INDUSTRIAL Safety News

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SPRING 2017

COULD GRENFELL HAPPEN HERE?

Are New Zealand's buildings safe from the effects of fire?

Finding a guardian angel

Tackling a tough taboo

Are there any votes in workplace health and safety?

Throughout the recent election campaign, politicians promised to solve all our pressing problems notes Responsible Care NZ Chief Executive Barry Dyer

Regrettably, what passed for informed debate did not embrace keeping people safe and healthy at work, apart from the Māori Party promise to "unwind excessive health and safety rules".

Conducting comprehensive assessments of site health, safety and environmental performance and compliance, chemical suppliers recognize the difficulties of reducing workplace death and injury by 25 per cent by 2020.

The focus for most business operators, especially SMES, continues to be compliance, in lieu of hazard identification and pragmatic risk management.

Chastened by a Parliamentary Select Committee dismayed at the lack of credible information regarding progress towards the elusive 2020 target, agencies are generating voluminous statistics which, together with ACC figures, suggest progress in reducing workplace fatalities has stalled.

As the revised Hazardous Substances (HS) Regulations 2017 (565 pages) join the Health and Safety at Work Act (HSWA) 2015 (133 pages), together with relevant requirements of the contentious Resource Management Act (RMA) and often obscure local authority requirements, should we be surprised the legion of small and poorly resourced 'Persons Conducting a Business or Undertaking' (PCBU) despair?

Incorporating the ageing hazardous substance regulations into refreshed workplace health and safety legislation is a long-awaited improvement.

The much-maligned HSNO workplace chemical safety requirements are now more obvious to busy employers addressing compliance requirements, particularly in SMEs where time, capability and resources remain scarce – unless business operators know what to do and how to do it, the task becomes daunting.

Faced with costly professional advice, many wait in hope for a visit by one of 170 workplace inspectors policing 130,000 sites.

Increasing demands

Even with the required, comprehensive chemical management advice, SME operators must commit time and money to ever-increasing compliance demands.

Compliance information abounds on government websites, but finding and correctly applying it to often complex chemical inventories requires time, knowledge and patience – attributes largely lacking in SMEs.

Furthermore, the regression to highly prescriptive, rather than performance based regulation, hinders even the most committed.

User-friendly solutions are a hard-won combination of a thorough understanding of the requirements, identifying robust and practical solutions, sound training, supervision and then confirming compliance in a process of continuous improvement, thereby minimizing enforcement activities.

The proven HSNO approved handler requirement, while often poorly executed, ensured sites with significant chemical inventories had chemical safety expertise and compliance advice on hand, particularly invaluable in an emergency.

Mandating at least one on-site competent health and safety representative with chemical safety expertise would advance workplace health and safety performance.

Instead, the approved handler requirement is largely downgraded in favour of the PCBU having to ensure appropriate chemical safety competency under the general training provisions of the HSW Act 2015.

How does an enforcement officer quickly and efficiently determine the competency of chemical workers without an Approved Handler certificate?

Chemical suppliers have yet to hear a valid reason for removing this sensible requirement which we believe undermines the government's Safer Workplaces strategy.

Consequently, we strongly recommend employers continue to maintain approved handler competencies for staff involved with other than trivial quantities of product.

Revised regulations

Revised hazardous substances regulations coming into force on 1 December 2017 include progressively replacing comprehensive, industry developed HSNO Approved Codes of Practice (using the same robust process as international Standards) with simplified good practice guides and safe work instruments, which can modify international best practice criteria and not offer similar legal protection.

As changing performance standards and compliance requirements are identified, our members will be advising their customers of preferred best practice compliance solutions.

Meanwhile, Responsible Care NZ continues to press for the promised (and now critical) Phase II chemical management review, addressing the faltering test certification regime, updating by reference key international performance standards reflected in our chemical management legislation and discussing options for better supporting anxious employers struggling in the regulatory morass.

To their credit, regulators are belatedly seeking a strategic framework to better focus on learning from incidents that went right, rather than wrong.

Identifying and prioritizing risks critical to achieving safer workplaces will facilitate synergy between regulators and the regulated, encouraging and facilitating compliance with increasingly effective support services.

Responsible Care NZ is again offering to support WorkSafe NZ roadshows explaining the key changes to employers, particularly SME operators, together with identifying chemical safety training and proven compliance tools reflecting best industry practice.

Daunting challenge

A safe and healthy workplace is a daunting challenge for every employer, yet attracts little interest from politicians.

Reducing child poverty and homelessness and improving health, education and infrastructure are all critical to our national well-being and self-worth.

Keeping people safe at work also requires commitment, together with lateral thinking and innovative solutions, not simply more regulation.

We cannot simply regulate superior health and safety.

If we could, then declaring road fatalities illegal would presumably have prevented the loss of 333 men, women and children on our roads in 2016 (already overtaken by this year's toll of 367 fatalities to date).

Neighbouring Singapore has just launched a 'Vision Zero' campaign to reduce workplace fatalities from 1.9 (in 2016) per 100,000 workers to less than 1.0 by 2029.

A worthy aspiration with details yet to come.

Rather than more regulation, how about acknowledging proactive industry sectors and businesses committed to making a difference, rather than threatening punitive punishment?

Given the majority of chemical incidents and resulting harm involve workers in SMEs, a substantial incentive for SMEs meeting and exceeding expectations for safe and healthy workplaces is long overdue.

Worthy of attention from our new government?

Responsible Care NZ provides practical products and services to enable compliance with New Zealand's world-class chemical management regime. Talk to us today about your compliance requirements.

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Asbestos safety management made simple

WorkSafe has created a one-page visual graphic to clear up any confusion about safety management systems and help make it easy to see what's required.

The term safety management system conjures up images of a complex document that is in addition to the work that you already do.

But a look at the graphic shows that the majority of the system is made up of the plans, procedures and tasks you do already.

The document was produced off the OHSAS 18001 standard but applies just as effectively for the AS/NZS 4801.2001 standard.

Key dates for licence-related applications

04 January 2018

All new licence applications should contain the pre-requisites - training records and evidence of a certified safety management system - to be processed.

If it is not provided, your application will not be processed until this information is provided.

WorkSafe will also cease issuing any licences with the transitional conditions from this date.

04 February 2018

Requests for supervisors to be added to existing licences must include proof of training from this date to be processed further.

Any Class A licence holder who wishes to change to Class B must have applied for their Class B licence by 04 February 2018 to ensure it is processed in time for 04 April 2018.

04 March 2018

All transitional requirements should be provided by this date to ensure that the licence is re-issued by 04 April 2018.

Obviously, you will still need to discuss your situation with your auditor to understand what else they want to see.

Find an Auditor

In case you have not found an auditor – there is a list on the WorkSafe FAQ page to help you find one.

Remember, that this list is provided without any endorsement of any of the companies.

Costs of certification

You may have heard rumours that it's cheaper and easier to get certified under a generic scheme.

Regardless of which scheme your safety management system is certified under, the assessment body must take into account the specific requirements of the asbestos regulations.

The WorkSafe scheme makes things easier for the certification body to do this, so the regulator advises you to be sceptical of any assessment body claiming this.

WorkSafe is working with JAS-ANZ to ensure that assessment bodies carry out their work properly under its scheme.

It is unable to provide you with a similar assurance with regard to certifications under the generic scheme.

WorkSafe standard

WorkSafe worked with JAS-ANZ and industry to produce a new accreditation scheme specifically for Class A removalists, based on OHSAS 18001.

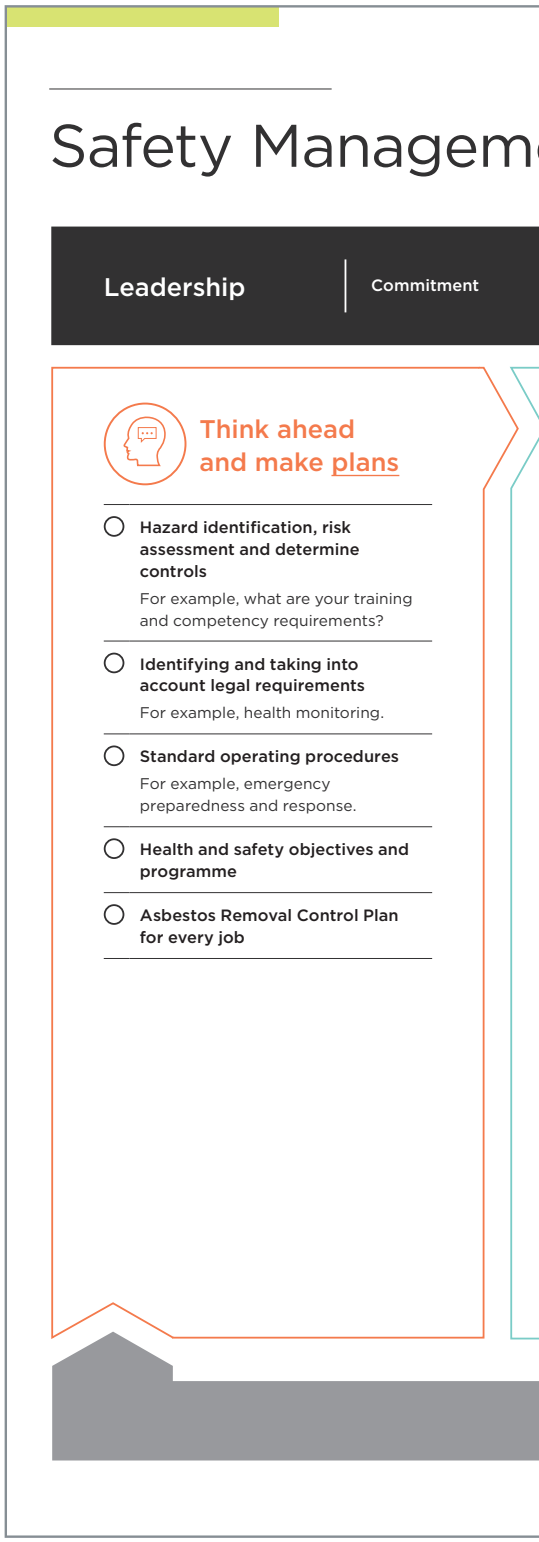
It is more specific to the work of Class A asbestos removalists and provides you with greater assurance that your safety management system is fit for purpose.

WorkSafe recommends that you have a look at the document, even if you are not being audited to this scheme, as it is loaded with links back to the ACOP.

It is free to read and may be useful even if you are being audited to the generic AS/NZS 4801.2001 or OHSAS 18001 standards.

Please note that WorkSafe has not prescribed the use of any scheme.

You are free to choose any scheme that is recognised by JAS-ANZ and is audited under the AS/NZS 4801.2001 or OHSAS 18001 standards.



Training update

There is still a shortage of New Zealand-based accredited training courses available.

The Australian-based courses are a great way to be ready when the transitional arrangements in the regulations expire on 4 April 2018.

Greencap is presently the only provider who can train to the NZQA standards.

WorkSafe is working with industry to get additional training providers, and will keep you updated on this.

ent System (SMS) – Asbestos

Establish health and safety policy | Establish resources, roles, responsibility, accountability, etc | Responsible for health and safety management system | Review performance of the SMS

Do what you planned

- **Competence, training and awareness**
  For example, workers are trained and certified.
- **Communication, participation and consultation**
  For example:
  - consult when planning work
  - discuss health risks with workers
  - provide ARCP to affected parties
  - notify WorkSafe of removal work.
- **Operational controls**
  For example:
  - controls to eliminate or minimise airborne asbestos fibres
  - delineate removal area and display warning signs
  - supervision of work
  - waste disposal.
- **Documentation**
  For example, all operational controls.
- **Control of documentation**
  That is, ensure version control, etc.
- **Emergency preparedness and response**
  For example, notify WorkSafe.

Check that your plans work

- **Monitor and measure health and safety performance**
  For example:
  - test and monitor enclosure for leaks
  - health monitoring
  - air monitoring
  - clearance inspection.
- **Evaluate compliance**
- **Investigate and analyse incidents**
- **Take corrective action**
- **Control records**
  For example:
  - keep ARCPs
  - keep training records.
- **Regular internal audit of system**

Act on any issues and improve

- **Health and safety performance**
- **Health and safety system**

Continuous improvement cycle

CLICK HERE TO DOWNLOAD THIS GRAPHIC

ACC WSMP (workplace management practises)

WorkSafe has had a few companies asking if it will accept the now discontinued ACC WSMP as evidence of a certified safety management system.

However, it's not able to accept this scheme as the ACC WSMP is not presently recognised by JAS-ANZ.

WorkSafe will accept any JAS-ANZ accredited scheme that is certified to the AS/NZS 4801:2001 or OHS 18001 standards.

The decision rests with JAS-ANZ on the schemes they deem comparable with the standards.

JAS-ANZ can recognise the accreditations of other signatories of the International Accreditation Forum, such as ISO.

If you provide WorkSafe with written confirmation from JAS-ANZ that they recognise the certification body who audited your safety management system, it will recognise them too.

You will need to seek this written confirmation from JAS-ANZ: they can be contacted on: contact@jas-anz.org.

If you currently hold a WSMP, then it could be worth exploring the audit costs with a JAS-ANZ accredited auditor to check if there are areas which can be streamlined based on prior work completed as part of the WSMP.

WorkSafe tests out the new enforcement measures

The Health and Safety at Work Act 2015 introduced a number of new and wider-ranging enforcement and compliance measures for the regulator, note Graeme Tanner and Joseph Williams

In addition to substantially higher sentencing bands for breaches of health and safety obligations, WorkSafe New Zealand (WorkSafe) was given a new tool to ensure workplace compliance – enforceable undertakings.

This article examines WorkSafe's approach to these new enforcement measures in light of recent developments and examines the implications of the changing landscape of health and safety.

We look at the first application of an enforceable undertaking, as well as the first sentencing under the Health and Safety at Work Act (the HSW Act), where the court set a starting point for a fine at between $400,000 and $600,000.

Enforceable undertakings

An enforceable undertaking is a legally binding agreement between a duty holder and WorkSafe.

The purpose of such an undertaking is to focus the duty holder on various tasks that they need to carry out to fix an alleged breach of health and safety standards, and/or to prevent a similar breach from occurring in the future.

In appropriate cases, a duty holder under investigation for contravening the HSW Act may propose an enforceable undertaking as an alternative to prosecution.

WorkSafe has the right to decide whether to accept an enforceable undertaking, and if they do the wording of the enforceable undertaking will be negotiated between WorkSafe and the duty holder.

The factors that WorkSafe will consider include:

- the nature of the alleged contravention, including the seriousness and potential degree of harm
- the views of any victim of the breach
- the views of the workers and their representatives
- the duty holder's conduct in respect of mitigation and remedial action
- and the duty holder's past performance and history of compliance with health and safety legislation.

Any proposed undertaking needs to provide for a significant improvement to the duty holder's activities.

It will not be sufficient to enter into an enforceable undertaking that only goes so far as compliance with the current legal requirements, it must improve the duty holder's practices beyond the minimum level.

The aim is to deliver real benefits to the workplace, industry or community beyond that achieved through other enforcement methods.

Additionally, the person proposing the enforceable undertaking needs to acknowledge the harm that has occurred and its impact; however, the giving of an enforceable undertaking does not constitute an admission of guilt by the person giving it.

Undertakings in practice

WorkSafe first had cause to consider enforceable undertakings under the HSW Act in relation to a widely reported accident during a production of 'Sweeney Todd' at an Auckland high school.

During the production, Sweeney Todd, a barber, cuts the throats of his victims whilst shaving them.

The accident in question occurred when two students were seriously injured, suffering lacerations during a performance of the production.

After investigating the incident, WorkSafe alleged that the school had breached its obligations under the HSW Act by failing to ensure, as far as was reasonably practicable, that the health and safety of students was not put at risk during the production.

However, rather than choosing to prosecute the school, WorkSafe accepted an enforceable undertaking proposed by the school.

In a statement at the time, WorkSafe said the school had "*taken responsibility and accountability for its breach of the law and is taking a number of actions to address the issues that led to this serious incident*."

Describing the incident as a "*serious but isolated accident*," WorkSafe considered that the enforceable undertaking was the most appropriate mechanism to address accountability in the circumstances.

It's worth noting that in the case that an enforceable undertaking that is accepted by WorkSafe is breached by the duty holder, WorkSafe retains the right to prosecute in relation to the incident that occasioned the undertaking in the first place.

"This highlights the need for duty holders to not only identify potential hazards, but act immediately to address them"

WorkSafe NZ v Budget Plastics Ltd

More recently, in the case of Budget Plastics Ltd, WorkSafe had cause to test the more punitive fines introduced for successful prosecutions under the HSW Act.

Facts

Budget Plastics is a plastic recycling company which operates a plant in Palmerston North, processing plastic materials into a reusable form.

The incident in question involved an employee getting his hand caught in the auger of a plastic extrusion machine.

At the time, the employee was loading the machine with waste plastic and became entangled in the bag, lost his balance and his left hand was dragged into the auger.

The employee's hand was effectively amputated from his forefingers down to his wrist.

Of note, the company had previously hired a health and safety consultant, who had highlighted the risks posed by the extrusion machine, among others in the plant.

While Budget Plastics had begun taking remedial steps to address the risks identified, the recommendations regarding the extrusion machine had not yet been adopted at the time of the accident.

WorkSafe's investigation found that the machine was insufficiently guarded, and there were no emergency stop buttons within easy reach of the operator.

The chute above the auger was also shorter than is required by the relevant safety standards to ensure that the hazard is 'out of reach' of the operator.

It also found that Budget Plastics did not have adequate systems, procedures or policies in place for identifying and managing hazards in the workplace.

As a result of its investigations, WorkSafe decided to prosecute Budget Plastics, who pleaded guilty to failing to ensure, so far as was reasonably practicable, the health and safety of a worker.

Reparation

Judge Large first considered reparations for the employee in respect of the injury suffered and noted that the HSWA Act does not affect the provisions of the Sentencing Act 2002 that relate to making reparation.

The court therefore considered previous similar cases involving the partial amputation of a hand and fixed reparation to the employee of $37,500.

Assessing level of fine

Of interest in this case was the approach taken by the court in respect of imposing a fine under the new sentencing bands.

Judge Large, in applying the increased culpability bands under the HSW Act, provided an interesting analysis of the status of previous health and safety cases and also Australian cases as precedents when considering the new provisions.

Despite the HSW Act having all but adopted the Australian approach, the court stated the unique framework of ACC in New Zealand and the approach of the Sentencing Act 2002 mean that sentencing in Australia and New Zealand take place on "*different playing fields*" (although Judge Large also noted that appellate courts would be better placed to assess the potential influence of Australian case law).

On that basis, the judge was not persuaded by Budget Plastics' submission to apply a starting point consistent with comparable Australian cases.

In relation to existing case law, the court was asked to consider the previous leading case which set out various culpability factors for sentencing under the former Health and Safety in Employment Act.

The court found that this has largely been subsumed by section 151 of the HSW Act, which states that the court must have particular regard to:

- the purpose and relevant provisions of the Sentencing Act 2002
- the risk of, and the potential for, illness, injury, or death that could have occurred
- whether death, serious injury, or serious illness occurred or could reasonably have been expected to have occurred
- the safety record of the person to the extent that it shows whether any aggravating factor is present
- the degree of departure from prevailing standards in the person's sector or industry
- and the person's financial capacity or ability to pay any fine.

The court accepted WorkSafe's submission that the meaning of what is 'reasonably practicable' under the HSW Act expands on the above considerations and should be amalgamated into sentencing considerations.

On this basis Judge Large assessed Budget Plastics' culpability to be moderate, and confirmed that a starting point for the offending could range between $400,000 and $600,000 under the HSW Act.

Reduction of fine (Sentencing Act)

With this starting point, the court turned to considering possible mitigating factors and found that there was a 30 per cent discount available to Budget Plastics for *"reparation, co-operation, remorse, remedial steps and the defendant's prior good record."*

An additional discount of 25 per cent was also applied in respect of Budget Plastics' guilty plea.

On this basis, Judge Large found that the end fine would be between $210,000 and $315,000.

In accordance with the Sentencing Act, the court then turned to consider the ability of the defendant to pay any fine ordered and was persuaded by uncontested evidence from Budget Plastics' accountant that any fine of more than $100,000 would cause significant difficulties for the business.

Taking this into account, Judge Large held that "*this case is not so severe as to justify a departure from the need to impose a fine within the offender's ability to pay (i.e. not a case where the defendant should be put out of business).*"

Accordingly, the judge set the fine at $100,000, based on evidence that this was the maximum amount the Budget Plastics could realistically pay.

Recommendations for employers

These cases provide a useful indication of WorkSafe's approach to the new enforcement measures provided by the HSW Act.

Duty holders should be conscious of their obligations in respect to identifying and managing potential hazards in the workplace.

In the event that an incident occurs that gives rise to an alleged breach, the enforceable undertaking measure can, in appropriate cases, be a viable alternative to prosecution.

It should also be noted that in the Budget Plastics case, the court made special mention of the fact that Budget Plastics was aware of the obvious hazard that resulted in the worker's injury and, by virtue of the health and safety appraisal conducted prior to the accident, been effectively placed on notice of a potential hazard that needed addressing.

This highlights the need for duty holders to not only identify potential hazards, but act immediately to address them.

Finally, while the fine in this case was reduced to $100,000, a significantly higher fine would have been imposed if Budget Plastics had the ability to pay it.

Given that insurance cover cannot be obtained for fines of this nature, every duty holder should be aware of the potentially significant consequences to their business if they breach their health and safety obligations.

Graeme Tanner is a senior solicitor and Joseph Williams a law clerk at Duncan Cotterill, a full-service firm with locations in Auckland, Wellington, Nelson and Christchurch

Identifying and remedying land contamination a tricky process

Naturally occurring contaminants in New Zealand and are more common than most people think, according to Dr Dave Bull

Perhaps more importantly, he says, it's not easy to identify, manage or remediate these hazards, which are prevalent throughout the country.

"The issue falls neatly between regulatory regimes that are either disinterested or incompetent," the HAIL Environmental contaminated site consultancy scientist maintains.

New Zealand has plenty of natural hazards, but other dangers such as chemical hazards are often overlooked.

"For example, when Ruapehu erupted in 1995 over 2,000 lambing ewes and wild deer were killed by acute fluoride poisoning from ashfall," he recalls.

"There's also other dangers such as an abandoned open-cast asbestos mine in Kahurangi National Park."

Geothermal areas make great scenery, and are a wonderful source of energy.

"But they also tend to give off hydrogen sulphide gas, which is highly poisonous," Bull notes.

"There have been at least two deaths from hydrogen sulphide poisoning in Rotorua in the last decade, possibly several more – apparently, it is hard for coroners to be sure."

Then there's Spartina grass, an introduced species that grows in salty marshes.

"In the US Eastern seaboard Spartina salt marshes sediment can acidify to pH 1 in early summer," Bull explains.

"Neither steel, concrete or wood can handle that type of acidity – let alone humans."

Mineral hazards include arsenic and antinomy, two trace elements which are generally rare but can be found at a number of locations around New Zealand.

"These are quite closely related elements, in the same column of the Periodic Table as phosphorus and with some similar properties, which as it turns out mean that instead of being essential for life, they are highly toxic," Bull observes.

These two elements are present in North Island volcanic-hydrothermal zones, the same zones that host gold and silver or mercury. "Possibly selenium and thallium might be elevated here as well."

These rare elements are being forced through fractured rock systems under great heat and pressure, and precipitating out as veins of massive sulphides.

"Around Te Aroha the geochemistry is a little different, tending to base metals like lead and zinc that are still potentially quite toxic – which is what gave us the Tui Mine remediation project."

Southern sites

Nor is the South Island immune, as sometimes arsenic and antimony occur along with gold in hydrothermal vein systems and sometimes on their own.

"There was even a New Zealand Antimony Company set up to mine at Endeavour Inlet in Marlborough - it didn't do too well, and the abandoned mine workings remain toxic to this day," Bull recalls.

"Apparently, there used to be a couple of picnic tables there until the ground underneath turned out to be 20,000 mg/kg antimony."

Thames suffered as a result of the Coromandel gold rush of the 1870s, when the miners dug into the hills and hauled or washed the spoil or "mullock" onto the mudflats.

The Moanataiari subdivision was built 100 years after the bonanza by putting a seawall around those mullock heaps and flattening them out.

"A regional council scientist took a soil sample from the school playing field as part of a regional background study in 2011," Bull says.

"It transpired that the surface soils were taken from these same goldmining hills and have the same general composition, elevated in arsenic and lead, a touch of thallium and possibly even silver."

The following year the whole subdivision consisting of some 200 houses was found to be well over soil contaminant standards for arsenic – about 50 per cent on the west side and about 12 times on the east side.

The only solution is to dig out all the topsoil and subsoil to at least 300 mm depth, preferably at least 500 mm.

"Ideally, you'd lift all the houses, re-lay all the services and put the houses back but that would cost up to $80 million," Bull explains.

"It's a reasonable bet that much of the surrounding area, possibly including the coastal sediments, is in a similar state."

Wine woes

Further afield, one Central Otago vineyard had an arsenic measurement of 60 mg/kg, three times the residential soil contaminant standard.

"Arsenic levels in the wine have been routinely tested and they are very low, while the water for the vineyard and the associated houses comes from a bore down near the river that is also routinely tested and very clean," Bull assures.

"The issue falls neatly between regulatory regimes that are either disinterested or incompetent"

There are several possible anthropogenic sources of arsenic in the vineyard, including historic sheep dip, 19th century rabbit poison, treated timber posts, orchard insecticide and gold mining.

But the consultant eliminated all of them.

"Firstly, the arsenic remains elevated to at least 600 mm below ground level," Bull notes.

"Secondly, the sheep dip has always been several hundred metres away, downhill."

The site history is well known and it was always a high country pastoral lease.

"Never any fruit trees on this site, never any mining."

Moreover, the arsenic's not from a treated timber post because copper and chromium are at background levels and the arsenic level doesn't change a metre in any direction.

Bull believes it came from a shingle fan offsite to the south and above the last fence, judging by arsenic readings of two to five times the 20 mg/kg residential soil contaminant standards.

"I never found the ultimate source – it seems to go underground," he admits.

"But it's pretty clear we've found another natural source."

The site isn't as big as Moanataiari, but it would be equally difficult to remediate or manage as there might be up to 30,000 tonnes on the site.

It would obviously be cheaper to bring in clean soil and cap it, but that would need at least 20,000 tonnes of fill and is simply out of the question.

"We have no idea how many more of these sites there are," Bull adds.

He notes that neither of these sites was identified using the resource management framework and neither is being managed using the resource management framework.

"The Health Act cannot cope with this kind of situation and the Building Act somehow never does."

Legislation lacking

The Health and Safety at Work Act appears similarly ineffective as The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health only applies to land contaminated by 'hazardous activities and industries.'

"That is not production land, and the standard only applies when someone wants to change its use, subdivide, or dig up more than five per cent of it," Bull says.

The standard doesn't capture either Moanataiari or the Central Otago vineyard.

"So it certainly doesn't require

either site to be identified, remedied, mitigated or avoided," he observes.

"In fact, both sites were found more or less by accident. There was no such thing as contaminated land when the Health Act 1956 was written.

"Provisions relating to abating nuisances might be applicable, but it's stretching credibility."

Clause F1 of the Building Code has "perfectly good provisions" for identifying 'hazardous agents on site, explicitly including 'naturally occurring features of the land', and requiring remedial action.

"I have never seen it invoked, and I don't expect to," Bull admits.

"It's possibly the worst regulated regulation in New Zealand."

Nor does the Hazardous Substances and New Organisms Act as it is "extremely difficult" to decide whether soil is a hazardous substance.

One novel approach that's been useful at both these sites has been bioavailability assessment.

"Bioavailability is a very useful concept, applicable to lots of environmental problems," Bull says.

The term refers to the extent to which a chemical moves from the environment into an organism. "For example, we could talk about phosphate fertilisers having different bioavailability, because some of them dissolve quickly and are taken up by crops quickly while others take much longer."

Generic models assume 100 per cent human oral bioavailability if someone ingests dirt, but in practice Bull says that is rarely the case.

"Only part of the arsenic is taken in as the soil passes through the gastric system, and the rest is eliminated in the usual way."

Studies using piglets show that the bioavailability of arsenic depends on the source of the arsenic, its chemical form, the soil particle size, and bulk chemical properties of the soil, notably iron and phosphorus content.

"We have no idea how many more of these sites there are"

Soil studies

USEPA studies, weighted towards mining soils because they have a lot of high-arsenic geology in places like Montana, suggest that it is actually unusual for arsenic bioavailability to be higher than 60 per cent.

"By way of a carefully designed study, that factor can be measured for a particular soil and incorporated into a risk assessment," Bull advises.

There is also a laboratory test developed by the Solubility and Bioavailability Research Consortium (SBRC) that simply exposes the soil to stomach-like conditions – agitating for an hour in warm acid and analysing what dissolves out.

"These investigations need a high degree of statistical confidence, which means tens of samples from each soil type," Bull adds.

They also need a high degree of chemical confidence, which means a lot of supporting chemical and mineralogical analysis.

"And they need a lot of quality assurance and quality control because the possibility of unfortunate error must be minimal."

Even building bioavailability into the site-specific risk assessment takes specialist skills, he admits.

"It's unlikely that a bioavailability assessment can be done for less than $50,000 or in less than three months, and those figures will be wildly optimistic for some sites."

Finally, the approach is only valid for arsenic and lead in relatively ordinary forms – it has not been proven to work for antimony or any other potentially toxic trace element.

"Since antimony is much less common than arsenic, it will probably be 10 or 15 years before anyone gets around to showing whether or not SBRC is applicable for it," Bull believes.

"Even then, we may not like the answer – antimony compounds can be quite soluble, suggesting they might not be difficult to take up into the body.

It also applies only for ingesting soil and soil-derived dust.

"Inhaling very fine particles into the lungs is a very different exposure route, and we don't yet know very much about pulmonary bioavailability," Bull admits.

"Contaminants in drinking water are typically 100 per cent bioavailable."

Luckily, soil arsenic bioavailability at Moanataiari was usually around 27 per cent and a mere six per cent at the Central Otago site.

However, these results didn't make the problem go away – in both cases a significant proportion of the land still wasn't acceptable for residential use, even with bioavailability taken into account.

"But they did make the problem considerably smaller and correspondingly more manageable."

Ultimately, it's not easy to identify, manage or remediate these hazards as the issue falls neatly between regulatory regimes.

"That will not save you from health and safety responsibilities," Bull concludes.

"And if it does come to remediation then cost, time and difficulty may be extreme."

Safer soap simple solution for suffering skin

Research shows that up to 40 per cent of workers will suffer from occupational dermatitis at some point in their working lives

People often read food labels to ensure a product they're consuming doesn't contain harmful ingredients such as preservatives, trans fats, and artificial sweeteners, but how often do they look at the ingredients in hand soap?

Industrial hand cleanser usually includes petroleum distillates, hydrocarbon solvents produced from crude oil that include mineral spirits, kerosene, white spirits, naphtha, and Stoddard solvents.

These solvents are produced in oil refineries at the same time as automobile fuel, heating oil, and chemical feedstocks.

Many industrial cleansers use them for the removal of heavy oil and grease, tar, and waxes, meaning you could be washing your hands with them.

Petroleum distillates can have a negative effect on the body if they come in contact with the skin. Short-term exposure can cause skin irritation, but the effects from long-term exposure are even scarier.

Prolonged exposure to petroleum distillates is known to cause skin drying or cracking, a condition known as dermatitis.

This occurs because the solvents defat pathways around the skin cells, causing inflammation and skin dehydration.

Warning labels

Some manufacturers even place warning labels on their products, prompting users to use caution.

For example, in 2001, the Zep Manufacturing Company issued a warning regarding its liquid hand cleanser, product 0925, which stated, "Skin which is repeatedly defatted by contact with this product may be more susceptible to irritation, infection or dermatitis."

In addition to contact dermatitis, petroleum distillates are often contaminated with carcinogens which are absorbed through the skin, potentially leading to harmful levels of toxins in the body.

In fact, the European Union banned certain petroleum distillates in cosmetics and personal care products due to concern surrounding these possible human carcinogens.

Grit is often added to industrial hand cleansers to help remove substances like oil, dirt, and grime. However, there are a number of scrubbers such as pumice and sand that can cause micro-abrasions, or tears, in the skin.

Pumice, a natural volcanic rock that consists of rough volcanic glass, is used in construction, housekeeping, polishes, erasers and beauty salons as an abrasive agent.

Without a doubt, this common ingredient does its job in these workplace environments to remove contaminants from objects.

However, using pumice on your hands will remove the skin, and most people can't afford further damage to their hands.

Super scrubbers

There are better scrubbing agents available such as cornmeal, ground olive pit or walnut shell. These scrubbers are natural and act as the ideal ingredients to gently yet effectively cleanse the skin.

Furthermore, there are environmental impacts to using pumice in hand cleansers. In comparison to pumice, shown to settle in ducts and pipes causing blockages, natural scrubbing agents like corn meal, olive pit or walnut shell are easily rinsed away, not prone to swelling, and will therefore not cause plumbing blockage.

In addition to the physical impact dermatitis can have on a person, it can also create a financial burden.

According to the US Centers for Disease Control and Prevention (CDC), up to 40 per cent of workers will suffer from occupational dermatitis at some point in their working lives.

Dermatitis can potentially become a financial burden to the employee, as well as the employer.

According to the U.S. Bureau of Labor Statistics (BLS), 50 per cent of all working time lost to industrial illness is due to dermatitis.

Just one case of occupational dermatitis can cost an employer approximately $3,500 in workers' compensation claims, and an average disability of 23.9 days, according to the *Journal of the American Medical Association*.

As with all occupational disease prevention is the key, and with most cases of occupational dermatitis, prevention entails minimizing or eliminating skin contact with chemicals or other unhealthy, damaging ingredients to help prevent the disease.

Just like there are healthy ingredients used as substitutes in recipes, there are also alternatives when it comes to hand soaps.

It's important to embrace a product that takes into consideration the impact it has on hands, yet is still powerful and effective enough for the job.

Low-solvent and solvent-free cleansers are a safer option than those containing petroleum solvents. Bio-scrubbers such as walnut shells, cornmeal, and olive pit are effective without stripping or causing damage to the skin.

Once your team learns more about prevention, pick the best-suited hand cleanser and dispensing system using this quick reference guide to keep your crew clean and compliant.

The appropriate products should be available and accessible to workers where and when they are required.

Creams should be located in key areas such as changing rooms, work area entrances, washrooms and hand washing stations.

Soap is designed to clean hands, not harm them. However, the soap you're using could be doing just that.

Employers and facility managers have a legal responsibility to ensure that they provide a safe working environment for their employees. Addressing hand hygiene is an important part of this.

The type of hand cleanser selected is vitally important to skin health. A common misconception is that a hand cleanser's performance is measured by its ability to clean hands aggressively.

In actuality, most cleansers unnecessarily far surpass the user's actual cleansing power requirements.

By selecting an effective product that does not contain skin damaging ingredients, you, in turn, can wash your hands of the risk and damage of dermatitis.

How English language ability affects vehicle accident risk

Our workplaces and road signs may have signage in clear English but that doesn't mean they're always understood by every driver on the road, Darren Cottingham warns

Variable signs give important messages about road conditions ahead - not being able to read the signs causes an inconvenience at best and danger at worst

Imagine you are driving through Iceland, where it's a different language with a number of additional letters not used in our Roman alphabet.

How much Icelandic do you know?

Would you know, for example, what STANS VEGGJALD means when written on a warning sign with no other clues?

These are the same issues that two segments of our population have with our English signs: those who have low literacy and those who are new learners of English (some new migrants, seasonal workers and tourists).

More than 20 per cent of our population have serious, restricting literacy issues and around 40 per cent have significant literacy issues according to an OECD study.

This was backed up by research from agricultural training organisationt, AgITO.

Chances are, you work with someone with English language literacy issues.

For these people, passing a driving theory test is challenging and it's more difficult to give them ongoing training if that training includes written tasks or information.

More than 20 per cent of our population have serious, restricting literacy issues and around 40 per cent have significant literacy issues according to an OECD study

Non-native speakers a particular concern

We also have to consider people who are not native English speakers.

Citizens of 24 countries, 18 of which drive on the right and only seven of which speak English as a primary language (Australia, the UK, Hong Kong, the US, Canada, South Africa and Ireland), can simply present their home country's driver licence and receive a New Zealand licence in return without having to take a theory or practical test.

Some of these countries that drive on the right (the US, Greece,

Belgium, South Korea and Portugal) have fatality statistics worse than New Zealand according to figures from the World Health Organisation in 2013. South Africa, which does drive on the left, has the highest fatality rate at over 25 deaths per 100,000 drivers per year compared to around 6.9 for New Zealand.

According to Statistics New Zealand in 2013 over 96 per cent of New Zealanders self-report that they spoke English.

However, for a significant number English was their second language, and while they can speak it they can't necessarily read or write it.

Almost 90,000 people reported they spoke no English at all.

Countries whose citizens can swap their native country's driver licence for a New Zealand licence without having to take a theory or practical test

Australia	France	Japan	South Korea
Austria	Germany	Luxembourg	Spain
Belgium	Greece	Netherlands	Sweden
Canada	Hong Kong	Norway	Switzerland
Denmark	Ireland	Portugal	United Kingdom
Finland	Italy	South Africa	United States of America

Citizens of 24 countries, 18 of which drive on the right and only seven of which speak English as a primary language, can simply present their home country's driver licence and receive a New Zealand licence in return without having to take a theory or practical test

Consequences of not being able to read road signs

New Zealand has many road signs which must be read in English to understand what they mean and there are serious consequences for not understanding them:

- **Road closed** – drivers could end up stuck on a snowy ridge, risking their own lives and those who have to rescue them.
- **Accident** – this sign is put up by police and tells drivers they must slow to 20km/h to reduce the risk to emergency workers. The accident could be around a blind bend with spilled fluids on the road. If a driver continues at a speed above 70km/h then they risk instant loss of their driver licence given that they are driving 50km/h over the limit.
- **Lane closed ahead** – not being able to read this makes the driver reliant on their forward observation of the actual road, which we know is usually poor for the majority of drivers.
- **Flooding** – it's very difficult to see standing water when it's dark. Driving into deep, flowing water means there's a risk of the car being swept away and, at minimum serious damage.

And there are a great many more – turn left at any time with care, road works, keep left unless passing, plus variable message signs which describe the condition of the road ahead or the route to take for a detour.

What can companies do to keep their drivers safe?

A vehicle is a place of work according to the Health and Safety at Work Act 2015, and vehicle accidents are one of, if not the, largest causes of workplace fatalities.

Companies are obligated to take measures to reduce their risks where practical.

Unfortunately, even though driving is one of those risks, most companies don't realise because New Zealand agencies don't keep accurate statistics about the purpose of journeys, i.e. was someone driving for work or recreation?

How many workplace fatalities are vehicle-related?

Worksafe is responsible for monitoring workplace accidents but does not track road accidents unless they meet the definition of 'notifiable.'

The purpose of a journey is not reported for fatal and injury road accidents and no accurate figures are available.

We know from Ministry of Transport figures that around 17 per cent of fatal road accidents and 18 per cent of deaths involve a heavy vehicle, therefore at least 17 per cent of road accidents are work-related.

We also know from Worksafe's notified fatalities that at least 50 per cent of notified accidents are vehicle-related, but there is little, if any, crossover between road accidents as that only adds up to 26 deaths between August 1 2016 and July 31 2017.

We also have to look to Australia to provide reasonably accurate figures.

Safe Work Australia reports that 39 per cent of on-road fatal crashes are work-related and around 65 per cent of all workplace fatalities are vehicle-related.

Therefore it's essential to provide ongoing driver training for any staff members that drive as part of their job whether it's in a company vehicle or their own vehicle.

Even if staff members don't drive for their job, they probably drive to and from work.

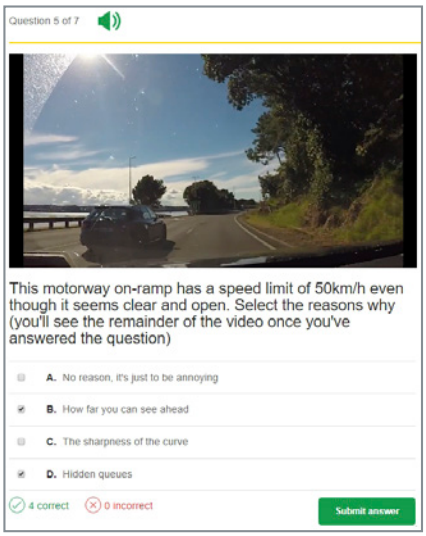
Literacy need not be an issue for ongoing driver training.

DT Driver Training (www.drivertraining.co.nz) has audio recordings of all questions in its online Fleet Driver Plan learning modules, plus a large number of videos.

Literacy Aotearoa (www.literacy.org.nz) and regional literacy providers have resources for workplace literacy and often run Road Code courses for those who need to get a licence.

As well as an obligation to keep their drivers safe, employers should also be interested in reducing maintenance and fuel consumption costs, both of which can be improved by providing effective driver training. Online training is the most cost-effective option.

Given that the cost of providing online driver training is negligible and demonstrates an intent to reduce risk, it's an essential tool for any manager of health and safety, training or fleet vehicles to help a company comply with the Health and Safety at Work Act 2015.



DT Driver Training's Fleet Driver Plan contains a mixture of video and text learning material with audio recordings of all questions and answers to support those with lower literacy

Darren Cottingham is Founder and Director of DT Driver Training, the largest provider of driver theory education in New Zealand

New telescopic boom features inbuilt safety and sustainability

The Haulotte HT28's maximum outward reach of almost 24m makes it ideally suited to tricky and awkward access applications

The new Haulotte HT28 RTJ PRO Telescopic Boom from United Forklift and Access Solutions features the latest advanced safety and sustainability innovations for optimal performance in a range of access and maintenance applications.

The boom lift has a maximum outreach of nearly 24m, below ground reach of 3m and ground clearance of 48cm, is compact, easily transported and offers excellent rough terrain capabilities.

"The HT28 is robust, easy to maintain and suitable for all industries," says United Forklift and Access Solutions National Product Manager – Access Division Andrew Macdonald.

"It is ideally suited to tasks requiring access equipment in industries such as building, construction and infrastructure, ship maintenance, forestry, mining and maintenance of large structures."

The new HT28 boom also has an optional dual-load capacity of 230-350kg.

In the 350kg mode, the platform can accommodate up to 40 per cent extra equipment weight.

The unit also has an oscillating axle, four-wheel steering, hydraulic differential wheel lock, high ground clearance, and gradeability up to 45 per cent.

Safety

The new HT28 comes with inbuilt ACTIV'Screen technology that provides real-time diagnostics and is capable of displaying malfunction resolution, machine settings, maintenance alerts and service intervals.

ACTIV'Screen's on-board fully coloured monitor screen and diagnostic system provides precise information for operators to help avoid unnecessary service calls or field intervention on rental equipment, maximising machine uptime.

By directly accessing the machine parameters and diagnostic information in real time, fault diagnosis is three times faster.

The telescopic boom lift also comes with the next generation of secondary guarding, Haulotte's ACTIV'Shield Bar 2.0, which provides a safety gap to prevent physical crush injuries when the machine is in operation.

ACTIV'Shield Bar 2.0 offers additional protection without compromising productivity.

The HT28s are also fitted with Haulotte's new industry-first ACTIV'Lighting System, which allows loading and unloading to occur at night.

The ultra-high performance lighting system is located at several points around the machine.

The lighting system illuminates controls and the area around the boom so operators can safely carry out manoeuvres in a well-lit environment.

Sustainability

Another innovative new feature fitted to the HT28 is Haulotte's world-first STOP Emissions System for booms that automatically switches off the engine after 90 seconds of idle, reducing running time by up to 20 per cent, and reducing fuel consumption by up to eight per cent.

By automatically stopping and restarting the engine, Haulotte's STOP Emission System reduces engine use and peripheral components by up to 20 per cent.

This extends machine life, extends residual value, decreases fuel consumption and lowers operating costs, and with 20 per cent less noise, permits use in sensitive areas like hospitals and office buildings.

"The innovative safety and sustainability features of the new HT28 make it a truly industry-leading telescopic boom, with useful benefits for a huge range of access applications," Macdonald claims.

Haulotte is Europe's largest manufacturer and supplier of elevating work platforms, with revenue in excess of $1 billion, marketing a full range of self-propelled access equipment ranging from 6m to 43m.

The Haulotte Group is ISO 9001 accredited, and all its products not only meet or exceed the requirements of Australian Standards AS1418.10, they also carry the European CE compliance stamp.

Fight the flames with creative coating

Applying a protective surface coating can minimise or reduce the effect of the excessive moisture, heat and abrasion that can accelerate the deterioration of machinery, vehicles and assets

A Chinook helicopter coated with Rhino Extreme 11-50 FR

One coating material for harsh conditions—including those in a combat zone—supplied by Rhino Linings Australia (RLA) is Rhino Extreme 11-50 FR.

While the material has been available for several years, it was only late in 2016 that the fire-resistant nature of the product received certification.

"The formal certification of Rhino Extreme 11-50 FR has opened up a range of new opportunities for industrial and commercial applications of the product," RLA's Technical Manager Robert Idzes claims.

The spray-applied pure polyurea is suitable for any application, such as a fuel bund—secondary containment area—that requires a fire-resistant surface.

Historically, bunds have been constructed of concrete or brick, but in recent years have been coated with a spray-applied pure polyurea or welded plastic liner to prevent leaks.

Fire is a potential hazard if a leak does occur, especially where fuel, sodium hydroxide, sulphuric acid and other highly flammable materials are stored.

The flame-resistant properties of Rhino Extreme 11-50 FR significantly reduces the burn rate, allowing safety officers and staff time to extinguish the flames before major damage is caused to the liner or catastrophic failure occurs.

"The Rhino Extreme 11-50 FR is the latest flame-retardant product to meet US Federal Aviation Regulation 25 (FAR 25) Flammability testing for aircraft," says Denis Baker, special projects engineer at RLA.

"It also meets UL 94, which is another high standard at the moment for coatings." The FAR 25.853 tests the self-extinguishing performance of materials under fire conditions.

In addition, due its excellent blast mitigation properties—arising from the high tensile and elastic elongation properties of the Rhino Extreme polyurea which enable it to contain and minimise shrapnel damage—the product can be used for military applications.

Barracks, tactical vehicles, temporary structures and buildings can be protected from damage. It can also be used on vehicles and equipment requiring abrasion, corrosion and impact protection, and when applied with a textured finish (R10 dry slip resistant rating) it is ideal for foot traffic areas requiring a non-slip surface.

Mixed in a 1:1 ratio, the material is a two-part, flame retardant, elastomeric, polyurea. The product's flame resistance makes it an ideal coating for numerous applications that require a flammability rating, all the more important as fire regulations become more stringent.

"When considering a coating you have to think about its physical characteristics as well as the physical environment where it will be used"

However, due to the range of substrates—metals, wood, concrete, fibreglass, geotextiles and most plastics—to which the Rhino Extreme polyurea can be applied and the numerous flammability ratings, RLA recommends that testing, certification and approval be considered prior to any application of a coating.

How much flame retardence provided is dependent upon the substrate being coated and the polyurea's thickness and density.

Spray application means that a monolithic, seamless lining is created that conforms to any shape and size.

In a refinery, concrete flooring was sufficient in the past but many now require easy to clean, seamless leak-proof floors to minimise dust build-up, making 11-50 FR an ideal material to use.

Applied to an appropriate thickness, the polyurea coating can withstand tracked vehicle traffic, forklift operations and heavy loads and reduces noise from vibration and impact.

However, Idzes adds that because of the range of substrates, customers should test a small section to determine the suitability of these products for their own particular application.

"When considering a coating you have to think about its physical characteristics as well as the physical environment where it will be used," he states.

RLA produces a range of spray-applied polymer surface treatments that are able to meet the demands of variable climates combined with the often harsh working environments of construction sites, oil rigs and often remote mining facilities.

While RLA has its origins in the automotive industry, the company has also been protecting military vehicles, boats, flooring, buildings, structures and industrial equipment for more than a quarter of a century.

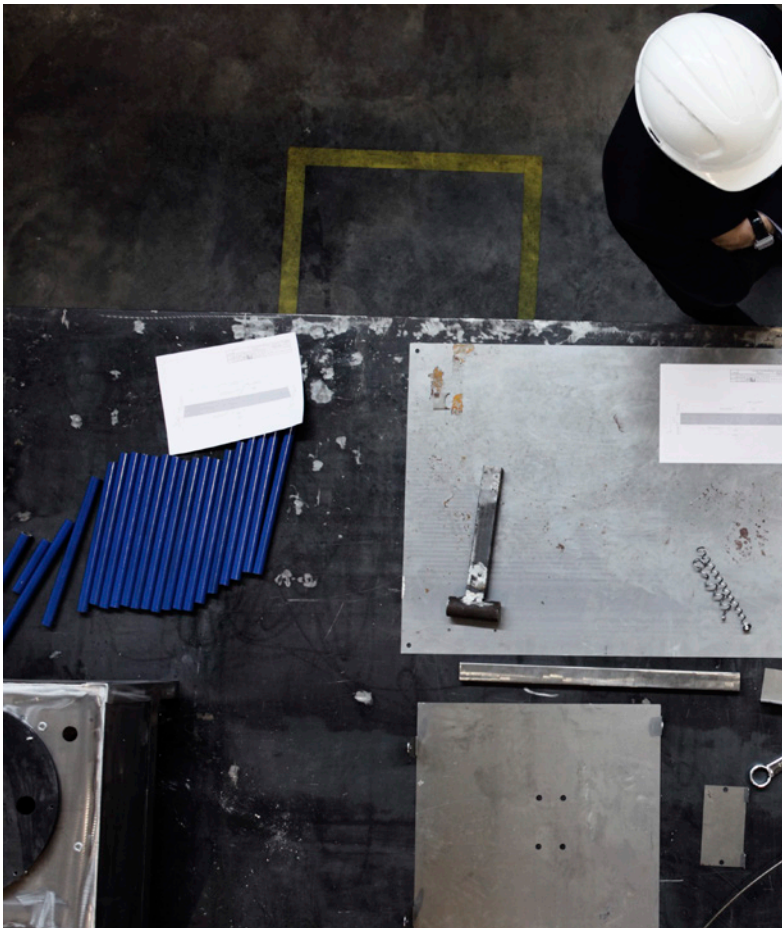
Gold Coast-based RLA has dedicated staff who thoroughly understand the chemistry of the products it supplies. "Their depth of knowledge and experience for which products can be used and in what situations is just a phone call or email away for our applicators and customers," RLA General Manager Morgan adds.

RLA assists its dealers in developing best method procedures and practices for chemical handling and machinery used to apply the company's products.

"Rhino Linings is committed to the development of new technologies, products, and services that offer the best solutions to the needs of our customers, applicators and distributors," Morgan says.

25 signs of an awesome safety culture

Safety culture is difficult to measure - how do you measure values, attitudes and beliefs? Check these 25 ways to tell whether or not your workplace has an awesome safety culture.



1. There is visible leadership commitment at all levels of the organization.
Leadership commitment (or lack thereof) to safety will always show. What your organization's leaders value is typically what gets done. In great safety cultures, leadership proves their commitment to safety through their actions and how they empower others throughout the organization to win with their safety initiatives.

2. All employees throughout the organization exhibit a working knowledge of health and safety topics.
When you value something, it's worth the time and energy it takes you to excel at it. In great safety cultures, all employees throughout the organization have invested in a working knowledge of health and safety topics. In order words - they're competent in safety. They know their roles and responsibilities. They know their stuff.

3. There is a clear definition of the desired culture the organization wishes to achieve.
How do you create movement toward the safety culture your organization wishes to achieve? You set a goal. You write it down. You measure where you're at. You develop a plan to make it happen. It's a simple strategy, yes, but not simplistic. Make sure you develop a plan that includes a clear definition of what your desired safety culture looks and feels like.

4. There is a lack of competing priorities – safety comes in first every time!
Who wins the showdown between production and safety at your organization? Does safety win every time or only when it's the easy and convenient option? Safety needs to win every time or you've developed a toxic culture. It's that simple.

5. There is visible evidence of a financial investment in health and safety.
Safety slogans are great, but creating a winning safety culture requires resources. Improvements need to be made. Problems need to be solved. If funding a safety project is a constant battle and there is no evidence of a financial investment in safety, you may have a safety culture issue.

6. Opportunities for improvement are identified and resolved before a problem occurs.
Proactive organizations identify issues before they become costly problems and injuries. Are you passively reacting to every injury? Or are you proactively finding risk factors and putting control measures in place? Safety leaders that are ahead of the curve identify and resolve issues before a more serious problem occurs down the road.

7. There is regular, facility-wide communication on health and safety topics.
Communication, communication, communication. An internal safety communication process increases awareness of safety topics and transfers knowledge to empower your people to be successful.

8. A fair and just discipline system is in place for all employees.
We live in a sowing and reaping world. There are your actions and there are the consequences. Instituting a fair and just discipline system for safety behaviors is a necessary step to follow through on your claim that safety is important to you.

9. There is meaningful involvement in health and safety from everyone in the organization.
Safety is everyone's job, and everyone needs to do their job well. From the facility manager to the safety manager to the supervisor to the worker on the floor, it takes a team effort to win at safety. Everyone needs to play a meaningful role in the safety process.

10. Managers spend an adequate amount of time out on the shop floor, where the people are.
Great safety leaders spend time out where the people are. It's where the real work gets done — the shop floor. That's where you can find problems. It's where you can talk to operators and get their feedback. It's where you'll be seen (and respected) as the safety leader. You have administrative duties, yes. But the great ones get out there and get their hands dirty.

11. Participation rates are at an all-time high, indicating that employees are highly motivated and

your marketing of health and safety initiatives is effective.
Safety success tends to breed more success. Safety culture is the vehicle that drives this phenomenon. When participation rates are at an all-time high, you've been able to build buzz and positive momentum for your future efforts. *Keep it going.*

12. Employees are actively engaged in health and safety initiatives, producing tangible results for your company.
Are your employees engaged in health and safety initiatives? Or are they dismissive, leaving you wondering if you're getting through at all? Engaged employees are more productive, giving you tangible results and feedback.

13. Your employees report high job satisfaction due to the company's commitment to their health and well-being.
Employee retention and engagement is a focus point for organizations around the world, and rightfully so. With the skills and talent gap growing wider and wider as baby boomers retire, engaging your workforce through excellence in health and safety builds culture. Do this right and you'll find yourself with highly satisfied employees and the safety culture you were striving toward.

14. Safety is the first item on the agenda of every meeting.
Is safety at the top of your agenda sheet? If not, either put safety first or send a loud and clear message to everyone at the meeting that you don't truly care.

15. Employees feel comfortable reporting safety issues to their supervisors.
Do your employees feel comfortable reporting a safety issue to supervisors? Or do they feel like they will be ignored or (even worse) punished for coming forward? This is a huge indication of the culture you're moulding. Employees should feel encouraged and be met with praise when they report safety issues.

16. Regular, detailed audits of the company's health and safety programme are conducted by an external auditor.
Great safety leaders are confident enough to be audited by an external auditor. It's one thing to do an internal audit (and pat yourself on the back). It's another thing to bring in an outsider to do an external audit (and meet the challenge head-on).

17. Rewards and recognition of good behaviors are regularly given and serve to motivate continued health and safety performance.
Positive safety behaviours should be awarded and these awards should motivate continued health and safety performance. You know what employees value but don't get nearly enough? *Recognition of a job well done*. Recognize and reward positive behaviors. The word will get out.

18. Safety is a condition of employment.
Can you really afford an employee who thinks they are above the rules when it comes to safety? Lives are on the line. Safety should be a condition of employment. If your organization values safety above all else, you make safety a fundamental value. Any employee who doesn't share this value should be asked to leave and go work somewhere else.

19. Managers and supervisors respond positively to safety issues that are raised.
Good managers and supervisors understand that when employees raise a safety issue, it's another opportunity for improvement. This opportunity mindset allows them to respond positively to the employee that raised the issue and escalate the issue far enough to get a solution put in place.

20. Safety is viewed as an investment, not a cost.
Companies that perform well in safety also perform well in business. Knowing the true value of safety, organizations with a great safety culture view safety as an investment, not a costly and dreaded expenditure.

21. A high standard exists for accurate and detailed reporting of injuries and illnesses – nothing is swept under the rug!
This is a big one. Nothing should be swept under the rug. In great safety cultures, transparency and integrity is the only way to conduct business. This is about living in reality and confronting the challenges that exist in your workplace.

22. There is a concrete definition of what success looks like for your health and safety programme.
How will you know when you've achieved your goals? You'll know because you have set measureable goals and you know exactly what success looks like.

23. The organization has the willpower to make major changes when necessary.
Quick fixes and easy solutions are great. But your organization's willpower will be tested when you need to make a major move. In great safety cultures, good intentions are backed by the willpower to endure major changes, expensive investments and hard decisions.

24. Safety issues are dealt with in a timely and efficient manner.
A functioning safety process deals with issues in a timely and efficient manner. Hazards are identified and controls are put in place within a reasonable time period. Knowing injury risks exist and not doing anything about them is a sure sign the organization has become complacent and culture is rapidly deteriorating.

25. All employees throughout the organization are empowered with the necessary resources and authority to find and fix problems as they see them.
Your safety process should have clearly defined roles and responsibilities. In order for the people throughout your organization to successfully accomplish their role in the process, they will need resources and authority to make decisions.

Part of the top floors of the Grenfell Tower block of council flats in which at least 80 people are thought to have been killed following a fire in Kensington, West London

Are New Zealand's buildings safe from the effects of fire?

The recent Grenfell fire tragedy in the UK is a timely reminder about the importance of the fire protection features that exist in the buildings we live and work in, says Dave Hipkins

While I don't claim to be an expert with regards to the fire regulations or construction techniques used in the UK, I do have a good grasp on the fire protection industry in New Zealand, its current state and the rules and regulations in which it is bound.

I am of the opinion that New Zealand's commercial and multiple occupant residential building stocks built to current standards are safe in terms of protecting people from the effects of fire – if all the correct processes and legal requirements are followed.

This can be put down to the multiple layers of both regulation and non-regulatory controls that exist in New Zealand's construction and fire protection industries.

However, before exploring the various aspects of the controls and regulations that contribute to New Zealand's fire safety we need to understand some of the components and systems that typically make up a building's fire safety system.

When evaluating how safe a building is in terms of its fire safety effectiveness, no one system or building element can be singled out as being the "kingpin" – rather it is a combination of fire safety systems and building features that combined with regular testing and maintenance equate to give the whole package.

Fire protection professionals often refer to active and passive forms of fire protection.

Active fire protection systems include the likes of automatic sprinkler systems, fire alarm systems, fire hydrant riser systems, stairwell pressurisation systems and smoke extraction systems.

Passive fire protection features, on the other hand, include the likes of fire and smoke doors, fire-rated linings for walls, ceilings, columns, beams or ducts and specialised service penetration techniques for the likes of cables and pipes to ensure that the fire resistance rating of the penetration remains as per the parent wall, floor or ceiling.

Many myths

There is often a lot of misunderstanding or myths associated with the role that each building fire protection system plays in the overall safety of the building.

I once had a CEO tell me that although his fire alarm and passive fire protection system needed urgent maintenance and were not fully functional, he felt safe because he was aware that the sprinkler system was fully operational.

This perception is wrong.

While statistics have shown that over the years there is unlikely to be multiple fatalities in a sprinkler-protected building, the other building safety features play an equal part in providing overall building safety.

Another such myth is that automatic sprinklers are engineered to automatically extinguish all fires.

This is not true.

A sprinkler system is typically designed to supress and prevent the spread of fire.

New Zealand Standard, NZS4541:2013 states, *"...so that systems reliably achieve their fire control function.*

That function is twofold: firstly, the fire should be controlled within a specified area and secondly, control should be achieved before levels of toxic by-products of combustion become life-threating."

Fire alarm systems play a critical role in building safety.

Their function is key to detecting smoke or heat from a fire and alerting the building occupants so that building evacuation can occur in a safe, logical and timely manner.

There have been many technology advances in fire alarm systems over the years.

The majority of these improvement have been made in making the systems not only safer but also more reliable by reducing "nuisance type" false alarms.

Synchronised systems

What the general public may not be aware of is the critical aspects fire alarm systems play

with regards to interfacing with other fire protection systems, building controls, initiating a signal to the Fire Service (now called Fire Emergency New Zealand) and interfacing with the building management system.

This can include the likes of a relayed signal to start the stairwell pressurisation system or the activation of a mechanical smoke extraction system.

The fire alarm panel itself, or the mimic indicating panel, provide firefighters with excellent information as to the exact location and the extent of a fire.

For such reasons, state-of-the-art fire alarm panels are critical to modern firefighting operations.

The importance of having adequate quantities and the correct type of portable fire extinguisher is also often overlooked.

Having staff that are well-trained and confident in the operation of these devices in combination with well-maintained units is key to their success.

Often small fires can be extinguished by the use of a handheld extinguisher.

Such early intervention can see the fire controlled or extinguished at an early stage of development.

Passive power

There has been much published in recent times about the importance of correctly installed and maintained passive fire protection features.

These critical building elements are relied upon by fire engineers as part of their overall fire design philosophy for containing smoke and heat associated with a fire to the "fire cell" of origin.

The inspection and maintenance of these systems is often a challenge as they may be located in hard-to-find places such as in ceiling or wall voids.

What is common to both active and passive building fire protection systems is that they both require regular testing and maintenance.

The Building Act (2004) outlines the overall objectives, which includes the fundamental requirement that, "people who use a building can escape from the building if it is on fire".

The Building Code has dedicated acceptable prescriptive-type solutions titled "Protection from Fire".

Alternatively, fire engineers have the option to utilise "fire engineered" or verification methods-type solutions based on a first-principles approach if the building is deemed complex or does not fit into the model of the prescriptive code based solutions.

Associated regulations

In addition to the above, what is also often overlooked by employers and building owners when considering the overall building safety features is the likes of the Health and Safety at Work Act, the Fire Service Act and the Fire Safety and Evacuation of Building Regulations.

While the above are examples of regulatory control, New Zealand is fortunate to have multiple degrees of no-regulatory or voluntary structures in place that all play a valuable role in contributing to safer fire protection within our buildings.

Organisations such as the Fire Protection Association of New Zealand (FPANZ) have a healthy and growing membership base.

This industry-based association acts for the general good of the fire protection industry and has a number of subgroups dedicated to common interest areas such as handheld fire equipment, passive fire protection, building evacuation and general contracting.

"It is very pleasing to see the great fire saves and successful alarm activations that can be attributed to the likes of well-maintained and tested sprinkler systems, alarm systems, gas flooding systems and portable extinguishers"

One of the key roles of FPANZ is the education of its members in order to raise the industry performance levels.

In a similar manner, the Association of Building Compliance (ABC) has a national network where members attend regular meetings on topical and current industry topics associated with the building compliance and the building warrant of fitness process.

While the ABC is open to a wide variety of groups and professions, it is pleasing to see a number of its members are working in the fire industry.

World leader

It is interesting to note that New Zealand was one of the first countries in the world to provide an avenue to allow for the design of building fire safety features by using a "performance-based" approach.

In order to meet this need it was recognised by industry leaders and engineering academics alike that such an approach would require future engineers to have a high degree of understanding of the likes of fire behaviour, fire science and how people react in fire situations.

To meet this need, the University of Canterbury established a post-graduate Master Degree in Fire Engineering in the mid-1990s.

These days the bulk of the professional engineers operating in the fire consultancy sector have gone through this path.

Regular testing and maintenance is required for both active and passive building fire protection systems

Lifelong learning

However, the learning is not over once the qualification is obtained.

The Institute of Professional Engineers of New Zealand (IPENZ) has set requirements in terms of continued professional development (CPD) for its Chartered Professional Engineering (CPEng) members.

Members are required to provide proof of their development and training in order to retain their CPEng status.

This has the effect of keeping such professionals current and well-versed in fire engineering matters.

In addition to education, the University of Canterbury fire engineering team plays a huge role in fire research and behaviour.

The university is well connected to a number of universities and fire-based research organisations overseas and makes a healthy contribution to international fire engineering and fire science development.

BRANZ busy

The activities of the BRANZ based in Wellington also pays a key role in fire safety in New Zealand.

BRANZ undertakes specific independent fire and evaluation

testing of specific products and materials.

This provides the industry with a wealth of information when it comes to decisions such as what materials and products can and can't be used in certain circumstances.

Often BRANZ's work is closely linked to New Zealand Standards.

In addition, BRANZ has spearheaded industry research and consultancy projects on specific topics.

This information is made freely available in the public sector, again with the key objectives of making buildings safer in a fire.

Peer review has also been a key part of the controls and safety nets that the New Zealand fire protection industry has adopted.

A fire engineer may undertake a complex engineered solution (referred to as a "verification method") that may involve the likes of multiple computer software simulations and detailed calculations in order to arrive at a final fire design solution. This work is required to be peer-reviewed.

What the fire engineer is required to do is to provide the peer reviewer with sufficient evidence that his/her proposed design has meet the criteria required under the building code relating to fire.

This requires the engineer's fire report to address each of these set criteria in a logical and quantitative manner – e.g. that the occupants on level 9 of the building can exit the building in an acceptable period of time while tenability conditions remain acceptable.

Accredited audits

In a similar manner, New Zealand's fire protection installation processes require that fire protection contractors have their work audited by an accredited third-party inspection body in the case of automatic fire sprinkler systems, fire hydrant systems or fire alarm system installations.

Furthermore, sprinkler and hydrant systems are also required to have their key design parameters agreed and approved by an independent organisation – i.e. the Sprinkler System Certifier (SSC) or Hydrant System Certifier (HSC).

This additional layer of control assists with quality and ensures that the system is installed in accordance with the specific standard nominated by the likes of the project specifications and building consent requirements.

Handheld fire extinguishers can be effective for extinguishing small fires but ensuring you have the correct type of portable fire extinguisher is important

The system discourages fire protection contractors from taking short cuts, as any such attempt would more than likely be detected during the third-party inspection process, hence the contractor would have to return to site to fix any non-complying defects at their own cost.

Although New Zealand's population is relatively small, we have our own set of national standards that covers most aspects of fire protection hardware, design, installation and commissioning.

Some building professionals may argue, "why bother – why not just adopt suitable overseas based standards?"

The counterargument to such statements is that our conditions are different.

Climatic conditions

We have a vast array of climatic conditions, most of our major cities and towns are located within close proximity to the sea, the building materials we use often differ from what is specified overseas and most of the country is subjected to varying degrees of seismic activity.

In addition, our cities and town infrastructure also have contributing factors that need to be considered, such as the available water supplies for the likes of firefighting or automatic sprinkler systems.

It's my opinion that our unique standards are an asset to making our buildings safer for people from the effects of fire.

Our standards relating to various aspects of fire protection, materials and hardware have been around for many years, and aspects such as new technology and lessons learnt have been adopted with subsequent editions to ensure that continued improvement is implemented in the industry.

In New Zealand, we are fortunate that legislation does exist that requires building owners to undertake regular testing and maintenance of both active and passive fire protection systems.

This is covered by the Building Act that stipulates that any building that contains life safety features is required to obtain a Building Warrant of Fitness (BWOF or Form 12) on an annual basis.

In order to obtain a BWOF a Form 12A is required to be provided by an Independently Qualified Person (IQP) for each building safety feature listed on the building's Compliance Schedule.

These signed documents are legally binding and are essentially a declaration by the IQP that the particular system "will continue to perform".

Key objectives

While this system often is the cause of much aggravation between the likes of the building owner, the IQP and the Building Consent Authority/local council, the system overall in my opinion works well at meeting the Building Act's key objectives – keeping buildings safe for people.

Further control is held by the local Building Consent Authorities in that they have the right to issue fines in the case of minor offences or, in the situation of a major breach of the act, prosecute the likes of building owners and/or the IQPs that act on their behalf.

As outlined above, New Zealand has a mature well-regulated fire protection industry with multiple levels of controls and audit processes in place.

Hence it is my opinion that if the correct steps and process are followed by all parties associated with both the installation and maintenance of fire protection systems, we are unlikely to see a tragedy like the world witnessed with Grenfell in the UK.

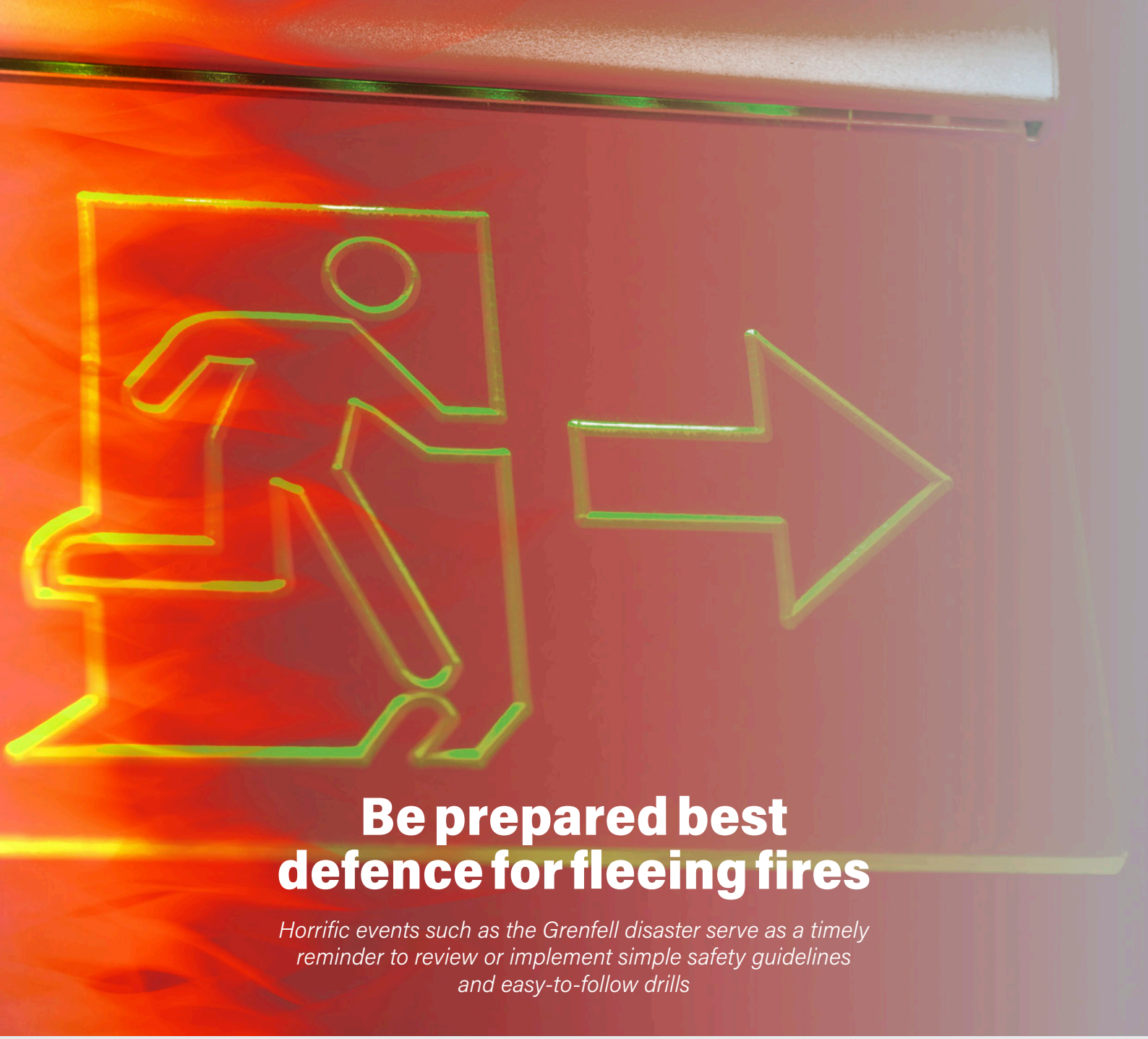
This view is backed up by statistics and records.

As part of the Wormald Quality Management Process, a brief fire report is undertaken for all fire incidents/fire saves that occur with the buildings we service.

It is very pleasing to see the great fire saves and successful alarm activations that can be attributed to the likes of well-maintained and tested sprinkler systems, alarm systems, gas flooding systems and portable extinguishers.

In a similar manner, Fire Emergency NZ also keep detailed records of such fire incidents and the conclusion is the same - i.e. the sprinklers and fire alarms installed throughout the buildings in New Zealand do their job.

A chartered professional engineer and a member of the Institute of Professional Engineers of New Zealand employed by Wormald as National Technical Manager, Dave Hipkins has been involved in the fire protection industry for 30 years and has sat on a number of New Zealand Standards committees relating to various aspects of fire protection within New Zealand



Be prepared best defence for fleeing fires

Horrific events such as the Grenfell disaster serve as a timely reminder to review or implement simple safety guidelines and easy-to-follow drills

An obvious first step is the preparation of a fire evacuation plan (FEEP), a written document that details the actions to be taken by staff if there is a fire and the arrangements for calling the fire brigade.

A FEEP can take various forms such as a:

- **General Fire Notice** – ideal for small premises, they can take the form of a simple fire action sign posted in positions where staff and relevant persons can read it and become familiar with its contents
- **Staff Fire Notice** - high fire risks or large premises will need a more detailed emergency evacuation plan which takes account of the staff significantly at risk and their location while notices giving clear and concise instructions of the routine to be followed in case of fire should be prominently displayed.

Managers or supervisors should also take the initiative and nominate persons to implement the fire action plan and give them adequate training in fire fighting and evacuation procedures.

Whatever the approach, the following items should be considered:

- fire evacuation strategy
- discovering a fire
- hearing the fire alarm
- calling the fire brigade
- power/process isolation
- key escape routes
- fire wardens/marshals
- assembly and roll call
- firefighting equipment
- training
- personal emergency evacuation plan
- liaison with emergency services

"Managers or supervisors should take the initiative and nominate persons to implement the fire action plan and give them adequate training in fire-fighting and evacuation procedures"

Fire evacuation strategy

It is important to consider how the evacuation of the premises should be arranged in the light of the risk assessment and the other fire precautions that are or will be put in place.

Simultaneous Evacuation

Normally initiated by the general alarm over the fire warning system, a simultaneous evacuation simply sees everyone making their way by a designated escape route to a place of safety away from the premises.

Vertical Phased Evacuation

The emergency arrangements in some larger complex premises are designed to allow people who are not at immediate risk from a fire to delay starting their evacuation.

It's often appropriate to start the

evacuation by initially evacuating only the area closest to the fire and warning other people to stand by – normally by immediately evacuating the floor where the fire is located and the floor above.

The other floors are then evacuated one by one to avoid congestion on the escape routes and the rest of the staff are then evacuated if it is necessary to do so.

The fire warning system should be capable of giving two distinctly different signals (warning and evacuation) or give appropriate voice messages.

Horizontal phased evacuation

Larger facilities such as hospitals, care homes or retirement villages may have the floor divided into a number of fire-resisting compartments, with the occupants moved from the compartment involved in fire to the adjacent compartment and if necessary moved again.

Depending onto the fire situation it may eventually be necessary to consider vertical evacuation. Because of the extra time this type of evacuation takes, other fire precautions may be required.

These include:

- voice alarm systems
- fire control points
- compartmentation of the premises using fire-resisting construction
- sprinklers in buildings where the top floor is 30 metres or more above ground level.

Staff Alarm Evacuation (Silent Alarm)

In some cases such as cinemas and theatres it may not be appropriate for a general alarm to start immediate evacuation because of the number of members of the public present and the need for the staff to put prearranged plans for the safe evacuation of the premises into action.

If so, a staff alarm can be given by fire records, personal pagers, discreet sounders or a coded phrase on a public-address system.

Following the staff alarm, a more general alarm signal can be given and a simultaneous or phased evacuation started.

The general alarm may even be activated automatically if it hasn't been sounded manually place within a predetermined time.

Defend in place

This strategy may be considered in blocks of flats or hospitals where each flat is a minimum 60 minutes fire-resisting compartment or hospitals or nursing homes where patients are connected to life-supporting equipment and cannot be moved.

The concept allows the occupants to stay put and allow the fire service to extinguish the fire, but if the fire spreads and it cannot be controlled then they will initiate a full evacuation.

If patients are connected to life-supporting equipment then a decision has to be made which option is the best – stay or move.

Either way the patient would be at serious risk.

Defend in place, phased evacuation schemes or a staff alarm system should only be used on the advice of a competent person such as a fire safety engineer and/or the fire and rescue service.

Discovering a fire

Everyone should sound the nearest fire alarm immediately he or she discovers a fire, and the plan should therefore include the method of raising the alarm in the case of fire.

Hearing the fire alarm

The plan should instruct all personnel upon on hearing the fire alarm to act in accordance with the agreed FEEP strategy, and if a fire warden's scheme is in force they should proceed to predetermined positions to assist members of the public and staff to leave the building by the nearest safe route.

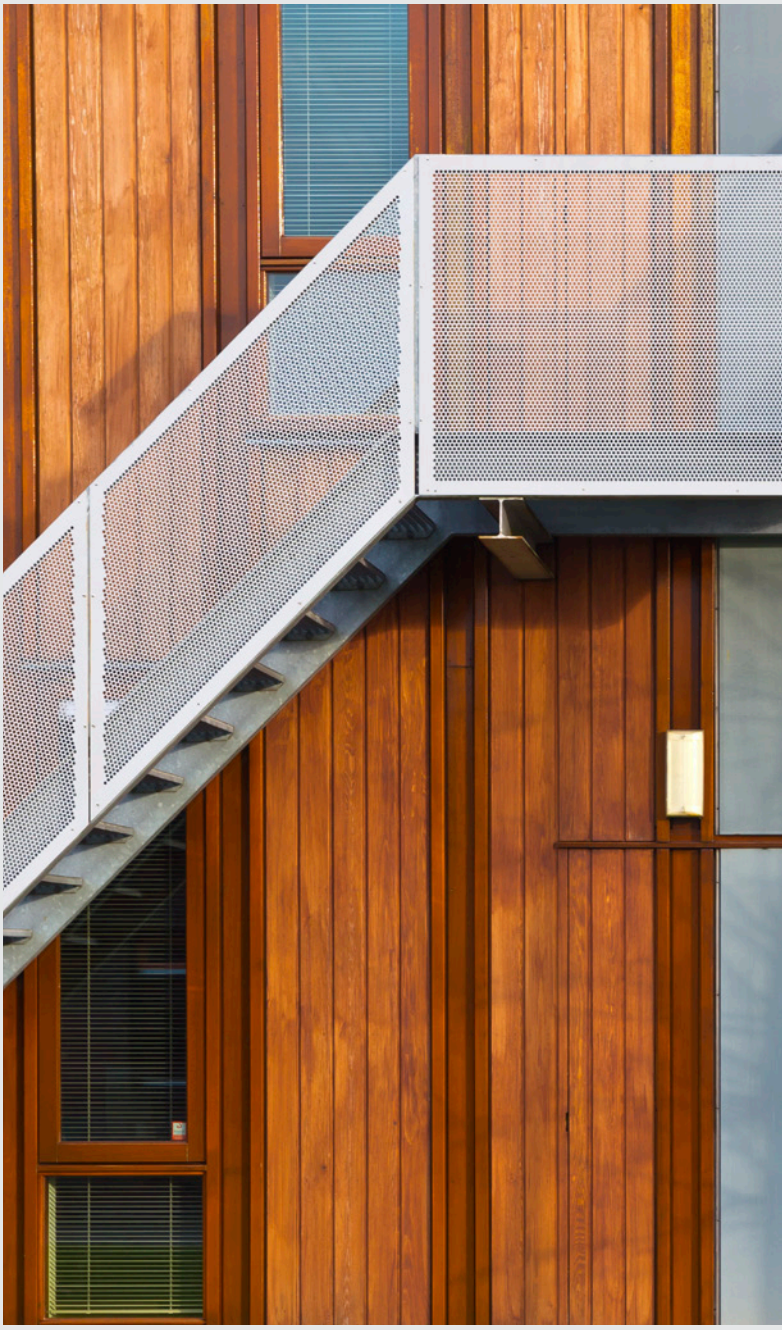
Lifts and escalators should not be used due to possible electrical failure unless they are part of a Personal Emergency Evacuation Plan.

Staff shouldn't re-enter the building with the possible exception of the Fire Team.

Calling the fire brigade

The Fire Service should also be informed immediately, either by the receptionist or the person discovering fire.

- work time – the receptionist should be conversant with the emergency evacuation plan, and should also ensure necessary extensions are switched through when the switchboard is unattended.
- other times – staff such as cleaners and caretakers should also to be conversant with procedure. In any case the senior official should ensure that the fire service is called in the event of an outbreak of fire.



"The best escape routes should be clearly signposted – especially in premises where members of the public or people unfamiliar with the building's layout are present"

Power/process isolation

Individual close-down procedures should be adopted and implemented as appropriate and responsible staff made fully aware of their responsibilities in the event of fire.

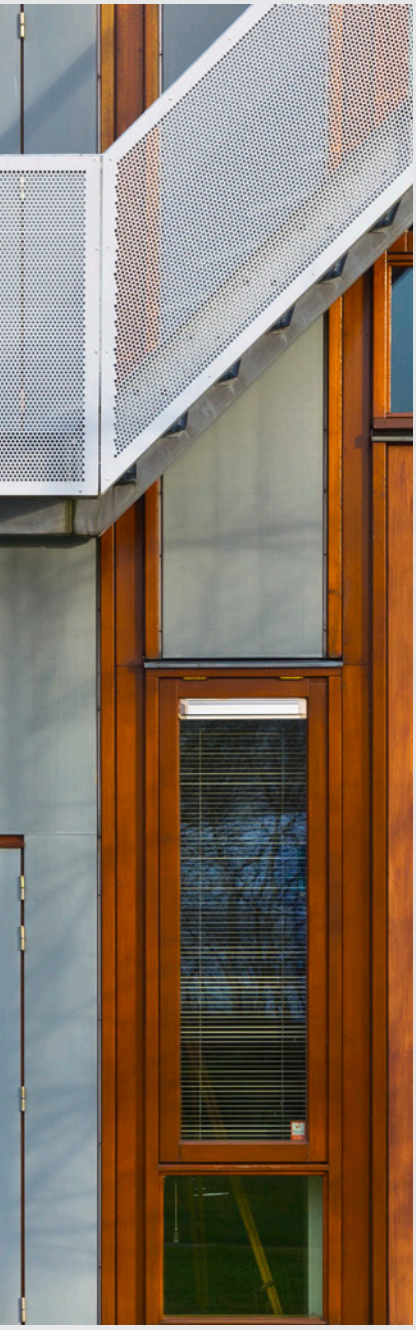
Key escape routes

The best escape routes should be clearly signposted – especially in premises where members of the public or people unfamiliar with the building's layout are present.

Key escape routes could, for example, include schematic drawings supplemented with emergency escape signs.

Fire wardens/marshals

Responsible employees should be appointed fire wardens or fire marshals to implement fire safety measures, which will include fire.



The need for fire wardens depends on the size and complexity of the premises – it may only require one on each floor or department with a chief fire warden coordinating their actions to make sure all persons are accounted for in the event of a fire.

Fire wardens or fire marshals also require special training above the needs of the normal employee – either in-house or by an external fire training organisation.

They should be:

- competent in the use of fire extinguishers and be capable of extinguishing small fires
- have some knowledge of fire prevention and be able to identify possible fire hazards to prevent fire from occurring
- should have an in-depth knowledge of the FEEP and their role in implementing it.

A senior official in each building should be appointed Chief Fire Warden and given the responsibility of maintaining a high standard of fire precautions and the overall responsibility for the action in the event of fire.

He/she should also have a nominated deputy capable of taking responsibility when the Chief Fire Warden is not present, on leave or ill.

Evacuation fire wardens should be appointed for each room/department/floor as applicable and each warden should also have a nominated deputy.

Fire wardens/marshals should be responsible for

- fire routine and evacuation drill procedure
- ensuring personnel know the location of fire alarm points
- ensuring regular use of primary and secondary escape routes
- the close-down procedure
- procedure for nominated staff to assist employees and members of the public to nearest exits.

A Senior Fire Warden/Marshal should be made responsible for ensuring that notices are correctly sited and the fire emergency evacuation plan is properly distributed and understood by all.

Assembly and roll call

Staff and visitors should assemble at a predetermined assembly point and a roll call of staff and visitors taken.

The person in charge of the assembly point should report to the person who has been nominated the fire service liaison person, indicating all persons accounted for or who's missing and where they were last seen.

A thorough understanding of the fire emergency evacuation plan is essential when selecting the location for an assembly site.

The number of staff and possible visitors that need to assemble should be calculated and the other occupants consulted if it's a multi-tenanted building.

It is also very important to be familiar with the surrounding area – the assembly point should be far enough away from the building not to put staff in danger of radiated heat and falling debris.

There should also be ample room so that the assembled staff don't interfere with fire-fighting operations and don't jeopardise the fire service.

The assembly point should be close enough to the building to ensure that the nominated person in charge of the assembly point can communicate with the nominated fire liaison person, who should be located near the main entrance.

This could be as simple as talking to him or her directly or using runners or mobile phones.

The area chosen should be larger enough to accommodate all the staff – if this cannot be found additional sites may have to be considered. Open areas such as footpaths and car parks are ideal.

The assembly point shouldn't be in an enclosed area and the staff should be able to disperse without having to pass close to the fire.

The weather also has to be taken into consideration, and some form of shelter or other weather protection may be necessary as staff are most likely to have evacuated without collecting outdoor clothing.

Finally, remember to use appropriate signs where feasible as they leave no doubts in the minds of staff.

Firefighting equipment

A nominated fire team if available or any trained competent person should, where possible, attack the fire with appropriate equipment such as fire extinguishers – however firefighting is always secondary to life safety.

The cardinal rule is, as always, **DON'T PUT ANYBODY AT RISK!** If in doubt or even as a precaution, call the fire brigade.

Training

The emergency evacuation plan should be the subject of frequent training so all employees are familiar with its contents and there should also be regular evacuation drills.

Employers, managers and supervisors are required to carry out this fire training. It's recommended that they keep a record of the results of that training, which will be useful if they are ever required to prove their actions in the future.

The FEEP must be included in the instruction and training given to employees.

Effective fire routine is dependent on regular instruction, training and practice.

Regular drills should be carried out using various escape routes in case the normal evacuation route is not available.

Fire drills should consider the following points:

- regular intervals
- records kept
- drills should be completed at least once a year – from sounding the alarm to roll call procedure
- fire alarms and firefighting equipment should be tested at weekly intervals and records kept
- fire equipment should be regularly serviced.

Personal Emergency Evacuation Plan (PEEP)

Staff may have to be trained in the correct procedures to help disabled or sensory-impaired people escape from fire.

Advice on the specific needs of disabled and sensory-impaired people can be obtained from the relevant organisation, the contact details of which can be found in the telephone directory or online.

Management and supervisors must take account not only of the people on the premises (employed or otherwise) who may be able to make their own escape, but also those who may need assistance to escape – for example, by having adequate staffing levels, especially in premises providing treatment or care such as hospitals, care homes and retirement villages.

Liaison with emergency services

A responsible employer, manager or supervisor should arrange all the necessary contacts with external emergency services and ensure they are familiar with the fire action plan.

A senior person should be nominated to meet the fire and rescue service when they arrive to provide them with any information they require.

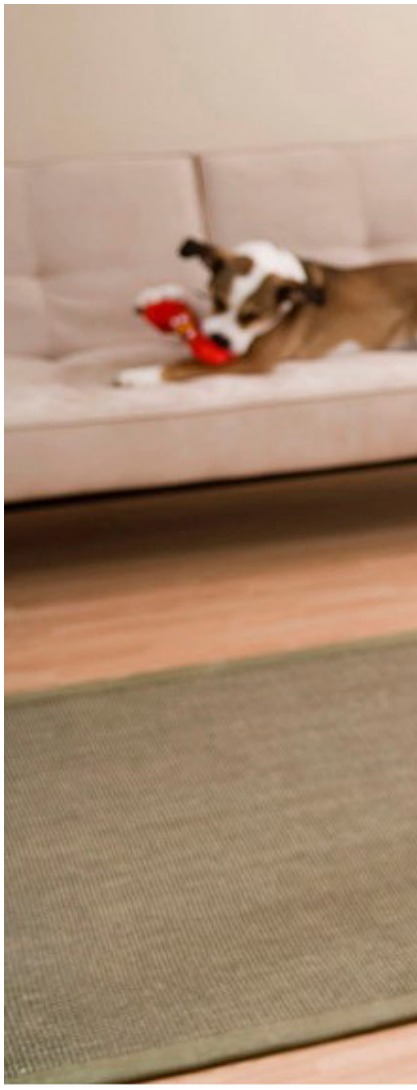
He or she should have an intimate knowledge of the premises and be in contact with the person conducting the roll call at the assembly point.

These are all basic, common sense fire safety drills but all too often they are either not developed in the first place or they're gradually shelved in favour of the good old Kiwi "she'll be right" approach.

However, implementing, following and regularly practicing these simple steps will go a long way to ensuring the safety of staff, visitors and customers in the event of fire – and surely that's the priority in any business.

Working from home raises health and safety considerations

Improvements in technology mean that working from home is more manageable than ever before, note Kirsty McDonald and Joseph Williams



For many reasons, employees are increasingly seeking flexibility in their working arrangements, not only in respect of their hours and days of work but also in the ability to perform their work remotely.

Many employers have already begun utilising these arrangements to attract and retain staff and, given the benefits arising from such arrangements, the demand for remote working is likely to increase in the future.

What is a workplace?

Under the Health and Safety at Work Act 2015 (the HSWA), an employer as a 'person conducting a business or undertaking' (PCBU) has a duty to ensure, so far as is reasonably practicable, the health and safety of its workers while they are at work.

The definition of 'workplace' under the HSWA is extremely broad. It includes any place where work is being carried out, or is customarily carried out for a business or undertaking, including any place where a worker goes or is likely to be while at work.

Therefore an employee's home could also be seen as a workplace if they regularly work remotely.

In addition to the employee's own duty to ensure their personal health and safety, the employer owes a duty to ensure that steps are taken to ensure the employee's workplace is safe and healthy.

The focus of this article is on an employer's duties to employees working from home. However, the obligations discussed will also extend to contractors and volunteers. Any type of worker engaged by a PCBU who works from home will be responsible for their own health and safety and will be required to comply with any reasonable instructions and/or health and safety policies.

Employers' duties to employees working from home

The starting point for assessing an employer's duties is the obligation to ensure the employee's safety and health "*so far as is reasonably practicable*."

Clearly, the level of control an employer can have over the health and safety of an employee who is working from the employer's premises is greater than the control the employer can have over an employee working from home.

There are presently no specific guidelines from WorkSafe New Zealand (WorkSafe) regarding the scope of an employer's obligations in relation to health and safety compliance for home workspaces.

However, there are a number of steps an employer can take to minimise the risk of harm to an employee who works remotely.

These are particularly relevant for employees who have a formal arrangement to work from home, rather than simply on an ad hoc basis.

Practical recommendations for establishing a permanent flexible-working arrangement

If an employee is seeking to regularly perform some of their work from home, the employee should make a written request (a "flexible working request" under part 6AA of the Employment Relations Act 2000) to vary the terms and conditions of his/her employee's working arrangements (including their place of work).

Once the request is received, the employer is obliged to consider it.

Part 6AA sets out an exhaustive list of grounds for refusing a flexible working request, but notably health and safety is not one of them.

However other grounds such as the impact on quality of work, the impact on performance or the burden of additional costs may be relevant considerations.

Once an employer has agreed to the implementation of a flexible working arrangement, there is no mechanism under the ERA for amending or rescinding the agreement.

Therefore it would be advisable, before responding and agreeing to the remote working arrangement, to discuss with the employee the practicalities of the arrangement, including the parties' respective health and safety obligations.

A practical step any employer should take (prior to agreeing to a remote working arrangement) is to conduct a home workplace risk assessment. Relevant considerations may include:

- the ergonomics of the proposed workstation
- the isolation of the proposed workstation from possible distractions
- the suitability of equipment for performance of work
- plans for protecting the security of data and personal security of the employee
- suitable fire safety equipment and emergency procedures
- and identification of any other risks/hazards that need elimination or minimisation.

If the finding of the risk assessment is that an employee's home workspace is unsuitable in its present state, the employer must take all "*reasonably practicable steps*" to ensure that it is.

The employer may need to consider providing assistance such as a financial contribution to the purchase of suitable equipment, or at least discussing with the employee whether they are willing to absorb any costs themselves.

Ultimately, if the employee is unwilling to meet the costs, it may be that the flexible working request could be refused by the employer on financial grounds.

If the workplace is suitable or can be made suitable, and the employer agrees to the flexible working request, we recommend implementing a formal policy setting out the parties' respective health and safety obligations when working remotely.

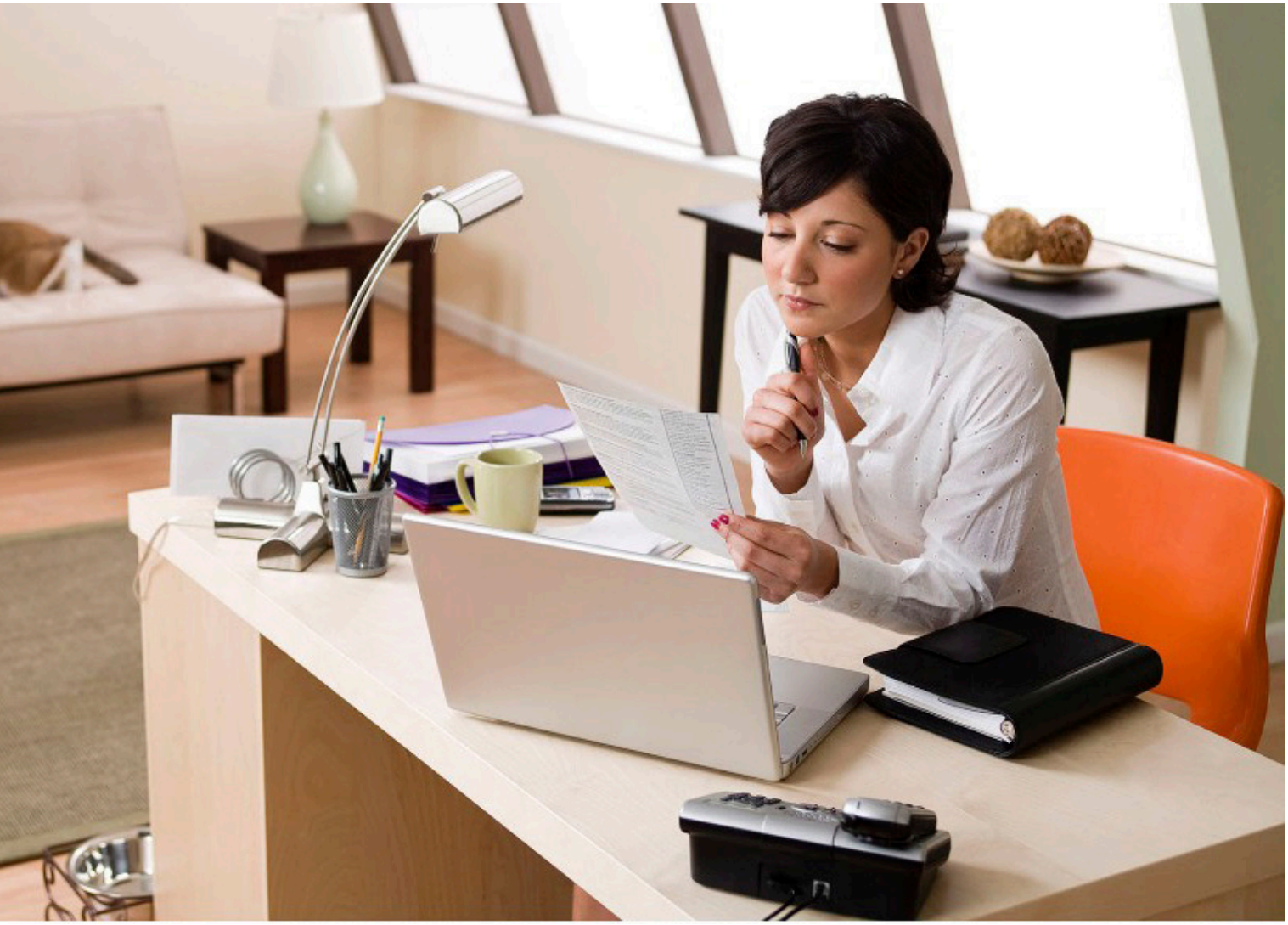
Working from home policy recommendations

Whether regular or ad hoc, we would recommend that an employer has a policy setting some minimum guidelines for the parties' respective health and safety obligations when working from home.

It is important that this policy not only considers the obligations to ensure an employee's physical health and safety, but also ensures any risks to the employee's mental health are eliminated or minimised.

In general, we would recommend that all policies include the following conditions:

- the employee agrees to ensure their home workspace is arranged so that it is comfortable and ergonomically sound
- the employee agrees to take regular breaks
- the employee agrees to ensure the workspace is kept clear and free from obstacles or tripping hazards, and is well-lit
- the employee agrees to ensure all work-related information and data is kept secure;
- the employee agrees to keep



in regular communication with their managers and proactively discuss any problems that arise from working from home
- and if a risk of harm to the employee's physical and/or mental health and safety arises, the employee agrees to consult with the employer about ways this harm can be eliminated or minimised.

Maintaining health and safety standards

As with office workstations, annual reviews of home workstations should also be completed to ensure they remain fit for purpose.

Depending on the resources available to the employer, this could be addressed through the employee:

1. discussing their workspace and home workspace setup with an occupational therapist
2. sending the employer a photo of their setup
3. or having a follow-up, in-home visit from an occupational therapist.

The employer should be in frequent contact with the employee regarding the effectiveness of the working arrangement, including any issues or concerns arising from the remote working.

If any serious issues do arise, then the employer should consult with the employee as to how these risks might be eliminated or minimised.

Depending on the circumstances this could be anything from making some minor adjustments to improve the working environment (such as varying the proportion of the employee's time they spend working from home), or in the most serious of cases, proposing that the employer return to working from the office in a full-time capacity.

In the event of a notifiable incident of an employee working remotely

As with any other accident, WorkSafe may investigate if a notifiable incident occurs when an employee is working remotely.

This would likely include visiting the site of the accident.

Any such investigation would likely centre around:

- what hazards/risks were present;
- what mechanisms were in place for eliminating or minimising such hazards/risks; and
- whether anything else could reasonably have been done to ensure health and safety.

While each situation would differ depending on the circumstances, at a minimum we would anticipate WorkSafe would expect to the following steps to have been taken:

- a specific policy setting out the parties' respective obligations regarding health and safety, including guidelines on set-up and maintenance of a safe and healthy workspace
- evidence of an assessment of the home workspace to ensure its suitability from a health and safety perspective
- and evidence of communications between the employer and employee regarding the remote working arrangements and any issues or concerns.

Greater clarity on WorkSafe's expectations in relation to the above will no doubt come as case law in this area continues to develop.

The preliminary requirements for an employer to properly establish a remote working arrangement with an employee may seem daunting from a health and safety perspective.

However, once an effective flexible working arrangement is established, the respective benefits to both the employee and employer are likely to far exceed the initial hurdles.

For more information on any of the matters discussed above, please contact a member of our specialist employment team.

Kirsty McDonald is a Partner and Joseph Williams a Law Clerk at Duncan Cotterill, a full service law firm with locations in Auckland, Wellington, Nelson & Christchurch

Forest industry successfully changing safety attitudes

One of the country's most dangerous industries is implementing various initiatives to improve its safety record, John Stulen reports

Foresters have made a change that farmers have yet to make – accepting that the status quo for safety in the outdoor uncontrolled environment is not good enough for the future ... or the present, for that matter.

People across the forest industry have made a decision to "stand in the gap"; to speak up when they see unsafe conditions and protect their fellow workers; not to turn away without acting.

In fact, the attitudes on the forest floor have been shifted over the past three years from acceptance of the accident toll to a much more inclusive attitude of helping keep your workmates and yourself safe by planning what work is possible to be done safely and changing the work plan when risks get too high, using practical bush-tested decision tools.

Out on the forest floor crews can be expected to be served with improvement notices by WorkSafe New Zealand inspectors if they cannot produce instant proof of "tailgate" meetings at least once a day in the forest.

To be fair, people throughout the forest industry had a wake-up call in 2013 when the union leaders called for an end to the deaths in forestry workplaces – most particularly among the (mainly) men carrying out tree-felling and breaking-out tasks (hooking logs to wire strops for yarder extraction).

A combined call from both forest contractors and forest owners saw an independent forest safety review conducted.

Results were shared openly and in earnest with the government's workplace regulator, WorkSafe New Zealand – recently reformed after the Pike River mining tragedy – and the Accident Compensation Corporation – the government and industry's accident insurer.

First conference

In 2015, more than 450 industry people attended the first national forest harvesting safety conference held in Rotorua – the heart of New Zealand's forest industry.

The focus then was clearly on some innovative and expensive new equipment that would begin then to replace manual tree-felling with custom-built feller bunchers – tracked machines that evolved from excavators but with high and wide undercarriages and specially-built tracks to tread lightly in the forest environment.

New Zealand was the first country in the world to perfect

Whangarei-based loggers, Rosewarne and May designed and perfected this remote controlled winch-assist anchor machine in their Northland logging operationsoperations, which is now used in New Zealand, Canada and the US

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mechanised tree-felling using traction assist winches to extend the reach of level-swing (tilting upper bodies) tree harvesters from 40 per cent slopes to 100 per cent slope capability.

Over 80 machines have been deployed in New Zealand forests alone since 2013 – and many more since then into the Pacific North-west region of North America.

Meanwhile, the recommendations of the Independent Forest Safety Review became the active "action" list for a group of foresters and contractors, backed by key industry CEOs.

Together they set about establishing a Forest Industry Safety Council (FISC) with a completely new budget to tackle safety initiatives to change the workplace injury rates.

By mid-2014 the Forest Industry Safety Council was getting engaged with its key target audience – the men and women working on the forest floor.

The new safety agency took a leading role in setting out new ways to help people communicate better and learn new ways to keep each other safe on the job.

Excavator-based winch-assist anchoring machines allow mechanised tree-harvesters to work safely on slopes previously only possible with men using chainsaws, some 60 having been deployed already

Training time

The group moved quickly in 2015 to establish a new safety resource. Several experienced trainers and health and safety practitioners led the way with a complete set of testimonials from leading logging crews on the practical ways they kept themselves and their workmates safe every day and in the constantly changing conditions that forest workplaces present to workers as the trees are harvested and replanted.

Forestry workers young and old were directed to a new learning media as the website www.safetree.nz became home to a multitude of new safety tools, techniques and workplace communications resources.

Crew workers and foremen alike have since commented on how easy the tools are to learn, use and help them in their work with others in the forest workplace.

By the end of 2015 leaders in logging and silviculture crews were adapting to the changes required of them in the workplace.

They had been guided and facilitated by their own safety-conscious crew owners but also with unprecedented support brought about by the new health and safety laws – the forest managers engaging them to do the forest work on contract for their shareholders be they local or overseas domiciled.

Forest managers and owners have quickly gained a working understanding of the intent of the new law – their contractors could not be left alone and unchecked or unsupported – in moves to improve workplace safety records.

"New Zealand was the first country in the world to perfect mechanised tree-felling using traction assist winches"

John Stulen is Director of Innovatek Ltd, which operates a range of technology-led events through its FIEA and CONNEX:Event Innovators divisions

A Nelson-based logger, Nigel Kelly designed and built several prototypes over four years, and now exports them to Canada and the US where they are unique in their design and steep slope operation. They require no separate anchor machine.

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Do your staff have a guardian angel?

All lone workers need someone or something to watch over them – but not all duress devices are created equal warns Petra Håkansson

Firstly, let's assume that all duress devices regardless of the network they use have GPS and send their location with any message.

The key thing to know about GPS is that it requires a view of the sky to accurately pinpoint a location.

If the device in use is a pure satellite solution (i.e. uses a satellite network to locate *and* send data) it needs a view of the sky to send and locate.

So, if you're looking to use a device such as InReach, Rockstar, Nano Shout, satellite phone, Iridium Go or any other satellite communication device, you need to know it's no use to you if you're inside a building (unless you're near a window).

This is one of the reasons a good cell-based duress device needs to be polling (sending location updates) regularly.

If a person is always outside it doesn't really matter, but if they're in and out of buildings the lone worker protection network looks for a one-minute polling rate.

This means if they activate an SOS inside a building it will still find them based on the breadcrumb trail and their last known position.

Cell-based devices

Many devices on the market such as watches, ID badge or keyring style only send their location when they go into alarm mode.

Basically, any device which is slim or small needs to be treated with caution – the battery technology simply can't support GPS without being a bit bulkier.

Providers will tell users they simply have check in by pushing a button before they enter a building, but the user will almost certainly forget.

Another issue devices have is being safe to wear if they are polling constantly.

Last year Worksafe Australia prosecuted a distributor of a duress device for selling a device which wasn't "fit for purpose".

A worker had been attacked inside a building, and because he was inside the location wasn't known.

The scary thing about this scenario is the false sense of security this worker would have felt thinking someone would come to his rescue imminently.

Whether he therefore failed to try to escape, or in fact maybe got over confident thus escalating the situation, I don't know.

What I *do* know is that he got severely injured.

Safe devices

Having a device which is not going to help you is worse than having nothing in my opinion.

A Specific Absorption Rate (SAR) certified device means that it does not emit harmful levels of radiation.

You are asking your staff to wear this device for hours at a time, so they need to know it's safe.

You should ask to view the SAR certificate (the full report is around 60 pages but you only need to see the signed certificate page).

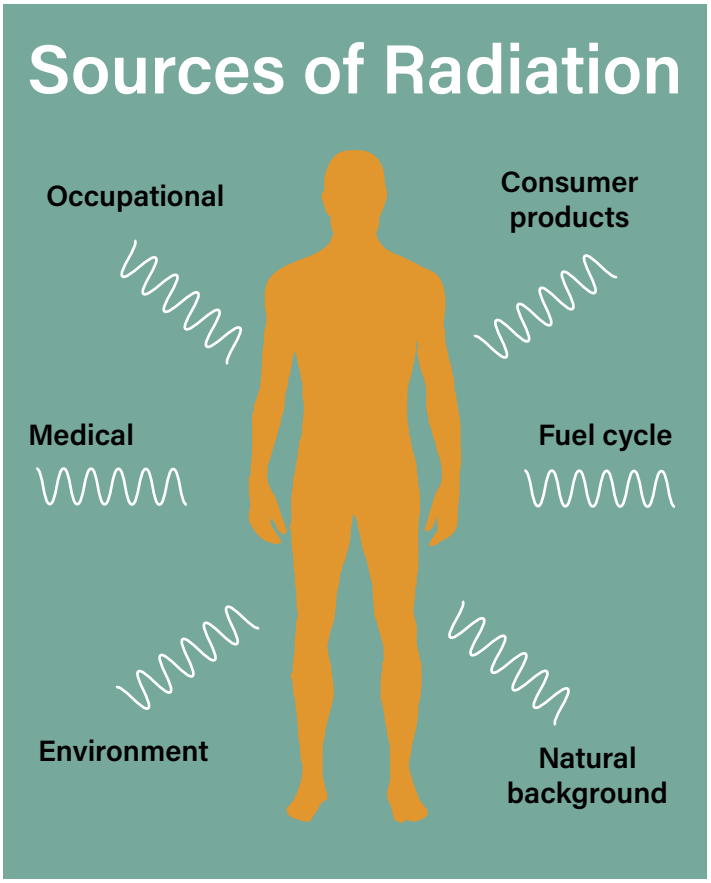
The certificate should state that the testing has been carried out in a NATA-approved test lab as the worker is going to have to wear the device for eight hours.

Would you put your mobile phone next to your ear and talk non-stop for eight hours? You know that's not safe so why ask your employee to take the risk.

While the radiation from small bits of data for location updates is minimal compared to mobile phones it's still potentially harmful.

If you are comfortable that your workers are always in cell cover and you're looking at a cell-based duress device; ask these questions:

1. what is the polling rate of the device? (look for 1-2 minutes minimum)
2. how often does it poll when in alarm? If you need to find your worker if they're running or driving make sure it doesn't just send a location when in alarm
3. what is the battery life of the device set to one-minute polling? (look for at least 15 hours)
4. what is the location accuracy? (look for +/- 5m minimum)
5. has it been SAR certified as safe to wear?
6. will it still work when 2G is decommissioned totally? (there is no 2G with Spark and Vodafone doesn't have 2G voice – watch out for 2G devices with 3G SIMs!
7. where is it manufactured and what are the warranty terms and support?
8. what is the IP rating? (it should be 65 to 67)
9. are settings configurable and how are updates received? (you want to be able to change tilt angles, delays etc over the air)



Pure satellite solutions

If you are simply looking for communication outside of cell cover, a two-way messaging satellite handset will do the job.

Most of the good solutions on the market allow you to set up preset messages to make it easier.

If you want to put more controls in place for staff outside of cell cover, you can also use check-in schedules that require the staff member to push a button to check in at predefined times.

If they fail to check in, you (or the monitoring station) gets a "failed check in", which can then be escalated.

The Iridium network is the only one you should be relying on for a robust commercial health and safety solution.

It has more orbiting satellites and forwarding technology, meaning if the satellite that receives your message can't see the earth station, it will forward it to one that can.

Good devices will keep sending the SOS or message until it knows it's been received.

You will also get a confirmation message that it's been sent – vital information for someone who needs help!

There are a lot of Personal Locator Beacons, Emergency Position-Indicating Radio Beacon and 's and Spot devices in use in New Zealand and Australia.

However, these don't use Iridium, provide two-way communications, keep sending messages or confirm to the sender that help is on its way, making them not suitable for a lone worker.

In my nine years working with lone worker protection solutions I have come across more failures in these devices than I care to count.

I have spoken to dozens of people who have tested them, and read various reports and they failed.

Close enough is not good enough when it comes to people's safety and possibly their lives.

If you are comfortable you need a totally portable satellite solution, ask these questions:

1. does the device use the Iridium satellite network?
2. does it keep sending the message until a satellite receives it?
3. does the user get a confirmation that the message has been received?
4. what is the minimum and maximum tracking interval and associated cost?
5. where is it manufactured and what are the warranty terms and support?
6. what is the IP rating? (it should be 65 to 67)
7. are settings configurable and how are updates received?

Hybrid solutions

You can get good portable hybrid solutions that have an Iridium and cell modem, but unfortunately none are small enough yet to wear!

The worker can carry the base part in a backpack or leave it in the car in view of the sky. The base also has the two-way messaging component.

You can also pair them with a pendant which has SOS, man down and welfare checks and thus get a very flexible and reliable solution.

The pendant communicates back to the "base station" via radio frequency (RF), which means the pendant will work whether inside a building or outside.

Provided the base station is in view of the sky, it will send SOS out on Iridium if there is no cell cover.

The only limitation is the range from base station to pendant. I have tested solutions that reliably give 2km – unless you work in forestry where the range becomes 500m as 900Mhz doesn't like pine needles for some reason!

Also, there are a lot of illegal pendants in New Zealand, where they need to be locked down to 915-928mhz.

The other frequency ranges are owned by other companies and the pendant could therefore interfere with medical alarms, radio stations and telephone companies – if found it could be confiscated.

Questions to ask:

1. what frequency is the pendant on? (it needs to be 915-928)
2. does the base station use Iridium? (for location and messaging)
3. are the messages stored until a satellite connection is established?
4. is the location of the actual pendant sent as well as that of the base station?
5. where is it manufactured and what are the warranty terms and support?
6. what is the IP rating? (it should be 65 to 67)
7. are settings configurable and how are updates received?

The Iridium network is the only one you should be relying on for a robust commercial health and safety solution. It has more orbiting satellites and forwarding technology, meaning if the satellite that receives your message can't see the earth station, it will forward it to one that can.

Vehicle solutions

They don't meet health and safety requirements unless they have impact and rollover alerts, are hybrid for when the user is out of cell cover and can be paired with a pendant if the user is at risk when out of a vehicle.

We recently completed a review for a business that sadly lost one of their lone workers in a vehicle incident.

They did have a telematics solution, but it relied on cell cover and did not have impact or rollover alerts.

They found him via the handheld satellite communicator he had with him in the vehicle, having only gone looking for him when he was reported missing by his spouse in the evening.

The impact and rollover alert would not have saved this particular worker, but an instant alert provides a window of opportunity to save them.

So, make sure you monitor the alerts and get help there immediately if the alarm is raised.

Questions to ask when assessing vehicle solutions:

1. can we have 3G and Iridium connectivity?
2. what is the range limit of the pendant (and is that line of sight)?
3. what frequency is the pendant operating on? (915-930)
4. where is it manufactured and what are the warranty terms and support?
5. what is the IP rating of the pendant? (it should be 65 to 67)
6. are settings configurable and how are updates received?
7. if you are interested in reporting on driver behaviour etc, ask for a list of available reports and if they can be automated.

Smartphone apps

They are not smart, simply because they rely on users too much to ensure that:

- they don't change settings on their phone which will affect the app
- they actually launch the app each day
- their phone doesn't sleep the app when the battery is low
- they charge their phone

(which they'll need to do through the day with the GPS drainage on the battery).

Apart from all that, if there was an incident are people going to have time to find their phone, potentially launch the app and press the button?

You also don't know what bugs the app might get with updates to operating systems.

I haven't found a scenario where I would recommend it as yet, but I understand the temptation of not having to buy another piece of hardware and for staff to not have to wear another piece of kit.

But to me, at this stage it's not worth sacrificing the safety of a stand-alone duress device.

Questions to ask if considering a smartphone app:

1. are the staff able to pre-empt risk to the degree where they can launch the app and have their phone in their hand before they enter the situation – i.e. before they leave the building to walk to their car?
2. Do you want to chase everyone, every morning to make sure their app is launched and check on them through the day to make sure it's not sleeping or their phone battery low?

Monitoring

My worst experience is of a company that had panic buttons, but the alerts only went to the platform, which was only opened by the fleet manager when managing the vehicle rego or other mundane tasks.

I advised them to get the panics monitored by an outside provider or remove them immediately!

It is vital that the signals from whatever device you have in use are sent via multiple paths to a reliable, professional provider.

The security industry does not have many who understand lone worker monitoring, while in-house monitoring is also fraught with danger.

Will the person's mobile be switched on and heard, are they preoccupied with dramas in their own life, do they actually even want the responsibility?

Questions to ask when reviewing monitoring centres:

1. is your centre graded or government audited to supply medical monitoring?
2. is it a professional monitoring centre with trained operators and a commercial response software for managing signals in priority or is it a customer service department?
3. is the centre staffed 24/7 or do the signals go to a mobile phone after hours?
4. what business contingencies are in place – do they have multiple providers for their internet, phones and power and a back-up centre in case their building has to be evacuated?
5. what reporting do you have available?

Training

All the above is pointless without trained and engaged staff.

A solution that is delivered in a box for people to just start using with no socialising or training is not going to work.

The management of the relationship between people and technology is sometimes volatile and needs to be managed.

Every project we have implemented has involved at least one person who DOES NOT want to know about GPS, whether it be because of fears about Big Brother or whether they think it's unsafe.

Users need to know it's coming, why a particular solution has been chosen and they need to be trained.

We like hands-on training – with practice in raising the SOS and messaging if it's a satellite device. They also need to understand how to charge and wear the device.

The lone worker policy needs to be updated to include the use of the solution, and the staff need to see this.

They need to understand their responsibilities and the processes in place for use.

They need to know the monitoring station will be reporting on low battery and connectivity so that it can be assured the solution is being used and thus they are safe.

And most importantly, they actually have to feel comfortable pressing the panic button – which is a barrier for men in particular.

I know of an instance where a person was attacked and severely beaten to the point of weeks in hospital.

He had a panic button but he'd never touched that button or been trained on it and in a state of stress he most likely forgot he had it.

The main criteria for success are simple:

1. staff are socialised and engaged
2. the solution chosen makes sense for their risk – fit for purpose
3. they don't have to do too much
4. good training with an opportunity for them to ask questions and practise pressing the panic button
5. staff trust the solution and it has credibility
6. staff need to form new habits, so allow 2-6 months for it to settle in
7. keep user and response contact details up to date – ideally, they should be available on a monthly report
8. solutions manufactured by the provider are going to have better support, be continuously enhanced and not ever be "orphaned" – a solution brought in from overseas by a provider that focuses on the recurring revenue from the platform license is never going to be as robust
9. complacency is the enemy – test regularly.

What we know is that your staff are probably safe 99 per cent of the time – and the one per cent of the time things go wrong it's usually human error.

We are all human and we are never going to not make mistakes, so don't wait for the one per cent to find out what could go wrong when you can mitigate the consequences now.

Petra Håkansson is Managing Director of Guardian Angel Security, which offers a full range of lone worker protection including hardware, network, monitoring and consultancy services

Understanding your responsibilities

While compliance and morality are two different factors in the decision-making process, there is no question that under the new HSWA there is a responsibility on the PCBU to put controls in place to manage risk to their remote and isolated staff.

The *General risk and workplace management: Part 2, 3.1 (Regulation 21: Managing risks associated with remote or isolated work)* provides clear guidance on who is captured in this regulation.

Work can be remote or isolated from the assistance of other persons because of location, time, or the nature of the work. Work can be isolated without being remote, and be remote without being isolated.

The first consideration, as with all risk, should be to consider whether the remote or isolated work is necessary.

If it is to take place, there are prescribed risk management and examples of control measures detailed in the guidelines.

These include:

- carry communication devices that work at the remote location (e.g. radio, satellite or cell phones, pagers or distress beacons) and other means to raise the alarm
- contact home to check-in at specified times (or are contacted by another worker at specific times) with failure to check-in triggering the emergency response plan.

In addition, the PCBU must provide a system of work that includes *effective communication* with workers.

What constitutes an effective communication system will also depend on the sorts of risks faced by the worker (and may need to include panic systems).

A communication system that has gaps in coverage or cannot be used in an emergency is unlikely to be effective.

So, basically, you must provide communication, and you must consider duress devices if the risk is such that a phone call is unlikely to be successfully made.

Resilience, well-being and risk management are vital

Resilience is identified as more than just the ability to bounce back after a challenging time, Sam Patel observes

It's about having the self-insight to adapt your skills, attitude and behaviour so you can thrive through change and unexpected events at home and at work.

To this end personal and professional resilience are viewed as going hand in hand.

After all, we carry ourselves wherever we go.

Often 'resilience' is referred to as something that you either 'have or don't.'

This myth can be challenged by providing an evidence-based approach to considering resilience as a developing capability.

In terms of application to a healthy workplace, the health and safety legislation changes in New Zealand specifically highlight the responsibility that we all have for our health and safety.

We are required to fully understand hazards and risks in the workplace, to ensure 'reasonably practicable' steps for safeguarding are implemented.

When it comes to 'social hazards,' such as work related-stress or working long hours, I consider 'health and safety' and 'well-being' to be two sides of the same coin.

Being realistic about risk

The understanding, estimation and management of risk are further considered the other side of the resilience coin.

Identifying and quantifying hazards is complex and there is a danger of inaccurately estimating these risks due to the role of emotion and unconscious bias.

For example, someone whose role involves working face to face with the public may believe that an aggressive interaction is a more likely risk than being hit by a car when crossing a road.

The dramatic nature of the first scenario can cause us to magnify the risk involved and at the same time we may underestimate the risks involved in more everyday activities such as crossing the road.

Individual resilience starts with knowing yourself

How a person is feeling on a particular day is also a risk factor that often goes unidentified as people try to put on their game face at work.

Lack of sleep or personal issues may mean a person is more vulnerable or less in control of themselves, which can heighten risks.

These risks can be minimised by creating a holistic health and safety culture that takes into account the human factors and provides supporting structure and policies.

Resilient organisations recognise that they are dealing with humans and emotions

Supporting the individual, team and organisation to enhance their resilience supports the robust management of risks, and is what drives a pro-active health and safety culture.

A focus on resilience and wellness can help to ensure that people and leaders are more aware of themselves and their people and are comfortable having honest conversations, making adjustments if necessary to prevent possible harm.

Why is resilience so important?

Life and work can be challenging with pace increasing and change becoming a permanent part of the landscape.

Events such as natural disasters have emphasised the power and impact of resilience on wellness.

Whilst some events are more predictable than others, workplace stress is a common reaction to change, uncertainty and adversity.

The Te Whare Tapa Whā (a Māori Model of Wellbeing) developed by Māori health expert Mason Durie in 1982 encapsulates a Māori view of health and wellness and has four dimensions:

- taha wairua (spiritual health)
- taha hinengaro (mental health)
- taha tinana (physical health)
- and taha whānau (family health).

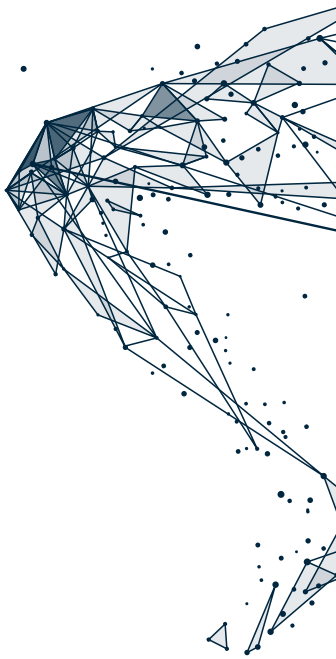
Different parts of a wharenui (meeting house) represent each of these dimensions; a model that also provides a visual metaphor for people in organisations.

It promotes individual responsibility for wellness alongside a collective responsibility to care for each other and to look out for colleagues.

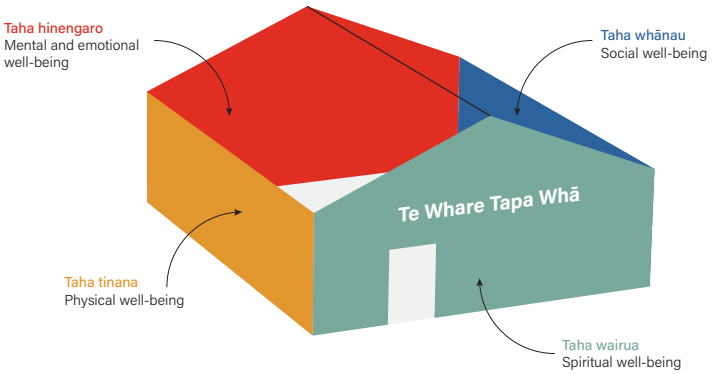
By proactively building resilience, enhancing employee well-being and developing robust risk management, an organisation can ensure the sustainability of their business.

How can resilience training help an organisation?

- Equips managers with the tools to recognise risks and help to



build resilience in their teams
- Ensures executive teams are meeting their governance requirements under the Health and Safety Act by championing a proactive health and safety culture in their organisations
- Gives individuals the skills to take responsibility for their own health and safety
- Creates a structure that ensures all employees are part of the feedback loop to continuously improve the recognition and management of risk
- Builds resilient organisations that can adapt and respond as the environment changes or unexpected events occur
- Creates an improved culture that recognises that people are people and "no one stands alone"
- Contributes to the community by giving people and families a core skill set that apply to work and life.



When is being resilient useful in organisations?

- When preparing people to deal with change
- Interacting with the public or in customer service and enforcement roles
- Improving productivity and preventing burnout and stress
- Correct identification of hazards
- There is a need to correctly identify hazards
- Responding to an unexpected or difficult situation
- Debriefing after an incident
- Dealing with residual feelings following an incident.

What other outcomes occur from developing a resilient workforce?

- An inclusive, caring culture
- A shared approach to health and safety
- Reduced absenteeism
- Reduced accidents/incidents
- Reduced staff turnover

Who should attend

- Front line staff
- Supervisors and people leaders
- Senior leaders and executive team members
- Health and safety teams.

Sam Patel is a Registered and Forensic Psychologist with almost 20 years' experience working within both clinical and organisational settings, covering very high risk, high pressure environments across New Zealand, Australia and the UK

Tackling a tough taboo

The first New Zealand company to adopt a targeted suicide prevention programme received a Judges' Special Mention in the Leadership Category at the 2016 Site Safe Construction Health and Safety Awards

Lines company NETcon design, construct and maintain electrical systems throughout the South Island, with customers ranging from public service utilities to individual land owners.

The Timaru-based company employs a hardworking staff of 100 employees, most of whom are men.

Each year, about 75 per cent of all the 500-plus suicides in New Zealand occur in men, the majority of whom are men of working age.

Those in construction are most at risk, with a recent study finding that the suicide rate among men in the construction and trade industry was higher than the rate for those working in farming or forestry.

"The effects of suicide always extend beyond the person who died; children lose fathers and mates lose friends," NETcon General Manager of Strategy, Operational Compliance and Security, Dave Armstrong observes.

"There are also economic costs to family, and families may have to move.

"Suicide is a very real problem in New Zealand and something we must work harder to address," he insists.

NETcon addressed the problem by instituting the Mates in Construction programme, which is based on the idea that suicide is everyone's responsibility and it is not something that should be left to mental health professionals alone.

Originally developed in Australia, the programme offers workers three levels of training to help workmates, and additional support for companies such as case management and critical incident support.

Mates in Construction works on the premise that suicide is preventable. It gives workers the confidence to recognise when a workmate may be depressed and shows them how they can help.

Sobering statistics

- The latest available statistics show that the number of suicides in New Zealand increased to a new high of 579 in 2015/16.
- This is the most suicides since 2010/11, when there were 558 in the provisional statistics.
- Earthquake-stricken Canterbury had the highest rate by district health board with 78, followed by the Waikato with 55.
- There was also a rise in women committing suicide, with an increase of 34 on last year, as male suicides reduced by 19.
- The 25-29-year-old age group recorded highest number (66), while Māori suicides were down by one to 129.
- People who were employed had the highest number at 252.

Simply effective

Armstrong says after attending a presentation on the Mates in Construction programme at Timaru Hospital, he was struck by how simple, and yet effective, the programme seemed.

"It's an easy-to-implement programme.

"It's not about turning workers into counsellors or psychologists.

"It's just about workmates looking after each other.

"The risk to men is something that's often not spoken about and it's a significant issue.

"Men are often not good at speaking up.

"We save it up and wait until it's at a more serious stage.

"Kiwi men are not typically high users of medical treatment - we tend to try to solve things by ourselves – and we are often not good at communicating our feelings.

"So, part of what I liked about the Mates in Construction programme was that it's actually in your face – yes or no – and that's how men traditionally think."

With staff often working in challenging weather and at all hours of the day to repair vital powerlines, NETcon places a strong emphasis on keeping its workers safe and well.

The company has a comprehensive wellness programme, which includes twice-monthly visits from a nurse, and free hearing and blood pressure checks.

National first

Armstrong says it made sense to add the suicide prevention programme to NETcon's health and safety toolkit, and in 2015 the board approved its roll-out, the first in New Zealand.

The programme was introduced later that year, with all staff attending an initial one-hour group training session aimed at raising awareness.

This basic training introduced workers to the idea suicide can be prevented and provided practical guidance on how to assist workmates.

Following the initial awareness session, many of NETcon's staff volunteered to receive extra training enabling them to become a work site "Connector" - someone able to help by connecting a workmate to professional assistance.

Armstrong admits he was surprised by how many workers asked for the additional four-hour training, with almost 40 per cent of staff volunteering.

"The reaction from staff blew my mind.

"It's one of those programmes that just grows, but it's all basic stuff like not being scared to say 'hey, what's changed, what's different?' if you notice something going on with your workmate."

Helping someone might be as simple as picking up the phone and dialling the number for them, Armstrong explains.

"There doesn't have to be any management or HR involvement.

"It's just mates, looking after mates, and people not being afraid to take that first step."

NETcon now has 14 trained Connectors across all areas of the business, and advertises who they are on posters around the office.

Evaluations of Mates in Construction in Australia have shown the benefits of the approach, with research showing a $4 return for each dollar invested in the programme.

Armstrong says he hopes other New Zealand companies will follow their lead, so that the industry can begin to address the problem of suicide.

"Trying to stop suicide is everyone's responsibility, it shouldn't just be left to mental health professionals.

"And it makes good business sense to invest in our greatest asset – our staff."

For more information on Mates in Construction programme, go to matesinconstruction.org.au

Where to get help:
Depression Helpline
0800 111 757
Suicide Crisis Helpline
0508 828 865

Taking the heat out of hot works

There's always potential for injury in a 24/7 transport operation with more than three thousand employees, and New Zealand's national rail business is no exception

That's why KiwiRail has been driving a strategy for the past three years to improve performance in the business, standardise assets and invest in safety behaviour, training and leadership.

It's a daunting task encompassing three inter-island ferries, three long-distance passenger services, 198 mainline locomotives and 4,585 wagons that together transport 25 per cent of New Zealand's exports.

Particularly at risk are the 450 maintenance staff who work on the locomotives, railway lines and wagons that handle 18 million tonnes of freight and some 1.2 million passengers per annum.

Since 2012 there have been 64 hotworks accidents from gas-cutting and welding, ranging from lost-time injuries to medical treatment injuries.

One of the worst accidents happened on April 27, 2016, when a mechanical engineer was performing a weld repair underneath a rail wagon in the KiwiRail Depot in Christchurch.

Boiling residue from the welding torch fell into his overall sleeve, his t-shirt caught fire and he received severe deep tissue burns on the underside of his upper right arm.

He needed several hospital visits for treatment, skin grafts, and to manage associated skin infections, but unfortunately was not able to return to full duties and subsequently left the business.

An investigation found that KiwiRail processes and procedures were deficient in various areas, resulting in several recommendations following KiwiRail's Zero Harm inquiry into the incident.

Worksafe peer-reviewed the Zero Harm investigation, which identified that a culture change amongst employees was needed to prevent accidents occurring.

The response to a serious burn injury highlighted the effectiveness of the High Performance-High Engagement approach in reaching successful workplace solutions to safety issues.

HPHE is a partnership between KiwiRail and the Rail and Maritime Union (RMTU) the independent trade union that represents the majority of employees at KiwiRail.

KiwiRail's Hotworks High Performance-High Engagement Team (HPHE) is made up of employees from KiwiRail's frontline, managers, engineering and technical experts, RMTU Delegates and Zero Harm advisers.

"The composition of the 11-person team ensured the best geographical spread possible and there was sufficient representation from all stakeholders," says HPHE facilitator Strachan Crang.

Every HPHE team starts with a two-day interactive training event focused on problem-solving, dealing with perceptions, active listening and learning principles.

"By spacing the engagement sessions throughout the day and repeating messages, staff had the opportunity to think about the issues and ask questions in a non-threatening environment"

On the second day of training the team develop an Issue Statement to accurately capture the issue the team is trying to resolve.

"This is completed by consensus; every person must be able to actively support the outcome, even if it is not their first choice."

The Issue Statement in this case was:

How do we resource our people to be competent, equipped and prevent harm when carrying out hotworks tasks?

The next step is for stakeholders to identify their underlying concerns and motivations related to the issue statement. "Solutions are then brainstormed collectively and assembled into a 'strawman' solution," Crang adds.

This is done with the full group and then all participants are allocated into mini teams to work on the "strawman" and develop the solutions into final proposals. "A number of initiatives are proposed to eliminate, isolate, substitute and reduce the risk."

Additional solutions included lower level administrative and workwear solutions including Personal Protective Equipment (PPE), guidelines, first aid equipment, job aids, training and competency guidelines.

Time was allocated for team members to workshop the ideas and solutions with their workmates. The approved list of PPE was acquired and tested by team members.

"A comprehensive rollout package was developed by the team, which included a visit to all mechanical sites to ensure maximum attendance coverage," Crang recalls.

Many past initiatives had been imposed by notice rather than through a comprehensive engagement strategy, so a core rollout team of two employee and two manager representatives from the Hotworks HPHE team travelled the country.

Staff in the regions supported the presentation, Crang says. "Meetings were informal and focused on learning, rather than imposing a policy."

The rollout started with a full site briefing for 15 minutes, followed by small group meetings around the sub projects for half an hour.

"This allowed the participants to ask questions informally, rather than having to stand up in front of a crowd."

The full site then got back together for further questions and a series of meetings with the site Health and Safety Committee and key influencers including managers, team leaders and RMTU delegates, followed by more detailed sessions with employees who perform hotworks tasks as part of their roles.

On day two there were activities out in the workplace which included placing new first aid boards and posters around the sites.

"This also gave the team the chance to have safety conversations and mini workplace audits," Crang adds.

The rollout teams participated in some of the tailgates where there was a high rate of hotworks being performed.

"By spacing the engagement sessions throughout the day and repeating messages, staff had the opportunity to think about the issues and ask questions in a non-threatening environment."

Discussions during these meetings were peer-to-peer rather than senior manager to employee, Crang notes.

"This helped in forming connections with those using the new rules and allowed staff to have honest conversations about safe welding practices."

The initiative has been a resounding success, not only reducing the number of hot works injuries but also winning KiwiRail the Engagement category of the 2017 New Zealand Workplace Health and Safety Awards.

"We will continue to develop and implement similar campaigns in future to build on the success of this programme and ensure we keep our staff as safe as possible," Crang concludes.

Three things your employees must never do with their safety gloves

Your employees' personal protective equipment (PPE) is vital to keep them safe. Without it, they're vulnerable to serious injuries, the most common of which are hand injuries.

The most common of which are hand injuries.

This is because your employees constantly work with the hands and, when they use tools and machinery, it puts them in danger.

That's why you give them safety gloves as part of their PPE.

But to ensure their safety gloves do their job, your employees must never do these three things with them...

1 They mustn't try to force them onto the wrong hand. It may sound like a simple thing, but if your employee accidently tries to put his glove on the wrong hand, it could stretch and distort the shape of the glove.

This means the gloves will be baggy and clumsy to wear when working with tools. That makes them a health and safety hazard.

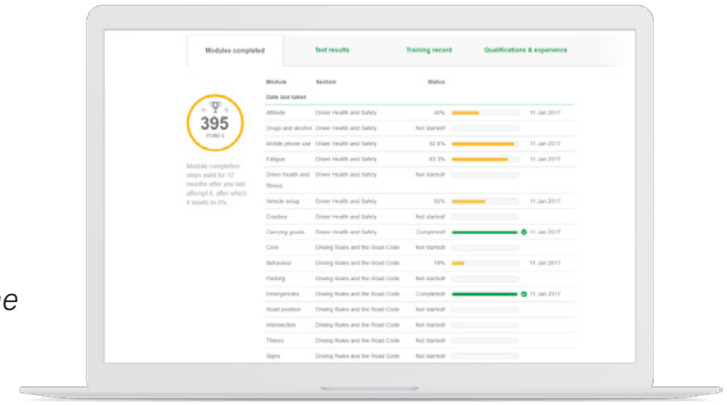
2 They mustn't use their gloves as a cloth. If your employees use their safety gloves as a rag to clean a surface, they might catch and tear on something. A torn safety glove won't be able to survive the tough use it gets and it'll just fall apart.

3 They mustn't leave their safety gloves lying around their workplace. Your employees need to keep their gloves somewhere safe when they're not using them. This should be in a pocket or a locker. If they just leave them lying around, they'll go missing or get damaged.

So ensure your employees know they mustn't do these things with their safety gloves so they stay in good condition. It's the best way to keep your employees' hands safe.

New online logbook and work time refresher course

DT Driver Training has added a logbook and work time refresher module to its Fleet Driver Training Plan



It helps companies ensure that their drivers know how to fill out their logbooks and calculate their work time, and therefore avoid fines and demerits.

"With NZTA recently changing the logbook rules again, now's the time to ensure your drivers are aware of their obligations," says DT Driver Training Director Darren Cottingham.

"Company managers can monitor driver progress through the modules and create a certificate when the driver has finished."

Available online at www.drivingtests.co.nz, the module explains:

- how to fill out the logbook properly and identify mistakes in cumulative work periods and work days
- variations
- secondary employment
- penalties
- exemptions
- employer obligations
- calculating work time
- unavoidable delays and more.

Used in conjunction with the existing fatigue module, it can assist drivers studying towards unit standard 24089 (*Demonstrate knowledge of fatigue management, work time, and driver logbook requirements*).

The Fleet Driver Training Plan can also be accessed via DT's free iOS and Android apps, along with their modules for driver health and safety, advanced driving, heavy vehicle training, and the Road Code.

www.drivingtests.co.nz

Control noise for safer, happier workers

Businesses must look beyond earmuffs for appropriate workplace noise controls, says WorkSafe

WorkSafe recently visited Metco Engineering which, through its Health and Safety Committee, takes a very proactive approach to keeping staff safe at work.

Metco Engineering's Mark O'Donnell says, "After twenty-five years of senior management I have witnessed many workplace incidents, and almost all were preventable."

Those experiences shaped Mark's approach to health and safety, and he says that health and safety is no longer a taboo subject and that it is a key driver for any business.

"At Metco, I've given our [health and safety]committee the power to make changes in the business.

"If there is a good reason, we'll do it because for Metco health and safety is of paramount importance.

"As a result of management and committee suggestions we recently modified our press machines to reduce noise.

"We ground shear angles onto the cutting faces of the press tool punches, reducing tonnage required to punch out parts, thus reducing noise.

"We've also put vibration pads beneath most of our industrial machines.

"These large pads reduce the noise, and they have the added advantage of cutting out vibrations, another health risk to our staff."

Boxing clever

For the machines that were not able to be directly quietened, they built sound-reducing boxes around them, which have dropped the noise levels by up to 60 percent for those machines.

"Staff who took an active role in the noise reduction programme couldn't believe they were working beside the same machines.

"We've managed to drop the noise by over 30 percent on the manufacturing floor which has made the environment better for our entire business – on the shop floor and in the office," Mark adds.

In a recent noise test by the council, a lawn mower at a neighbouring house registered higher on the monitoring equipment than Metco's workshop.

WorkSafe's construction sector lead Vadim Spice says, "Sustained noise in workplaces increases stress and can lead to a significant drop in productivity.

"It is encouraging to see innovative products, such as acoustic mats for construction sites, starting to appear as businesses realise they need to better manage the risks from noise.

"The real gains will come when businesses consider noise at the time of planning.

"Installing quieter machines, or designing ways to control noise at the very beginning, reduces the need to rely on workers using the less effective administrative controls, such as earmuffs."

Exercise every day to help keep death at bay

Desk jockeys and couch potatoes be warned – a few minutes exertion each and every day could prolong your life

A major global study has found that one in 12 deaths could be prevented with 30 minutes of physical activity five days a week.

The researchers also found that 1 in 20 cases of cardiovascular disease could be prevented if everyone did 30 minutes of physical activity five days a week – whether it's going to the gym, walking to work, or household chores.

Completing 30 minutes of physical activity five days a week (150 minutes a week) is associated with a reduced risk of death and cardiovascular disease, according to the largest study of physical activity tracking 130,000 people in 17 countries.

Being highly active (750 minutes a week) is associated with an even greater reduction, and the authors found that this was more achievable for those who built physical activity into their day through active transport, job type, or housework.

The study confirms on a global scale that physical activity is associated with a lower risk of mortality and cardiovascular disease (including death from cardiovascular disease, heart attack, stroke, or heart failure).

This lowered risk is irrespective of a person's home country, other risk factors for disease, the type of physical activity and whether the activity is for leisure or if it is taken as part of daily transport, at work, or housework.

Exercise essential

The World Health Organisation (WHO) recommend that adults aged 18-64 years old do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, as well as muscle strengthening exercises at least two days a week.

Cardiovascular disease is the leading cause of death worldwide and a major economic burden globally.

It is estimated that 70 per cent of cardiovascular disease deaths occur in low- and middle-income countries, where it is the most common cause of death.

The study saw 130843 participants aged 35-70 years old from urban and rural areas in 17 countries across various world regions complete questionnaires on their levels of physical activity.

Each participant provided information on their socioeconomic status, lifestyle behaviours, medical history, family history of cardiovascular disease, weight, height, waist and hip measurements, and blood pressure.

They also completed a questionnaire on the types of physical activity they completed over a typical week, which the researchers used to calculate their average activity levels.

Participants completed follow-up visits with the research team at least every three years to record information on cardiovascular disease and death for 6.9 years.

The team analysed rates of cardiovascular events (including death from cardiovascular disease, heart attack, stroke, or heart failure) and deaths.

Of the 106970 people who met the activity guidelines, 3.8 per cent developed cardiovascular disease, compared to 5.1 per cent of people who did not (23549 people).

Risk of mortality was also higher for people who did not meet the recommended amount of activity – 6.4 per cent compared to 4.2 per cent for people who met guidelines.

Preventive actions

The findings suggest that if the entire population met physical activity guidelines, 8 per cent of deaths (equivalent to around one in 12 cases) and 4.6 per cent of cardiovascular disease cases (almost one in 20 cases) could be prevented.

Furthermore, if the entire population was highly active (completing more than 750 minutes of physical activity a week), 13 per cent of deaths (around one in 8 cases) and 9.5 per cent of cardiovascular disease cases (around one in 10) could be prevented.

Overall, almost a fifth of people in the study (18 per cent, 23631 people) did not meet the physical activity guidelines, but almost half (44 per cent, 57868 people) were highly active.

Physical activity as transport, occupation or housework was the most common form of physical activity, across all regions (ranging from 437 to 574 minutes per week).

While physical activity in leisure time was common in high-income countries (average of 130 minutes per week), it was rare in other regions (25 minutes a week in lower-middle income countries and no time spent in this way in upper-middle and low-income countries).

Overall, the more activity a person did the lower their risk of mortality and cardiovascular disease.

The study found no ceiling effect on the association, and no risks associated with extremely high levels of physical activity (more than 2500 minutes per week, up to 17 times the physical activity guideline amount).

The authors recommend building physical activity into one's daily lifestyle to achieve higher levels and reduce risk as much as possible.

"Our study found that high physical activity was only possible in people who completed physical activity as a form of transport, part of their job or through housework – with 37.9 per cent of people who acted in this way attaining this level of activity, compared to 2.9 per cent who were only physically active in their leisure time," says lead author Dr Scott Lear, Professor of Simon Fraser University's Faculty of Health Sciences and Pfizer/Heart & Stroke Foundation Chair in Cardiovascular Prevention Research at St. Paul's Hospital in Canada.

"This reflects the challenge of trying to be highly active during limited daily leisure time outside of work and domestic duties."

The authors note that the physical activity questionnaire used in their study may overestimate the amount of physical activity completed, meaning the benefits of exercise could be even higher than projected in the study.