SHARING GOOD PRACTICE
www.safequarry.com

Sharing good practice 2006/07

ENTRIES FROM THE HEALTH AND SAFETY BEST PRACTICE AWARDS

'06
Extending the Culture

Continuing Professional Development
CPD
material

QUARRY PRODUCTS ASSOCIATION

Introduction

This guide summarises the ideas and innovations to come from the Quarry Products Association's *Health & Safety Best Practice Awards* 2006.

In addition, the entries can be viewed at www.safequarry.com, where those from the previous six years of the awards scheme can also be accessed. The new website also features a database of incident alerts, toolbox talks and the latest on the industry's hot topics. By registering on the site, you will receive email alerts when new items are added and an "information basket" where you can store those that most interest you.

The resources are ideal for training purposes and for Continuing Professional Development (CPD). We hope that companies of all sizes will find them useful and accessible.

How to use this guide

This guide is a compilation of solutions that companies have applied to minimise and, where possible, eliminate health and safety risks arising from their daily operations. The ideas and innovative approaches are often very simple and could readily be applied to a range of common industry problems.

It is hoped that by reviewing this guide, particularly those sections relating to your main area of work, you will recognise solutions that could be applied within your own workplace or they will generate an idea for an alternative solution.

The guide has been divided into ten sections that reflect the most common areas or activities requiring particular health and safety consideration. We have indicated which entries were prize winners, and which have video clips available. To help you locate entries relating to a certain subject, we have provided a *keyword* index.

We welcome your feedback via the safequarry website. Your involvement is crucial in helping the industry to achieve its ultimate target of zero incidents.

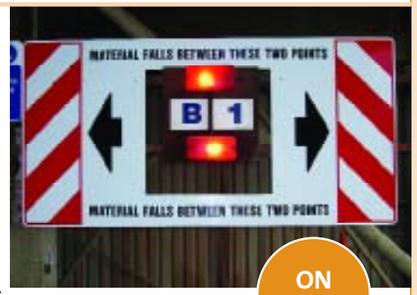
Contents

Asphalt discharge signage

Foster Yeoman > Purfleet Asphalt Depot, Essex > 01708 869251

The installation of signage and lights at the weighbridge of this asphalt plant has cut the risk of an incident as hauliers load their vehicles. In the past, there was a danger of the driver being incorrectly positioned as the hot material is discharged from the overhead storage bins.

Two red lights indicate which bin is activated. The bin lane and number is shown. This corresponds to earlier signs and also to information given to the driver over the loudspeaker system. Further signs showing PPE requirements and other safety information are erected at a height and location where the driver can easily view them from the cab window.



ON VIDEO

Inclinometer to prevent tipper overturns

Hanson Aggregates > Bradford Unit, West Yorkshire > 01274 606479

After several incidents of articulated lorries tipping over when unloading bulk materials at Hanson's UK sites, measures were introduced to address the problem. An inclinometer was fitted to a Hanson articulated tipper. The electronic sensor is attached to the trailer and detects lean, preventing the driver tipping if an unsafe angle is reached.

This original device was not sufficiently sophisticated, however, and was redeveloped to improve reliability and accuracy. Since the modification, drivers have expressed their views that the inclinometer has reduced the risk of overturning and has led to tipping areas which were previously regarded as 'border-line' being re-categorised as unsafe.

Driver training

Aggregate Industries > Bardon Concrete, Lancashire > 07740 933939

Traditionally, the training of drivers, and in particular franchisee drivers, has been inadequate in a number of areas. In particular, training in site-specific risks has been neglected. This has an overall commercial impact on the business.

A training programme was developed for franchisees and company drivers and included individual safety, site specific risks and current transport regulations. A special module is available for truckmixer drivers. On successful completion, the driver is then presented with a photo-card to demonstrate his competence. Following the training, the driver is given a file containing company procedures and a six-monthly review to maintain standards.

Contract haulier training

United Marine Aggregates > UMA House, West Sussex > 01243 817201

It became evident that the hauliers who were delivering goods on UMA's behalf had received insufficient levels of health, safety and environment training which, it was felt, could increase the risk of road traffic incidents and Lost Time Injuries. Part of the reason for this was the lack of contact between the company personnel and the hauliers.

To rectify this situation, a formal training programme was implemented. The existing induction course was modified to ensure that these objectives were covered and ended in a test which required a minimum pass rate of 75 per cent. Furthermore, all UMA contract hauliers have been required to attend a driver awareness course. Since the training, there have been no traffic accidents involving UMA hauliers.

CCTV cameras reduce tipper overturns

Aggregate Industries > Bardon Aggregates, Lancashire > 07802 276 158

One of the difficulties associated with the transportation and tipping of heavy loads is the overturning of articulated tippers. In an attempt to prevent overturns, Bardon Aggregates installed CCTV cameras in the front-inside of the vehicle body. The image is then relayed to a monitor in the cab. The driver can now observe, visually, the loading and discharging operations from the safety of the vehicle cab, assessing if there is likely to be any danger of the lorry tipping.

Entrance and traffic improvements

Aggregate Industries > Moorcroft Quarry, Devon > 01752 485254

A number of improvements have been made to the old weighbridge complex at this quarry. The entrance road was widened and signage placed overhead. A pedestrian walkway and cycle path was also constructed. The visitors' car park is now pedestrian friendly too and there are clear directions for drivers.

The vehicles are weighed at a 'check point' to prevent them from reaching the 'out-bridge' with the incorrect weight. Overall it has produced a safer, more environmentally sound and swifter solution.

Preventing hose 'whiplash'

Hanson Aggregates > 20/20 Industrial Estate, Kent > 01622 678231

During 2005, there were several 'near hits' involving truck-mixer drivers forgetting to remove the water hose attached to the vehicle's water tank during loading. This resulted in hose couplings being stretched and flying off in a "whiplash" action. The solution was simple and cheap, but effective. A quick release "in line" connection was placed between the hose bayonet connections, so that when the hose reaches maximum tension it merely detaches, rather than whips violently.

Primary crusher drive belt tension

Hanson Aggregates > Forcett Quarry, North Yorkshire > 01325 718291

The primary crusher drive belts at this quarry were tensioned by moving the motor backwards and forwards on its bed. The motor, which weighs over a tonne, was held in place by four bolts and adjusted via a threaded bar. The belt was deemed to be at the correct tension when a man standing on a 36mm spanner could no longer turn the nut on the threaded bar.

This led to risk of injury through over-exertion, the spanner slipping or the operator falling.

To remove the physical aspect of this process, a hydraulic system was introduced. The motor bed was replaced with one designed to accept hydraulic rams. The rams were placed in lugs and pumped up to complete the tensioning. This simple yet innovative solution has not only made the task much safer, but it has also reduced the time it takes to tension the belts from around two hours to just 40 minutes.

Road traffic safety initiative

Lafarge Aggregates > The Horse Shoe, Leicestershire > 0116 2304014

This road safety initiative was conducted on an M1 resurfacing contract between Junctions 20 and 21 for nine months from July 8th 2005. The aim of the initiative was to provide a safe environment for both the workforce and the travelling members of the public. The intention was to bring about a sea-change in drivers' attitudes – which had not happened in a number of other schemes.

The problems with other systems were identified as:

- barriers do not prevent speeding
- signage will not stop all speeding and loses its effectiveness with time
- the traditional speed camera (GATSO) leads to:
  - tailbacks/congestion
  - high levels of driver prosecution/frustration
  - poor levels of workforce protection
  - dangerous practice of acceleration and braking between cameras leading to accidents and reducing the steady flow of traffic.

These issues were addressed by adopting a SPECS average speed enforcement system. The average speed of motorists was monitored by cameras and signalled by number plate recognition and display units.

Traffic segregation

Aggregate Industries > Edzell Quarry, Angus > 01356 647178

There was a problem at the entrance to the quarry because all traffic was using it as the point of entry and exit. Hence, readymix traffic would need to interact with quarry traffic. In addition, parking, manoeuvring and reversing were all candidates for improvement.

A new traffic system was installed to ensure the one-way flow of traffic and to minimise traffic manoeuvres. New direction signs have been installed on the approach to the weighbridge to direct traffic for the readymix plant away from the weighbridge and onto the new route, thus segregating it from the quarry traffic.

Converted fuel carriers

Foster Yeoman > Robins Wharf, Kent > 01474 333186

The site had debated whether equipment should be refuelled on or offsite. If refuelled onsite, the fuel was decanted into tanks using containers. There were various risks, including fire, manual handling injuries and damage to the environment through spills. Furthermore, portable fuel cells and bowsers were liable to be stolen or set alight in arson. Because of this, extra security was required when the site was unmanned.

The solution was to convert existing 7.5t 75E15 Cargo trucks into a fleet of Mobile Replenishment Vehicles, which could move around the site and provide fuel and water replacements. All vehicles are those where the bodies would be otherwise disposed of and are taken to an in-house workshop and converted.

Each vehicle is fitted with:

- 900 litre gas oil tank
- 24 volt electric discharge pump
- 2 inch petrol-driven water pump
- fire extinguishers
- a double oil spillage pack
- independent lighting systems for operations
- rear view CCTV camera.

The benefits include:

- removes manual handling risk and reduces risk of fire and spillage
- provides complete site re-supply on one vehicle
- each vehicle can work independently
- does not require an LGV licence to drive.

Illuminated signage

CEMEX > North West Region > 01928 752752

The signs at this concrete plant are equipped with flashing warning lights to make them more noticeable. A remote PIR sensor at the bottom of the sign detects motion and sends a signal to the lights. It is an effective way of giving signage more impact at a low cost.

Safety of vehicles on site

Tarmac > Stancombe Quarry, Somerset > 01275 464542

This quarry has made three distinct improvements to its site:

1 After reading of a fatal injury following the unauthorised use of a 'Bobcat', it was decided that action needed to be taken. An immobiliser was installed and discreetly hidden on the site's vehicles. The immobiliser can only be released by an authorised driver through the use of a unique fob, removing the risk of unauthorised users.

2 The noise produced by a reversing vehicle was considered to be intrusive. So, more discrete white noise reversing alarms have been fitted to small vehicles, which are quiet enough to be used outside an operative's residence in the early hours of the morning, but loud enough to be used in pedestrianised parts of the quarry.

3 A winter working procedure was produced and handed to each worker. Developments in this field include:

- purchasing a specialised salt spreader
- placing 20kg bags of rock salt around the site
- fitting tow hitches to site vehicles to tow the spreader
- purchasing four hand-pushed spreaders
- frost alert signs which change colour as the temperature reduces.

Dumper load cameras

CEMEX > Dove Holes Quarry, Derbyshire > 01298 77531

During inclement weather, dumper drivers used to regularly leave the cab to check that the load was being distributed evenly and was not overhanging the sides. The site has now fitted another rear-view CCTV camera on the side of the vehicle, overlooking the body. It thus became possible for the driver to see the load on the monitor without having to leave the cab.

Road haulage safety

Tarmac > 01698 575500

Road haulage safety at Tarmac's sites in Scotland and Northern Ireland is much improved with better training and upgraded plant and vehicles.

There are several specific ways in which SHE issues are managed. The Freight Transport Association (FTA) inspects Tarmac units to assess their suitability for using articulated vehicles, whilst contracted hauliers receive an FTA inspection twice a year. There is also an incentive for drivers to maintain good standards with a trophy and £100 prize for the person with the 'best presented truck'. Concrete plants have had automatic loading bins installed so loading shovels are no longer needed, and automatic tailgates have been fitted to tippers with the discharge door opened from the cab.

Inclinometer for dumper to avoid overturning

Bardon Aggregates > Colemans Quarry, Somerset > 01373 836401

An incident occurred at this quarry where a driver's misjudgement caused the dumper's skip to turn over whilst tipping on a stockpile. In order to avoid another incident, the company decided to install an inclinometer.

However, fitting inclinometers to dumpers was a relatively rare practice and there was nothing suitable available. The company worked with Transport Support to design and install an inclinometer suitable for a Caterpillar 740 articulated dumper.

The instrumentation sits on the back axle of the dumper and monitors its angle. A tipping margin can be set, including defining a maximum angle. As well as a beeping noise inside the cab, there is also a speaker on the outside of the machine to alert those nearby of a potential hazard.

The inclinometer is still undergoing development. Further research is being considered to make the system only active in either first gear or reverse and also to link the system to the hydraulics of the skip so that, if the audible warning was ignored, the hydraulics would stop working.

Various improvements to road haulage safety

Tarmac Limited > Scotland region > 01698 575500

Tarmac's Scottish aggregate sites have made a number of improvements to road haulage safety, including:

- improving lighting and upgrading ramps
- creating designated parking and waiting areas
- doubling the number of salt stations at each unit
- building sheeting platforms for uplift customers
- introducing a policy at many concrete plants of automatic bin-loading, which means that loading shovels do not need to be used
- for those sites that still have loading shovels, making the movement of conveyor from bin to bin remote-controlled
- commissioning the FTA to advise on legislation, carry out audits and talk at an annual owner seminar
- fitting mixer truck drums with a newly designed safety hatch with one bolt (whereas the old version had 12), encouraging drivers to use proper entry procedures, rather than entering through the loading cone
- fitting mixer units with new safer style ladders (with treads instead of rungs) and platforms (with all round support)
- encouraging drivers to be part of a depot team and inviting them to take part in area safety meetings. They are also provided with full PPE free of charge.

Loading asphalt without leaving the cab

Aggregate Industries > Back Lane Asphalt Plant, Lancashire > 01524 733 512

Pedestrian involvement (i.e. drivers leaving the confines of their cabs) during loading of asphalt, has been eliminated at this site.

Various measures have been put into place to eliminate the need for drivers to leave their cabs:

- weighbridge mimic – a wintern control, which is a computer system, in the asphalt plant allows the operator to see which wagon is assigned to each load line by mimicking the image onto the screen that is seen in the weighbridge
- LED loading sign – a one line LED display used to communicate the load position and the waiting time for the load to the driver
- water spray bars – used to lubricate the rear of the wagon. Positioned under the hot storage and operated on a timer from the control cabin
- loudspeaker system – used to communicate further information or instructions to drivers
- loading beacons – a fail-safe should the sign or loudspeaker system fail
- loaded klaxon – indicates to the driver that they have been correctly loaded.

Ensuring competency of hauliers

Aram Resources > Carnsew Quarry, Cornwall > 01326 375660

Aram Resources is working hard to ensure that road haulage drivers are competent and familiar with its Carnsew Quarry. Comprehensive instructions, combined with a map of the site on one A4 laminated sheet, are issued to all hauliers visiting the quarry and recorded in a register which is signed by the driver. Bitumen tanker drivers have their own special instruction sheet.

Safety issues are the top of the agenda at annual meetings with the regular hauliers. Their suggested improvements are considered and adopted where possible. The thinking is that who better than the drivers themselves to point out concerns about their own safety?

The company has also opted for a policy of "naming and shaming" those drivers who repeatedly put their own welfare – and that of others – at risk through potentially dangerous actions. Names are on a list at the weighbridge and repeat offenders are liable to a ban from the quarry.

Safer inflation of tyres

Hanson Aggregates > Whatley Quarry, Somerset > 01373 452516

ON VIDEO

A blow-out while inflating a tyre in the workshop at this Frome quarry led to prompt and decisive action by the safety representative and site management.

Following a review by the safety committee, a new tyre inflation bay was designed and built with a risk assessment and new safe system of work. The bay has a red flashing beacon which starts automatically when air is in the line, and is outlined by a red/white chain with a simple gate system, that removes the vehicle from any of the site's traffic routes and prevents any vehicles from parking in or around the area.

Stop and Think campaign

CEMEX > 07795 332823

AWARD WINNER

ON VIDEO

CEMEX UK has developed a safety campaign which applies to all the different areas of the business. The focus of *Stop and Think* was a real-life employee who, having had a serious accident at work, has returned with a clear message for others.

The different elements of the campaign include:

1 Injury prevention tours, during which, *Stop and Think* guides were handed out and discussed. Employees were encouraged to "sign up" to 12 "Safety Essentials" by filling in a card at the back.

2 A video focusing on "Safety Essentials" is available at all sites. This is directed at employees, new starters, visitors and contractor inductions.

3 Printed documents, including a calendar that shows that safety is a year-round practice, posters and personal reminder pocket cards to carry around for quick reference.

4 Electronic safety alert reports, circulated as soon as an incident has occurred.

5 Feedback from employees is encouraged via 'Near Hit'/Hazard Alert cards to raise health and safety concerns with management. Senior management carry out health and safety tours to mark sites for compliance with the "Safety Essentials".

6 Publicity of the launch of the campaign via the employee newsletters and magazines.

Since the launch of the campaign, strong progress has been made, including 34 per cent reduction in employee lost time injuries and 41 per cent reduction in contractor lost time injuries.

Safety films

Tarmac > Sustainable Development Department, West Midlands > 01902 383320

Tarmac is using films to improve the safety of workers on site, especially those on busy roadworks contracts. The company safety video, *Once too often Dave*, is a ten-minute film that opens with three quarry workers talking in a bar. It turns out that they died in an incident on site, and the drama uses flashbacks to follow their misfortunes as they each breach one of Tarmac's Golden Rules. The film has been shown to employees and contractors across the UK and forms an element of the induction for all new employees and contractors. The message is simple - if you break one of Tarmac's Golden Rules, it could result in death.

Following its success, a second film was produced specifically for Tarmac National Contracting resurfacing teams, who face additional safety hazards from live traffic, while they work on busy roads. *Never walk by* warns roadside workers about reversing vehicles; overhead and underground services; and the importance of wearing the correct safety gear.

The film features a contractor who could have stopped an incident occurring and follows him as he goes to the hospital where the injured colleague has been taken and waits to hear whether he will live or die.

The films aim to highlight the hazards on site in a hard-hitting way.

Signs for non-English speaking drivers

Foster Yeoman > Purfleet Asphalt Depot, Essex > 01708 869251

This site is a busy asphalt depot with 13 large silos and six weighbridges. An incident occurred after a non-English speaking driver misunderstood the directions he was given. It was agreed that a site plan incorporating a pictorial element should be developed explaining simply how to safely load.

The plans are attached to each of the poles located at the exit points of the vehicle holding bays.

At this point, the weighbridge staff can speak to drivers over a two-way intercom, explaining the loading procedures further.

Induction and management of contractors

WBB Minerals > Preston Manor Works, Devon > 01626 322326

AWARD WINNER

ON VIDEO

Integrating contractors with employees was the objective behind this initiative. The culture of 'one team' is promoted from all levels within site staff, and everyone is encouraged to become involved.

Only approved contractors are allowed to work on the sites. They are entered into a database once they have provided documentation, such as insurance policies. They are then taken through the induction process, which includes familiarisation with site issues, such as emergency procedures, traffic routes and parking arrangements.

Once contractors begin work on the site, they are monitored closely through workplace inspections, the encouragement of 'near hit' reporting and regular review meetings. Contractors are also encouraged to become involved with toolbox talks, inspections, risk assessments and so on.

An increase in foreign lorry drivers at this site raised some health and safety concerns, particularly surrounding PPE and traffic routes, resolution of which were hampered by language barriers. As a result, the site rules were translated into 15 different languages and issued to drivers on arrival at the weighbridge. The documents are now available to other WBB Minerals sites via the company intranet.

Another important area of on-site operations involves mobile plant. Engineers from the manufacturers are based on site at Preston Manor. WBB Minerals draws up Service Charters with the contractors concerned at the initial stages of the contract. This service charter is a working document and is constantly updated by all parties as a result of review meetings. The document details all aspects of the way in which the contract is managed including Health & Safety, Finance and Production.

Machine operation is also closely monitored. This is carried out by on-board data logging facilities, producing high quality machine specific reports on a six-monthly basis. These reports include machine performance and driver techniques, which assist site management and operatives in optimising operating techniques. The criteria reported include machine utilisation, gear change techniques, engine shutdown techniques and fuel consumption. These reports are then discussed with the machine operatives concerned by way of toolbox talks, with any concerns being discussed.

Isolation competency test

Tarmac > Ballidon Quarry, Derbyshire > 01335 0392038

One of Tarmac's *Golden Rules* for safety concerns the safe isolation of equipment. There must be a risk assessment and all action should be executed by a competent person.

In order to demonstrate this competency, a twenty question test was devised to evaluate a person's understanding of equipment isolation. The nature of the questions relate to twenty different scenarios involving the locking off of machinery or equipment. The candidate is then asked to select the correct option. A score of below 70 per cent represents a failure. The same also applies if the candidate fails a mandatory question – where a person's life would be endangered if they made the wrong decision.

Fibre addition unit

CEMEX > Dove Holes Quarry, Derbyshire > 01298 77531

This quarry decided to use the loose fibre system for the fibre addition to the coating plant to make Stone Mastic Asphalt. The fitters devised a system which ties into the current plant controls. It eliminates the need for manual handling of fibre bags and repeated entry to the plant to add pellets. The 1 tonne bags have to be raised above the hopper before they can be untied. To ensure that no one is under a supported load, the site installed a bag support frame, which is a sturdy reinforced piece of equipment that ensures no-one risks being crushed by the bags.

Maintenance of conveyor

CEMEX > Shap Blue Quarry, Cumbria > 01768 371479

This quarry occasionally requires the maintenance and replacement of a length of conveyor running below the A6.

Working at height is involved to enable replacement or jointing when a crane hook is attached to the Gravity Take-Up (GTU) weights. Subsequently, the GTU unit was adapted to include a fully certified lifting beam/crane and hook which is situated below the apex roof and enables the safe lifting of the weights from a designated work platform. This also provides safe access for statutory inspections. The rationale behind the design is to remove the need to work at height and ergonomically design the operation from a safe working platform.

Hinged ladder

CEMEX > Hartley Quarry and Coating Plant, Cumbria > 01768 371479

Occasionally, this coating plant requires access to view the condition and contents of the cold feed aggregate bins and the clearance of material build-up from the corners of the bin. The old steps and ladder were repeatedly damaged by the loading shovel feeding the bin and so were replaced with a hinged ladder, which can be swung out of the working area.

Accessing screen decks/mats

CEMEX > Pendean Quarry, West Sussex > 07889 315448

Instead of using ladders or a mobile platform to access the screen deck/mats, this site has devised an alternative solution. A hinged platform has been installed, which is erected by the following simple steps:

- spray bars are removed from the screen deck
- hinged top handrails are moved out of place
- bottom handrails are welded onto the site of the chute – which lifts out of place on hinges
- top handrails are put back into place
- platform is lowered down to rest on two channel supports on the floor
- top handrails are removed, allowing free access to the screen mats.

The new design, which can be adapted to fit any type of plant, has benefits in terms of working at height and manual handling.

Accessing a Linatex sand tower

CEMEX > Denge Quarry, Kent > 01797 320422

Accessing the site's new Linatex sand tower for routine maintenance work has been made safer by the fabrication of a mobile platform. Concerns arose about accessing the tower's three-foot cyclone extension to undo the bolts and allow the cyclone to be lowered to the ground by a crane. An operator would have to stand on the handrails whilst wearing a safety harness.

This process has been improved by building an extension walkway/platform, complete with handrails, kickboards and self-closing gate, which can be lifted into place using a crane.

Handrails and steps for the face screen conveyor

Bardon Aggregates > Manor Farm Quarry, Gloucestershire > 01285 810926

After an internal audit identified a potential fall from height hazard in clearing the conveyor on the face screen, the site team suggested some solutions. The addition of handrails and access steps was agreed upon as they enclose operatives on the main belt and prevent a fall. It also means that operatives do not need to wait for a telehandler or a man basket, which saves time.

The handrails are effective at this sand and gravel site, but would not be advisable at a rock quarry, due to the different type of material stopped on load and the risks of injury and slips.

Retractable handrails for quayside walkway

United Marine Aggregates Limited > Ridham, Kent > 01795 432310

A removable barrier around the quayside walkway has been developed by United Marine Aggregates which prevents a fall from height during mooring operations.

The quayside walkway is 2.6 metres higher than the stockyard, requiring handrails to be removed to allow ships' discharge conveyors access to the shore-side receiving hopper. Previous designs had progressed from posts and chains to slot-in barriers and most recently sliding panels, each presenting its own limitations and hazards.

In response to near hits and a revision of risk assessment, a working party was formed involving wharf staff of all levels to evaluate the hazards involved.

The group identified a specification and led the development of retractable handrails which revolve downwards around a pivot point that is easily operated from ground level.

Before retracting the handrails, pedestrian access to the quayside is restricted by means of barriers and warning signs. The operation can easily be carried out by two people, controlling the movement with a lever section protruding at 900 to the main handrail section. After discharge, the procedure is reversed with the handrail sections secured by means of spring-loaded bolts and pedestrian barriers removed.

Pulley system to move Linatex sand chutes

CEMEX > Manor Pit, Peterborough > 01778 560451

A control has been developed to enable Linatex sand chutes to be moved at ground level. The objectives were to minimise manual handling hazards; eliminate the need to work at height; minimise exposure to slip, trip, and fall hazards; and minimise exposure to entrapment hazard.

The method of moving the chute historically involved climbing up a vertical ladder to a height of 15 metres, often passing through staging gates to move the tower chute to its new position – occasionally through kicking for older units.

After various designs were suggested by the workforce, a simple pulley and wire system was progressed, tested and finally installed. The lower pulley was mounted at ground level as a manual operated winch. This is attached to the upper pulley via cables, which in turn is connected to the moving chute at the discharge point. To prevent overrun, stops are attached to the framework.

There are ideas in development to improve the system further, such as spring-mounting the chute and even fitting an electric motor to the winch which could then be controlled from the plant control cabin.

Accessing binder weigh kettles

Foster Yeoman > Foster Yeoman > 01489 784438

The binder weigh kettles at this site are located above the mixer boxes, almost 4 metres above floor level with no dedicated access platform. When routine calibration was required, 300kg weights had to be carried upstairs to the walkway next to the weigh kettles. The bitumen pumps and trace heating were then isolated to remove any risk of burns and the area beneath cordoned off in case a weight was dropped.

Instead of placing the weights on top of the kettle, they are now suspended beneath. Beams were fitted across the tops of the weigh kettles, with wire ropes hanging down either side to floor level. Each wire rope was then passed through lengths of metal tube to keep it ridged and a small base plate fitted for the first weight to rest on. Round interlocking slotted weights are then placed on top of the base plate with the metal tube passing up through the slot. As weights are added to the stack, they are turned to lock them together on the metal tube.

Automatic retracting hose

AWARD WINNER

CEMEX > Nottingham Coated Stone, Nottinghamshire > 07771 878373

ON VIDEO

Flexible hoses are used widely at this plant for such purposes as washing down mobile plant, adding water to truck bodies and washing down walkways. Storage can be a problem, as hoses trailing on the ground can cause a trip hazard or be damaged by vehicles.

One solution is to use auto retractable hose systems, but collect customers sometimes use them incorrectly, failing to realise that they need to tug the pipe for it to be retracted. CEMEX found another answer – they use a predetermined length of hose suspended from a counterbalanced shaft. The shaft and hose length were calculated and a prototype manufactured. The hose is automatically retracted and stored vertically when not in use.

Automated weighbridge cleaning

AWARD WINNER

Bardon Aggregates > Manor Farm Quarry, Gloucestershire > 01285 810926

Cleaning beneath the low-level weighbridge with a hosepipe used to be a difficult and time-consuming task, requiring high levels of manual handling.

The quarry manager has now found a more effective method. A two inch galvanised steel pipe has been attached alongside the weighbridge complete with several taps which release a fine spray underneath the bridge.

For just £500, the new system has reduced manual handling and the risk of slips, trips and falls. The manufacturers of the weighbridge consider it to be good practice, as it maintains accuracy of the bridge for longer and makes it easier to maintain.

ON VIDEO

Elevator maintenance inspections

AWARD WINNER

Aggregate Industries > Halton East Asphalt Plant, North Yorkshire > 01756 709219

In the past, the task of maintaining and inspecting hot elevators at this asphalt plant involved heavy manual handling and “live working”. Now, a vehicle winch is used, which is fixed to the maintenance truck and powered from a 12v battery. This means that the plant can be fully locked off.

Engineered on site, a small extension was welded to the bottom elevator shaft. The simple task is to slide a hub wheel onto the bottom shaft, then attach the winch cable to the hub. The cable is wound onto the hub before being secured to the shaft using a locating pin. The easy fit guard to protect the operator from any moving parts can then be fitted into place. The winch is activated with a remote switch held by the fitter. The elevator now moves in a slow, smooth and controlled manner. If work is needed on the elevator, a lock off/isolation is fitted to the 12 volt battery supply.

ON VIDEO

Mechanised greasing system

CEMEX > Dove Holes Quarry, Derbyshire > 01298 77531

ON VIDEO

AWARD WINNER

Greasing the machinery and equipment was a manual task that required the operative to continually climb up and down a ladder. Using the greasing gun also brought risks of repetitive strain injuries. The problem has been addressed by installing a small compressor onto the back of a wagon, along with pneumatic greasing equipment and an inertia hose reel. Once the lightweight reel has been pulled out and attached to the grease nipple, the compressor will do the rest.

Hinged access steps allow mechanical cleaning of JCB

CEMEX > Roan Edge Quarry, Lancashire > 01539 740383

AWARD WINNER

Spillages are mechanically removed from this site using a JCB, but some manual cleaning was still necessary around steps and access ladders. CEMEX's solution eliminated manual handling and prevented damage to the steps and ladders from accidental collision with the JCB bucket. The ladders and steps were hinged and can now easily be lifted during cleaning.

ON VIDEO

Aggregate door pins

CEMEX > Carlisle Coated Stone, Cumbria > 01228 514455

A recurring problem was the maintenance and replacement of the aggregate door pins. The four pins operate the aggregate door via a hydraulic ram in a sweeping motion. Due to the harsh working environment and poor lubrication, failure was a regular occurrence, resulting in spillage and the complete shutdown of the site for up to eight hours. Upon this failure, there was much work that needed to be done, including welding at height.

It was decided that work could be reduced if the mounting brackets remained in situ and a face plate fabricated to allow a simple bolting exercise when wear became apparent. By changing the cheek plates bolted to the mounting plate, it has reduced time input from approximately eight hours to just one. Other benefits include:

- reduced need to work at heights
- reduced need to weld in tight space
- ability to foresee problem by replacing parts before failure.

Thermally activated ice warning signs

Aggregate Industries > Edzell Quarry, Angus > 01356 647178

Icy conditions are a hazard for workers at any quarry. In 2005, there were injuries ranging from bruising to fractured wrists as a result of slipping on ice. In response, thermally activated signs have been placed at strategic points around the site to warn of icy conditions. They have Thermo – Chromic ink spelling out "WARNING" and are designed to show 1 per cent of the ink at plus 12 degrees and 100 per cent at zero degrees. At only £15 each, they are a cost-effective option. The fact that the signs change means that workers are more likely to take notice than static signs which are present all year round.

Secondary crusher confined space access

Aggregate Industries > Back Lane Quarry, Lancashire > 01524 733152

Traditionally, maintenance and inspection operations on the Arja horizontal impact crusher required the complete emptying of the feed hopper to allow for safe access due to the risk of material becoming dislodged and falling from above.

The aim was to make access into the crusher as safe as possible without having to empty the hopper. A swinging door in the Skako feeder was manufactured to control the flow of material into the crusher. This proved very successful as the material could be held back with the control door, effectively sealing the hopper from the crusher and had the added advantage of preventing surges in the crusher from freefall material.

Welfare facilities

CEMEX > Hyndford Quarry, Lanarkshire > 01555 663597

Welfare facilities that had been present at this quarry since the 1960s had become progressively inadequate. With the strong involvement of the workforce, new facilities were developed, including:

- canteen, first aid and training room
- separate toilet and shower facilities for male and female employees
- on site water treatment
- power and communication provision
- car access, parking and pedestrian walkways ensuring segregation from large quarry vehicles.

The new buildings feature cavity block walls and tiled roofs with solar panels, which will give them a life-span beyond that of the quarry.

Raising noise awareness in the workplace

Hanson Aggregates > Wetherby Regional Office, West Yorkshire > 01373 452415

The three northern regions ran employee-led initiatives to raise noise awareness in the workplace.

The Scotland and Cumbria area ran a training session highlighting the consequence of not looking after your hearing, while the safety representatives from the North West and North Wales used a PowerPoint presentation. Yorkshire and the North East area ran a poster competition open to employees and their families. The winning posters in each category were displayed in the workplace and, as an extra incentive, the winners also received a gift voucher.

The safety representatives then combined these projects to create a regional training and awareness package, which was delivered during their site safety meetings to coincide with the European Week of Safety. The benefits of this were:

- it helped to drive home the message about the dangers of noise in the workplace, and communicate key points to employees about occupational health
- it raised the profile of the safety representative and allowed them to have a more proactive role in safety
- by allowing the safety representatives to take control of a project and research their own materials, they were able to broaden their knowledge and experience.

Employee safety committee

Tarmac > Swinden Quarry, North Yorkshire > 01756 731000

The safety committee at Swinden Quarry is employee-led. The Self Observed Safety Committee, known locally as the SOS, meets every month to discuss health and safety matters on site. In the first half of the meeting, management reports back on the previous month's minutes and issues, but the second half allows the SOS (only) to discuss openly any issues.

All the points raised are minuted and passed to the management and thereafter displayed around the site. There is also an anonymous suggestions box in the canteen for any other employees to make suggestions.

This approach has helped contribute to a period of five and a half years (or over 500,000 man hours) without a Lost Time Incident.

Contractors safety seminar

Tarmac > Tarmac Topmix, Nottinghamshire > 01777 713500

Tarmac Topmix Midlands was particularly concerned about the communication between management and contractors and so set about arranging an annual Contractors Safety Seminar.

The first event included a presentation from the management team on the company's policies and procedures in terms of health, safety and environmental issues and how these affect the role of the contractor.

The agenda was as follows:

- *Golden Rules* video
- site specifics, which included issues like signing in/out and parking; levels of PPE; risk assessments; isolation procedures; permit to work; safety signs and site hazards
- toolbox talks, starting with details of a fatality at a company contracting site
- Near Hits reported to the business from contractors and employees
- the new award-winning video *Once too often Dave*
- open discussions about the presentation, policies and procedures that they were being asking them to perform.

Checklists from workers

WBB Minerals > 01626 322326

WBB Minerals' employees have been closely involved in the development of an initial twenty key safety behaviours, which were then incorporated into checklists.

These were for workers to rate their own safety habits and those of their colleagues. For any unsafe actions, workers were asked to say why they had acted in this way. In order to encourage openness, no workers were held accountable for any wrong-doing over the four week period of the initiative. Instead, it helped to identify where mistakes were being made and helped to combat unsafe practice.

Some of the benefits include:

- increased awareness of unsafe acts on site
- interaction between workers over safety issues
- identification of root problem of unsafe act so it can be addressed.

Worker-led safety campaign

Hanson Aggregates > The Ridge, Somerset > 01373 452415

After several years of decline in accident rates from 2000, the pattern began to change in 2005, with initially a plateau before a reverse in the trend. The *Safety Matters* campaign was relaunched and consisted of:

- a short audio-visual presentation focusing on simple risk assessment and employee behaviour
- new user-friendly health and safety policy document issued personally to every employee
- safety partnership poster for each of the company's 450 sites. They set out a pledge for a safer working environment and are personally signed by the managing director, relevant line managers, the site safety representative and the workforce.

This campaign has had a marked influence on safety performance. Accidents rates have dropped dramatically and lost time incidents have also fallen. Worker involvement was critical to the success of the campaign. It complemented the traditional 'top-down' approach of health and safety training by embracing ideas and guidance from the shop floor and incorporating three key elements: to include; to involve; and to inform.

Influencing employee behaviour

Lafarge Cement > Cauldon Works, Staffordshire > 01538 309418

Lafarge places major emphasis on the behaviour of its employees, citing this as the principal factor in most accidents. The company is adopting a multi-faceted approach to instill a health and safety culture in the workforce.

The STOP assessment is the first of these and is a very simple risk assessment that all employees and term contractors complete before beginning a task. This involves taking the time to ensure that the Safe Working Procedure will be adopted.

Once a week, an activity called the 'blitz' is undertaken by all employees. This involves employees working on a task that needs completion. The benefit of this is that workers from different sections in the company can be brought together to learn about how different aspects of the company work which helps increase awareness of health and safety issues.

Other safety initiatives include hazard elimination, where each team has hazard elimination targets, and Safety Oscars, where teams compete for the safety award.

Training to improve safety communications

Bardon Aggregates > Bardon Asphalt, Derbyshire > 07850 065998

A training day was organised to improve safety communication between managers and employees and to ensure that risk assessments and Safe Systems of Work were of sufficient detail and quality.

Session one focussed on the importance of accident and incident investigation; the importance of 'near hit' reporting and the prevention of vehicles overturning on site.

In session two, groups of mixed experience and ability were formed and had to discuss different jobs and the amount of induction and training required. Throughout the session, the groups were monitored by senior management and health and safety advisors.

Engaging the workforce in safety culture

Lafarge Readymix > 01162 648000

In an attempt to improve its record of Lost Time Incidents after several occurrences during 2004, Lafarge Readymix launched a programme where success is rewarded. Workers were offered an additional day of holiday if there were no LTIs for three months. This was achieved and employees were then offered another day if a further six months was reached. Furthermore, the senior management had to commit a minimum of four hours per month solely to safety issues.

The company wanted health and safety to become everybody's priority. The message was communicated through:

- meetings
- safety bulletins
- quarterly newsletters
- reporting performance – every morning, a reminder appears on all computer screens telling employees how long until the next target (and an extra day of holiday) will be reached
- training days.

Near hits are reported and investigated thoroughly. It has been stressed that the responsibility for health and safety should be that of everyone, not just management. These changes have resulted in zero LTIs occurring in the last seventeen months.

PowerPoint presentation to contractors

Lafarge Aggregates > Kiplin Hall Quarry, North Yorkshire > 01748 812117

This quarry has developed a PowerPoint presentation to communicate relevant information to contractors, including the location of all relevant safety resources and emergency equipment. The presentation is readily adaptable to suit any site and video clips can be added.

In addition, the names of all inducted contractors are entered into a database which can be accessed by the entire company. A simple card is issued after an induction which provides details of who to contact in the event of an emergency. Those contractors who have been inducted are issued with a sticker for their helmets so that they can be easily identified by other employees. The sticker shows where the induction took place and its expiry date.

The new resources help to ensure that all contractors have been given information that is relevant and up-to-date.

Various on-site safety improvements

Tarmac > Ballidon Quarry, Derbyshire > 01335 0392038

The site came up with three ways to improve safety at the quarry:

1 **Improved brake testing facility** – a horizontal test facility was produced. However, the consistency of speed of approach could not be ensured, thus it was difficult to measure the efficiency of braking systems. To overcome this, a speed monitor was positioned outside the cab to help maintain a consistent approach speed

2 **Convex mirrors** – to improve lines of visibility on haul roads

3 **Training matrix** – the systems for monitoring the training records and renewal dates was poor. A spreadsheet was produced to identify when an employee needed to be trained. Ninety days before expiry of the training certificate, the cell on the spreadsheet changes from green to amber, changing to red when the training certificate has expired.

Peer group audits

Brett Aggregates > 01206 824971

A new peer group audits scheme has been devised, which:

- involves operators at all levels
- improves physical plant safety
- streamlines systems
- shares best practice and encourages operators to communicate.

Peer group audits happen twice per year at each site within Brett Aggregates. The inspecting team normally comprises a manager or supervisor and at least one other person (usually an operator) from a different quarry. These teams will audit sites all over the Brett sphere of operations, thus sharing best practice throughout the whole of the company.

The inspections follow a set pattern – there is a system audit followed by a plant tour, which includes task auditing. At the end of the audit, actions are agreed with the local management and priorities are set. One month after the audit has taken place, there is a wash-up meeting, which involves the local staff, the area and operations managers and a member of Group SHE. The agenda focuses on progress of any action items; progress on 'near hits' raised in the six months since the last audit; training issues; and an update on changes in legislation.

Staff development days

Brett Concrete > 01206 824971

Each year, Brett Concrete shuts down its plant for two days to devote time to the development of its staff. This is done so the maximum number of people can be involved including batchers, lab technicians, fitters and area coordinators. As well as receiving training, all personnel have a chance to meet, and to share best practice.

The session examines a variety of elements including technical areas, HSE issues, 'near hits' and a range of procedures. Every effort is made to make the sessions interactive, with participation from the delegates. This has taken the form of competitions and quizzes with prizes for the winning teams.

Implementation of the QHEST system

Brett Group > 01227 829000

QHEST (Quality, Health, Environment, Safety, Together) is an integrated management system, aiming to combine the requirements for each aspect into one comprehensible set of procedures that all employees can follow. It involves all levels of employees throughout the business in the formulation and implementation of the system. It has been written with the close involvement of personnel at all levels.

QHEST is an innovative project in that it combines all elements of health, safety and environment management and quality control into one useable system enabling all employees to easily identify and manage risk. There is an introduction to the policy followed by Brett procedures and business procedures – which are specific guidelines for individual sites.

Internal newsletter for a smaller company

Tudor Griffiths Group > 01691 626262

The Health & Safety Manager of Tudor Griffiths has devised a new style internal company newsletter which encourages the communication of incidents between departments, and which reports on the issues discussed in health and safety quarterly meetings.

The monthly newsletter is aimed at employees at the "sharp end" of the business and is limited to two sides of A4 to make it easy to flick through during a lunch break.

The content ranges from recent near hits in the company, to relevant articles from the national press.

Cluster group committee and hazard alert cards

CEMEX > Aylesford, Kent > 07764 353885

CEMEX's aggregate, concrete and mortar sites in the South East have been participating in health and safety committee meetings for some years. The cluster group approach allows experiences to be shared across a number of sites, which is particularly beneficial for lone person operations.

One of the most effective ideas developed by the committee is for hazard alert cards, which include 'near hits'. Ideas for these are raised in meetings and then entered into a central database, as well as being displayed on site notice-boards. Employees who submit a particularly high quality hazard alert card, which includes an effective solution to the problem, receive gift vouchers as a reward.

Delivery and storage of bitumen

Aram Resources > Carnsew Quarry, Cornwall > 01326 375660

AWARD WINNER

ON VIDEO

An incident when a minor bitumen spill occurred led to a comprehensive review of the bitumen delivery and storage procedures. Firstly, the RBA/QPA document *Guidance for Safe Bitumen Tank Management* and the *RBA Code of Practice for The Safe Delivery of Bitumen Products* were consulted for best practice guidance.

Two improvements at the delivery point were the installation of vertically slotted delivery point flanges, and lockable safety hoods which hinge down over the flange on the connected pipe. In the event of a damaged gasket or loose connection, any spillage is directed to the floor.

In line with the RBA and QPA documents, further improvements included the initial installation of a new Hycontrol contents and high level alarm system. The specification contained independent ultimate high level alarms with ground level test facility, clear display panels at the fill point and large traffic light indicators for current tank status. The contents gauge provides a signal when the bitumen reaches 90 per cent capacity, triggering an orange flashing beacon, an audible alarm, and the orange traffic light. The system features an ultimate high level, with the signal provided by a separate instrument in case of a failure with the contents measuring equipment.

This ultimate high level triggers a separate red flashing beacon, a different sounding audible alarm and the large red traffic light.

The ground level test facility tests the flashing beacon, the traffic light, the audible alarm and the functionality of the ultimate high level instrument. The display panels and traffic lights were mounted on a purpose built fabrication to provide clear visual indication to the delivery driver.

Lifting drill rig percussion hammers

Exchem Explosives > Blasting Services, Derbyshire > 01492 518358

AWARD WINNER

ON VIDEO

A tool has been fabricated to combat the risks associated with lifting heavy percussion hammers for drill rigs.

The hammer is left on the ground with the plant tracked up and the mast positioned above the hammer. The adaptors are attached to the rotation motor tube adaptor and hammer top, the chain is then connected to the rotation motor lift eye and passed through the dust collector pot and guide rings and finally attached to the top of the adaptor hammer adaptor lifting eye. The operator then returns to the cab so there is now no one in the lift area. The hammer can then be lifted remotely and safely.

Overflow bin from asphalt plant hot bins

CEMEX Materials > North West region, Cheshire > 01246 450852

AWARD WINNER

ON VIDEO

An overflow bin has been manufactured and installed at various locations to prevent overrun from the hot bins discharging directly onto the floor around the customer loading area. Previously, this posed a major trip hazard.

The bin is basic but effective. The material is collected from the overflow of the hot bins on the plant, and stored in the bin until it reaches an upper level.

This is monitored by the plant operator with the aid of a fixed camera. As the level is reached, he informs the shovel operator. To empty the bin, the shovel driver approaches and uses the front lip of the bucket to push open the door at the bottom of the bin. This then discharges the material into the empty bucket of the machine. He can, at any time, reverse the process and close the door. The hot material is returned to stock, and cooled for use the next day.

The savings made on the material returned to stock can be considerable – up to 15 tonnes per week, which would previously have been considered contaminated and sent for disposal at a landfill site.

Blast design calculator

CEMEX > 01969 623197

AWARD WINNER

ON VIDEO

A new tool has been developed which allows shotfirers to accurately calculate the amount of explosives needed to safely charge holes. Simple data, such as face height and hole depth measurements, is entered into an 'Excel' spreadsheet. Warning messages appear if the shotfirer is attempting to carry out an action that is not good practice, such as insufficient stemming; too much water in the hole; or excessive face height.

The system identifies the section of the hole which is minimum burden. Where this is 10 per cent less than the designed burden, guidance is given on intermediate stemming.

Once all the relevant data has been input, the system calculates the amount of ANFO required and automatically adjusts the rise levels. The spreadsheet also calculates the amount of packaged explosive required where water in the hole is present. Finally, a summary of the entire blast is offered, including tonnage of blasted rock produced, amount of explosive used and cost per tonne.

A link to Environmental Monitoring is also available, which shows Seismograph Peak Particle Velocity and Air Overpressure results, and a tool calculates regression lines to control vibration on future blasts.

Remote generator at readymix plant

Aggregate Industries > Edzell Quarry, Angus > 01356 647178

The positioning of the generator next to the discharge chute made it difficult to hear the reverse alarms of the readymix trucks as they moved back towards the chute. As a result, the generator has been relocated to an area away from the plant and a walkway has been created to keep the batcher within a designated area away from readymix trucks. To reduce the risk even further, a remote starter can be used in the batching cabin.

While the safety of the batcher has been improved, there are also environmental benefits as the method of remote start up and shut down requires less fuel.

Adding recycled material to the batch heater

CEMEX > Salford Coating Plant, Lancashire > 01246 475115

It was thought that adding asphalt to the mixing process at this coating plant would require expensive equipment and would create high levels of steam when the cold, wet material was added to the hot process. The steam that was produced in other plants occurred because of the addition of recycled asphalt product (RAP) directly into the mixer. As well as steam, it left a by-product of sludge.

RAP is now added to the process after the heating and drying process, but before mixing. Not only does this reduce levels of steam, but it also has the environmental benefit of re-using the aggregates and hydrocarbons from a time-served material.

Sample point chute

CEMEX > Dove Holes Quarry, Derbyshire > 01298 77531

The mortar plant sand product must be sampled regularly but the only place to do so was at the input point to the silo which was 40 metres high. This was deemed unacceptable, so the fitter came up with an idea to make a sample point into the chute at the bottom of the elevator. The system took a sample across the full product flow and reduced the need to climb to the top of the silo and return with a sample load.

"Cyclops" camera to view the drill hole

Stemtek > 01925 268397

Stemtek has developed a "Cyclops" camera, which allows shotfirers to check the physical status and three dimensional path of a drill hole. It consists of a hand-held colour monitor and a small camera, mounted at the end of an aluminium tube. An infrared light source surrounds the lens of the camera, allowing it to be used in complete darkness. It is supplied with 20m of co-axial cable, which is strong enough to support the weight of the camera when lowered into a blast hole. Power can be provided either from a cigarette lighter socket in a vehicle or from a rechargeable 12vdc battery. The kit also contains a 12v charger and the complete system is housed in a robust box.

The camera can be easily lowered into a drill hole, providing clear pictures on the monitor. The Cyclops camera meets the need for a system that allows the shotfirer to see inside the hole and check the validity of the data recorded in the driller's log. For example, the shotfirer can visually assess the extent of a cavity recorded by the driller.

Due to its compact size, the camera can also be used around the quarry for inspecting hard-to-reach areas, such as screens or feed hoppers.

Jack hammer lifting tool

Tarmac Ltd National Contracting > Northern Region, West Yorkshire > 01977 662633

AWARD WINNER

ON VIDEO

The repeated task of lifting a heavy jackhammer up to chest height to place it on and off the 'Tractair' cradle is a potentially dangerous activity.

A much improved method was developed by a surfacing gang foreman. A new device works by the use of a simple, mechanically-operated change of level in the cradle height, achieved by pulling a handle. The operator first places the jackhammer onto the cradle at road level. Pulling the handle lifts the cradle and jackhammer into a raised and locked position for storage and transit.

The procedure for lowering, removing and using the jackhammer is easily achieved by unlocking the safety catch, and reversing the lifting procedure, with the added safety precaution of a gas ram, which prevents free fall should the operator release the handle unintentionally.

It is expected that the device will be fitted to the 'Tractair' fleet throughout the Tarmac National Contracting business.

Emulsion sprayer

Tarmac National Contracting > Contracting Scotland, Airdrie > 01236 840086

AWARD WINNER

ON VIDEO

The need to manually attach 200 litre drums to an emulsion sprayer caused concern at this site. On large jobs, a spray tanker carries out this work, but there are many smaller jobs where the use of the tanker is inappropriate.

An easily transportable unit with a hydraulic lifting attachment has been designed. When 200 litre drums are offloaded by the delivery vehicle, they are placed on level ground with wooden straps below them to leave a minimum of 50mm clearance. This means that the forks from the device fit under the barrel and allow it to be lifted hydraulically. The unit is fitted with pneumatic tyres to facilitate easy movement.

In addition, a pallet cart was purchased and the site fitters were tasked with designing and building a portable sprayer. This can be connected to the 200 litre drums without the need for any manual handling of barrels. An easily operated hand jack operates the forks for raising and transporting the barrel, which is chained to the portable sprayer prior to it being moved.

Hose reel

Aggregate Industries > Duntilland Quarry, North Lanarkshire > 07775 821507

One of the main causes of health and safety incidents at Duntilland is from slips, trips and falls caused by objects left on the ground. The long water hose, which is used to fill the water tanks on trucks, is the main problem. In order to avoid the possibility of the hose lying around, a fire reel has been installed, which can be swivelled around a vertical pivot and has been placed at a suitable height to prevent the need to bend over, thus reducing the risk of back problems. A warning sign has also been installed as a reminder that the hose should be wound back onto the reel after use.

Bitumen discharge precautions

Tarmac > Ballidon Quarry, Derbyshire > 01355 390301

Hazards associated with the delivery of bitumen need to be controlled. Where possible, those not involved should be kept away from the discharge location. However, at Ballidon Quarry, the proximity of the bitumen delivery points to other activities made this difficult. There was a further problem in that the incoming delivery drivers, bringing the supplies of bitumen into the plant, did not have suitable PPE available if required.

The danger to those working nearby the bitumen storage tanks was removed by the installation of Perspex screens which encloses the fill point and bitumen tank so that any spillage would be contained. The nature of the screen still means that the operation can be monitored safely. In addition, a simple storage unit containing safety equipment for drivers has been placed at strategic locations.

Primary crusher blow bars vibrator

Hanson Aggregates > Whatley Quarry, Somerset > 01373 452515

A build-up of compacted fines made it difficult to loosen and change the primary crusher blow bars. In the past, a 14lb copper sledge hammer was used to dislodge the bars. However, this brought a risk of repetitive strain injuries and being hit by flying shrapnel.

The solution was to install an Invicta vibrator to shake the bars free of the compacted fines. The vibrator was attached to a purpose-made frame from which it could perform its task.

Quick-hitch attachment for transporting gas bottles

CEMEX > Goddards Quarry, Derbyshire > 01433 630708

AWARD WINNER

A simple tool for transporting gas bottles has greatly improved safety standards at this Derbyshire quarry, but could also be of benefit to many other sites. Instead of manually transporting the bottles, a lifting attachment has been created, which connects to a Volvo L-150 loading shovel. The shovel comes with a “quick hitch” facility for a lifting beam and a fork attachment. The quarry fitters fabricated a secure cage to hold the gas bottles, attached to a replica of the “quick hitch” part of the lifting attachments.

The bottles can be placed anywhere effortlessly, and replacement bottles are easily exchanged. The concept could be used for other purposes, such as moving a bunded gas oil tank.

New hopper to remove semi-dry concrete sticking

Ennstone > Burford Quarry, Oxfordshire > 01993 842391

A build-up of material was occurring in the transfer hopper because of the feeding of semi-dry concrete into the slab press. The way that this had been dealt with in the past was by installing vibrators to the sides of the hopper and for someone to clean the insides manually. This was undesirable because the hopper was accessed from a ladder into an awkward and confined space. In addition to this, the cleaning process was only a temporary expedient.

The machine operator led the development of a hopper lined with thick conveyor rubber. This has produced a hopper that rarely suffers from build-up of semi-dry concrete. This solution has also removed the need for heavy manual intervention as, on the infrequent occasions that the material does build up, it is released via a simple tap on the side.

Installation of bulk propane gas storage system

Foster Yeoman > Glensanda Quarry, Morvern > 01631 730441

Gas bottles were kept in three separate locations at this remote site to power the cooking and tumble dryer facilities. When moving the bottles, there was the risk of injury to workers, such as strains, trapped fingers and toes. In addition, the lack of a gauge on the bottles regularly resulted in the system ‘running dry’ before a change was made. In addition, the bottles were stored close to vehicles, with occasional impact damage being sustained by the bottles.

To remedy the situation, a new gas storage system, bringing all three tanks into one place, has been positioned in a sheltered location. A concrete pad forms the base and underground pipes link directly to the tumble dryers and the kitchen.

BEFORE

AFTER

There are devices to measure the flow of gas, with a safety cut-off valve that can work if the flow of gas is too low, indicating a leak. The tanks are scheduled to be refilled when they drop to 25 per cent capacity, to ensure an uninterrupted supply.

Environmental spillage carts

CEMEX > Local Asphalt Ellesmere, South Wirral > 01246 475115

An innovative solution was introduced to deal with environmental spills. Having taken inspiration from a local authority cleaning operative, a cleaning cart was obtained from the local council, and converted to an environmental cart. The cart contains all that is needed to deal with a spill, including a brush; shovel; cones; emergency spill kits; plastic chain for isolating the area; signs; and adsorbent granules. With a little imagination, an inexpensive way of coping with minor environmental spills has been found.

Lifting the casing on a sand pump

Tarmac > Scorton Quarry, North Yorkshire > 01748 811768

In order to carry out regular checks on the Linatex facility, the sand pump casing needs to be lifted. Whilst the standard swinging lift arm lifts the front casing, a heavy spanner had to be used to lower the pump parts of the back casing to the ground. To reduce the manual handling risk, a lifting beam was installed.

A safe working load for the lifting beam was assessed via a series of tests. These showed that the maximum weight to be lifted was 140kg but that the beam was capable of taking up to 500kg.

However, two further issues required to be resolved: Firstly, the beam trolley was too high to attach the pull-lift from ground level and a ladder still had to be used. The remedy - a chain sling added to the pull-lift, which could be attached to the trolley without the need for a ladder. Secondly, before moving the pump casing, the discharge pipe had to be supported. In response, a new support member was fabricated and fitted adjacent to the discharge pipe.

By carrying out these improvements all maintenance work can be carried out from ground level, eliminating the use of ladders. As a consequence, there has also been a very significant risk reduction in manual handling.

Clay lump breaking

Ennstone > Ling Hall Quarry, Warwickshire > 01332 694000

During the quarrying of aggregates at this quarry, large proportions of clay lumps were emerging. Consequently, there is a high level of rejected material being generated from the excavation at the process point. Previous attempts to reduce or remove the offending material which often arrives in large clay lumps, have met with little success.

There was a danger to employees when they were required to remove these lumps from the process by hand when blockages occurred. Without a suitable mechanical option on the market, a double shaft shredder was designed.

The principle of the machine is a drive shaft and driven shaft, rotating in opposite directions via timing gears, which results in the cutting and breakdown of the clay lumps. Overall, this has reduced a number of manual handling tasks and thereby cut the risk to employees.

Crusher access

Aggregate Industries > Holme Park Quarry, Lancashire > 01524 781441

Maintenance, repairs and inspection of the quarry's Mansfield crushers, created difficulties regarding manual handling, the lifting operations involving a crane, added to which, access for inspection, repairs and adjustments was poor.

It was decided to create a hydraulically operated door and hinged front panel to remedy these health and safety issues. This also included a mechanism for retaining the top hinged door whilst open. This system was then applied to the remaining crushers.

Manual prop should also be used in case of hydraulic lift-ram failure

Paddle lock bars for the mixer

CEMEX > Wormit concrete plant, Fife > 01382 541641

There was a risk of injury during the manual cleaning of the Millar Mixer. Whilst it was possible to stop the mixer from working, there was still the hazard of the paddles rotating manually during cleaning.

The team at this site came up with a paddle lock to solve the problem. The bar was designed to fit over the paddle arms and be locked into place using bolts and tightened with the use of spanners. This meant that, in order for the paddles to become free again, a tool had to be used - they could not be set in motion by accident.

Other benefits include:

- bar manufacture less than £200
- risk of accidental entrapment eliminated
- lightweight and easily fitted by one man
- easily modified to fit alternative mixer designs.

Changing dumper tyres

CEMEX > Dove Holes Quarry, Derbyshire > 01298 77531

Changing dumper wheels used to be a dirty, hazardous task. Hydraulic jacks and wooden blocks had to be carried and placed under the back axle and the vehicle was then jacked up.

The Dove Holes solution was to design a frame that utilises the hydraulic system of the machine, allowing it to raise its wheels off the ground. When raised, the body pins are put in position and the machine switched off so the work can be carried out.

This removes the manual handling problems and also the difficulty of changing a tyre on uneven ground.

Transferring gas oil

Foster Yeoman > Northfleet Depot, Kent > 01474 333186

The storage tanks supplying the crane on the jetty with gas oil are refilled on a weekly basis. Previous methods of transferring gas oil proved ineffective in preventing spillage and often involved several movements to fill the tank completely.

The risks were reduced with the help of a used Intermediate Bulk Container (IBC). A frame was constructed to enclose the IBC and a guarding added to provide protection against puncture. The tank is moved by rough terrain forklift to the discharge point. To transfer fuel, a Proprietary 24 volt fuel transfer pump was fitted to the frame making the unit self-contained.

One operator can now carry out the re-fuelling task cleanly and effectively. The possibility of an environmental incident or personnel contact with gas oil has been greatly reduced.

Pigment chute for mixer box

CEMEX > Staveley Asphalt Plant, Derbyshire > 01246 475115

A pigment chute has been fitted to the mixer box, which has effected a major reduction in manual handling. The chute has been constructed with rollers along the base, enabling the pigment bags to roll into the mixer with ease, thus removing the need for pushing or pulling. The design is not unique, but has been developed so that 20kg bags of red pigment can be emptied directly into the mixer box safely and easily.

Bitumen delivery procedures and delivery point

Lafarge Aggregates > Elstow, Bedfordshire > 01234 347648

During the planning stages of a new asphalt plant at this site, serious consideration was given to the plant layout and associated traffic routing. Particular emphasis was placed on the route the delivery vehicle would take to the storage tank and where it would park to enable the safe discharge of its load.

The bitumen delivery process was also reviewed and now takes place in the following way:

- bitumen tanker arrives at the site and pulls onto the weighbridge
- gross weight, grade, quantity and temperature of the bitumen is checked against the order and recorded
- operator at the appropriate plant is informed
- once all the checks have been carried out, the delivery tanker driver is issued with a key to a padlock that is attached to the chosen bitumen storage tank delivery pipe connection flange
- driver proceeds to the plant. A new intercom and CCTV system means that the plant operator can monitor progress and communicate with the driver
- before discharge, the tanker driver notes the ullage in the selected tank, confirms with the plant operator and records it on the bitumen delivery ticket
- once it has been established that there is sufficient space within the tank to receive the load, the bitumen is discharged
- on completion, the padlock is re-attached to the storage tank's connection flange
- tanker returns to the weighbridge where the vehicle's tare weight is recorded
- delivery ticket is handed to the weighbridge clerk.

In addition, the delivery point for the new plant has been specifically designed and fabricated by the site team. Firstly, the safest place for the location of the point was established, taking into account the Refined Bitumen Association's guidance. Tankers are segregated from other site users by a safety barrier 6 metres from the discharging tanker.

The new plant has four bitumen tanks with room for a fifth with their delivery charge pipes brought together to one tanker delivery point, allowing for the connection flanges to be incorporated into one unit. The connection flanges themselves are specifically designed to reduce the risk of injury while man-handling the connection pipes into place. Security of the locking bolts is ensured by utilising the "Stomes" vertical slot design, instead of the old-style "elephant's foot" flange.

Each connection flange is labelled with the tank number and the grade of bitumen contained within the tank to which it is connected. Close to the connection flanges, gauges display the tonnage of bitumen contained within each tank along with the safe working capacity of each tank. Each tank is also fitted with an ultimate high level probe with a warning light and siren above the connection flange. Any drips from the flanges are contained within a tray incorporated into the discharge point, which is filled with water for cooling and solidifying the bitumen.

Finally, an emergency shower is available at the discharge point which has been protected against frost by insulating all pipe work above ground.

Bitumen delivery protocol

Lafarge Aggregates > Renishaw Coating Plant, South Yorkshire > 01246 432215

The new driver-controlled delivery protocol at this coating plant combines logistical efficiencies with health and safety improvements. Drive-controlled deliveries were introduced at Renishaw due to the increased demands on haulage. Problems with the Working Time Directive and the increased congestion on the UK road system required a proactive approach from both the bitumen supplier, Shell Bitumen, and Lafarge.

The companies worked together to ease the problem. This was achieved by allowing Shell Bitumen to stock manage the bitumen levels on site along with the flexibility of a 24 hour slot for deliveries seven days per week. Accompanying this is a robust protocol to ensure all parties understand and are competent to carry out these arrangements safely.

Engineering and management systems are in place to prevent:

- **overfills/spills** – independent and ultimate high level alarms have been installed and diagrammatic references to the safe working capacity in each tank are displayed at the discharge points. Large 100 tonne storage tanks/tank gauge panel readings have been extended and are now located at the driver discharge point which enables drivers to check prior to delivery. Deliveries are only scheduled when telemetry – remote monitoring mechanism – indicates sufficient ullage.
- **cross-contamination of bitumen grades** – each driver cross-references delivery documentation and flange connection prior to discharge. Delivery commences when each driver has signed the other's delivery documentation. Each tank and flange is clearly labelled with the grade and is padlocked and opened with a unique label to prevent a crossover. Keys for the padlocks are colour co-ordinated and locked in a cupboard to which only the Shell Bitumen driver has access.
- **bitumen delivery vehicle-related site traffic accidents** – all deliveries are routed when the plant is closed and traffic movements are few or none.

Both Shell Bitumen and Lafarge have near-miss reporting processes in place. All deliveries are remotely monitored from Doncaster by CCTV. Drivers are required to inform Doncaster of their arrival on site using the phone number located on the gate. The site is locked during non-open hours and Shell Bitumen holds the key for entry.

Gas-powered gate

CEMEX > North West Region > 01928 752752

The heavy entrance gate at this site had to be lifted when being opened or closed to raise it from ground level. There was concern that this could cause a manual handling injury. A support wheel was impractical due to incline of the road and the position of the site entrance.

The answer was to use two adjustable gas-powered struts, a jockey wheel and a simple slide frame, which allowed the system to follow the contours of any incline. The gas-powered struts come completely charged and are adjustable – the pressure can be altered, depending on the load that needs to be carried.

Calculating daily hand-arm vibration exposure

Ennstone Plc > De Lank Quarry, Cornwall > 01208 850217

AWARD WINNER

Hand Arm Vibration Syndrome has become one of the most commonly reported diseases under Reporting of Injuries, Diseases and Dangerous Occurrence Regulations (RIDDOR). New UK legislation now lays down action levels and control measures for differing amounts of vibration exposure. However, calculating daily exposure to employees who use different pieces of equipment can prove difficult and time-consuming.

ON VIDEO

At this long-established Cornish quarry, an exercise was conducted to evaluate and measure actual vibration levels of hand tools used by stone masons and quarry men. A unique exposure points system was then introduced which is used to mark equipment with colour-coded plastic tags according to the vibration levels they emit i.e. green for low, amber for medium and red for high. Exposure points shown on the tags attached to each tool used during the day are simply added together by the operators to estimate and manage their own vibration exposure. They are then recorded on a form.

Dust removal system

Hanson Bath & Portland Stone > Avon Mill Lane, Somerset > 0117 9869631

The process of cutting and shaping stone at this works creates a high level of airborne dust. The idea to counter this was based upon a wet suppression system found in asphalt plants.

A powerful fan is located in a building where it is linked back to the masons' workstation. The fan sucks the dust through the ducting link where it passes through a series of water bars which send out a fine spray, turning the dust into slurry. This slurry then falls to the bottom of the tank where it is mixed with a flocculent and turned into a semi-solid, ready for disposal. This process therefore removes the dust and releases clean air into the atmosphere. As a consequence, the dust levels have been cut by 50 per cent.

Noise level monitoring device

Aggregate Industries > Bardon Concrete, Lancashire > 07740 933939

The varying levels of noise in the loading area of concrete plants can be a problem. During low-noise periods , it is not appropriate for workers to wear hearing protection all the time as it might affect their ability to anticipate other potential hazards.

A device has been created which monitors the noise levels in the loading bay area and, at a pre-set decibel level, will activate a series of flashing beacons indicating that the area is now a designated hearing protection zone. This innovation offers a highly visual and instant alert to all staff and visitors that noise levels are approaching mandatory protection level. It also means that ear protection does not need to be worn all of the time.

Safety PowerPoint presentation

Aggregate Industries > Express Asphalt Newark, Nottinghamshire > 01636 613344

There was a problem at the site with 'body surfing' – a person riding on the back of a lorry while it is in motion. It was felt that, with all the posters onsite, a poster campaign would not have enough impact.

Instead, a wall-mounted LCD screen now displays a continually changing PowerPoint presentation adjacent to the weighbridge.

Advantages of this system:

- attention span could be held with short messages
- graphic (and changing) images keep a customer's interest
- message can be changed daily
- message can change to reflect any specific problems that have occurred on site
- low cost as produced onsite
- all staff involved in the process.

Eliminating Vibration White Finger

Hanson Bath & Portland Stone > Avon Mill Lane, Somerset > 01373 452415

During the extraction process of dimension stone, the use of powered hand tools had resulted in cases of Vibration White Finger (VWF). The measures to counter this problem began in 2002 and, following several years of research, the target to eliminate VWF was achieved.

The studies carried out in conjunction with HSE and the Mines Inspectorate concluded that the existing proprietory powered hand tools marketed in the UK did not comply with the HSE guidance on safe vibration levels and that a more radical solution to the problem was needed.

The main thrust of the development programme was aimed at eliminating the use of hand held power tools for "breaking out" and "trimming" of block stones – which is where most of the vibration exposure occurs.

Today, the activities associated with extraction of dimension stone at Bath Mines are completely mechanised with no employee being at the risk of exposure to VWF.

Occupational health screening

Brett Aggregates > Southern region, Kent > 01795 594000

Brett Aggregates decided to take a more proactive approach to occupational health by organising a programme of in-service screening. Previously, the company awaited reports on employees, such as from a doctor, to ascertain their suitability to work. However, the reports were often inconsistent and lacked the necessary detail, particularly regarding recommended solutions.

The central SHE team of the Brett Group set about rationalising these processes and came up with a number of systems. Some were reactive, such as physiotherapy or counselling to aid rehabilitation, but others were proactive, including pre-employment health assessment and ergonomic workplace reviews. A 'standards summary' sheet was then produced with evaluations ranging from "fitness criteria met" to "test declined".

The results are then presented in a way that is clear for line managers to understand so that moves can be made to help workers with any specific needs.

Safe conditions programme – eliminating new cases of occupational health problems

Tarmac > 01902 382584

Tarmac succeeded in achieving some ambitious targets to eliminate new cases (or progression of existing cases) of Noise Induced Hearing Loss, Hand Arm Vibration Syndrome, Dermatitis and Occupational Lung Disease related to exposure agents or substances at work by the end of 2005.

There was a phased programme for implementation of the strategy:

1 Create a baseline of occupational hygiene data by 31st March 2005

2 Create a baseline of occupational health data by 30th June 2005

3 Complete occupational health risk assessments for all operational personnel by 30th June 2005. Employees were classified as high (or potentially high), medium or low risk in relation to each category of occupational ill health

4 Prepare action plans to eliminate, control or minimise occupational health risks by 31st December 2005 with PPE as a last resort. The aim was to place all personnel in the low risk category for each occupational health factor.

Tarmac then set about increasing its existing monitoring of employees by identifying their risks in order to try and cut them. Each risk assessment carried with it a 'traffic light' system with red being a high risk, amber a medium risk and green a low risk. Having established how at risk an employee was, the target was then to make sure that everyone was in a green, low risk category.

Mobile welfare units

Foster Yeoman > Robins Wharf, Kent > 01474 333186

Both civil engineering and surface operations require that groups of operatives work in isolated locations, which often means they are without basic amenities, such as toilets and washing and drying facilities. Foster Yeoman was keen to improve standards of hygiene.

The company has produced a number of mobile welfare units from existing long wheel-based 'Transit' vans. The units are purpose-built to provide all the welfare needs of the employees including toilets, drinking water, washing, eating and rest facilities.

As well as raising levels of hygiene, these units have also enhanced morale, which is reflected in the great pride taken by the workforce to maintain the vehicles and the facilities.

Musculoskeletal assessments for each employee

Bardon Aggregates > Colemans Quarry, Somerset > 01373 836401

After three cases of back injury at this site, a physiotherapist was consulted, who suggested that the problem lay not in the tasks themselves but in the lack of a warm-up before they were carried out. It was felt that a generic warm-up routine for all employees would not be adequate, so the physiotherapist gave each individual a musculoskeletal assessment to identify existing joint and muscle problems where injury could occur. Each employee was given advice on how to prevent further damage and also how to strengthen weak areas. The process was carried out not only with those employees in physical jobs, but also office weighbridge staff, who could suffer from postural problems and repetitive strains.

A major contributory factor to injury is dehydration as the muscles and joints become less flexible. To address this, more water dispensers have been installed across the site.

Control of respirable crystalline silica dust

WBB Minerals > 01270 752651

WBB Minerals has developed comprehensive systems covering all aspects of the management and control of respirable crystalline silica dust.

These systems include:

- implementation of the IMA Europe standardised dust sampling protocol by an in-house monitoring team
- provision of silica dust awareness training for site operatives
- use of the company intranet to improve communication on respirable crystalline silica issues with operatives
- risk assessment for exposure to respirable crystalline silica dust using a formalised document management system
- fit-testing of dust masks for operatives in accordance with industry best practice and COSHH
- provision of health surveillance for personnel exposed to respirable crystalline silica dust.

These measures need not be expensive and can bring long-term benefits.

Footwear investigation report

Brett Aggregates > Bysing Wood Road, Kent > 01795 594000

An investigation was conducted to try and determine the best quality anti-slip footwear as it was found that PPE suppliers could not provide an anti-slip standard or specification. While some footwear has passed an industry-standard SATRA test, which indicates whether a piece of footwear has acceptable tread, the HSE deems this to be inadequate. A further problem is that the upper area on footwear can often give way before the sole.

The conclusion from their tests recommends the use only of Polyurethane, or rubber/polyurethane manufactured soles/heels which meet the anti-slip coefficient requirements of the SATRA or BS EN tests. These provide increased slip resistance with a level of durability that will still outlast the uppers in most cases.

Reducing noise and dust inhalation in picking shed

Day Group > Brentford, Middlesex > 07775 821561

A safer method has been put into place for personnel hand picking contaminants from a moving conveyor at this construction and demolition recycling facility. The "picking shed" is located between the main screening shed and the secondary impact crusher, where noise and dust levels are high.

The solution was to erect two inner false walls within the picking shed, effectively forming a room within a room. New inner walls with self closing doors were built, and the existing doors had new closers fitted to ensure that doors remain closed at all times. Dust curtains have been fitted to the new openings where the conveyor belt passes through the walls.

An independent noise/dust survey confirms that levels have been significantly reduced.

Improved access and egress to dump trucks

AWARD WINNER

Aggregate Industries > Stoneycombe Quarry, Devon > 01803 872193

ON VIDEO

Quarry staff have modified their new fleet of Komatsu HD465 dump trucks to improve the safety of access and egress. Originally the vehicles were fitted with a step approximately 600mm from the floor, which then met a vertical ladder with four rungs. The ladder required the driver to always have three points of contact which was difficult when carrying an item.

Instead, inclined steps have been designed and manufactured, which can be lowered to within 350mm of the ground. They are fixed across the front of the radiator with the last three rungs retractable by twin air rams. Handrails are provided along the length of the stairway and across the front of the dumper to reach the driver's cab door.

The steps are controlled by the use of a switch at ground level and a duplicate switch in the driver's cab. Indication lights show whether the steps are in the lowered "park" position, or the raised "travel" position. An audible warning in the cab sounds if any drive gear is selected whilst the steps are not fully in the travel position. An additional feature is extra lighting of the whole access step area.

Accessing the top of an explosives truck

Tarmac > Caldon Low Quarry, Staffordshire > 01538 308282

AWARD WINNER

ON VIDEO

A risk assessment on a new explosives truck identified several safety issues. The safety handrails located on the top of the vehicle had to be manually locked into position. Safety concerns included climbing a vertical ladder which had no fall protection, working at height and manual handling, In addition, the storage hoppers a did not have a safety grid, allowing inadvertent entry into a confined space.

In response, the site fitting supervisor adapted the truck in various ways:

1 Collapsible handrails were installed, which are operated using the vehicle's hydraulic system. By adding a separate valve and hydraulic ram, the handrails can be positioned and locked into place automatically.

2 A fixed hoop with two further collapsible hoops were attached to the vertical ladder. They operate from the powered system used for the handrails.

3 Grids now cover the storage hoppers. During filling, the discharge auger has to be swung away, thereby removing any fall protection on the opposite side of the vehicle. A running rail for the attachment of a safety harness with short lanyard provides fall protection during this operation.

These added features are now fitted as standard by the vehicle suppliers.

Safe access to the primary crusher cabin

Aggregate Industries > Melbur Works, Cornwall > 01726 861140

All workers at this site are required to access the primary cabin, but the three ways of doing so each caused safety concerns:

1 Walking under the main conveyor belt – posed possible slips/trips; any spillage from the belt could fall on pedestrians; and pedestrians could touch the moving belt.

2 Walking up the existing steps – although technically safe with steps and handrails of a good factory-made standard, there was the possibility of pedestrians entering whilst the rock breaker was working.

3 Walk around the yard to gain access via a conveyor walkway – means walking through part of the stockyard and therefore near machinery and haulage movements.

The solution was to build a walkway which, although a simple idea, helped eliminate a number of issues related to pedestrians.

Excavator access

Lafarge Aggregates > Dry Rigg Quarry, North Yorkshire > 01729 860411

Following consultation with both operational and maintenance staff, several enhancements have been made to the access of a Komatsu PC 600 excavator.

These include:

- installation of automatic 'smart' steps - the steps are retractable so remain in the "up position" while the machine is operating, but once the machine is stopped and out of gear, the steps are deployed automatically
- lighting for the stairway system
- external ground-operated light switch fitted, which can be switched on before accessing the machine
- extension of walkway length around front of cab and, but reduction in width. An operator noticed that the width of the walkway had been dictated by the need to fully open the cab door. He felt that this made the walkway too wide, causing potential structural failure or impact risk. He requested a reduced width walkway but with an extension in length beyond the cab to allow easier access to the cab without any need to fully open the door
- installation of plastic-coated wire handrails on walkway and engine area as the tubular steel handrails had been replaced several times owing to vibration of the rigid structure. The new handrails provide protection from falling, but are flexible during motion of the machine

Caterpillar 330BL handrails

Aggregate Industries > Woodhall Spa Sand & Gravel, Lincolnshire > 01526 342360

The excavator operator pointed out a potential area of risk on his Caterpillar 330BL over the safe access to the engine canopy area during pre-start checks and servicing. Although the surface had good anti-slip properties, there was no barrier to prevent falls off the sides of the engine canopy area.

The solution was to install handrails. The handrails were constructed using 30mm tubular steel as smaller separate units to decrease vibration and reduce stress on the joints. Handrails were not placed at the very rear of the excavator to allow the engine canopy to open fully and maintain visibility. The operator found the addition of handrails made the area safer to work in when carrying out his machine checks. There was also no impact on all round machine visibility.

Note: Sites wishing to emulate this practice should consider the addition of 'kicker boards' to constrain slips, also the application of non-slip overlays to horizontal walkway areas, where necessary.

Working platform for loading shovel

Aggregate Industries > Express Asphalt Derby, Derbyshire > 01332 664422

An incident at another site highlighted the danger of topping up hydraulic oil and water levels on a loading shovel. The Express Asphalt Derby team carried out a safety audit on their method, which involved standing on the mudguards either side of the machine without handrails and with a drop of 1.5 metres beneath.

It was felt that a safer method needed to be introduced. Their solution was to erect a purpose-built working platform that the loading shovel could park alongside and allow an operator/engineer to safely top up oil and water levels. The platform has handrails and kickboards to prevent falls. The total cost was under £400 and it took some 24 hours to build.

Note: Access platform would be even more user-friendly if a set of inclined stairs were to replace the vertical rung access.

Handling tramp metal and munitions

United Marine Aggregates > Greenwich Wharf, London > 020 8305 0978

Throughout its history, the marine aggregate industry has had to deal with contaminants. For example, tramp metal and munitions are found on the seabed as a result of illegal dumping, military activity and shipwrecks. During the dredging process, metal and munitions can be dragged up with the sand and gravel and ultimately discharged at a wharf.

UMA has achieved a way of reducing the contact of its staff and assets with these contaminants. The original system had involved using a metal detector to locate the tramp metal/munitions. Whilst this process was reasonably effective, due to the high feed rates and depth of material, some contaminants were able to pass undetected.

To overcome the problem, there had to be changes at the wharf. Whilst it is desirable to remedy the problem at sea, this is not always possible. The two main aims were to improve detection and reduce human intervention. The following was purchased and incorporated into a system:

- overband magnet
- electromagnet
- three static magnets
- metal detector
- appropriate galvanized steel structures
- 3 tonne electric driven hoist remotely controlled from the plant control room
- dome camera colour monitor in control room.

There is also a new system detailing how contaminants should be dealt with. The elements include:

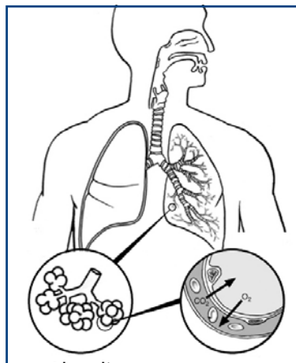
- an introduction
- a description of the equipment and how it operates
- frequency of inspections
- instructions in dealing with tramp metal/munitions
- a three-stage procedure to underpin the system – from when suspected munitions are detected, through to what to do in the event of onsite detonation by Bomb Disposal officers
- an evacuation plan when a controlled detonation is required, including contact with emergency services, muster points and communication with surrounding companies
- historical/daily records.

Note: Readers are referred to the June 2006 guidance entitled "Dealing with munitions in marine aggregates", produced by QPA, BMAPA ACPO and the Crown Estate (in conjunction with the MCA, JSEOD and the HSE). This document is freely available on www.safequarry.com (click "Hot Topics"; enter "marine" in keyword search box).

RESPIRABLE CRYSTALLINE SILICA 'RCS' – your new duties

EUROPEAN LEGAL AGREEMENT

A range of European extractives and consumer industries have negotiated a ground-breaking Agreement with their trades union representatives, to work towards the elimination of silicosis as an industrial disease. The negotiations were facilitated and funded by the European Commission and culminated in the signing of an innovative multi-sectoral Social Dialogue Agreement in April 2006. This major legal Agreement, affecting more than 2 million workers and a business exceeding □250 billion, includes duties on Employers *and* Employees and is viewed as being clearly preferential to the alternative imposition of an EU Directive with unnecessarily low exposure limit values. For the UK, the HSE/HSENI Workplace Exposure Limit of 0.1 mg/m^3 8hr time weighted average, applies. **HSE will be targeting RCS in Quarries in 2008/9.**



Alveoli

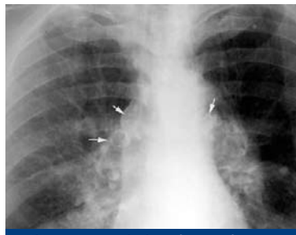
'Respirable' means fine enough to reach the alveoli

WHAT IS SILICOSIS?

Silicosis is a lung disease caused by inhaling damaging amounts of respirable crystalline silica (RCS). This new EU Agreement aims to:

- *protect* the health of the whole workforce
- *minimise* exposure to RCS by applying Good Practices
- *increase* knowledge of potential health effects of RCS; and about good practices

The Agreement (implemented in October 2006) is supported by 8 Annexes. These include a Good Practice Guide; a Dust Monitoring Protocol; a Health Surveillance Protocol for Silicosis; and an agreed Reporting Format.



Silicosis nodules (X-ray)

PROCESS TO BE FOLLOWED ON SITE

Carry out an INITIAL RISK ASSESSMENT based on the results of personal DUST EXPOSURE MONITORING

↓

Implement Good Practices (collective/personal protection measures)

↓

Provide information, instruction and training to the workforce

↓

Organise health surveillance

↓

Monitor the application of the Agreement & Good Practices

↓

REPORT to your Company who, in turn, reports to the QPA, as below

"Smoking causes lung cancer, heart disease, emphysema and exacerbates silicosis"

SEQUENCE OF REPORTING

Site → Company → National Association e.g. QPA → European Association e.g. UEPG → Agreement 'Council' → European Commission

Index – keywords

continued overleaf

Quarry Products Association
Gillingham House, 38-44 Gillingham Street, London SW1V 1HU
Tel 020 7963 8000 Fax 020 7963 8001

Written by Daybreak Communications Ltd, Newbury
Designed by Publicity Project, Newbury
Managing editor: Martin Isles, QPA

Printed on paper and board which is totally chlorine-free and produced from pulp from sustainable forests

www.safequarry.com

SHARING GOOD PRACTICE
www.safequarry.com

Fast route to:

- Best practice
- Incident alerts
- Hot topics
- Toolbox talks

Why?

Saves lives, prevents injuries and keeps you up to date with good practice.

When?

NOW! Updated constantly with new information and email incident alerts.

Who?

For you and your colleagues - sharing health and safety best practice.

Continuing Professional Development CPD material

www.safequarry.com