



Welcome to the May edition of Train Brain

How long do you think it's been a legal requirement to guard machinery? It may surprise you to know this was introduced in the Machinery Act 1950. Yet as WorkSafe recently commented, we are still seeing cases of workers losing body parts.

Clearly the courts think that nearly three quarters of a century is long enough for businesses to get on board. Since mid-March they've imposed more than half a million dollars in penalties for cases where workers have lost fingers on machinery that weren't kept safe. Mercifully, these were all engineering or factory sites rather than quarries or mines, but we share manufacturing's persistent problem with machine safeguarding.

In this Train Brain, we report on how WorkSafe inspector John Ewen provided an example to this month's MinEx workshop in Dunedin of an extractive worker still in hospital after being pulled into a tail drum.

It's concerning that if we can't get these things right in two generations of workers, how are sites going to deal with the rapidly emerging reality of managing silica dust?

This is a bit like artificial intelligence. It's not on the horizon; the risks and issues are here right now and need to be addressed. Already a couple of Southland quarry workers have been diagnosed with silicosis. As this Train Brain reports, this disease has already earmarked several hundred Australian workers in manufactured stone for death.

Yes, the silica component in those flash marble-like benchtops is 1000 times more than a quarry or mine worker might face; but exposure over a prolonged period will heighten the risk to worker health if not appropriately managed.

Australia is getting serious about RCS. Manufactured stone is banned from July; next year all new machinery will need to be equipped with heating ventilation and air conditioning (HVAC) systems, which ensure no dust can penetrate a cab.

So, it is more than disappointing to learn that companies offering such installs here are not getting much traction.

Silicosis is now the elephant in our industry room. Please start reviewing how your business or your employer is dealing with it. You owe it to yourself or your staff to get assurance that this is not being ignored; this is not about the risks of losing a digit to unguarded machinery, it's about risks to life and we don't have seven decades to get this right.

I hope this Train Brain may provide the shunt that is needed to get things moving in many extractive workplaces.

Stay safe

Wayne Scott
CEO MinEx and AQA

Not one quarry using certified cab dust filter systems

High-performance cabin overpressure and filtration systems – that protect Kiwi machinery operators from fine dust or harmful contaminants have now been available for retrofit for more than a dozen years.

While many landfills, transfer stations, animal feed processors, fertiliser handling facilities, concrete crushers and batching plants have opted to install the systems, to date the market leader says not one quarry operation has chosen to use the engineered solution to fine respirable dust.



Bill Hackshaw, Managing Director BroLube NZ.

Bill Hackshaw is a director of the company that imports their own brand of cabin overpressure and filtration systems, manufactured in the Netherlands.

Bill points out that although there are also a number of other suppliers in the market, NZ quarries continue to reject adoption of cabin overpressure and filtration systems that can meet the standards and protect worker health.

“These are readily available at low cost to extraction industries. They are very effective engineered solutions to harmful fine dust.”

“Other New Zealand industries have taken to the technology with enthusiasm to protect worker health and it’s sad to see the failure of any quarry or mining industries to take this up.”

Bill says they have done 12 system installs since Christmas, most in landfills, transfer stations and cement batching plants.

“Not one single install yet in a quarry. They just won’t accept there’s any need.”

Installs cost around \$13-\$14,000. The systems force highly filtered air at 120 pascals into a cab.

“It’s not a lot of pressure, you don’t notice it, but it reduces the chance of any harmful air getting in”.

The suitable products in the market use layered filters with a large footprint. These filters clean the air as it passes slowly through, until the P13 HEPA (high efficiency particle arresting) filters then capture respirable material down to 0.03 micron – too small to see with the naked eye.

Bill says a common misconception is that air condition systems do much the same.

“With your HVAC system blasting, in fact you are forcing more fine dust into a cab. The filters in your AC intake will try, but there’s no way they can provide the safe air the worker requires. With a good cabin air system, the air coming in is warmed or cooled and it’s very clean”.

“Think about your HVAC system and your electronics system only dealing with clean air. No material corrosion, no unnecessary R&M, should be a no brainer!”

From next year, Australia will require all new machinery to have systems which prevent any dust entering a cab. Currently, one major equipment manufacturer does offer a lower-pressure filtering system as an option but it does not meet European standards.

The AC Filter (then Brofil) product was developed more than 40 years ago when a Dutch village needed highly contaminated soil removed from beneath existing houses.

The cost was 85 million guilders (NZD \$68M) and the Dutch Government contributed to the development of the cabin overpressure and filtration technology to protect workers on site.

This was then commercialised into the products AC Filter and others manufacture and distribute today.



[Register here](#)

Going under for the first time

MinEx Communications Adviser Brendon Burns experienced his first underground mine earlier this month with a visit to OceanaGold's Macraes gold mine in East Otago...

Tom Penny, a shotcrete sprayer, advises as we approach the entrance to the Golden Point mine that if any of us feel overwhelmed, just sing out and he'll take us back to the surface.

"I certainly didn't like it the first time I went down the hole," he candidly admits.

The safety briefing and procedures have already helped ease any concerns. Roger Forrest, Underground Safety Manager at Macraes, had walked us through the briefing.



Entrance to Golden Point mine, OceanaGold Macraes.

This includes learning about how to operate the self-rescue units which cling to our sides. Looking like a WW1 gasmask, these recycle your breath for 30 minutes in the event of a mine fire or outbreak of noxious gas.

We also learn among other things the code for the headlights on top of our hard hats. If a mine worker is moving their head side to side, it means don't proceed towards them.

Our briefing takes place in the underground staff canteen which has big monitors showing all aspects of production. These are replicated in the underground ops room.

Roger says all miners now carry iPads which link into the ops system. No need for a pencil any more underground.



Roger Forrest, Underground Safety Manager, OceanaGold Macraes.

Tom says the health and safety messages are drilled into staff. "When you start, Roger says all these procedures are written in blood."

He invites us into a ute and we drive across a portion of the vast Macraes operation. As NZ's biggest gold mine, the scale of its more visible opencast operations are the closest to Australia's giant mines.



Tasha Goldworthy and Adam Wayman in underground control room.



Macraes Flat.

Gold was discovered in Macraes Flat, an hour northwest of Dunedin, in 1862. OceanaGold began operations in 1990 as an opencast site and that continues alongside two underground mines, the first of which commenced in 2008.

We stop at the mandatory mine log-in point where you leave your tags to collect on your return. Tom says this provides the necessary count should anything ever happen to prevent miners returning to the surface.

Then we drive down to the mine entrance. It's surprisingly busy with two-way traffic on the one lane road. Several times, Tom pulls the ute over into a branch portal where we park and look at aspects of the operation.



Giant bidders (low trucks) are carting the extracted rock to the surface, a grader is maintaining the roadway and other utes are coming and going.

In one of the pull offs, Tom takes us to an emergency shelter. These sit at intervals alongside an escape shaft from the base of the tunnel 200m underground to the surface.

Inside there is bench seating, medical supplies, water and sufficient oxygen to provide safe sanctuary for miners for up to three days while they await rescue in the event of a collapse or explosion.



Emergency shelter.



Rock carted to the surface.

In another portal, Tom turns off the ute's headlights and invites us to step out. The absolute darkness is both exhilarating and a bit overwhelming. I'm glad when he turns on his headlight and we get back inside the vehicle.

We are soon returning towards the surface – going any closer to the mine face is outside best health and safety practices. Regular drilling and blasting at the face allows further extraction.

The rock is then carted to the surface where it is crushed into a slurry before the gold is extracted and smelted.

Further refinement takes place at the Perth Mint which processes about 80% of Australasian gold.

Since operations started at Macraes 34 years ago, it has produced more than five million ounces of gold. At today's prices that's worth a staggering \$20 billion; about the same value of our annual dairy exports but sourced from one site.

For Tom Penny, as one of the 650 direct employees and contractors at Macraes, the mine provides a welcomed local well-paying job.

He's been here for seven years after earlier working as an exterior plasterer in Dunedin and prior to that as a chef.

A career in the police was then being considered but the pay at Macraes was better. After earning \$22 an hour as a

plasterer, he started at Macraes on \$30 an hour with big annual increases. It's a seven-day cycle of 12-hour shifts plus travel on a company provided bus from his home north of Dunedin.

OceanaGold runs both night and day shifts with 25-30 staff underground at any one time.

The focus on health and safety, and getting them home safely is underscored during our visit; it coincides with one done quite regularly by WorkSafe High Hazards Unit inspectors.



Tom Penny, OceanaGold Macraes.



It is a good idea to record your CPD restricted and unrestricted hours every time CPD is done. It only takes a few minutes!

The need to get serious about silicosis risks



Not that unusual of a sight – unsuppressed dust in a quarry operation.

A register of silicosis cases is needed in New Zealand as part of efforts to combat the disease, says MinEx CEO Wayne Scott.

Wayne told Dunedin's MinEx workshop attendees (one of 16 he is again running around NZ) that he's called on the coalition government to set up a register.

There had already been a couple of recent cases of respirable crystalline silicosis (RCS) detected in a Southland quarry.

“There’s every chance we’ve got more,” he told the 40+ quarry and mine workers attending the Dunedin workshop in early May.

Wayne says a silicosis register, like one already established for asbestosis, would help identify the level of risk posed by silicosis.

It would sit alongside regulations now in place which require all extractive sector workers (initially mine and now also quarry sector) to have lung spirometry tests every five years to check lung function. However, Wayne says there is no one trained in New Zealand to properly detect early onset of silicosis in such tests.

He recently advised Workplace Relations and Safety Minister Brooke van Velden of this critical absence, noting that until Australia ensured such skills were in place, its lung spirometry tests were not detecting any silicosis.

If the first presence of silicosis is detected in X-rays, the worker’s death is likely, says Wayne.

From July, Australia is moving to totally ban engineered stone because of the huge health issues exposure at accelerated levels has created.

Around 700 compensation claims for silicosis have already been accepted and around 100 former engineered stone workers have died, many of them under the age of 35.

MinEx has supported a similar ban in New Zealand.

Wayne says someone working in engineered stone faces 1000x or more exposure to RCS than anyone working in a quarry. While some engineered stone factories may have improved practices, much of the risk of exposure to RCS came in installing benchtops where inevitably a bit of shaving was needed.

He says dust controls in NZ quarries tended to focus around suppression by the use of water, checking seals in cabins and control rooms, and general housekeeping. However, Australia was moving to require from 2025 that no new equipment can be purchased without heating ventilation air conditioning systems which prevent dust entering a vehicle cab or office by forcing clean filtered air into the workspace.



Remember to keep all evidence of CPD activities to provide when you apply/ renew your CoC

Tough regulatory line emerging on silica dust

WorkSafe is signalling to the extractive sector that it’s going to start taking a tough line on employers who fail to protect their workers from silica dust.

“We are going to be coming in quite hard,” WorkSafe mines inspector Stuart Heslop told this month’s MinEx workshop in Dunedin. “This stuff is nasty.”

Respirable Crystalline Silica (RCS) fibres were 100 times smaller than a human hair and the health risks to quarry and mine workers from the resulting disease silicosis were bigger than most people realised.

The same was the case with asbestos which was regarded as a great product until the alarm bells began to ring.

Like asbestosis, silicosis could take 8-10 years from diagnosis until it killed someone.

Modelling by Curtin University in Perth estimates that up to 103,000 Australians will get silicosis as a result of exposure to silica dust at work. The estimate covers a range of sectors including tunnelling, quarrying, cement work, mining, and construction. More than 10,000 will develop lung cancer. That’s many times more than the 700 Australians already diagnosed with silicosis, mostly for work with engineered stone which is about to be banned.

Stuart says it is a quarry or mine operator’s responsibility to know what they are crushing and to take preventative measures if silica is presenting a risk.

“You are going to have to look after those workers if they are exposed to the stuff.”

From next year, Australia will require HVAC systems in all new machinery cabs. WorkSafe’s view is that these should be in place in New Zealand cabs. They could also be retro-fitted.

Respirators should be available when there is any residual risk from dust after controls like extraction ventilation are used. Staff must be clean shaven to ensure a proper fit when using tight-fitting respirators.

If a worker doesn’t want to shave, then exposure needs to be controlled to a level below which there is serious risk; or they need to be provided with loose-fitting air supplied respirators; or they need to be offered another role away from any area where silica dust may be present.

The mine or quarry operator must ensure that respiratory protective equipment is fitted correctly for each worker by ensuring fit testing is conducted for each person for each mask they will wear. WorkSafe recommends an expert is engaged to conduct fit tests.

MinEx CEO Wayne Scott told the forum that silica dust was presenting significant potential risks to the extractive sector.

“One of the biggest issues is, we have been in denial.”

He says a 1990s Department of Labour study had said silica dust was not a problem but the technology to detect it, including now required exposure monitoring, has moved on since then. “Your exposure monitoring will tell you the extent of worker exposure to RCS.”



MinEx CEO Wayne Scott presenting at the MinEx Health and Safety Workshop in Dunedin.

Reduce the paperwork and focus on people

Jo Prigmore has ditched paper documents in favour of a ‘less is more approach’ to support in her company’s quest to improve the safety of its staff.

“I’m not a fan of paperwork,” the Fulton Hogan National Health and Safety Manager cheerfully told the Dunedin MinEx workshop earlier this month.

“When we think of safety, most of us think of compliance. Really, safety is about people.”



Jo Prigmore, Fulton Hogan National Health and Safety Manager.

Jo asks the quarry and mine workers if they know what's the average reading age in New Zealand? "Twelve," one person suggests. Actually, she says, it's 8-12, so having a lot of paperwork doesn't make much sense.

Jo's had 14 years at Fulton Hogan (interrupted by a wee break in the wine industry) and before that was a health and safety inspector in the UK.

Fulton Hogan has removed some 2,000 documents from a system covering all health and safety, and environmental rules for staff. Now it has the Living Safely manual which covers the whole health and safety management system in about 100 pages. The permit system for high-risk jobs was 37 pages; now it's 4 and half.

It's not just a change in the paperwork. Jo says after some incidents involving its traffic management staff, the company did what it could to move them out of the way of sometimes dangerous drivers through the use of traffic lights.

Staff have become involved in making videos too which highlight risks such as earthmoving machinery hitting other vehicles – and how to avoid such incidents.

There has also been a move from what Jo terms the name, blame, shame and train approach, to health and safety incident investigations.

The focus is now on people, not liability, from rules to more thinking. Near-miss reporting has become safety improvement reporting.

"Nearly every good idea comes from a cock-up," she says.

It's still a work in progress but since 2018, Fulton Hogan has halved its total reportable incident frequency rate (TRIFR) and life-changing injuries across the company are down by almost a third.

And there's a lot less paperwork as well.



If you know of anyone who would like to receive the Train Brain email office@minex.org.nz and we'll help keep their training on track

What to expect when the inspector calls

A tidy workplace usually indicates better health and safety practices, says WorkSafe mines inspector John Ewen.

The West Coast-based inspector and his Waikato colleague Stuart Heslop both presented at the Dunedin MinEx workshop earlier this month.

“If it’s untidy and there’s stuff everywhere that generally relates to health and safety,” John told the 40 attendees. “Your office and workshop say a lot about how you manage health and safety.” For one thing, cluttered workspaces made it more difficult to display necessary signage, so it was clear and understandable along with health and safety information. They also increased risks of tripping and falls. “Keeping tidy saves time, money and injury.”

Mining and quarrying operations are ordered by risk profile, which determines the frequency of site inspections by one of the eight extractives inspectors (four for mines and tunnels, and four for quarries). Effectively, the higher the risk score, the more visits you will get. “Being a high-risk site may not necessarily mean it is an unsafe site,” says John.



John Ewen, WorkSafe West Coast-based mines inspector.

With more than 1,000 quarries and mines, visits to some sites may take place less than once a year.

Unannounced inspections do happen but extractives inspectors will generally organise a visit prior to arrival. They usually meet with the site manager and often find differences between what a manager thinks is happening on site and what is actually taking place.

Particular attention is paid to walkways and machine guarding which needs to be bolted on and not cable tied. The rule of thumb is not being able to reach in and touch any part of the machinery.

Windrow height is outlined within industry guidance to be at least 50% of the height of the largest tyre on operating vehicles and constructed from suitable material. Logs and boulders are not acceptable as edge protection. However, recent studies have indicated that in some cases, windrow heights may need to be greater than 50% taking into account the type of mobile plant used and energies applied.

The inspector will look at the health and safety management plan and expect people to be trained to operate any machinery they are using.

First aid kits on sites are often inadequate. Something that fits in a glove box would not be much help if a major injury occurred and immediate help is needed before medics arrive.

At the end of a visit, a site manager is advised of any enforcement action that WorkSafe intends to take. A follow-up report is usually issued within three weeks. If an improvement notice is issued, this would include a deadline to make the necessary changes. If this cannot be met, the business must advise WorkSafe before the deadline.

New micro-credentials from MITO



MITO has launched three new extractive industry micro-credentials.

They are designed for extractive industry employees, particularly those wishing to be appointed to a safety-critical role under the [Health and Safety at Work \(Mining Operations and Quarrying Operations\) Regulations](#).

"These micro-credentials will support the industry to meet their CoC requirements," says MITO Executive Director Verna Niao. "We have worked closely with MinEx to achieve a great outcome for industry."

The new micro-credentials are specifically for those who need to meet additional CoC requirements under the [Safe Work Instrument](#). They may have already completed or are currently working through a [MITO Mining Administration](#) programme leading to a national qualification.

The three new programmes are:

Safe Working Practices Micro-credential (Level 3)

This provides an understanding of the general safety practices for workers and how to undertake a job safety analysis in the extractives industry. Courses take two days in an off-job session run by a provider.

Site Construction and Maintenance Micro-credential (Level 4)

This provides the skills and knowledge to identify the attributes and health and safety considerations of conveyors, crushers, and screening plant; how to follow, maintain and recommend modifications for stockpiling and tip head management plans; and explains associated hazards and controls, in the extractives industry. Again, a two-day course will be required.

Standard Operating Procedures (SOP) Micro-credential (Level 5)

This programme will provide the skills and knowledge to identify the key components of an extractive site operations activity, write an SOP and test and review them in the extractives industry. This course can be done online at any time from any device – mobile phone, tablet or PC.

If you are currently employed in the industry and your employer is able to support you for any of these courses, please [contact MITO](#) to organise an appointment to get enrolled.

MITO notes the micro-credentials do not need to be completed in sequence – they all cover different topics to meet the additional requirements needed for a particular CoC and each micro-credential is designed to complement existing MITO training programmes to allow learners to cover all the unit standards in the Safe Work Instrument.

You must be employed in an extractives workplace with a suitably qualified supervisor as practical components or pre-course work and post-course assessment projects include those completed in the workplace.

MITO says an average time to complete one of the micro-credentials is 1-2 months as learners can work at their own pace.

Benefits to learners include access to an industry-recognised course and specialist extractives industry learning and assessment materials, an enhanced CV and a step towards competencies required for a CoC required in a safety-critical role.

Benefits to employers include a nationally consistent training programme, a clear pathway to achieving competencies required to maintain a qualified workforce and enabling suitable people to get safety-critical roles within the industry.

More information can be found on MITO's [website](#).

ACT Safety Courses



View the upcoming courses [here](#).

To view all Extractive Unit dates visit the [Extractive Units Training | ACT Safety](#).

NZ Mines Rescue Service



Click on the link below to view the upcoming courses you can do through Mines Rescue Service.

[2024 A Grade COC Training Schedule](#)

[2024 B Grade COC Training Schedule](#)

[2024 Site Senior Executive Training Programme](#)

[2024 Specialist CoC Training Schedule](#)

For more information contact Colin McDonnell (03) 762 7828.

Tai Poutini Courses



Go to the [Tai Poutini website here](#) to view the available courses.
Students may be eligible for free fees, see more information [HERE](#)
Contact Nicole Scalmer on 03 769 9645 or nicoles@tpp.ac.nz

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