universal, particularly in the smaller and transient sites. Practical issues with using water suppression also remain and need effective management to overcome these. The picture is best summed up by the following comment: "In my experience the use of water suppression has greatly increased over the last five years but there is still room for improvement".

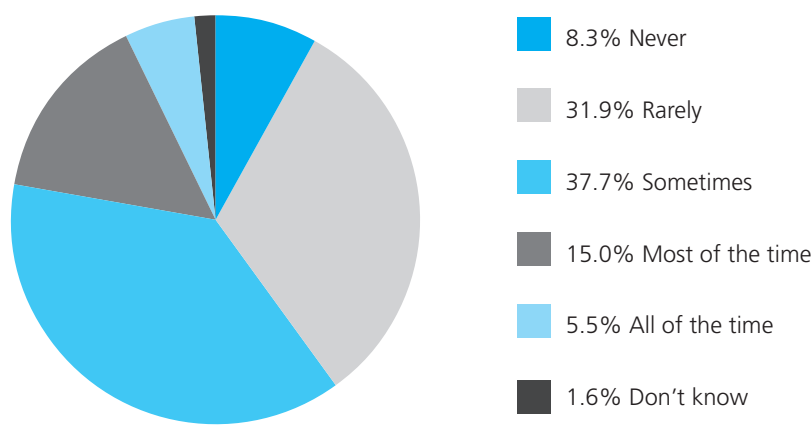
7 Dust extraction

The next two questions in the survey looked at how effectively the industry was controlling dust risks by using extraction equipment.

‘Water suppression is not suitable for controlling all dust risks. It cannot be used with most electric tools, on wood or where the waste slurry would create a problem such as in an inhabited building. Extraction is an effective alternative. This sucks the dust away as it is being created and stores it until emptied. The extraction vacuum can also be used for general cleaning instead of dry sweeping.’

In your experience, how often is some form of extraction provided to workers for those tasks where it would be expected?

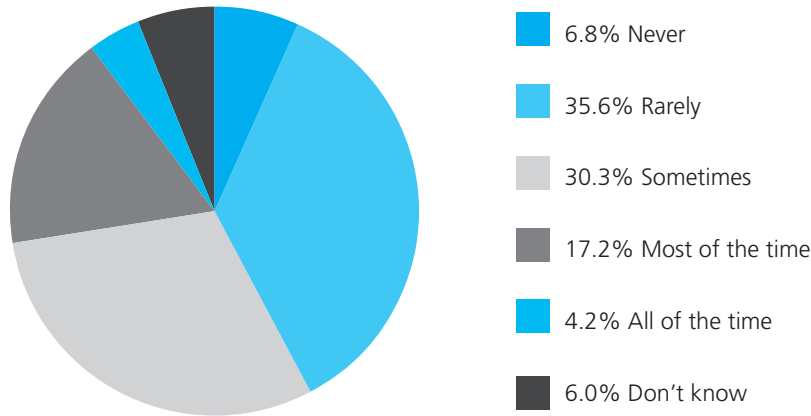
Answer	Number of respondents	Proportion of respondents (%)
Never	51	8.3
Rarely	197	31.9
Sometimes	233	37.7
Most of the time	93	15.0
All of the time	34	5.5
Don't know	10	1.6
Base	618	100.0



'Correctly working on-tool extraction is made up of a number of different parts. A specially designed hood is needed to collect the dust at the point it is being created. This should be shaped and designed around the cutting/contact point. The hood is attached to an industrial vacuum extraction unit via a hose. For most tasks the industrial extraction vacuum should be either an M or H class.'

In your experience, how often is the CORRECT form of extraction provided to workers for those tasks where it would be expected?

Answer	Number of respondents	Proportion of respondents (%)
Never	42	6.8
Rarely	220	35.6
Sometimes	187	30.3
Most of the time	106	17.2
All of the time	26	4.2
Don't know	37	6.0
Base	618	100.0



The responses to the first question indicate that water suppression is far more prevalent than dust extraction in the industry as a means of control. About two fifths of respondents (40.2 per cent) indicated that some means of dust extraction are never or rarely available, and 37.7 per cent suggested that they are sometimes available. Only one fifth of respondents (20.5 per cent) said that some form of dust extraction is available all or most of the time.

The second question examined views on the suitability of the limited amount of extraction equipment where it is provided. Dust extraction is a control that is relatively new to the industry. There is also more potential to 'get it wrong' when compared to water suppression because of the different parts and specifications involved. Again, the picture is not encouraging. About two fifths of respondents (42.4 per cent) thought that the industry never or rarely used the correct type where some form of extraction was provided. A further 30.3 per cent said this only happened sometimes. Correct provision was made all or most of the time in only 21.4 per cent of responses. Interestingly this question had by far the highest number of 'don't know' responses (6 per cent) in the whole survey. This may indicate a degree of confusion in a respondent's ability to recognise the difference between good and bad practice on this issue.

The free-text comments indicated a number of reasons for these responses.

- **Employers:** Unlike previous sections of the survey, there does not seem to be a significant split between larger employers and sites and smaller ones. The comments tended to focus on more needing to be done across the board:

"There is a very great need for action on this issue within the construction industry. At the moment it is all reactive from clients' safety personnel."

"Having been on an HSE LEV course it is evident that the message about extraction is not getting over to company management (ie the people who control the finances)."

"Unless a safety advisor flags this up it is even then only grudgingly provided and probably only used when a visit from a safety advisor or similar is taking place."

"We see high protection in joinery work shops but little to none on-site."

- **Awareness:** Poor adoption may in part be due to a lack of awareness about the equipment that is actually available and the correct specifications needed.

Worryingly, this also seems to extend across the supply chain, including hire companies.

"I don't think many operatives or even some managers are aware of the different types of class of extraction."

"I think better promotion of this is required, as I don't think there is much knowledge on-site of what equipment you can get actually get."

"Sometimes the hire companies, even if you order a specific extraction system, send a different one to site."

"I have tried repeatedly to hire portable extraction but the only product we could obtain were [Brand XYZ] but I had to tell the hire company in question what they were and asked them to buy some!"

- **Effectiveness:** A lack of awareness has a knock-on impact on the effectiveness of the on-tool extraction systems that are used. There were frequently comments about the inadequacy of the systems, 'bodging' things together or 'having a go'. Some of this ineffectiveness is likely to be due to the use of the wrong types of equipment. On-tool extraction is just as effective as water suppression when correctly selected and used. Typical comments include:

"Many systems seen are 'Heath Robinson' in nature, with many connections made with the assistance of duct tape."

"Effective dust extraction needs to be properly designed and maintained. Both rarely occur."

"Most systems are not capable of collecting all types of dust. The wrong system is worse than useless. Filters are rarely if ever cleaned. Hoses vary widely in diameter and therefore are often inefficient. Joints are usually sealed by using gaffer tape. Many dust collections systems are just vacuum cleaners which are not suitable for the purpose. Dust collection bags are often emptied into skips and then reused to reduce costs! I could go on, and on, and on!"

"Tailoring the extractor system to the task is critical, we have a great many LEV systems that are being reviewed as tasks change frequently, often making a great extractor unsuitable – but with minor alteration problems can be minimised, user awareness is often an issue here."

"Most of the time operatives turn up with an old vacuum cleaner that does not have the correct attachment to fit on the piece of equipment being used. So they end up gaffer-taping the hose on to the tool which eventually works loose, allowing dust to escape into the atmosphere."

- **Use:** To be effective, the correct on-tool extraction systems need not only to be provided but also properly used and maintained. There were a number of comments linked to the equipment being cumbersome, impractical, poorly maintained or giving rise to other risks. Comments include:

"Cost, cleaning, maintenance, training, time setting up and dismantling have impact on how it is it is provisioned and used."

"Many operatives complain that the dust extraction equipment is cumbersome, making it difficult to move from one location to another."

"Extraction equipment can increase noise levels. Can be cumbersome and difficult to hold by the operative. Leads and cables can increase trip hazards."

- **Cost:** Cost was more of a concern here than with water suppression, perhaps reinforcing the idea that this is not as embedded or accepted a control. It was also noted that a lot of the relevant tasks may be subcontracted to smaller contractors, where cost becomes a much more significant issue:

"It's mainly used by our carpentry contractors cutting MDF skirtings, architraves, cill boards...the problem is most carpenters are self-employed and have to buy the equipment themselves."

"Consider also the average carpenter could carry a bag of tools in one trip to the workplace. Then consider carrying associated extraction systems which would then have to be subject to testing to ensure efficiency which is also difficult and cost-prohibitive."

"Procurement departments don't buy these machines because they are more expensive than standard machines."

"This may be good on large sites. Most small builders will laugh at 'another H&S problem for me'."

Conclusion

There is a significant contrast between the answers given above and those for water suppression. Not only is the use of extraction apparently less prevalent, but the comments also indicated a confused picture about its availability, effectiveness and suitability for different tasks. Where on-tool extraction is used, 'have a go' seems to be a more common theme than people making informed and correct choices. This is best summed up by the following comment: "If you ask me what grade of stepladder can be used on a construction site I would say 'an industrial type class 1'. I cannot tell you what grade of vacuum is required or what the differences between the vacuums classes are!"

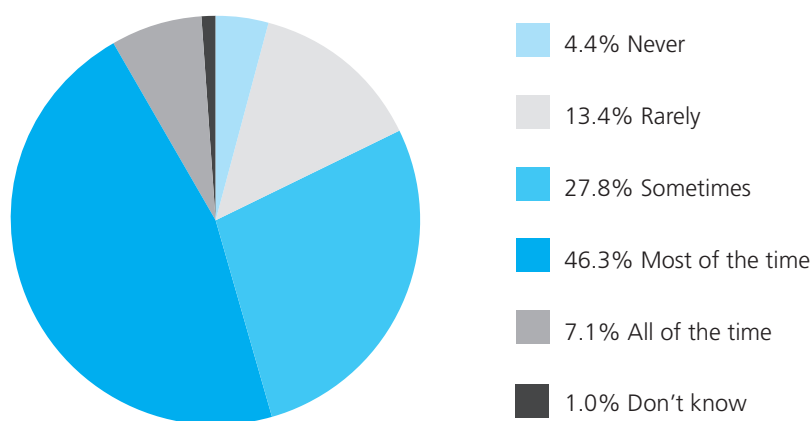
8 Respiratory protective equipment (RPE)

The fifth section of the survey looked at a number of issues associated with the provision and use of respiratory protective equipment (RPE). Respondents were asked to give their views on four questions with supporting statements.

'RPE is often used to protect against dust risks. It takes two main forms: a disposable mask or half mask with filters. It should be used as a back-up measure to water suppression or extraction. It should not be used as a replacement for those controls where they can be used.'

In your experience, how often is RPE provided to workers as the ONLY means of controlling dust?

Answer	Number of respondents	Proportion of respondents (%)
Never	27	4.4
Rarely	83	13.4
Sometimes	172	27.8
Most of the time	286	46.3
All of the time	44	7.1
Don't know	6	1.0
Base	618	100.0



RPE as a main control

RPE is an effective back-up control measure to water suppression or extraction. It should not be used as a replacement for them. However, there is an assumption that all too often it is used as the only control measure in place of anything else. The survey assessed the validity of this assumption and appeared to confirm it.

Over half of the responses (53.4 per cent) indicated RPE is relied on as the only method of dust prevention either all or most of the time, while 27.8 per cent thought that this was sometimes the case. On the other hand, only 17.8 per cent suggested that this was never or rarely the case.

This picture is supported by the comments made, which also explain some of the underlying reasons:

“Still reliant [on this] in most cases as [the] only method of dust control.”

“It is viewed as the ‘traditional’ answer to the problem and definitely the easiest and cheapest option.”

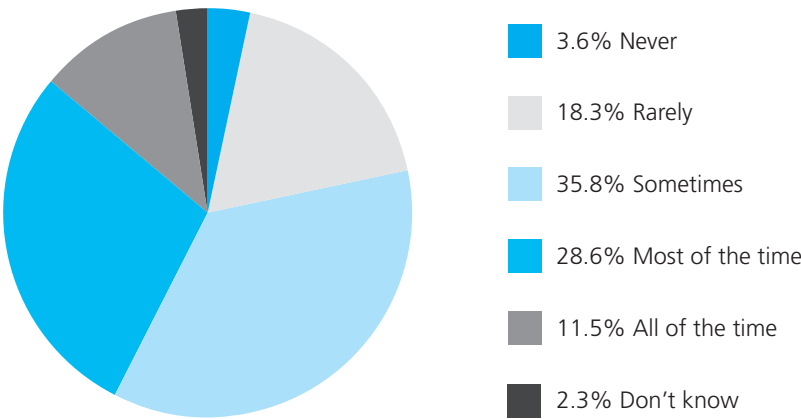
“Often the easy option to try and comply.”

“Tends to be the ‘first line of defence’ and most contractors believe they have done enough to protect the worker.”

“Reactive measures to dust hazards i.e. dust masks are still seen as the answer to the issue rather than eliminating the dust at source by selection of product (pre-sized units) or by elimination of dust at source by suppression techniques, shadow vacuuming.”

In your experience, how often is RPE provided to workers as a back-up measure where other controls are also being used?

Answer	Number of respondents	Proportion of respondents (%)
Never	22	3.6
Rarely	113	18.3
Sometimes	221	35.8
Most of the time	177	28.6
All of the time	71	11.5
Don’t know	14	2.3
Base	618	100.0



RPE as a back-up control

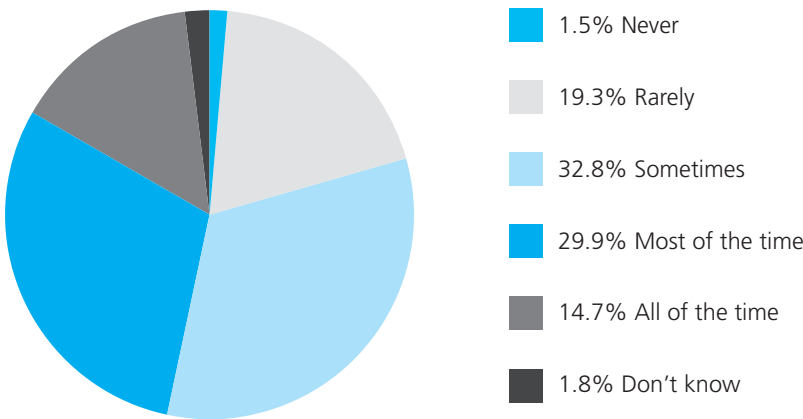
The second question looked to establish whether there is any improvement in the frequency of RPE provision when a main control (e.g. water suppression or extraction) is also in use. Two fifths of responses (40.1 per cent) indicated that RPE is used as a back-up measure all or most of the time, and 35.8 per cent sometimes. Just over a fifth (21.9 per cent) suggested that RPE is never or rarely given out as a back-up.

The results indicate that there is a fair degree of compliance where people are aware of the correct controls – over 40 per cent use a main and back-up control together. However, further interpretation of these results was not possible, as respondents’ comments all focused on the other RPE questions.

‘RPE needs to be to the correct specification if it is to provide the protection needed. For most tasks involving power tools this will be a disposable FFP3 mask or a half mask with a P3 filter.’

In your experience, how often are masks provided to workers that meet the correct specifications?

Answer	Number of respondents	Proportion of respondents (%)
Never	9	1.5
Rarely	119	19.3
Sometimes	203	32.8
Most of the time	185	29.9
All of the time	91	14.7
Don’t know	11	1.8
Base	618	100.0



RPE specification

The results indicate the degree to which information about the correct specification for RPE has penetrated the industry. Nearly half of the respondents (44.6 per cent) stated that the correct specification of RPE is provided all or most of the time. This is around double those who indicated (20.8 per cent) this was never or rarely the case. This implies a fair, but not universal, degree of compliance. The comments shed some light on the reasons for this.

- **Employers:** As with other areas in the survey, there is a difference between the larger and smaller employers and sites. In particular, references were made to the need to manage those in the supply chain who use masks and the difficulties presented by agency workers.

"As a health and safety manager of a large company it is a constant battle to educate the supply chain on the requirements on the selection, use and fitting of dust masks and in some cases our own staff."

"Our company only buys FFP3 masks and has compulsory face-fit-testing for direct employees. The problem is this does not apply to a lot of the workforce now as they are supplied through agencies."

"Our own employees have all been trained in the correct use of dust masks; have been face-fitted and can only be provided with our approved FFP3 masks. Our subcontractors still require to be managed to bring them up to this level."

"The bigger companies tend to do things correctly as they employ the likes of us to provide safe systems of work. Smaller companies tend to buy face masks at their local DIY store and don't really know what is required – ignorance is bliss."

- **Awareness:** The last comment above highlights the link between poor awareness and the provision of inadequate masks. Some of the comments indicate that awareness about the correct RPE is improving. Others stress that there is still a way to go.

"The message about P3 masks/filters is starting to get through."

"Most operatives know that wearing a mask will help with the inconvenience of breathing in dust but very very few understand about the correct type or fitting of the mask."

"As a union safety rep I had to be the one to tell managers who should know better to use the correct-spec mask."

- **Culture:** Poor awareness may be linked to traditional ways of working such as:

"The conventional 'decorators' mask is the one used on most sites and is totally inappropriate."

"The majority of the time it's the first mask that comes to hand and not if it's suitable for the task."

- **Cost:** As in other sections of the survey, cost appears to be a major factor. RPE, like water suppression, is a much more embedded control compared to on-tool extraction. However, RPE comes in a variety of different performance specifications. This means that there are cost differences, and cheaper RPE can appear more financially attractive. Comments included:

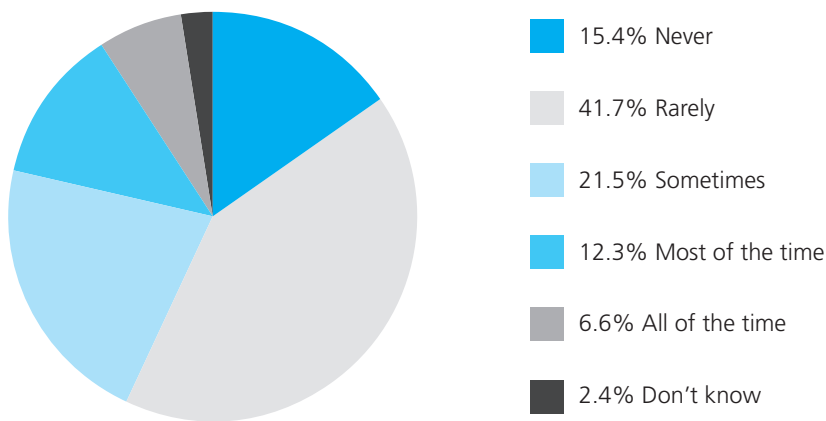
"The cost of the RPE governs the selection – not its efficiency."

"It is the same old story: employers buy the cheapest masks, that are not fit for purpose and the lads won't use them as they don't work."

'A tight fitting disposable or half mask also needs to fit the wearer. The dust particles that cause the greatest harm are very small and can fit through any tiny gaps between the mask and the wearer's face. Workers need to be face-fit-tested to ensure that their mask fits properly.'

In your experience, how often are workers fit-tested for the mask that they are using?

Answer	Number of respondents	Proportion of respondents (%)
Never	95	15.4
Rarely	258	41.7
Sometimes	133	21.5
Most of the time	76	12.3
All of the time	41	6.6
Don't know	15	2.4
Base	618	100.0



Face-fit-testing

While RPE may be a well-established control, such familiarity does not appear to extend to the process of face-fit-testing. Over half of respondents (57.1 per cent) believe this practice is never or rarely followed. This is over three times the number (18.9 per cent) who indicated that face-fit-testing is done all or most of the time. Another 21.5 per cent thought that this was 'sometimes' the case.

There are several comments on this topic which provide some context to these results and reveal issues relating to general RPE use.

- **Employers:** While larger contractors appear to lead the way, there seems to be less of a pronounced difference between them and smaller sites and employers. Typical comments include:

"Having just completed a fit testing course, it is important to fit test all masks to workers and this should be done in all cases. I have only just started seeing this being done on site. I would say most companies do not fit test their workers' masks."

"Very disturbing that so many companies and employees are unaware of face fit testing requirements of RPE."

"Many companies think one mask fits all. Face fits are not ever thought about."

"HSE need to launch a Face Fit Testing campaign. Whilst I have trained 30 supervisors across the company in the year we have only had 2 contractors who have been able to demonstrate that their workers have been face fit tested...I have held a train the tester WWT (Working Well Together) event and getting the supply chain to come to the free event was like pulling teeth!"

- **Use:** A significant number of comments referred to practical issues associated with using RPE. Many of these comments were in relation to the problems of ensuring that workers were clean-shaven so that the masks would form an effective seal with the face. Other comments related to the problems of using masks with other items of PPE, employees not wearing the masks – in part due to them being uncomfortable – and the importance of supervision.

"Often users (even if fit tested) will not be cleanly shaven, thus mitigating any or most of the protection that should be afforded by the RPE."

"The perennial problem of PPE incompatibility often arises. On several tasks where operatives are required to wear eye protection, this interferes with the fit of the RPE or vice versa. People complain that their eye protection 'fogs up' so they tend to protect their lungs or their eyes, not both."

"We have face-fitted all our operatives for respirators and instructed the operatives to use respirators. However, if a task only takes a few minutes and the site supervisor is not nearby, operatives will quite often not wear their respirator."

- **Cost:** Again, the issue of cost was raised. However, concern was not just about the cost of the face-fit-testing itself but also the knock-on effects in terms of supplying different types of masks and dealing with a constantly-changing workforce. Comments included:

"Face fitting can add to companies' costs as they can no longer bulk-buy masks as one type will do all."

"With the fast turnover of staff in the construction industry, companies would be constantly getting operators measured only for the guy to leave their employment a short while after!"

- **Benefits:** Perhaps surprisingly, the benefits of face-fit-testing were also mentioned. In particular:

"Having undertaken face-fit testing we find that the operatives are astounded at the level of protection they get when these are properly fitted... Operatives also are found more likely to comply if they are told why and not just told to do as they are told."

Conclusions

These results are a concern, especially when taken in conjunction with the earlier findings about the industry's poor risk appreciation. They confirm a picture that RPE is too often the only form of protection relied upon and even then it is not always to the correct specification – although there would seem to be better use of RPE where another control is already in place. Poor compliance with face-fit-testing is a particular worry as without it individuals may be getting reduced or even no protection from their RPE – even if the correct specification is provided. This has particularly significant implications for the apparently commonplace situations where RPE is the only control. This is best summed up by the following comment: "The main problems with RPE are wrong specification, incorrect fit and use beyond the point where replacement is required. These problems are often caused by a failure of supervisors to manage the issues correctly...."

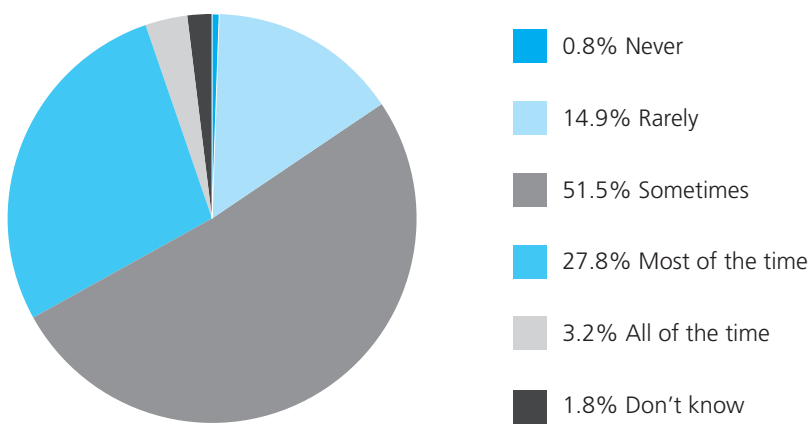
9 Other control issues

This last section of the survey looked at ‘softer control issues’ that underpin the effective implementation of the controls already discussed. Respondents were asked to give their views on three questions with supporting statements.

‘The right controls still have to be used correctly. A worker may not know what to do. There may be a problem with the control due to poor maintenance. Poor planning might mean no more water is available to refill containers or electricity for extraction. Spare masks may have run out. Supervision may be lacking. Management arrangements are important for this.’

In your experience, how often do poor management arrangements create a situation where the controls provided fail to work properly?

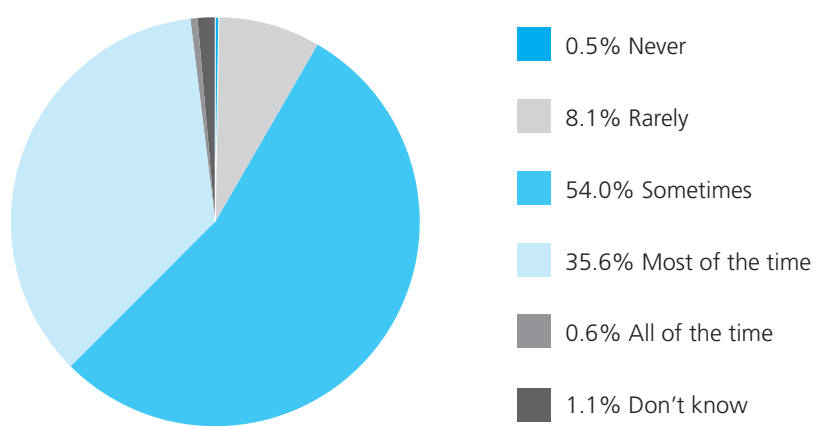
Answer	Number of respondents	Proportion of respondents (%)
Never	5	0.8
Rarely	92	14.9
Sometimes	318	51.5
Most of the time	172	27.8
All of the time	20	3.2
Don’t know	11	1.8
Base	618	100.0



‘The control of dust also needs the user / worker to play their part. The best controls and systems will not work if they are not followed.’

In your experience, how likely is a worker to end up not following prescribed methods of work (whether intentionally or unintentionally)?

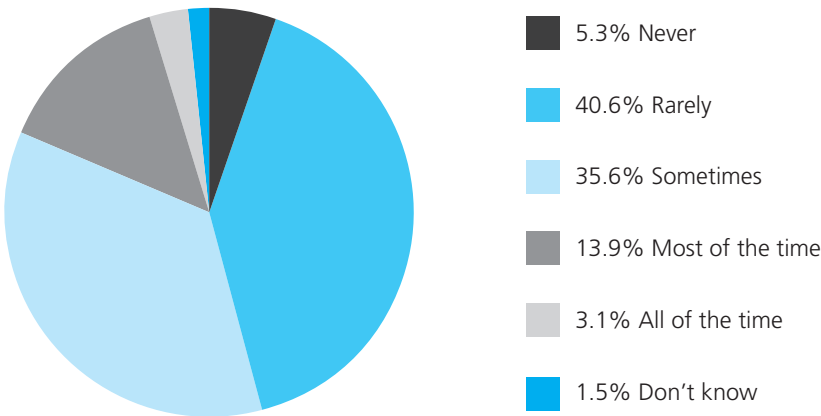
Answer	Number of respondents	Proportion of respondents (%)
Never	3	0.5
Rarely	50	8.1
Sometimes	334	54.0
Most of the time	220	35.6
All of the time	4	0.6
Don't know	7	1.1
Base	618	100.0



One of the reasons for people not following work methods is that they do not fully appreciate the risks or have not been involved in any discussions about them.'

In your experience, how often are workers involved in discussions about dust-related issues?

Answer	Number of respondents	Proportion of respondents (%)
Never	33	5.3
Rarely	251	40.6
Sometimes	220	35.6
Most of the time	86	13.9
All of the time	19	3.1
Don't know	9	1.5
Base	618	100.0



Management arrangements

Just under a third of respondents (31 per cent) indicate that poor management arrangements lead to failures of controls either most or all of the time, and more than half (51.5 per cent) think that this is sometimes the case. Only 15.7 per cent believe that this is never or rarely the case.

These results are a frank admission that in general the industry does not get the management arrangements of dust controls issues right a lot of the time. The following comments refer to a link between the relative priority given to this issue by managers and the corresponding conditions found on-site.

"When working in a dusty environment we ensure toolbox talks on the risks of dust and importance of controls in place ... but without that input from us as principal contractor I feel the controls would go unheeded and the risks ignored."

"Rarely is the situation of worker exposure due to lack of possible solutions, rather in my experience the exposure is a result of management's lack of commitment to worker protection due to cost or knowledge of hazard."

"It is all down to brave managers who understand the risks to health and follow through with good practices on-site but they are sadly in the minority."

"Some companies have this down to a fine art, as they have strong management teams. Others ... pay no attention to the creation of dust, particularly when cutting slabs or kerb stones in the midst of the general public."

"Setting a clear example is required."

Worker compliance

The majority (54.0 per cent) of respondents indicated that workers sometimes fail to follow prescribed methods of work. Over a third of respondents (36.2 per cent) indicated that this happened most or all of the time. Only 8.6 per cent indicated that workers never or rarely fail to follow prescribed working methods.

While the previous answers acknowledge that problems exist with management arrangements, these responses indicate that there are significant issues with workers failing to follow instructions. The comments indicate a number of reasons relating to workers' mind-set, including cultural issues, bad habits and workers' desire to take short cuts. More worrying were comments indicating that workers felt 'worthless' or that 'it was already too late' for them.

"When being face fitted, we deliver a short presentation on why it is important, talk about the hazards depending on their job, then go onto how to wear the mask correctly and how to look after it and when and how to change it. We also talk about using water etc. Despite all this, we still often catch them without masks. It is not through lack of understanding. It is like wearing hi-vis 15 years ago or hard hats. It took years for the culture to change."

"Workers on construction sites are considered to be the lowest form of life, and they feel worthless and expendable, they do not feel valued so why should they care about themselves!"

"The dust hazard is regularly covered in toolbox talks and directly when meeting bad practices on site, the responses are generally good but bad habits do tend to return."

"Given the mindset of site operatives it is difficult, unless continually highlighting the dangers of silica dust via toolbox talks and safety alerts, to get them to follow correct procedures to minimise exposure."

"Some workers still despite knowing the risks will take a chance or can't be bothered to follow the control measures."

"Most of the older workers are of the opinion that they have already been exposed at some point during (or for most of) their careers, so it's too late for them. This leads them to be a bit blasé about risks to themselves and others as a result of their activities."

Worker involvement

Nearly half of all respondents (45.9 per cent) believe it is never or rarely regular practice to involve workers in discussions about dust-related issues. In contrast, only 17 per cent think it is regular practice all or most of the time. Over a third (35.6 per cent) of respondents think that these discussions occurred sometimes.

These results indicate that worker involvement in these issues is unfortunately far from routine. Many of the comments referred to sites covering dust issues through inductions and toolbox talks. It is unclear whether the respondents take this to be a form of worker involvement. However, presenting workers with information on its own is not real involvement. Full interaction is needed. A couple of comments make this point:

"There are continual toolbox talks on the issue... But sometimes this can seem like the men take it in at that point, go and have a cigarette and a cuppa then go off to work as they were doing an hour ago."

"A 5 minute TBT is no use to some of the lads for the jobs they do, we need to make more of this time and explain the dangers of Silica, this needs to get the press that Asbestos gets."

"The team on our last scheme were asked what type of RPE should be used on the site as a discussion forum, this formed part of the TBT and ensured that the correct RPE was used and the operatives also wore it as they felt like they had a hand in getting the right equipment."

The last comment indicates the benefits that can be achieved from involving workers in decisions. Other comments build on this:

"Involve operatives in actively choosing the RPE they feel most comfortable with. They are then more likely to use it correctly."

"The operatives carrying out the work are very rarely involved in the discussion around the safe system of work to be adopted. They are just expected to adopt a system of work, thought out by others, who may not fully appreciate what is involved. Involve the operatives more and empower them to offer suggestions for improvement."

"Worker involvement plays a large part in ensuring measures are followed, makes them aware of potential health issues makes them think twice about not following prescribed procedures."

"The basic essentials work best for us. Involve the workforce with trials of new and better equipment, discuss their concerns, and give good feedback, help the workers to help you."

"If the operative is told to wear the RPE or else face removal from site – it does no good. If the reason he needs to wear it is explained to him then the result is usually better."

Conclusions

The results present a picture of generally inadequate management arrangements, workers failing to follow the instructions given and a lack of worker involvement. This is a significant concern but may in part be a reflection of the earlier findings showing that dust is often not a priority issue and there is poor worker awareness about the risk. This is best summed up by the following comment: "I think it's not so much about workers not wanting to wear RPE or management failures – it's a wider issue and is based on a clear lack of understanding of the risks from airborne dusts."

10 Conclusions

The survey has provided an overview of the way that the construction industry views and manages construction dust issues. When considering the results it is important to remember that most respondents (61.6 per cent) were health and safety advisors – either in-house or external. This means the information gathered largely represents the perspectives of health and safety professionals working in the construction industry, rather than the entire construction industry itself..

Main findings

Many of the survey findings paint a fairly negative picture for a number of issues. In general the survey reveals:

- a lack of priority given to this issue by companies;
- poor awareness of the risks among workers;
- little attempt to design dust risks out;
- a poor understanding and use of on-tool extraction;
- an over-reliance on RPE as the main form of control;
- a lack of awareness about face-fit-testing;
- inadequate management arrangements to control dust;
- poor worker compliance with the arrangements that are in place; and
- a lack of worker consultation.

The picture is not uniformly negative, as there was also generally found to be:

- an improving picture of control through the use of water suppression; and
- better compliance among those who are more informed about the risks and the controls needed.

Underlying issues

These main findings are generalisations from the information provided. Analysis of the comments highlighted some common underlying reasons for this generally poor picture.

- **Awareness:** The poor general awareness identified at the start of the survey has a significant detrimental effect on control, provision and use.
- **Culture:** The culture of the industry, and its 'traditional' view of dust as an expected or normal part of construction work, can be a significant barrier.
- **Use:** Workers often view the controls as cumbersome, impractical, affected by poor maintenance or giving rise to other risks. This deters use.
- **Employees:** Implementing controls effectively depends on good management and supervision. Operators generally choose not to use controls.
- **Management arrangements:** In general, the industry does not seem to manage dust controls issues adequately. Comments refer to a link between the management priority given to this issue and the corresponding conditions found on-site.
- **Cost:** Dust control is often viewed as labour-intensive,

expensive, time-consuming and a nuisance that slows work.

It is also important to stress that the underlying issues are not uniformly negative. In particular, the survey highlighted:

- **Employers:** Attitudes vary greatly between employers. Larger companies generally promote much higher standards of dust prevention and protection. A lack of risk control is more marked for small companies and self-employed workers on small projects.
- **Practical alternatives:** Alternative solutions that limit the amount of dust created on site are available and can be practical.
- **Regulator:** Reference was made to the positive impact the HSE has had in driving forward improvement in certain areas.
- **Benefits:** There are potential cost savings to consumables from using water suppression, and face-fit-testing can lead to a better use of RPE by workers.

The following comments perhaps best sum up these main findings and underlying issues:

"When you observe construction work it appears to fall into two areas. (1) Construction sites run by larger construction companies take the problem seriously and issue protection – I think the workforce now understands why but it takes a long time for the awareness to become common practice. (2) When you see small roadworks, refurb, etc, there is still not much evidence of awareness. In a lot of occasions the operator may be protected but those working near him are not, dust suppression is now easily obtainable but again is often omitted."

"Dust is usually thought of as a nuisance and impossible to control in the construction industry. This together with the availability of cheap and effective diamond tipped cutting blades has led to an increase in the production of airborne dust in construction, as items that used to be cold chisel cut, ie bricks, blocks, and paving, are now disc cut as more accuracy is achieved."

"There are pockets of best practice, most I would suggest on UKCG type sites."

"Generally speaking I have found that large principal Contractors are fully aware of the hazard of dust and monitor the implementation of PPE. However, the not so large Principal Contractor does not know. A lot of the 'Site Managers' do not put as much emphasis on dust as say fall from heights, eye protection, traffic management. I suggest this is because the Site Manager is not fully aware of the hazards. I personally had a

subcontractor say to me that in all the years he has been working in his trade, he has never been directed to include in his RAMS that operatives are to wear a mask when drilling into a concrete ceiling!! This is evidence that the subcontractors are not thinking outside of their main scope of work and carrying out a duty of care for their operatives. When I asked if they were aware of the hazard of silica dust, they said 'no'. It wasn't until I displayed a report from the HSE on silica dust that operatives on site began to request correct respiratory protection from their employers."

"Unfortunately, although contractor employees possess the CSCS Certificate and site management cards, the priority in small to medium construction projects is delivery to time, avoiding penalties, but undertaking almost 'natural risk taking' to avoid investing in sensible risk control measure where possible, which affect the overall costing for the work."

The way forward

The findings highlight many issues that need to be addressed. This will be challenging. Equally, however, the survey has indicated that there are some positive developments. While the results show a low level of risk awareness, several responses indicated that this still represented recent improvements. For example, a greater awareness of different dust types like silica was cited. Some comments also praised the work of larger contractors and the HSE on this issue.

There are some grounds for optimism that improvements can be made, providing the industry shows a collective will. Respondents made suggestions covering the following themes:

- **HSE engagement with industry associations:** HSE already engages with industry associations through the Construction Dust Partnership and on specific control issues. This situation was supported and further development of it suggested:

"The HSE should engage with the Federations and Associations more and get their members to meet codes of practice for their federation. I only see the issue raised at principal contractors level and then they try and push it down to the supply chain. I have seen the work the HSE has done with the roof tilers⁵ and believe that this should be mirrored with many things the HSE try and instigate."

- **Campaigning:** Reference was made to the benefit of undertaking an awareness-raising campaign; particularly if that was led by HSE. Several respondents had mistakenly indicated that HSE had already undertaken

such a campaign. While this has not been the case it may be a general reference to the increased priority with which HSE has put on this issue in recent years.

"I don't think workers appreciate just how dangerous silica dust is and that it could overtake asbestos-related deaths if we don't control exposure. The HSE have run some very good campaigns on silica dust but the industry must remain vigilant and constantly reinforce the message on the health risks. I also think workers' attitudes are still too casual; this may be a topic which needs a harder-hitting campaign."

"The perception of construction workers of the risk has increased in the last year since the initial HSE campaign which has been highlighted, especially with the face fits being undertaken etc."

"Workers need a hard-hitting campaign similar to the asbestos one to show the damage that dust does."

- **Guidance:** Respondents indicated that the industry not only needs better information on risk, but also guidance on the steps that should be taken to control risk.

"Better industry guidance and advice from professional and other organisations would help to achieve awareness of both hazards and resulting risks of non-effective management."

- **Supply chain:** Dust risks created on-site are not in isolation from the rest of the industry. It is important that the whole supply chain plays its part.

"Clients have a major role in setting standards for the work they commission. The best clients step up to the bar and not just set standards, but monitor these standards regularly on their sites. Many clients unfortunately are not experienced and rely on the professionalism of the people they employ in their projects team. This brings us back to the role of designers and manufacturers and to the need for an aggressive and stimulating re-appraisal of how designers should be educated in their responsibilities under the current CDM Regulations."

This survey highlights the fact that the construction industry often poorly understands and controls dust risks. Given the serious health risks and the impact that this has on the lives of workers, the industry now has to face up to this challenge.

The industry creates this risk. It now needs to acknowledge it, own it and deal with it.

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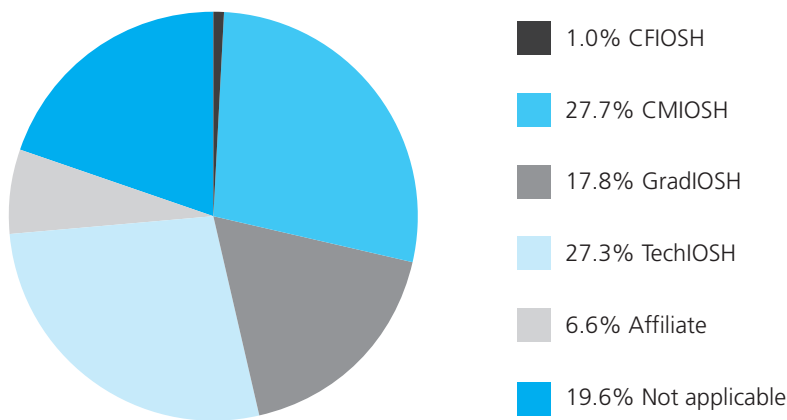
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Appendix: Details of respondents

To contextualise the information provided, respondents gave the following basic background details:

What is your IOSH membership category?

CFIOSH	6	1.0%
CMIOSH	171	27.7%
GradIOSH	110	17.8%
TechIOSH	169	27.3%
Affiliate	41	6.6%
Not applicable	121	19.6%
Base	618	100%



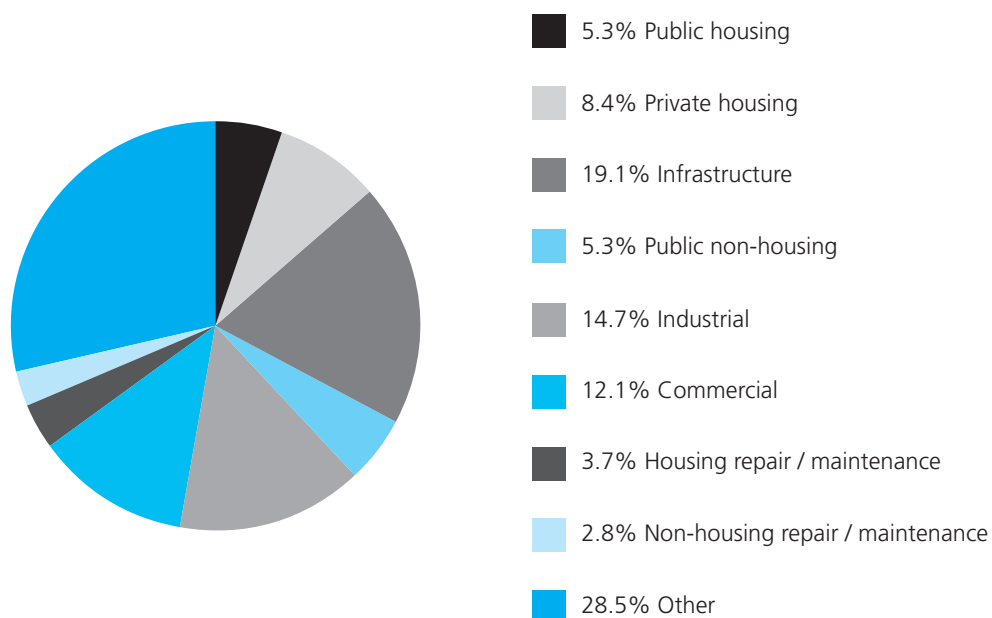
Comments:

- Comparison between membership levels of respondents and IOSH Construction Group membership statistics:

Membership level	Respondents	Actual
CFIOSH	1.0%	1.2%
CMIOSH	27.7%	29.1%
GradIOSH	17.8%	19.3%
TechIOSH	27.3%	32.0%
Affiliate	6.6%	17.0%

Which sector of the construction industry do you work in?

Public housing	33	5.3%
Private housing	52	8.4%
Infrastructure	118	19.1%
Public non-housing	33	5.3%
Industrial	91	14.7%
Commercial	75	12.1%
Housing repair / maintenance	23	3.7%
Non-housing repair / maintenance	17	2.8%
Other	176	28.5%
Base	618	100%



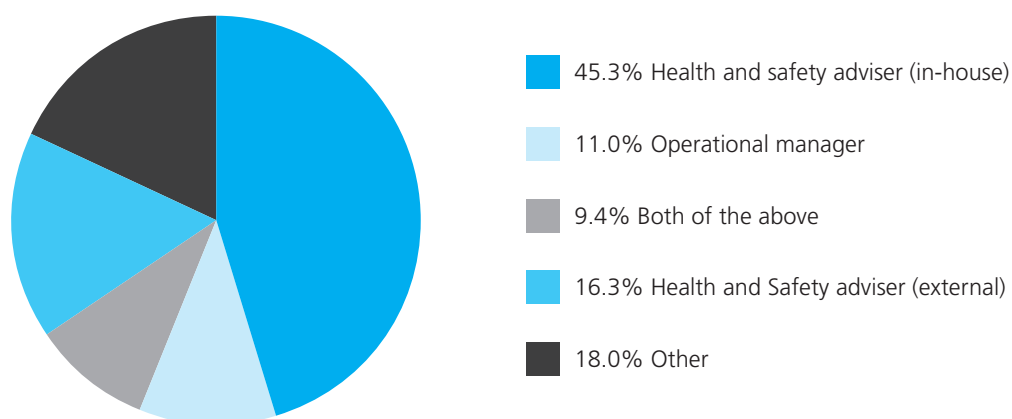
Comments:

- 'Infrastructure', 'Industrial' and 'Commercial' were the best represented industry groups.
- 'Other' accounted for 28.5 per cent of the responses. Among these respondents, those who specified their role included:

Industry Training Board	Insurance (2)	Equipment rental (2)
Industry representation	Land drilling (2)	Equipment retail
Asbestos and hazardous materials	Extractive Industry / quarrying (2)	Refurbishment / restoration (7)
Civil engineering (2)	Major projects (3)	Tool and equipment rental (2)
CDM (2)	Equipment production	Training (3)
Civil engineering (6)	Nuclear decommissioning (3)	Tunnelling (2)
Demolition (8)	Nuclear industry (4)	Utilities sector (4)
Earthmoving / remediation	Healthcare estates (3)	Waste management (4)
Education (8)	Highways (5)	Renewable energy
Local authority (3)	Energy sector (7)	Further education (5)
Emergency services	Estates management (2)	Gas industry (4)
All of the above (24)	Most of the above (12)	General construction (2)

Which option best describes your role?

Health and safety adviser (in-house)	280	45.3%
Operational manager	68	11.0%
Both of the above	58	9.4%
Health and Safety adviser (external)	101	16.3%
Other	111	18.0%
Base	618	100%



Comments:

- The greatest number of respondents (45.3 per cent) are 'in-house health and safety advisors', while a further 9.4 per cent of those surveyed did this role as well as that of 'operational manager'.
- 11.0 per cent of respondents identified themselves as 'operational managers'.
- 18.0 per cent of respondents did not identify with the options, instead selecting 'other'.

IOSH

The Grange
Highfield Drive
Wigston
Leicestershire
LE18 1NN
UK

t +44 (0)116 257 3100

www.iosh.co.uk

 twitter.com/IOSH_tweets

 facebook.com/IOSHUK

 tinyurl.com/IOSH-linkedin

IOSH is the Chartered body for health and safety professionals. With more than 44,000 members in over 120 countries, we're the world's largest professional health and safety organisation.

We set standards, and support, develop and connect our members with resources, guidance, events and training. We're the voice of the profession, and campaign on issues that affect millions of working people.

IOSH was founded in 1945 and is a registered charity with international NGO status.