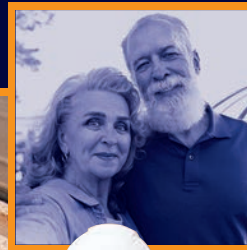




# Life Saving Rules

Including Minimum Safety Management System Requirements

2025



***Who is waiting for you at home?***

If you would like hard copies of this document please email

[lifesavingrules@dvfprint.eu](mailto:lifesavingrules@dvfprint.eu)

indicating which language version you require.

Orders for larger volumes of this document should be discussed directly with your local safety team.



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***A Message from Peter Buckley:***

At CRH, there is nothing more important to us than making sure that every colleague and contractor gets home safely to their families at the end of their working day.

Safety will always be our anchor value, and the Lifesaving Rules define the conduct by which we work to ensure that we continue to improve our safety performance, every day, across all of our operations.

While I am pleased to see the steady improvements across all of our safety indicators in 2024, we also experienced some very serious accidents that we must learn from as we endeavour to keep everyone free from serious harm in 2025.

This year's Lifesaving Rules contains new information and industry learnings that I hope will benefit you in your safety operations throughout the year. My simple ask of each of you, is to please speak up if you feel or see something unsafe.

We all have a collective responsibility to take care of ourselves and the colleagues we work with, and you are all doing tremendous work in that regard. Thank you for this continued commitment and please as always, stay safe.

A handwritten signature in black ink, appearing to read 'Peter Buckley', with a stylized flourish at the end.

***Peter Buckley***  
***President, CRH Europe***



2024 saw another very strong year of performance across CRH Europe . A new organisational structure was announced in December 2024 which will present an ongoing opportunity for greater collaboration at regional, country and operating company levels

2024 saw a significant number of ongoing safety initiatives, which in addition to our core programs of leadership safety training , active and visible safety leadership , transport safety , work at height , energy isolation and contractor management highlight again the commitment of the CRH organisation to protect all those impacted by our operations.

We launched the first Safety Best Practice webinar in April of 2024 – this approach allowed approximately 2000 of our colleagues to join a Safety Best Practice forum (transmitted in 16 languages to 48 regional centres) – the forum allowed a significantly wider audience to experience over 30 safety best practice examples from across the CRH group. We will continue with this approach in 2025 with the ambition of adding more colleagues and contractors across an increased number of centres.

The need to accelerate safety best practice sharing and adoption was highlighted by a number of serious accidents in 2024 , in the unfortunately familiar areas of work at height , transport safety and energy isolation . We must be relentless in how we manage and develop our risk control capability for these critical risks and the 2025 version of the CRH Life Saving Rules provides us all with a mechanism and framework to learn from the lessons of the past , to understand the critical risk controls required and to prevent repeat incidents .

I have 2 specific asks of you:

1. Please do not regard this document as a set of corporate rules – this document , which is updated every year , represents the means to live our anchor value of getting people safely home to their loved ones every day. There are lessons within this document that each of us have a responsibility to learn from and prevent repeat incidents. Simply put, this document represents our long and collective corporate memory in relation to safety in the workplace.

If we fully manage the 16 risk areas that are covered in this CRH LSR document, then over 95% of our serious accidents will disappear – reflect on that.

2. We must consider contractors and their safety in everything we do – our experience continues to show that contractors are involved in most of our serious accidents. The first Life Saving Rule is “Contractor Safety Management“ and we must continue to improve our consistency in this area in 2025.

Please read this document and refer to it often. Thank you for your continued commitment to safety at CRH.



**Michael Keating**  
**Safety Director, CRH Europe**



Dear Colleagues,

Safety is our top priority. Whether at limestone quarries, during transport operations or at gravel and concrete plants – we must not ignore hazardous situations. We believe it is important for us to take responsibility and act immediately when we identify risks. A driver is permitted to stop a delivery if there is a serious risk on arrival or unloading. And we all share responsibility for ensuring that colleagues wear the correct protective equipment (including a helmet!) and comply with CRH regulations.

Safety is not just a matter for the boss – it is crucial that we support one another and make one another aware of safety issues to create a safe working environment for everyone. Each and every one of us has the potential to set an example with our own behaviour. By demonstrating that safety is non-negotiable, we are sending a clear message – both within our team and to external partners.

Unfortunately, we have all experienced critical situations before that could have caused an accident. These incidents are warning signs that we learn from and that help us to improve our safety measures on a continuous basis. By taking experiences like these seriously and developing our processes consistently, we are reinforcing our safety culture for the long term.

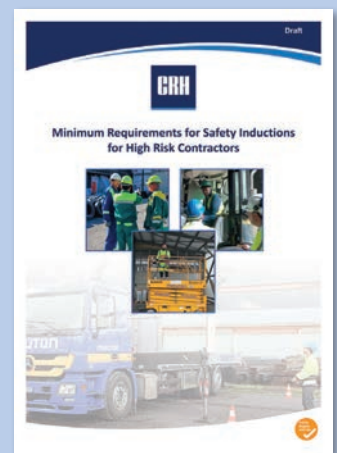
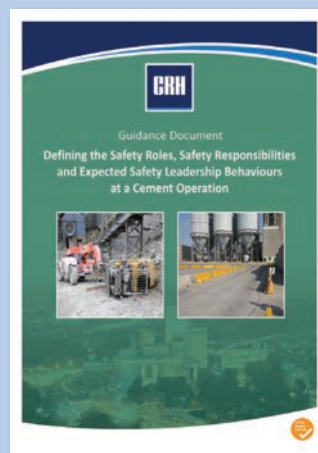
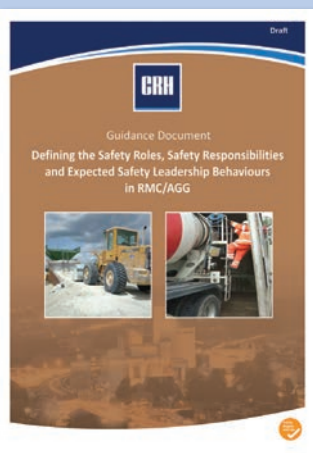
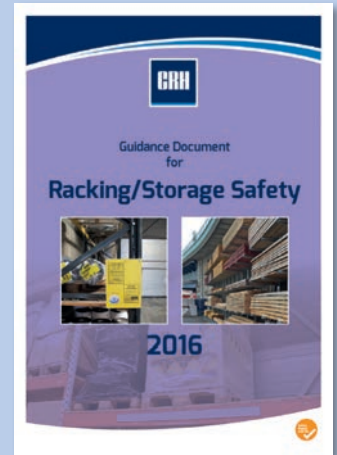
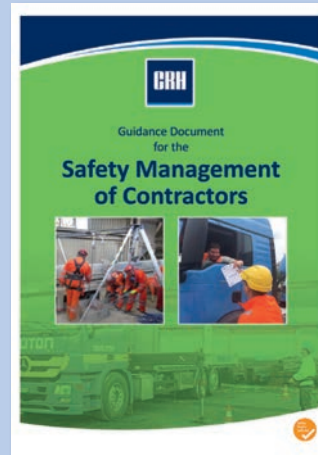
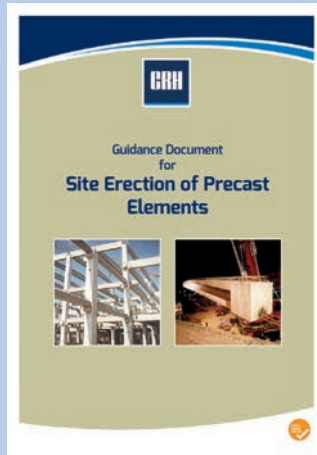
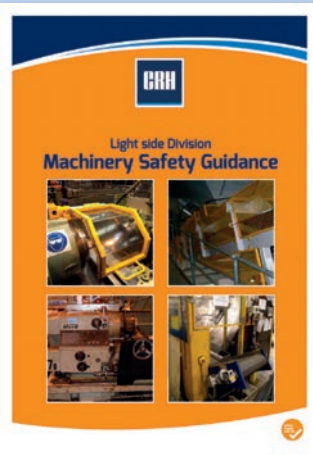
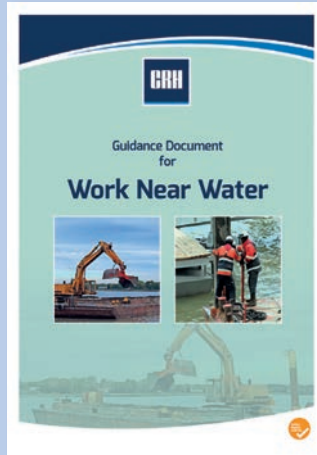
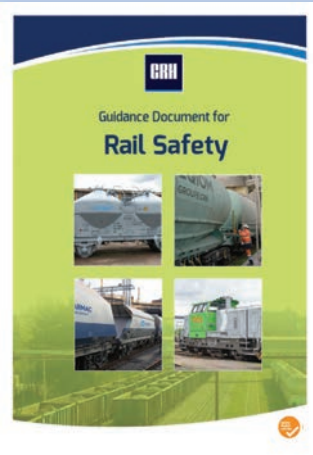
This brochure is a valuable tool that gives you practical insights into our 16 risk areas and the associated life-saving rules. Using specific examples, it shows how we can apply a safety-conscious mindset to all areas of work. It is essential for this mindset to become a natural part of our activities – in every project and in every task. Your active involvement and feedback are a key part of this process.

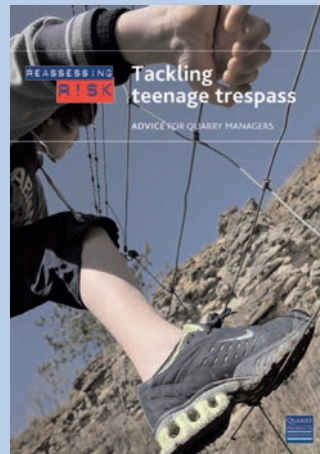
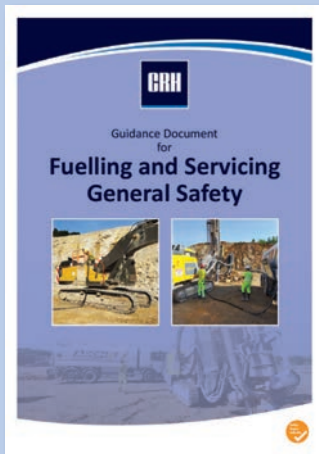
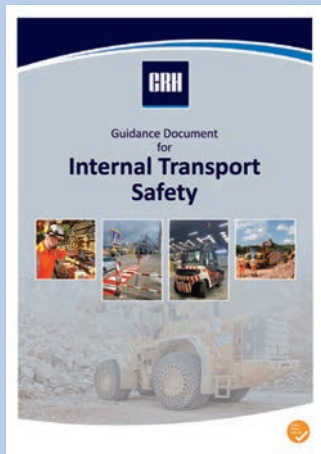
We would like to end by thanking you for your commitment to safety at CRH. Let's do all we can to ensure that we return safe and well to our loved ones after work.

Best wishes,

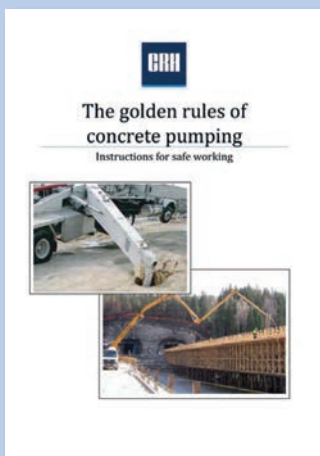
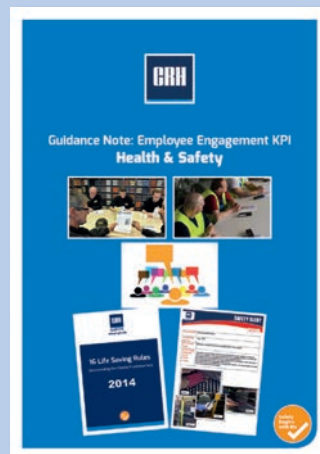
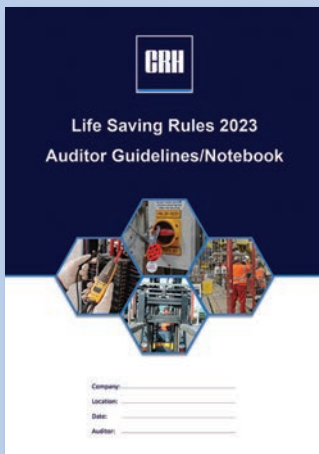
**Klaus Födinger**  
**Managing Director Cement**  
**JURA Materials**

**Hannes Eisner**  
**Managing Director Non-Cement**  
**JURA Materials**





Updated in 2024



Updated in 2024

Europe Materials

**Electrical Safety**  
Guidance Note

- This guidance note is intended to act as a template for each country / company to draw up their own electrical guidance in consultation with their in-house or external electrical engineers. This will ensure compliance with local regulations and national legislation and national standards. The CRH Group will ensure the documents to be implemented are specific to company guidelines.
- A suggested checklist is included at the back of this guidance. These may be of use for each company when drawing up their own checklist. An example of format follows up to the 2 current fatal accidents involving electricity.
- This guidance relates to portable and transportable electrical equipment. This covers equipment that is not part of a fixed installation but is intended to be connected to a fixed installation by means of a flexible cable and either a plug and socket or a hard hat or similar device. This guidance also applies to equipment that is to be moved when connected to a fixed installation. It should be permanent and efficient earthing in accordance with national legislation.

CRH Group Technical Services Engineering

**Civil Structures Assessment and Management Guide Draft**

CRH

**16 Life Saving Rules**

Guidance Document  
Life Saving Rule # 2

**Machinery Safety & Energy Isolation**

mpa

**VISION ZERO**  
SAFE & WELL EVERY DAY

Code of Practice for:  
**Safe Stressing of Prestressed Concrete Products**

2023 Edition 2

CRH Europe 16 Life Saving Rules

CRH Europe Heavy Side West/East.

Guidance Document  
Life Saving Rule # 12

**Managing Risk for Work at Height and Falling Objects**

Live Working Rule No. 12 - Managing Risk for Work at Height and Falling Objects

mpa

**VISION ZERO**  
SAFE & WELL EVERY DAY

Mineral Products Association  
**Guidance for prevention of storage silo over-pressurisation during road tanker deliveries of non-explosive powders**

CRH

**A Practical Guide to Shotfiring Operations**  
CRH Guidance  
November 2016

Performance Excellence

vdz.

VDZ-Merkblatt V1 12  
Health and safety in hot areas of cement plants

CRH

**Guidance on Drill Rig Safety**  
Risk Control: Movement of Tracked Drill Rigs

CRH

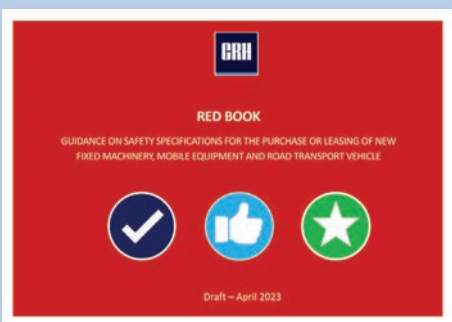
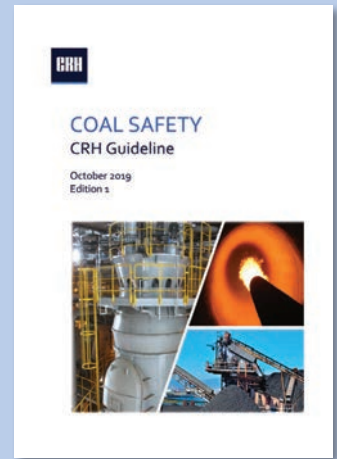
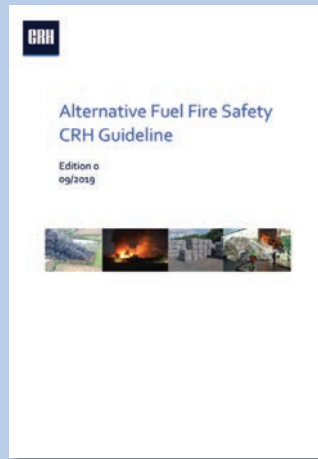
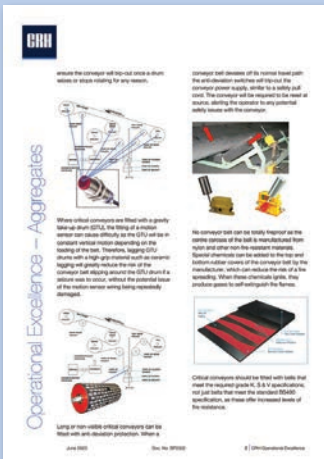
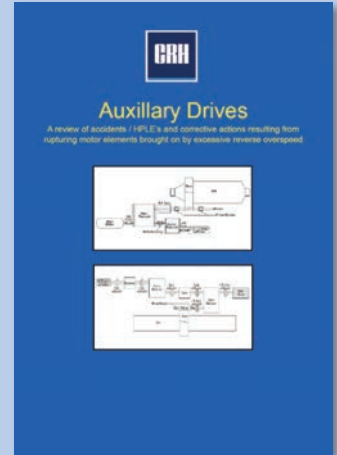
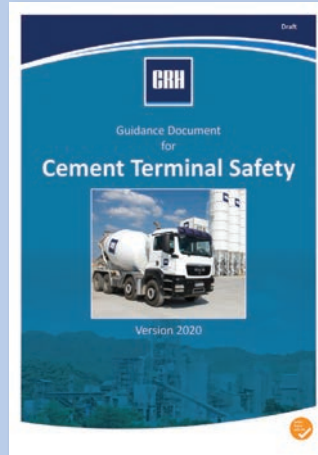
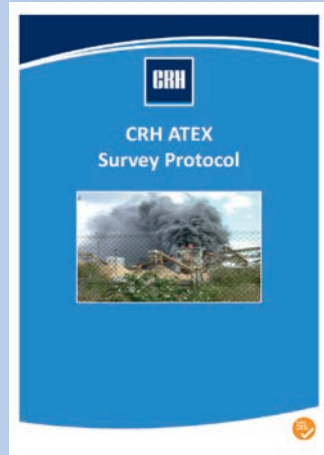
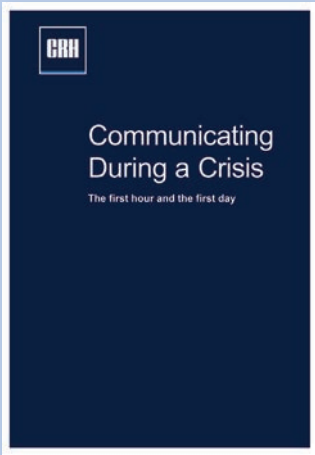
**Guidance on Safe Work with Material Stockpiles**

**Safe handling, storage and use of alternative fuels in the manufacture of cement**

Produced by the Alternative Fuels working group

CRH

**Workplace Winter Safety Precautions/Winter Checklist**



Updated in 2024



## Safety Alerts: Keeping Energy in the Safety Message

Each month we issue 5 Safety Alerts (to cover the various activities) and one Best Practice example.

06 / 2024


### Safety Alert

Let's discuss and prevent repeat incidents...

<b>COMPANY / LOCATION</b>	CRH Cement Plant
<b>DATE / TIME</b>	January 10, 2024 / 10:35 AM
<b>INJURIES / DAMAGES</b>	HIGH POTENTIAL LEARNING EVENT – Failure in LOTOTO procedure
<b>DESCRIPTION / CAUSES</b>	<p>Before attempting to rotate the kiln on auxiliary drives, cement plant employees noticed a contracted worker (using fall protection equipment) on the kiln shell in the area of the kiln seal on the side of the riser chamber. The locking group of the kiln auxiliary drives was removed (all padlocks removed to be able to rotate kiln). On that day, the contractors continued their work on replacing the kiln seal elements. Before starting work, they put padlocks on the group blocking box of a different group of devices than the ones they were working on. On the previous days, they worked in the same place and applied their padlocks correctly on the boxes blocking the group of mechanical works on the kiln (to start work on the kiln area, two padlocks must be put on, because a group of auxiliary drives has been separated from the kiln group in order to perform safe rotation without the need to unlocking all devices).</p> <p>Root Cause Analysis (RCA) is in progress to investigate issues around training, communication and supervision.</p>



Position of the contracted worker



Example of LOTOTO boxes used onsite


Let's discuss and learn from mistakes

[alesko@crh.com](mailto:alesko@crh.com)

06 / 2024

### Alert

Let's discuss and prevent repeat incidents...



Alert to refresh basic rules on Energy Isolation.

Each person must have a documented LOTOTO policy incorporating machine specific details.

Each person who is involved in any element of LOTOTO procedures, must be trained in and associated procedures. Such training must be carried out on an ongoing basis. The interval of such training should not be less than one year.

Each person must be clearly labelled to identify the item of equipment that they isolate. In padlocks, hasp locks must also be in place as part of all isolation safety systems.

Each person and contractors involved in LOTOTO must be issued with their own personal identification system to be attached to the isolator as part of the LOTOTO procedure.

When multiple persons are involved in a LOTOTO procedure, a multi hasp padlock must be used and a CRH person must be nominated whose padlock is the last and the last lock to be removed. LOTOTO procedures and site-specific instructions relating to LOTOTO must be included in the site safety inductions (for employees and contractors) which must include an assessment.

Let's discuss and learn from mistakes

[alesko@crh.com](mailto:alesko@crh.com)


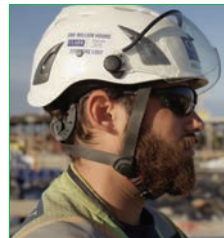
January / 2023 / 1

### Best Practice Sharing

Let's discuss and prevent repeat incidents...

<b>TOPIC</b>	Switching from Hard Hats to Safety Helmets with Chinstraps
<b>COMPANY / LOCATION</b>	Pullman (Non-CRH Construction Company) / US
<b>PROBLEM</b>	Traumatic brain injuries are responsible for 25% of all construction fatalities, and many life altering injuries. Traditional hard hats protect the top of a worker's head but have minimal side impact protection and also lack chin straps. Without straps, hard hats can fall off if a worker slips or trips. In addition, traditional head protection gear has tended to lack vents and trap heat.
<b>SOLUTION</b>	<p>Pullman decided to switch from traditional hard hats to Safety Helmets with Chinstraps. The company developed awareness materials around this topic to support the implementation (see examples on the next page), highlighting that Safety helmets offer superior protection for construction workers by:</p> <ul style="list-style-type: none"> <li>incorporating energy-absorbing liners to significantly improve protection from impacts and penetrations to the Top, Sides, Front, and Rear of the helmet</li> <li>having chin strap to assure that the helmet will stay on during a slip, trip, or fall</li> </ul>

CRH LSR 2024: "From January 1st 2025, all persons (all employees, contractors, contract truck drivers) working at sites must wear a **helmet with a chin strap** as part of their required PPE. Exemptions at sites are only permitted where a risk assessment from a CRH safety professional specifically allow their non-use."

Let's discuss and learn from mistakes

16 / 2024

### Safety Alert

Let's discuss and prevent repeat incidents...

<b>COMPANY / LOCATION</b>	CRH Precast Plant
<b>DATE / TIME</b>	February 05, 2024
<b>INJURIES / DAMAGES</b>	HIGH POTENTIAL LEARNING EVENT – Broken double ended joint
<b>DESCRIPTION / CAUSES</b>	<p>During detensioning of a line of strands, one of the joints used for coupling the strands suddenly broke and the strand was released uncontrollably. As per procedure nobody was in the area at that moment, there were no injuries.</p> <p>Key factors:</p> <ul style="list-style-type: none"> <li>The joint was found to have been damaged by angle grinder prior to coupling</li> <li>Possible unsafe acts by the contractors involved in the coupling operation – cutting strands in close proximity to the joints, leading to grinder damaging this joint</li> <li>Possible gaps in banal and wedge management (checking process – damaged joint not observed and eliminated)</li> <li>Excess force induced in the strand during detensioning. When detensioning multiple strand lines using the hydraulic release, if one of the hydraulic cylinders is not aligned with the others (release tables), the extra force is induced on the other cylinders (banal, also in the strands). This caused the already weak, due to grinder damage, joint to break.</li> </ul>



Broken double ended joint



Prior angle grinder damage

Let's discuss and learn from mistakes


16 / 2024

### Safety Alert


Let's discuss and prevent repeat incidents...

LSR 16, Point 7: All operations where prestressing of cables is an element of manufacture must:

- Follow the requirements of the MPA UK Prestressers Association guidance note "The safe stressing of prestressed concrete products". In particular, the use of pre-stress check procedures (before stressing activity) must be in place
- Complete an annual banal, the British Precast Association "Audit checklist for pre-stressing operations".



MPA Guidance Document - Safe Staying of Prestressed Products



CRH Prestressers Operations - Safety Audit


Let's discuss and learn from mistakes

38 / 2024

### Safety Alert

Let's discuss and prevent repeat incidents...

<b>COMPANY / LOCATION</b>	CRH Cement Plant
<b>DATE / TIME</b>	June 03, 2024
<b>INJURIES / DAMAGES</b>	HIGH POTENTIAL LEARNING EVENT – Type shredder ignited, and fire spread at storage area
<b>DESCRIPTION / CAUSES</b>	<p>There was a significant fire during the operation of a contracted mobile tyre shredder producing fine chips for the cement plant. Flames were noticed by the contracted machine operator coming out on the shredder conveyor. He was loading tyre to the shredder with a forklift (large PPE equipment). He interchanged with a 50 kg foam mobile extinguisher but was not able to extinguish it. The fire increased in intensity and the operator went to the equipment command panel, using the conveyor and stopping the shredder, calling for the plant fire department for intervention. They were then supported by the external fire service - The mobile shredder was not equipped with any automated fire detection and extinguishing system.</p> <p>The ignition source was inside the mobile shredder (probably due to friction), possibly with other material that intensified the quick ignition and spreading on the conveyor and on the pile of material. The hydraulic oil from the shredder hydro motor acted also as an accelerant in second phase.</p>



Let's discuss and learn from mistakes

38 / 2024

### Safety Alert

Let's discuss and prevent repeat incidents...

The Tara Shark Shredder is owned and operated by a contracted company. It was purchased 2 years ago. It had 128 working hours. Full maintenance was performed just before being brought to the plant, it worked 134 hours afterwards.




Freighting activities – Wheel loaders were also used



Best Practice Guidelines for Fire Prevention

- A very helpful guidance note for Tyre Storage and Fire Prevention is referenced (with a link) at the top of this page. Please note pages 30 to 32 of this document in particular as well as pages 26 to 28
- Load tyre stacks must be kept at low levels and at distance from shredded tyres and from any other activity that has the potential to cause fire.
- Accessibility must be ensured from all directions on the storage platforms for intervention vehicles.
- Regular fire drills should be performed in all high-risk areas. Communication between plant intervention teams and external firefighting teams must be tested during the drills.
- As rubber fire is difficult to be extinguished with water and foam, availability of sand / slag on the storage platforms in the immediate vicinity should be considered.
- Intervention with Heavy Mobile Equipment (e.g. from near the Quarry) could be considered as part of the intervention plan.
- Consider equipping mobile shredders with automated fire detection & extinguishing systems.
- SOP for mobile shredder must include the request to perform daily checks on the equipment, periodic cleaning of rubber dust deposits resulted from shredding and removal of any flammable materials from the equipment.

Let's discuss and learn from mistakes

## Measuring Safety with Leading Indicators

1. **Leadership KPI: Safety Leadership Interactions (SLI's)**2. **Employee Engagement KPI**3. **Transport Safety Checks:** Random safety spot check on heavy goods vehicles carrying goods for CRH.

- 6 areas are checked (if one or more of these issues is not in place , the check is deemed a fail/non compliance)
  1. Evidence that a spot check has been carried out that working day
  2. A pedestrian mirror is in place
  3. That the driver has the required PPE (for the site collection and delivery) in the vehicle
  4. That the reverse warning system on the vehicle is working
  5. That the load is secure (where applicable)
  6. That the truck is fitted with a warning alarm which activates if the driver opens the cab door and the truck handbrake is not engaged.
  7. The Transport Safety Check interaction with the driver must include a reminder around mobile phone policy – this could take the form of an awareness note (see examples on page 11).

4. **Safety Observations (near miss):** any behaviour, condition or practice which could lead to injury.5. **High Potential Learning Event (in effect a serious near miss).**

**High Potential Learning Event:** is an incident which could have resulted in a fatal accident/serious injury if there was a small change in circumstances. A comprehensive list of examples is included:

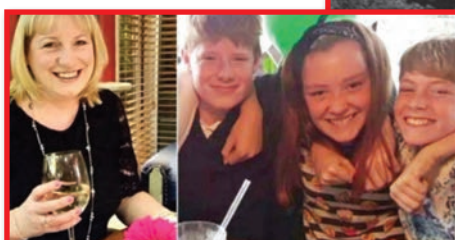
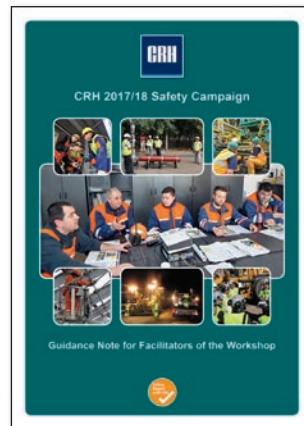
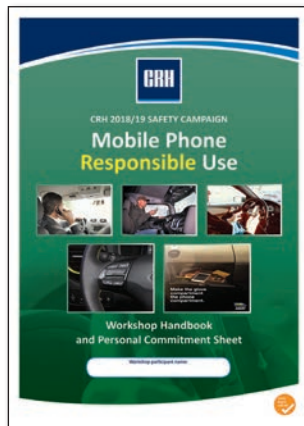
**Definition of a High Potential Learning Event:**

- 5.1. Person or persons working on a machine which is not isolated (electrically, pneumatically, hydraulically or mechanically) - this includes electrical work. Machine: conveyor belt, belt drives, rollers, drums, motors etc. Included in this category is:
  - Entrance into an area of the plant where the equipment is still in automatic mode.
  - The deliberate bypassing of an interlocked gate.
- 5.2. A vehicle (site vehicle or visitor vehicle) comes close enough to person to cause the pedestrian to take evasive action.
- 5.3. Any work at height where any one of the following measures where specified in the work instructions have not been carried out:
  - Use of a safety harness
  - Use of MEWP
  - Use of scaffolding
  - Any other measure specified in the work instructions.

This category also includes work at height which was specifically prohibited.
- 5.4. Persons working in trenches where any one of the following measures where specified in the work instructions have not been carried out:
  - Use of trench side support systems
  - Reduction of the slope of the trench sides/walls
  - Any other measure specified in the work instructions
- 5.5. Person detected to have alcohol or drugs in his/her system while on site.
- 5.6. The collapse, overturning or failure of any load bearing part of a:
  - Any lift, hoist, crane or MEWP
  - Any excavator
- 5.7. Any work in a confined space , where the emergency or rescue procedures were required to be used.
- 5.8. Any form of ejection of moving parts from within a machine where there was a risk that persons could have been struck by those parts – examples would includes fluid couplings.

### Measuring Safety with Leading Indicators

- 5.9. Any burns resulting from hot material which could have had the potential to cause serious injury.
  - 5.10. An unintentional initiation of a detonator or ignition/explosion of explosives.
  - 5.11. The explosion, collapse or bursting of any closed vessel.
  - 5.12. The collapse or partial collapse of any access scaffold.
  - 5.13. Any unintended collapse or partial collapse of any building under construction or renovation or any floor of a building being used as a place of work. This category includes the explosion of pressurised equipment (fixed and mobile) such as boilers and cement tankers etc.
  - 5.14. Any incident in which plant or equipment comes into contact with an overhead power line/ underground cable or comes close enough to cause arcing. This includes the unplanned unearthing of either Gas pipes or Electrical Cables during excavations of any sort.
  - 5.15. Where an object falls from a height close to where people would usually be working within that area or regularly accessing the area.
  - 5.16. Any other event, situation or incident which in the view of the company safety officer inclusion as a High Potential Learning event. This can be agreed on submission of the monthly data.
6. **Measuring the number of operating sites each year where a safety audit (in line with CRH guidelines and auditor notes) is completed.**
  7. **% of operating sites where a Safety Culture Assessment has been conducted.**
  8. **Number of Event Learning Teams (ELT'S) - From January 2024**
  9. **Number of Post Contract Safety Reviews (for high risk contracts) - From July 2024**

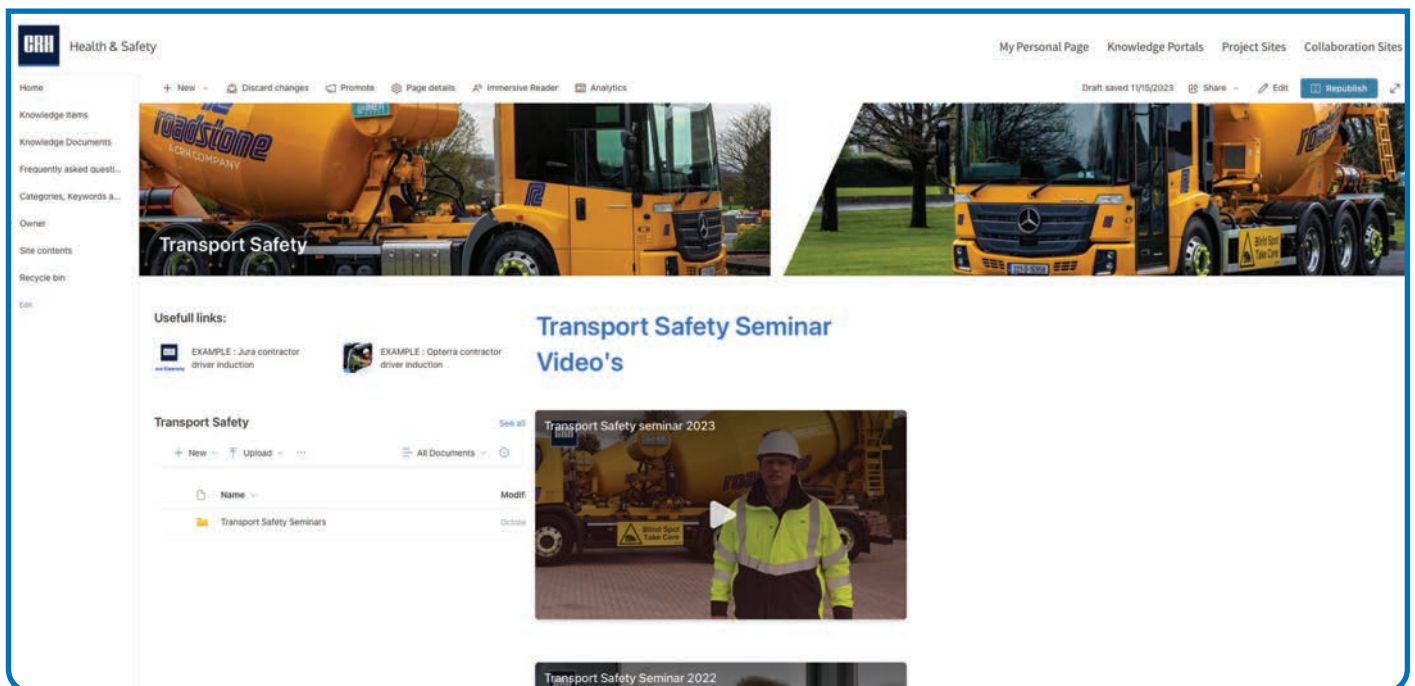
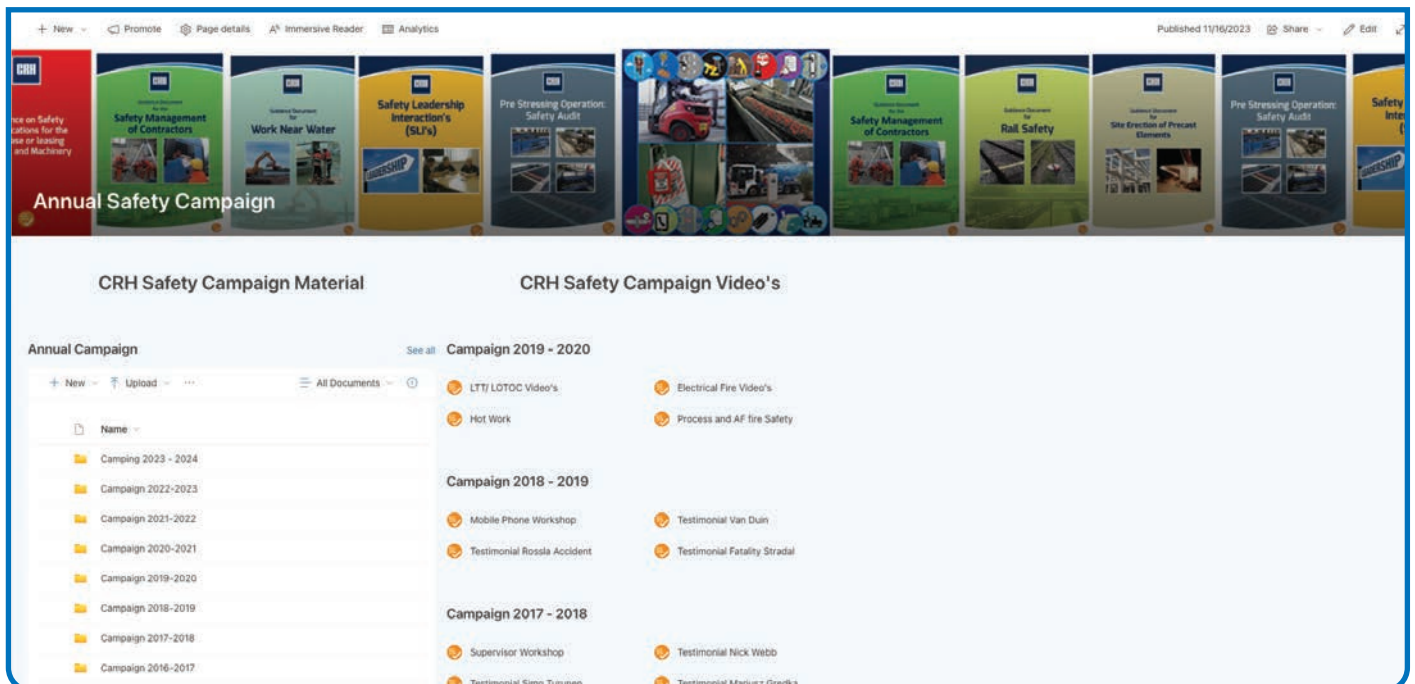


## Dedicated Safety Sharepoint

A Dedicated Safety Sharepoint was developed in 2014 to provide a support to all operating companies. Key elements of the Safety Sharepoint include:

- A database of all CRH Safety alerts in all languages
- A search function to allow you locate relevant alerts
- A full database of all CRH Health & Safety Guidance notes
- Presentations from the various Safety Best Practice working groups
- Presentations from various Safety events e.g Annual Transport Safety seminar

*Please contact your company safety professional to gain access details for this safety site.*



### 1. HEALTH & SAFETY POLICY STATEMENT

- 1.1. A Health and Safety policy statement must be in place at each company. It should be signed by the Company Managing Director and displayed at every location.
  - The Health & Safety Policy must clearly state that all employees and contractors have full authority to stop work or to challenge a colleague over a safety concern i.e. the policy must include an Intervention Policy
  - The policy must also reference the fact where employees or contractors intervene or stop work or (example of such intervention programs include “Tap on the shoulder “ . “ Stop Work & Discuss “ , “ See something, Do Something “) to challenge a colleague or contractor, there will be no negative impacts on any person involved
  - The Intervention Policy /Program must be developed and communicated within each operating company (taking into account existing programs)
- 1.2. Each company Managing Director is responsible for the development and implementation of an SLI program in their company.
- 1.3. All companies are required to define and document the safety roles / safety responsibilities / expected safety behaviours of management and supervisors.

### 2. SAFETY ADVICE / SAFETY RESOURCES

- 2.1. Every company shall appoint a Health & Safety Officer (full or part-time) who shall provide advice and assistance on implementation of safety policy.
- 2.2. Safety professionals will be invited to participate in a Continuous Professional Development (CPD) initiative for safety professionals.
- 2.3. A safety management IT system is in development for CRH Europe/APAC. This system would incorporate a safety app. However the timeframe between the development of a proposal to the actual rollout phase could mean that such a system would be in place by 2021/22.

### 3. PERSONAL PROTECTIVE EQUIPMENT: MINIMUM REQUIREMENTS

- 3.1. Each operation must have a clearly defined policy for PPE requirements.
- 3.2. While each site can define their own PPE requirements, the following are considered minimum requirements (unless their non use is permitted through a risk assessment completed by a competent internal safety person):
  - Safety Helmet (not bump cap).
  - High Visibility Clothing (see requirement 5 of LSR No.5 on page 43).
  - Safety Glasses (the use of goggles or other tight fitting safety eyewear may be required for specific activities - this should be addressed and identified as part of the site risk assessment. As a general rule safety glasses should be a requirement for all those working in or visiting an operational site.) **There have been a number of serious accidents and HPLE's in 2023 involving the incorrect use and non use of Eye Protection (see Safety Alerts 15/23 and 37/23).**
  - Safety footwear: Integrated metatarsal boots are required by all contractors and employees working at an operational site- see requirement 16 of LSR No.12 on page 81. An exemption to this rule only applies where a site specific risk assessment, completed by a competent internal safety person allows for their non use in specific circumstances).
- 3.3. For persons involved in any work where there may be a discharge of cement /lime dust - then the safety goggles worn must provide a full seal around the eye. For cleaning, maintenance or inspection tasks where there is a risk of a significant emission of quicklime, then a full face visor (in addition to the required protective eyewear) should be worn. For such tasks where there is a risk of a significant emission of quicklime under pressure e.g. clearing of pneumatic lines, then protective covering of the face and mouth with self contained air supply should be in place. All operational personnel (including contractors working on the operational site) should carry a personal eye spray unit e.g. Diphoterine for emergency eye irrigation. The correct use of the such eyewash e.g. Diphoterine should be covered in site level safety inductions.
- 3.4. Each operating company must make available where requested, personal protective equipment (overalls) designed for expectant mothers. A European supplier provides such workwear and your company safety professional will have the contact details.

- 3.5. From January 1st 2025, all persons (all employees, contractors, contract truck drivers) working at sites must wear a helmet with a 4 point chin helmet strap as part of their required PPE. Exemptions at sites are only permitted where a risk assessment from a CRH safety professional specifically allow their non-use.
- 3.6. Following on from the 2022/23 pilot, each operating company must have an agreement in place with a local PPE supplier - that female PPE is in stock or can be ordered and delivered with 72 hours of that order.

## 4. RISK ASSESSMENT / SAFE SYSTEMS OF WORK / PERMITS

- 4.1. Each company must have an appropriate documented system to complete Risk Assessments for all machines/ installations, workstations, processes and manual tasks that identifies and evaluates the present hazards, the associated risks and the necessary control measures that must be taken to prevent accidents/injuries.
  - Identifying control measures must be based on the general principle of prevention (Hierarchy of Controls) taking into account the following order 1) preventing risks, 2) preventing damage/injury, 3) limiting the damage/injury.
  - Risk assessments must be reviewed on a regular basis or in cases where task/job changes occur that increase or change the risks.
  - Dynamic Risk Assessment e.g Last Minute Risk Assessments should be in place where tasks are identified as high risk. The level of paperwork around such assessments should be kept to a minimum, to ensure the key objective of the dynamic assessment of pausing to reflect and review the original risk assessment.
  - The concept of Hierarchy of Controls must be included on all internal training programs for Managers, Supervisors and Employees / Contractors. The objective is to create clarity in terms of risk management in terms of safety.
- 4.2. Standard Operating Procedures (SOP's) must be developed, implemented and maintained for repetitive tasks. Tasks without SOP's shall have a task risk assessment conducted prior to the work starting.
- 4.3. A permit system to support risk assessment should also be in place for certain tasks (as identified in the site level risk assessments) some examples - LOTOTO, Hot Work, Confined Space, non routine lifting operations.
- 4.4. Construction / Project work such as installation or removal of plant should be accompanied by a detailed Project Risk Assessment.
- 4.5. A documented Management of Change (MOC) process must be in place at each operating company. An MOC risk assessment must be developed and submitted for all Capex applications. In addition an MOC risk assessment must be completed for:
  - Newly installed equipment / machinery (including new fuel or energy sources)
  - New waste streams of alternative fuel (to include fire risk assessment)
  - Any other significant change that has the potential to alter existing or introduce new Health & Safety Risks

## 5. SAFETY TRAINING

- 5.1. In conjunction with the HR function within each company, there must be a training database/matrix in place for Health & Safety Training and Safety Inductions.
- 5.2. Each Company must have in place an annual safety employee training program. This training program must be based on an assessment of required competencies and skills for each employee. Such training must include an assessment and be recorded.
- 5.3. Each operational full time operational employee must receive 12 hours training per year. Again such training must involve an assessment.
- 5.4. Each company must have programs in place to ensure all managers and supervisors receive dedicated safety management training relevant to their position.
- 5.5. Such training, as required by point 5.4 should include as a minimum:
  - Contractor Management: Ref LSR rules 1 and 10
  - Communication Skills: using material such as the 2017/18 campaign Frontline Leader DVD
  - Safety Roles / Safety Responsibilities/ Expected Safety Behaviours
- 5.6. A specific Health & Safety induction process must be in place for all new employees, contractors and visitors. Safety Inductions for new employees and contractors must involve an assessment.
- 5.7. Where safety training , including safety stand downs and toolbox talks are taking place at a site - all contractors working at the site should be included, where appropriate, in such safety events.

- 5.8. All supervisors will be required to complete the CRH FLL (Frontline Leadership Program) which is due for launch by CRH in late 2019.
- 5.9. Due to the high use / turnover of contract transport drivers, companies are required to have an online safety induction capability for this group. A number of examples of such systems have been provided and such a system must be in place by April 2020.
- 5.10. The CRH LSR videos must be used as part of safety training at all levels - as part of each operating companies 2024 Training Program.

## 6. SITE LEVEL ENGAGEMENT

Regular safety meetings (formal and informal) should be held with employees on relevant safety topics and where possible should include contractors. Each location should have a committee of employees from across the location who will review Health & Safety on a regular basis (formal minutes shall be produced from such meetings).

## 7. INTERACTIONS WITH TRADE UNIONS ON SAFETY

Subject to local custom and law safety discussions should be held with Trade Unions (if present at a location).

## 8. ACCIDENTS / INCIDENT INVESTIGATION

- 8.1. All lost time accidents and High Potential Learning Events (HPLÉ's) shall be thoroughly investigated with a focus on root cause analysis. It is the role of the safety professional to ensure the completion of root cause analysis in such cases. A Root Cause Analysis model has been identified for a standard approach and monthly 1 day online training on this model is available.
- 8.2. All lost time accidents and fires must be notified to the relevant SVP (Senior Vice President) or Platform MD (Managing Director) within 48 hours of the LTI occurring. That notification can be by email and include a short description and photograph of the relevant accident.
- 8.3. All serious and fatal accidents must be reported to the relevant senior manager and the central Safety team in Amsterdam as soon as possible after the accident.
- 8.4. To improve the quality of serious accident/incident investigations - each operating company should develop a procedure for the establishment of an "Investigation Panel" or "Event Learning Team" to investigate serious accidents or incidents. A guidance note on Event Learning Teams is now available to assist the implementation of this concept.



## 9. MONTHLY SAFETY ALERTS / ANNUAL SAFETY CAMPAIGNS

- 9.1. 5 Safety Alerts and one Best Practice example will be produced each month in all relevant languages. The Safety Alerts are a key element in maintaining awareness of key risks and facilitating effective safety discussions.
- 9.2. Alerts should be used to facilitate discussion at all levels of meetings with operating companies.
- 9.3. The relevant company safety professional is responsible for the distribution of alerts (in the local language) to all key persons within the operating company.
- 9.4. All companies must develop an annual safety campaign which will be supported each year by a CRH developed central theme and resources (workshop elements - support videos etc.)

## 10. CONTRACTOR SAFETY

- 10.1. Only contractors who have successfully completed a prequalification process are permitted to work at a CRH location.
- 10.2. Transport Contractors must satisfy all elements of the CRH LSR No.8.
- 10.3. Transport Contractors are subject to random safety checks (known as Transport Safety Checks – see page 9).
- 10.4. All contractors must undergo a site induction which must include an assessment, to verify that they have understood the key site risks.
- 10.5. Site Safety Inductions for new employees and contractors must cover the disciplinary procedures for breaches of health and safety, including where relevant “Site Cardinal Rules” - see next point.

## 11. DISCIPLINARY MEASURES / CONSEQUENCE MANAGEMENT / CARDINAL RULES

- 11.1. Each company must have a documented disciplinary procedure related to breaches of safety and health requirements in conformity to local law and Trade Union agreements.
- 11.2. All elements of this procedures must be clearly communicated to all employees and contractors are part of the safety induction.
- 11.3. Operating companies should consider the use of a series of site specific rules which if not followed or breached, will result in serious disciplinary action. These site level rules , which could use the term “ Site Cardinal Rules “ would be linked to the most serious safety risk/relevant LSR’s at that operational site.

## 12. EMPLOYEE INCENTIVES

Whilst this is not an absolute mandatory requirement, safety incentives schemes (e.g. most improved location etc) are strongly recommended to give an ongoing focus to H+S.

## 13. SITE AUDITS / REVIEWS

Each operating company must conduct an internal CRH LSR Audit at each operational site each year using the CRH LSR Auditor guidelines. The Audit findings must be presented in a specified format with photographs of the issues identified and named responsible persons for each corrective action identified. These annual audits can be carried out by internal or external assessors.

- All operating companies must report “ % of operational sites where an internal LSR audit has been completed in accordance to the CRH LSR audit guidelines “ as part of the monthly safety reporting.
- An additional layer of oversight is present in that CRH will arrange for an LSR Audit in at least one operating site of each company each year. This audit will be carried out by an external team with minimal notification to the site. Where serious issues are identified , additional site audits will be conducted.

## 14. DUE DILIGENCE / ACQUISITIONS

- A CRH Safety Due Diligence checklist must be completed as part of any due diligence process (see page 5). Where applicable the newco integration plan should set out a programme and timetable to ensure conformity to CRH policy and requirements as soon as practical.

## 15. CAPITAL EXPENDITURE: SAFETY

All capex proposals shall have a Health & Safety assessment completed. Preparation of purchasing specifications should include a reference to the guidance document on safety specification for new plant and equipment (The Red Book - see the CRH Safety guidance section on page 7).

## 16. TARGET SETTING / PERFORMANCE REVIEWS

- 16.1. Health & Safety performance should be an internal part of the company reporting system and should be reviewed at management meetings.
- 16.2. The safety performance metrics / safety information to be reviewed include:
  - SLI’s
  - Safety Observations / High Potential Learning Events / Employee Engagement
  - Recent Safety Audit findings
  - Recent CRH Safety Alerts
  - Non compliance issues within the CRH Transport Safety Checks

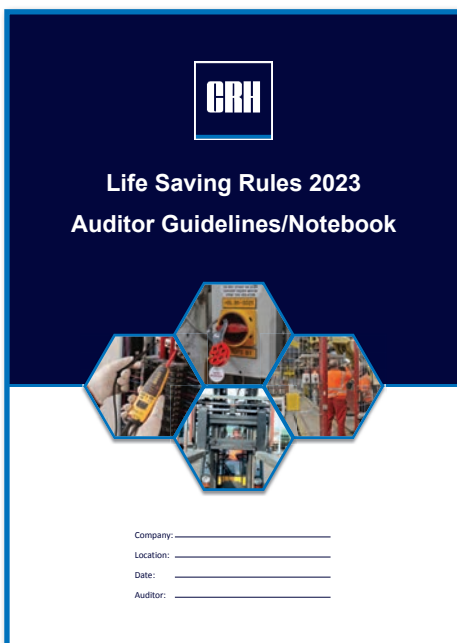
## Assurance / Oversight

Each operating company must conduct an internal CRH LSR audit at each operational site each year using the CRH LSR Auditor guidelines. The Audit findings must be presented in a specified format with photographs of the issues identified and named responsible persons for each corrective action identified.

These annual audits can be carried out by internal or external assessors.

All operating companies must report “% of operational sites where an internal LSR audit has been completed in accordance with the CRH LSR audit guidelines” as part of the monthly safety reporting .

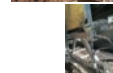
An additional layer of oversight is present, in that CRH will arrange for an LSR audit in at least one operating site of each company each year. This audit will be carried out by an external team with minimal notification to the site. Where serious issues are identified, additional site audits will be conducted.



Category	Date	P	Person Responsible
Safety Documentation - Signage	26-January-2022	M	Long, Daniel
Status	Due / Complete Date Code		
Outstanding	02-February-2022	2.12 : RMC C1 & RMC C2 - Are E-Stops in place at the tail drum area of the conveyors and are the E-Stops identifiable by signage?	
Corrective Action			
E-Stops combining the pull cord must be identifiable by signage at C1 & C2.			

Category	Date	P	Person Responsible
LSR 2 Machinery Safety	26-January-2022	M	Long, Daniel
Status	Due / Complete Date Code		
Outstanding	05-February-2022	3.15 : RMC C1 & RMC C2 - Other	
Corrective Action			
Touch access must be prevented through the existing guarding to the flange bearings/rotating drum shafts. Upgrade & or replace the existing guarding to prevent touch access.			



**Observation:**No at the time of audit there was no evidence of an eye wash station at the wash out area.

9.7 : Wash Out area - Is access steps and Catwalk to the standard? **Minor Issues**

**Observation:**No at the time of audit there was damage to the existing handrail & mid-rail of the wash out catwalk/platform.

9.8 : Wash Out area - Are isolators on water pumps etc. labelled? **Minor Issues**

**Observation:**No at the time of audit the isolators on water pumps etc were not labelled.

9.9 : Wash Out area - Other **Minor Issues**

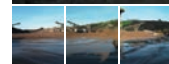
**Observation:**Housekeeping at the wash out area was not of the required standard. RMC Drivers are discarding waste from cabs of trucks (plastic bottles & waste wrapping).

**Corrective Actions**

Category	Date	P	Person Responsible
LSR 12 Work at Height - Protecting Against Falling Objects - Work Near Water	26-January-2022	M	Long, Daniel
Status	Due / Complete Date Code		
Outstanding	05-February-2022	1.3 : Aggregate Bins Loading area - Are suitable handrails and midrails at sides of bins?	
Corrective Action			
The existing handrail & mid-rails need to be altered & or replaced with new suitable handrails and mid-rails at sides of bins to prevent access to a fall from height area.			

Category	Date	P	Person Responsible
Safety Documentation - Signage	26-January-2022	M	Long, Daniel
Status	Due / Complete Date Code		
Outstanding	02-February-2022	1.6 : Aggregate Bins Loading area - Is safe loading/tipping safety signage in place at suitable locations?	
Corrective Action			
Additional safe loading/tipping safety signage should be erected at the stock piles/suitable locations.			



- 16.3. Each operational site should have a clearly visible sign close to the entrance of the location which shows/states the number of days since the last lost time accident at that site – see example on page 15.

## 17. SAFETY COLLABORATION / SHARING BEST PRACTICE

- 17.1. CRH Europe has a significant safety best practice / collaboration structure. This includes specific working groups on cement/lime, RMC/Aggs, Precast / Paving and Lightside.
- 17.2. All Companies must ensure that a representative attends the National and European level Safety best practice meetings.
- 17.3. Each company must have access to the CRH Safety Sharepoint (see page 12).
- 17.4. Each operating company shall provide a dedicated budget for 2024 pilots of the following technology (already piloted between 2021 and 2023):
- Virtual Reality Safety Training
  - Driver Monitoring systems
  - Artificial Intelligence (integrated into CCTV system)

## 18. EMPLOYEE OCCUPATIONAL HEALTH CHECKS / WORKPLACE HEALTH MONITORING

- 18.1. Health checks should be carried out where applicable for job function, and include pre employment and exit medicals where required under company policy.
- 18.2. All companies must have programs in place to meet the requirements of this initiative which focus on noise and dust exposure.
- 18.3. All operating companies must have a risk based annual industrial occupational hygiene plan which covers issues of monitoring of exposure related to noise, workplace dust, hand-arm vibration as appropriate.
- 18.4. The 2 Occupational Health KPI's referenced in LSR No.16 will be replaced by one new KPI “% of operational sites where an Employee Well Being Program \* is in place” - this KPI is already reported on annually.

\*for the purposes of this KPI ,an employee well -being program is a program which focuses on elements relating to some or all of the following:

- Cardiovascular Health e.g the provision of blood pressure monitoring
  - Work-Life Balance / Mental Health : provision of information/support
  - Prevention of Chronic diseases : provision of information/ testing e.g diabetes
  - Nutritional health: provision of information/support
  - Fitness programs: provision of information/support
- 18.5. Where possible, a winter flu vaccine program should be in place in each company to offer employees the opportunity to avail of the vaccine.
- 18.6. Each regional division will establish a Drugs & Alcohol Working group consisting of Safety, HR and operational representatives to develop policy recommendations which take into account national and regional legislative considerations.

## 19. ANNUAL SAFETY PLANNING / OBJECTIVES AND TARGETS

Every company shall have annual set Health & Safety Targets & Objectives, which are approved and signed by the Managing Director. As a minimum the annual plan must cover the following:

- Programs to ensure full compliance with the 16 Life Saving Rules
- Program of SLI's which covers all senior managers
- Programs to monitor contractor performance
- Program of internal/external audits
- Programs to ensure high levels of housekeeping – including training, audits
- Program to ensure compliance with the CRH Safety training requirements
- Targets for Transport Checks
- Targets for % employee engagement

## 20. SAFETY CULTURE ASSESSMENTS / BEHAVIOURAL SAFETY PROGRAMS

- 20.1. These surveys are based around management and supervisor interviews and anonymous employee questionnaires (see results table below). The process is facilitated by external personnel.
- 20.2. The process involves an initial Safety Culture Assessment, a program to address the issues raised, and a follow up survey to assess program progress.
- 20.3. From April 2019 all operating companies must report “ % of operational sites who have had a Safety Culture Assessment completed“.

Notes :

- Where required small locations (with less than 5 full time employees ) can be combined for this process “ - this will be a quarterly KPI – first information April 2019.
  - Safety Culture Assessments are counted for a 3 year period from date of completion – so a Safety Culture Assessment completed in 2021 and counted in 2021, 2022 and 2023.
- 20.4. The Human Performance concept is a useful model around behaviour that is used as part of the annual Leadership Safety Training programs can be used as a basis for behavioural training - see page 20.
  - 20.5. The concept of “Organisational Drift “ as covered in a Human Performance model must be included in all internal training programs for Managers, Supervisors and employees / contractors. The objective is to create commonality in terms of safety vocabulary for this concept across CRH.

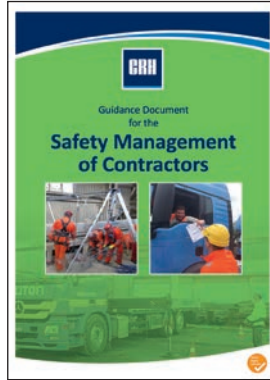
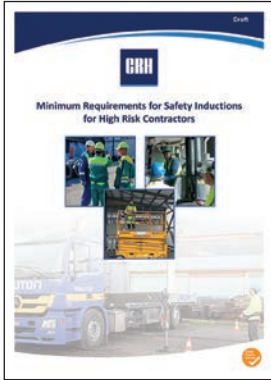
Safety Culture Assessment	AVG%	AVG%	Gap
Safety Values			
Safety Communications			
Management Credibility			
Hazard Correction			
Aligning Conditions			
Behavioural Reinforcement			
Accountability			

## Human Performance

Human performance is a simple model which challenges how we respond to human error by pushing us to look deeper inside our processes and systems.



	ELEMENT	DETAIL
1	<b>HUMAN ERROR IS INEVITABLE</b>	<ul style="list-style-type: none"> <li>Open culture around <b>HPLE's</b> (expecting and accepting error as a learning opportunity).</li> <li>Move away from sole focus on FR/SR to wide range of <b>Leading Indicators such as Transport Safety Checks % fails</b>.</li> <li>Concept covered as part of each Annual program of <b>Leadership Safety Training</b>.</li> </ul>
2	<b>ERROR SITUATIONS ARE PREDICTABLE</b>	<ul style="list-style-type: none"> <li><b>Life Saving Rules</b>, updated annually to learn the lesson, identify trends and identify common BP approaches.</li> <li><b>Annual Safety Campaigns</b> (since 2010), rolled out during our high risk period (end of year / start of year, Nov-Feb) focused on key risk areas.</li> </ul>
3	<b>ORGANISATIONS AND PEOPLE DRIFT</b>	<ul style="list-style-type: none"> <li><b>Monthly Safety Alerts (5 per month, translated into 14 languages)</b> to maintain focus / provide sites with fresh safety material.</li> <li><b>Annual Safety Campaigns</b> to prevent complacency, maintain vulnerability.</li> <li>Annual program of <b>Leadership Safety Workshops</b>.</li> <li><b>External LSR Audit System</b>.</li> <li><b>Internal LSR audits (measured as a leading indicator)</b>.</li> </ul>
4	<b>INFLUENCE OF CULTURE AND LEADERSHIP</b>	<ul style="list-style-type: none"> <li><b>SLI's</b> ( approximately 6,000 per year).</li> <li>Safety Integrated into all <b>Leadership Communications</b>.</li> <li><b>Safety Culture Assessments</b> carried out at all companies to identify underlying issues.</li> <li>Annual program of <b>Leadership Safety Workshops</b>.</li> </ul>
5	<b>EVENTS CAN BE AVOIDED BY LEARNING</b>	<ul style="list-style-type: none"> <li>Life Saving Rules (updated annually) to bring a focus to the key risks and identify trends.</li> <li><b>Monthly Safety Alerts</b>.</li> <li><b>Formalised Best Practice</b> structures / webinars.</li> <li><b>Internal &amp; External LSR Audits</b> (using a standardised template).</li> </ul>
6	<b>POSITIVE REINFORCEMENT DRIVES BEHAVIOURAL CHANGE</b>	<ul style="list-style-type: none"> <li>Covered in each Annual program of <b>Leadership Safety Workshops</b>.</li> <li>Dedicated campaign on the issue (the power positive reinforcement) in 2018 – with fully developed workshop (&amp;DVD in 16 languages) – DVD now used in <b>Frontline Leadership Programs</b>.</li> </ul>



*Please note: Contract Haulier / Transport Contractor issues are covered in LSR No.8*

### Introduction

Contractors and their employees continue to represent a significant proportion of the serious accidents within the Group. Based on this level of risk, it is policy that a robust pre qualification system is in place in each company for the use of contractors.

To ensure that the contractor prequalification system is consistent across the divisions and fulfils a minimum standard, a contractor prequalification system based on the requirements of a prequalification template the CRH Heavy/Light side **“Contractor Safety Checklist” or agreed equivalent.**

## CONTRACTOR MANAGEMENT

*You are only as strong as your weakest link.*

*A Contractor is four times more likely to be involved in a fatal accident than an Employee.*

The sample **“Contractor Safety Checklist” (or agreed equivalent)** must fulfil the objective of ensuring that, prior to any contractor commencing work at a CRH location, that the operation is aware of the following:

- The details of the people the contractor will be using.
- Information about the previous safety performance of the contractor company.
- Confirmation that the contractor company have systems for ensuring that their plant and equipment is safe.
- Confirmation that the contractor is aware of the safety requirements of CRH.
- The level of supervision in place.

Please note the following key points in relation to the contractor prequalification system:

- The **“Contractor Safety Checklist” (or agreed equivalent)** is completed by the contractor.
- The operational manager who engages the contractor is responsible for ensuring that the prequalification process with the contractor is completed prior to the contractor commencing work at the location.
- Where contractors are used throughout the year for one operation, the form can be completed once per year.

#### **Example:**

where a contract company carry out maintenance throughout the year at different times, that contractor company can complete one Contractor Safety Checklist in January of each year. They are required to list all the procedures and personnel that they will use throughout the year. If the personnel used by the contractor company are different to the personnel listed in the January Contractor Safety Checklist, then the CRH company / location would have to be informed of the change. The same applies where the contractor company carries out a different job or different work than that listed in the January Contractor Safety Checklist, then the CRH company / location would have to be informed of the change. (can be updated if personnel details change).

- Where contractors sub-contract an element of this work, the sub-contractors involved must also complete the relevant prequalification questionnaire.
- The contractor prequalification system detailed above is not required for low risk contractors such as:
  - Security Contractors
  - Office Cleaners
  - Inspection Bodies
  - Personnel repairing office equipment only

One pre-qualification approach will ensure a system which is:

- Consistent
- Auditable

**Contractor Safety Checklist**

**Section 1: Contractors Employees Details**

Name / Job Description	Qualification / Training / Experience
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____

The contractor prequalification system is intended as a formal system of ensuring that contractors:

- Provide safe systems of work and risk assessment information relating to the work that they are going to carry out.
- That they are issued with the relevant CRH safety requirements and expectations.
- That the past safety performance of the contractor in terms of previous fatalities and serious accidents is identified.
- That the machinery and equipment to be used by the contractor companies is identified and where appropriate certification is made available.
- That the contractor and his personnel are suitably qualified and experienced to carry out the required work. This also covers the need that the contractor and those working on his behalf are medically fit to carry out the required work.
- That adequate insurance arrangements are in place.
- That the CRH requirements relating to Personal Protective Equipment are outlined.
- That the contractor is mandated to notify CRH of any changing work procedures, changing personnel or equipment.

**Veiligheidschecklist derden**

**Veiligheidschecklist derden**

**Veiligheidschecklist derden**

National legislative requirements can be added by each company as appropriate.

**How does an External Third Party Contractor Prequalification work?**

External Pre-qualification Company Sample Process (in this example we will call such a company ABC Ltd)	
Step 1	A contractor is selected by CRH to work at the CRH location.
Step 2	The contractor is directed by CRH to ABC Ltd.
Step 3	ABC Ltd has details on the full safety information criteria required by CRH and ABC requests the contractor to supply this information to ABC. The contractor pays ABC Ltd a small fee (in the region of 300 euros) to have the safety information from the contractor reviewed and verified. The safety information supplied to ABC by the contractor would cover issues such as Insurance information (employer liability, public liability and professional indemnity (if required)), information on recent accidents involving this contractor company, training details and records etc.
Step 4	Once the contractor has supplied the required information to ABC (and ABC have verified the information) the contractor is issued with a certificate by ABC.
Step 5	The contractor then brings that certificate to CRH.

A key advantage of this approach is that the use of an external prequalification system removes some of the paperwork work from the prequalification process from the CRH site team and allows the site team to focus on safety inductions, task planning and on site monitoring of the contractor company.

### Requirements for Rule No.1

1. All companies must have in place a contractor prequalification system based on “The Contractor Safety Checklist” or similar prequalification questionnaire. Where contractors sub-contract an element of this work, the sub-contractors involved must also complete the relevant prequalification questionnaire. The contractor must provide safe systems of work and risk assessment information relating to the work that they are going to carry out. If the original plan changes then all risk assessments must be reviewed again.
2. The issuing of the “Contractor Safety Checklist” to the contractor firm is the responsibility of the manager or supervisor who engaged the contractor firm in the first instance.

The purpose is to ensure that the “Contractor Safety Checklist” is completed well in advance of commencing work on site. This is to allow a comprehensive prequalification assessment.

Each operation will be required to demonstrate that such a system is in place.

3. All contractors must receive a site specific safety induction prior to commencing work. That induction must outline the site specific requirements around risk assessments and work permits. This induction must include an assessment.
4. Where appropriate, on site contractors must be included in any safety activities such as toolbox talks, safety campaign events etc.
5. All contractors (excluding contract transport contractors) commencing work at an operation must be assigned a CRH person, who has overall responsibility for monitoring the work of the contractor while on site. This responsibility also includes a requirement to conduct regular safety reviews with the contractor. For short term contractors, this would involve a safety review at the end of the contract. For medium and long term contractors, this could take the form of a monthly review. Any review should cover the following:
  - Accidents/incidents during the contract work.
  - Quality of the site induction and any issues with site safety procedures.

The CRH person will also act as a site contact person for the contractor if they require additional information or if the scope of the contractors work is to change.

These additional requirements will involve some changes to the “Contractor Safety Checklist”. See an updated version of the Contractor Safety Checklist on the safety sharepoint.

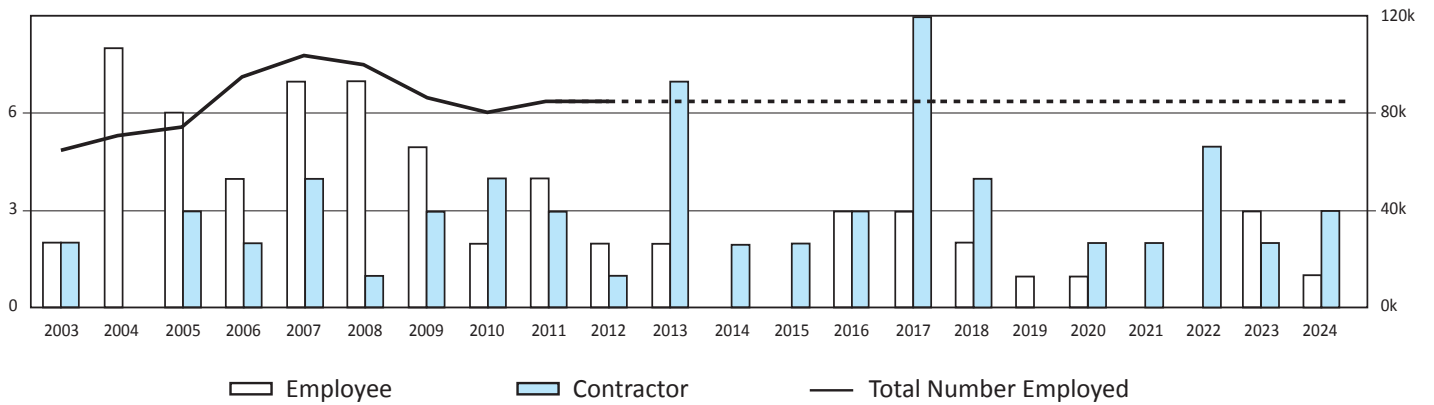
6. All on-site operational contractors (excluding contract transport companies) will be required to have an external third party check on key elements of the safety information that they have submitted. Each country will agree and decide on the structure and implementation of this requirement, which comes into effect on October 1st 2022.
7. From July 1st 2024, all contractors involved in high risk work (work involving LOTOTO, Industrial Maintenance, Work at Height etc.) must receive an individual STOP WORK AUTHORITY CARD (or letter) as part of their safety induction. This STOP WORK AUTHORITY (or letter) card must name the individual contractor employee, be signed and dated by the Plant Manager and refer to the fact that the contracting company will suffer no financial disadvantage where work is stopped or delayed because of a genuine safety concern or issue.



**Serious Accident 2014:**

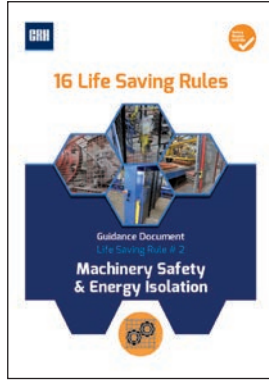
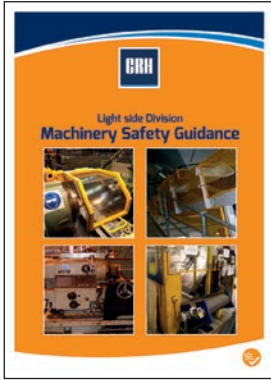
*Accident involving major contractor firm: lifting gear failure during a lifting operation. Lifting gear certification out of date, task safe system of work incorrect.*

**Group Fatality Data: 2003 - 2024**



**Best Practice Example:**

*Contractor Management. For operations at Opterra each contractor coming on site comes under the responsibility of a Opterra employee. That employee has responsibility for the ongoing monitoring of the contractor once on site.*



## Introduction

There have been a very significant number of fatal and serious accidents involving persons

- becoming trapped in machinery due to inadequate guarding
- becoming trapped in machinery having accessed protected areas
- becoming trapped in machinery and emergency stop cords failed to operate

Fatalities involving machine interlocks integrity are outlined on the following page. Fatalities within the group relating to inadequate guarding can be summarised as follows.

Year	Fatality Details: Machinery Safety
1999	Contractor trapped in unguarded return roller
2001	Contractor trapped in conveyor roller
2005	Contractor trapped in conveyor belt
2007	Contractor trapped in conveyor tail drum
2016	Contractor trapped in Conveyor NIP Point
2017	Contractor trapped in Conveyor Tail Drum
2017	Contractor engulfed after Pneumatic slide was started when he was in a chute underneath.
2021	Employee trapped in conveyor belt tail drum
2023	Employee trapped under elevator which was not isolated
2024	An employee was trapped in a conveyor while dealing with a blockage
2024	A contract haulier was pinned between two electrically controlled large facility doors

This Life Saving Rule focusing on the following aspects:

- Machinery Guarding standards.
- Where interlocks are in place, to ensure the integrity of such systems.
- Technical requirements for emergency stop buttons and trip cords.
- The need to review the need for start-up warning alarms as a last line of defence.

The specific requirements for Life Saving Rule No.2 are outlined on page 27.

## Machinery Guarding Standards

The following technical guidance documentation has been prepared to assist operations in complying with the requirements on machinery guarding. This guidance can be used when carrying out machinery safety inspections, risk assessments and when formulating safety training courses.

- **16 Life Saving Rules guidance document on Machinery Safety** which incorporates the U.K Quarry Products Association “Code of Practice for the Safeguarding of machinery used in the aggregates industry” - this guidance contains pictorial guidance on guarding and isolation requirements.
- **Machinery Safety in Lightside activities:** this is an internal guidance document which contains pictorial guidance on guarding and isolation requirements.

## The Integrity of Interlock Systems

There have been a number of serious accidents within the group, where interlocks have been bypassed by maintenance staff.

Year	Fatality Details: Energy Isolation
2000	Maintenance person crushed by pallet clamp during maintenance
2001	Contractor crushed during commissioning of machinery
2001	Employee crushed by brick setting machinery
2004	Employee struck by automated machinery while carrying out maintenance
2005	Employee trapped inside cuber machine
2005	Employee trapped in polystyrene block feeder
2007	Employee accessed an EPS cutting line to clear a blockage, was trapped and killed
2009	Employee entered an interlocked area and was trapped and killed between a slider and column
2011	Employee accessed a brick gripper area and was trapped and killed
2021	Employee trapped in conveyor belt tail drum
2023	Employee trapped under elevator which was not isolated

Each company must introduce a system of formal checks on all interlocks to ensure integrity i.e that they have not been bypassed. Interlock systems should be connected to a failsafe circuit. Experience indicates that attempts to bypass interlocks are indicative of a production or maintenance issue that can be easily addressed placing the guard close to the machine to allow easier visual inspection and installing features such as remote greasing points.

Where inspections reveal that machine interlocks were being by-passed, a management assessment must be carried out to identify the cause(s) leading to such a by-pass (the by-passing of an interlock is a serious breach of safety procedures and will result in significant disciplinary action).

**Emergency Stop Systems**

A Conveyor trip switch, when activated, should open a pair of contacts that are electrically connected to a failsafe circuit. This electrical failsafe circuit has to be risk assessed and engineered, so that the necessary measures are taken to ensure the reliability of this failsafe circuit. At the same time the trip switch has to operate a latching mechanism which keeps the contacts open. The setup should be such that having reset the emergency stop button or trip wire the machine does not restart.

For all Conveyor Trip wires, the following applies:

**1. Technical Specification**

- a) Either a switch is provided at each end OR
- b) A single switch is used at one end and a tension spring anchors the other end so that a pull on the wire in any direction will stop the conveyor.

**2. Testing (conveyor trip wires and emergency stop buttons)**

It is important that all trip wires are tested regularly i.e physically checked to ensure latching performance, and also to ensure that the switches have not seized up - the following are the requirements:

- Trip cords and emergency stop buttons must be tested at least once per year.



*Fig. A  
Required Electrical Isolation Switch type*



*Fig. B  
Required Pre-Start Warning Alarm with combined Siren and Flashing Light*



## MACHINERY SAFETY: SAFETY RULES TO LIVE BY



### Conveyors SHALL

only be operated with approved guarding in place



### Workers SHALL

LOTOC/LTT all energy sources before doing maintenance



### Workers SHALL

LOTOC/LTT all energy sources before cleaning & clearing jams



### Workers SHALL NOT

modify, misuse or remove controls, interlocks or warning devices



### Workers SHALL

keep clothing, tools, body parts and loose hair away from conveyors



### Workers SHALL NOT

climb, sit, ride, stand, touch, or walk on or walk under exposed (isolated) conveyors



### Workers SHALL

be trained and competent to operate & maintain conveyors



### Workers SHALL

know the location and function of all stop & start controls



### Workers SHALL

ensure everyone is away from conveyors before starting



### Workers SHALL

report all unsafe conditions and behaviours

### Requirements for Rule No. 2

1. All machinery must be guarded in accordance with the CRH guidance which applies to your operation, namely:
  - The CRH Machinery Guidance document on Machinery Safety (incorporating the QPA Technical Guidance Document).
  - The Lightside Machinery Safety Document.
2. From the requirements / guidance mentioned above in 1, attention is drawn in particular to the following requirements:
  - All machinery guards must be fixed. This means that an engineering tool is required to open the guard.
  - Screw Conveyors must be secured in such a way that an engineering tool is required to remove them.

3. All interlock systems must be tested and inspected monthly by a competent person. The Site Manager is responsible for ensuring such a system is in place.

Where interlock systems have been found to be bypassed, the reasons for such modification should be investigated and identified.

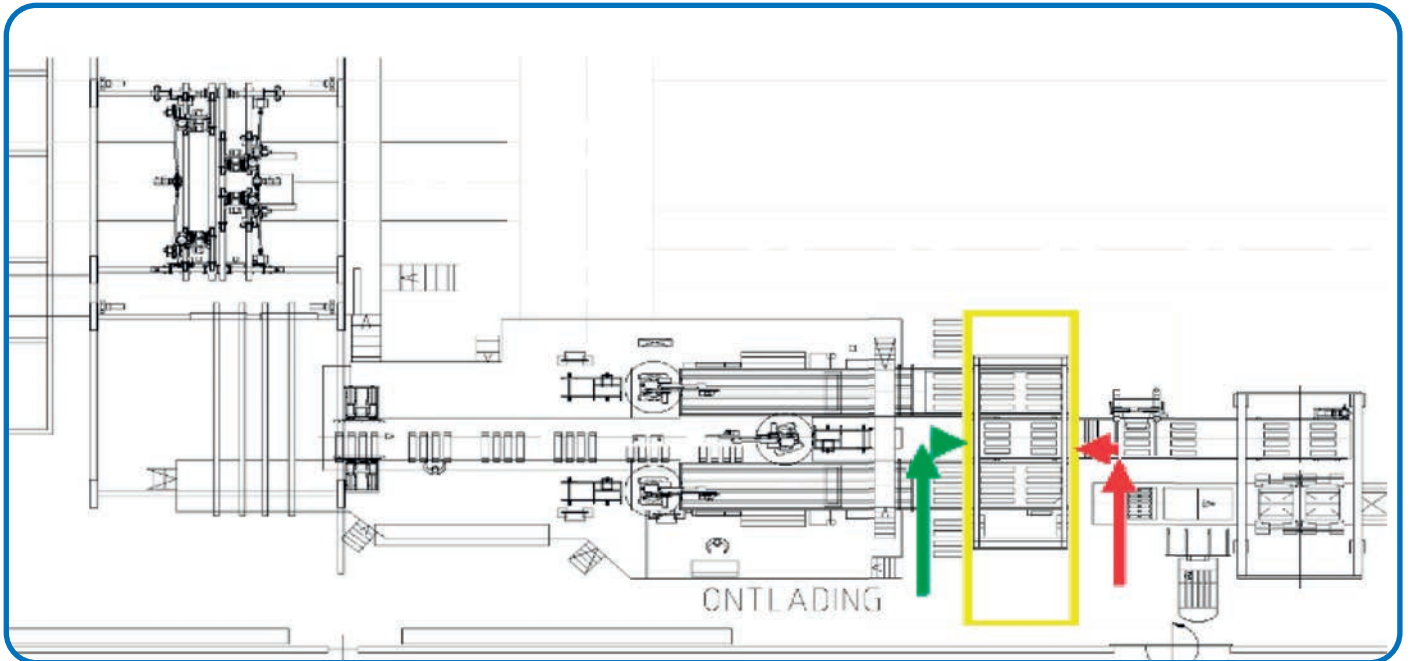
4. Each machine which relies on interlocked gates or interlocked guards must:

- Have a specific risk assessment, which clearly identifies:
  - Which circuits and relays are deployed when an interlocked gate or guard is opened/removed. This is to clearly identify what is controlled (and not controlled) by interlocks.
  - Pneumatic / Hydraulic power sources.
  - Pneumatic / Hydraulic isolation sources.

Technical requirements around interlocks are included in the CRH guidance note on Machinery Safety / Energy Isolation.

5. All conveyor emergency trip cords must be configured in such a way that there is a switch at each end or a single switch at one end and a tension spring anchors the other end.
6. As a minimum, all emergency trip cords and emergency stop buttons must be tested at least once per year. Each operation will be required to have evidence of such inspections and testing.
7. Machinery Safety: Safety Rules to live by (see page 27) must be integrated into machinery safety training programs.
8. Emergency stop buttons fitted to electrically driven and mechanically driven machines such as motors, presses and rollers have to be clearly marked – see examples on page 29.
9. All electrical isolation switches should be such that it is only possible to lock the isolator in the off position. (Fig. A on page 26).
10. All conveyor belts must be fitted with pre-start warning alarms with an appropriate delay time and a combined acoustic/light warning system. (Fig. B on page 26).
11. All batching plant mixers must have a full power cut off captive key system or equivalent in place by June 2025. This must include a local isolator located on the mixer platform.
12. Table and Panel Saws
  - The risk assessment for each saw must clearly identify which products can **and** cannot be cut using that type of saw. This information must then be clearly posted at the machine.
  - All persons involved in using saws and those persons who supervise areas/workers where saws are used must be formally trained in the safe use of that type of saw.
13. Bending Machines (used in building products operations to manipulate steel or aluminium)
  - All bending machines should be equipped with a safety device (scanner device or a 2 hand operation control) to prevent contact during machine operation (see photo on page 29).
  - All persons involved in using bending machines and those persons who supervise areas/workers where bending machines are used must be formally trained in the safe use of that type of bending machine.

Group Fatal Accident - Case Study



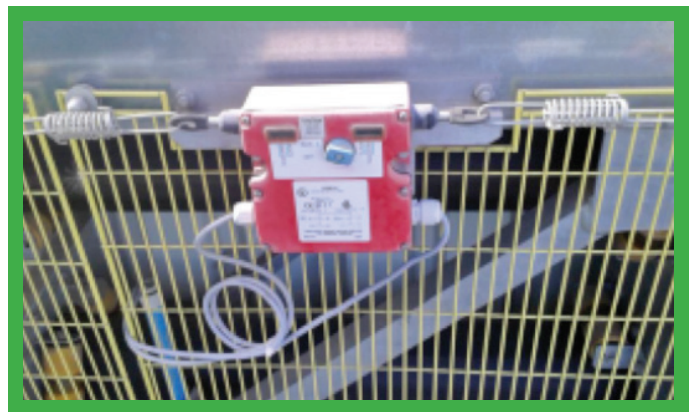
Fatal Accident April 2011 - CRH Brick Factory:

A gripper (outlined in yellow) was protected on one side by an interlocked system. The assumption had been that staff would access the gripper using the route outlined by green arrows and would activate the interlock system. However a short cut through the route highlighted by the red arrows had developed, this access point was not protected.



Serious Accident 2005:

Operator sustained serious injuries in an unguarded tail drum.



2020 Accident involving a bending machine: IP got his fingers trapped between the product and table benders.



Emergency Stop





*Serious Accident - Case Study 2013:*

*Employee lost both hands after they became trapped in a machine producing plastic dimpled sheets.*



*Serious Accident - Case Study 2014:*

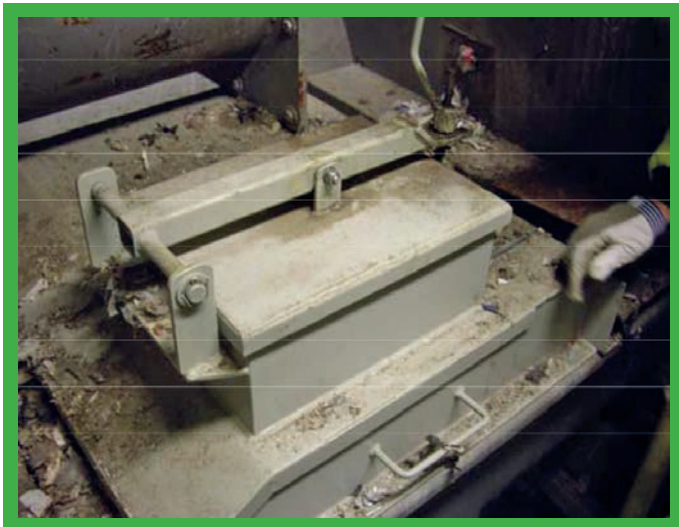
*Employee sustained serious hand and arm injuries when he was trapped between the discharge doors of a bucket and the bucket frame.*

*Serious Accident - Case Study 2014 :*

*Employee removed cement screw cover and became trapped in the screw which was still running and had not been isolated.*



*Remote greasing to prevent the need to remove the machine guard.*



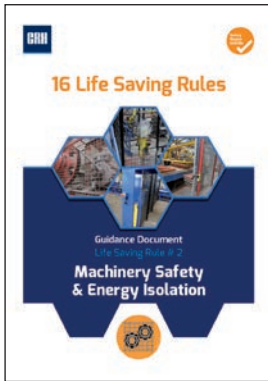
*Inspection hatch (with secured grid) on a screw conveyor.*

*Contractors working on Feeder (which was off, but not isolated).*



*This belt (which was not isolated) was started – deceased was standing on this belt.*

*June 21st 2017:  
26 years old employee of a maintenance contractor fatally injured.*



**Introduction**

There have been a very significant number of fatal and serious accidents involving persons becoming trapped in machinery due a failure to follow the correct isolation procedure, a number of these accidents have been outlined on the following pages. It is important that there is a consistency in the understanding of the term “Energy Isolation”.

“Energy Isolation“ relates to the following sources of energy:

- Electrical
- Pneumatic
- Hydraulic
- Mechanical/Gravitational
- Thermal
- Residual energy in machine component parts
- Material flow

Year	Fatality Details
2000	Maintenance person crushed by pallet clamp during maintenance
2001	Contractor crushed during commissioning of machinery
2001	Employee crushed by brick setting machinery
2004	Employee struck by automated machinery while carrying out maintenance
2005	Employee trapped inside cuber machine
2005	Employee trapped in polystyrene block feeder
2007	Employee accessed and EPS cutting line to clear a blockage , was trapped and killed
2008	2 contractors fatally injured when a mill was restarted while still working within it
2009	Employee entered and interlocked area and was trapped and killed between a slider and column
2011	Employee accessed a brick gripper area and was trapped and killed
2016	Employee trapped in conveyor belt
2016	An employee died when cleaning inside a pan mixer which was accidently started
2017	Contractor trapped in conveyor belt
2017	Contractor engulfed after Pneumatic Slide was opened over an area where he was working
2018	2 employees died during the maintenance of a skid steer machine (a Bobcat) – related to hydraulic isolation
2021	Employee trapped in conveyor belt
2023	Employee trapped under elevator which was not isolated
2024	An employee was trapped in a conveyor while dealing with a blockage
2024	A contract haulier was pinned between two electrically controlled large facility doors

Year	Serious Accident Details
2022	An employee suffered serious arm injuries (amputation below the left elbow) after a lack of LOTOTO during work on a MASA paving machine

**Requirements of Rule No.3**

1. Each location must have a documented LOTOTO policy incorporating machine specific LOTOTO rules.
2. That policy must cover the 7 energy sources outlined above. Operations will be required to have evidence that the various energy sources have been considered in machinery risk assessments.

3. Employees, who are involved in any element of LOTOTO procedures, must be trained in the policy and associated procedures. Such training must be carried out on an ongoing basis and the interval of such training should not be less than one year.
4. All Isolators must be clearly labelled to identify the item of equipment that they isolate. In addition to padlocks, hasp locks (see photograph on page 36) must also be in place as part of all Isolation safe systems of work.
5. All employees and contractors involved in LOTOTO must be issued with their own personal padlock and identification system to be attached to the isolator as part of the LOTOTO procedure.
6. Isolation owner: When multiple persons are involved in a LOTOTO procedure, a multi hasp or lock out box must be used and a CRH person must be nominated whose padlock is the first attached and the last lock to be removed. LOTOTO procedures and site specific information relating to LOTOTO must be included in the site safety inductions (for employees and contractors) which must include an assessment.
7. Each item of equipment which relies on interlocked gates or interlocked guards must:
  - Have a specific risk assessment, which clearly identifies
    - Which circuits and relays are deployed when an interlocked gate or guard is opened/removed. This is to clearly identify what is controlled (and not controlled) by interlocks.
    - Pneumatic / Hydraulic power sources.
    - Pneumatic / Hydraulic isolation sources.
8. Standards for Mould change on machines with face feeder sections:
  - Mould changing must be carried out according to site level risk assessment and safe operating procedures including machine specific LOTOTO.
  - This procedure must include photographs of the various steps to be taken in the mould changing process. A sample is available on Sharepoint.
  - This procedure must be a 2 man operation unless there is an automatic mould loading feature.
    - Drive back face feeder section to the isolation position and remove the mould from machine following the documented procedure.
    - After cleaning place the new mould in the machine as per the procedure.
  - Where the power system of driving the face feeder section into position is a hydraulic system, there is an additional risk in the lack of a slow speed mode, so the following procedures must apply.
    1. All adjustments to the back feeder section and the mould positioning must be completed.
    2. All operators involved in the mould change must have vacated the machine area.
    3. The moving of the face feeder section to its operation position must be performed from the main operating panel.
    4. If local conditions only allow for the moving of the face feeder section from a local panel, then the panel must be located at safe distance (+ 2.0 meters) from the locking position.
    5. When the face feeder is in the locking position, isolation (LOTOTO) must be in place where manual bolting of the face feeder section to the main frame is required.
    6. Only after the locking and ensuring that all sections are connected and may the operator remove LOTOTO.
    7. At this stage the machine is ready to be put into operation mode.



- In addition to the procedures where the power system of driving the face feeder section is electrical there must be a slow mode and an enabling button/dead man switch (wired to a safety-controller/relay) in use for moving the unit.
- For machines that require any movements to be controlled inside the enclosure best practice would be to use an enabling/dead man switch for all such movements. See the picture.

Use of an audible alarm or bell that goes off prior to any movement would also alert other operators in the vicinity of the work zone.

9. All electrical isolation switches should be such that it is only possible to lock the isolator in the off position. (Fig. A on page 34).



Figure A  
Required Electrical Isolation Switch type.



Figure B  
Required Pre-Start Warning Alarm with combined Siren and Flashing Light.



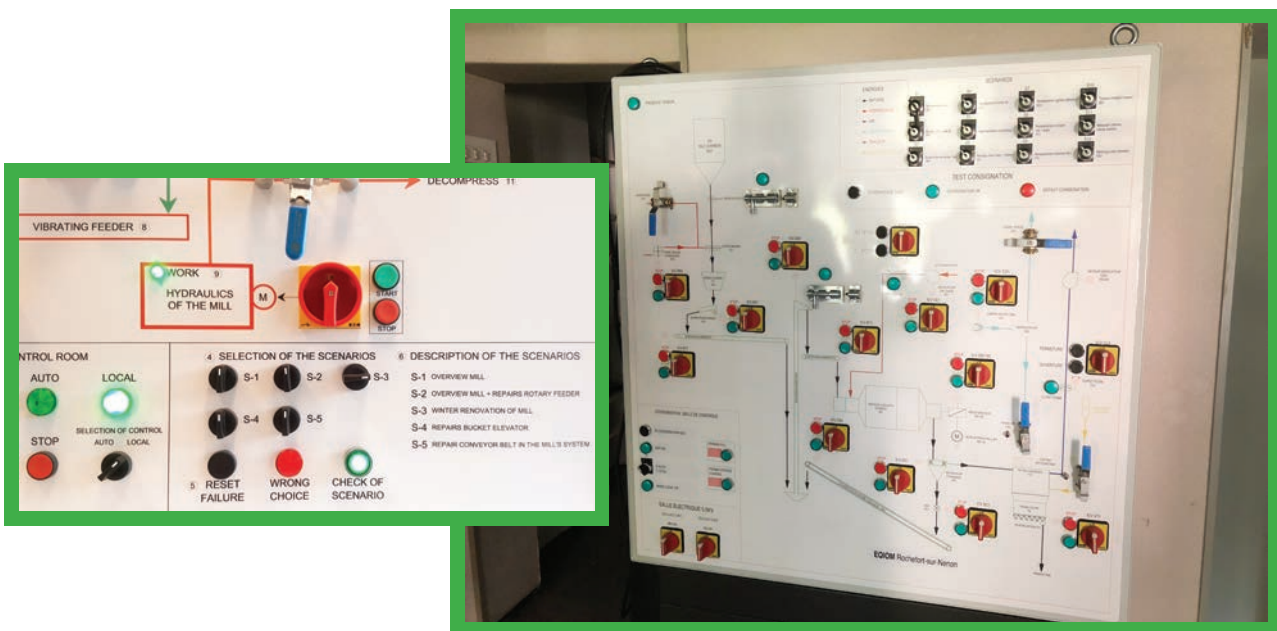
**2016 Fatal Accident - Lime Works:**

2 employees were replacing rubber skirting around a discharge point. The belt had been shut down for maintenance (by another team of maintenance personnel) with full isolation. The isolation was removed at the far end of the line to run a belt for a few moments (to clear material from a build-up at another discharge point) - the team that had restarted the belt believed the other team had completed their work. Neither of the two employees had applied their personal locks. One of the employees was killed when the belt restarted.



**2015 Accident:**

*An employee placed this bar through a conveyor guard to remove a material build up. The bar was trapped in the moving nip point resulting in the bar and the worker's hand being pulled inwards. The worker lost the top section of his middle finger on his right hand and sustained soft tissue damage to the thumb of his left hand.*



*Training boards for LOTOTO. These boards which are designed individually contain a number of scenarios which are used to train and assess trainees (on a one to one basis) on the issue of Energy Isolation and lockout.*



*Pneumatic Isolation*



*Clearly identified pneumatic isolation point.*



*Mechanical Isolation: protecting a sliding door (Mechanical + Padlock).*

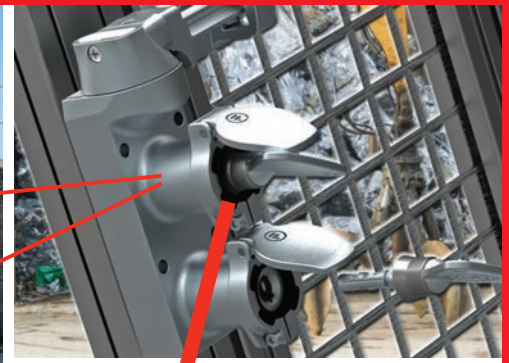


*Mechanical Isolation: protecting a sliding door (Mechanical + Padlock).*



*A confirmation check that all residual air has been vented from the system.*





**2021 Fatal Accident:**

*The key to open the gate protecting the area is in the control room and that key is integrated into the control circuit. So once you remove the key from the control room panel – the power to the machine is cut off.*

**2016 High Potential Learning Event:**

*An employee was carrying out a maintenance task, having attached his isolator, he tried to start the machine (The Try Out (TO) or Confirm (C) step ). The machine started and on investigation it was found that the isolator was faulty.*





### Introduction

There have been a very significant number of fatal and serious accidents involving persons being electrocuted or burned (a number of these accidents are summarised on page 39).

A guidance document: CRH Electrical Safety Guidance has been developed to assist operations to comply with this rule.

### Requirements of Rule No.4

1. Each operational site must have a list of electrical equipment or an electrical survey completed. As a minimum this information must cover the following:
  - A list of all electrical installations at the site.
  - Confirmation that the electrical line/circuit drawings are up to date.
  - A summary of maintenance requirements for the electrical equipment.
  - Emergency shut off devices are in place at each installation.
  - LOTOTO facilities are in place.
  - There is a scheme in place to restrict access to electrical panels and enclosures, transformers and substations.
  - All installations have the correct IP rating for the location and activity.
  - Confirmation that the electrical distribution systems likely to be affected by lightning are fitted with over voltage protection.
2. The CRH Europe electrical guidance includes a checklist which must be completed at each operation once per year (or shorter intervals if required by local/national legislation) by a competent qualified electrician (internal or external) and this checklist must be available for inspection. The completion of this checklist for each operation each year is a mandatory requirement.
3. Each operational site will be required to show evidence that electrical supply cables subject to physical damage have been identified and replaced by reinforced / strengthened cables.
4. All electrical contractors must be externally accredited (accreditation to be defined at country level) and all internal electrical people formally authorised by plant management.
5. A portable electrical equipment colour code system (or agreed equivalent) must in place where applicable at each operational site. Each minimum 12 month period will have a specific colour e.g yellow. Portable Electrical Equipment which has an inspection tag which is that colour i.e a yellow tag is an indication that the equipment has been checked and tested within that period (minimum 12 months). All users of portable electrical equipment would then be instructed to only use equipment with correct colour code tag for that period. See example photo on page 40.
6. All electrical substations shall be equipped with the following protective and rescue equipment:
  - Insulated gloves
  - Insulated Stool or Platform
  - Insulating Mats
  - Rescue Stick
7. In order to detect hot spots caused by loose contacts, corrosion or damaged electrical components that may result over time in overheating and fire, an annual thermographic survey (Infrared Scan) should be conducted when the electrical panels are under load. If hot spots are detected, the reason should be investigated, repaired and reports should be kept for future reference.



June 22nd 2017:

*Contract Electrician received serious burns to hand and face when a non-insulated screw driver made contact with live elements of a panel causing a "flashover". Procedures were not followed and the electrician used the incorrect type of tool (photo A) and not the correct insulated type (photo B).*



2015 Accident:

*A contract electrician received superficial burns to both his hands whilst removing a fuse compartment in the control room sub station at Croxden Quarry. The incident was the result of an electrical arc in the panel.*

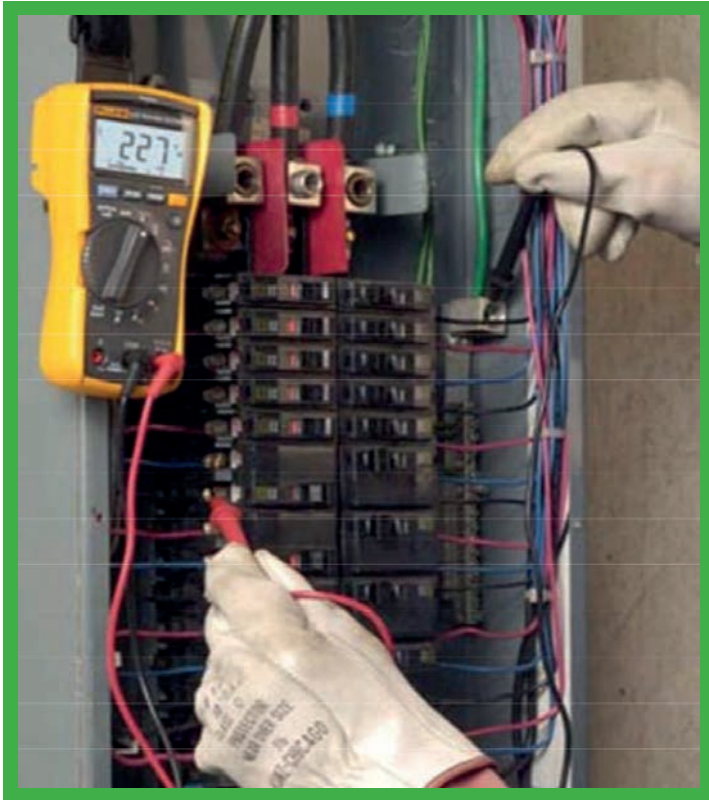
Fatal Accident 2011:

*Employee picked up cable which was damaged. He received a fatal electric shock.*



Fatal Accident 2012:

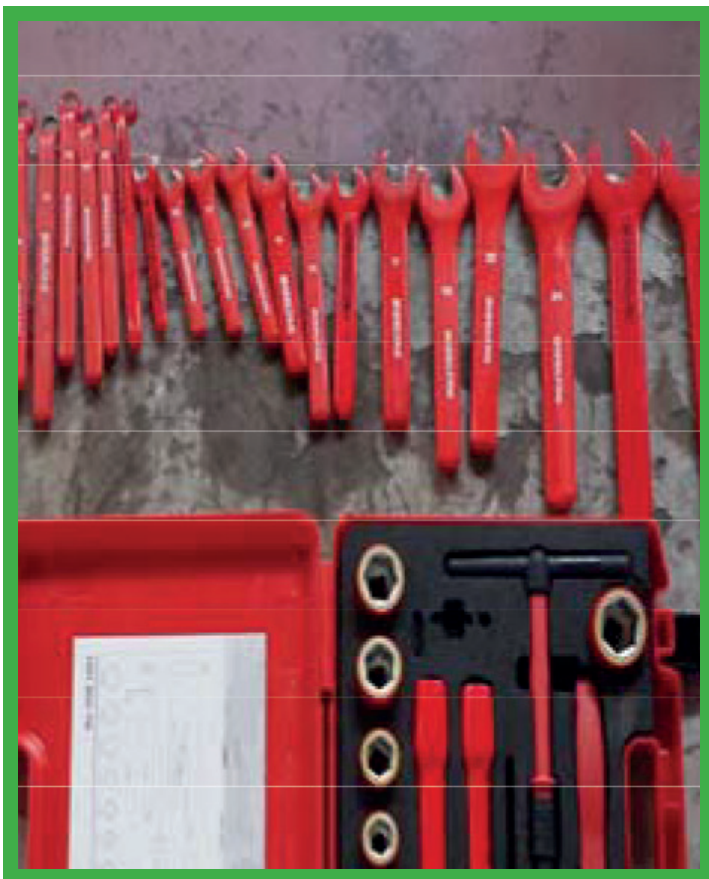
*Electrician was changing light bulbs when he suffered an electric shock- the electrical isolation of the circuit had not been confirmed.*



*A Digital Multi-Meter.*



*All live touch points shrouded and covered.*

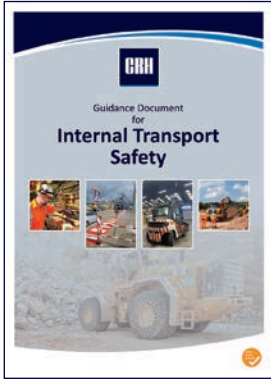


*Insulated Tools*

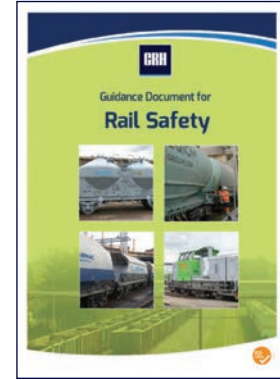
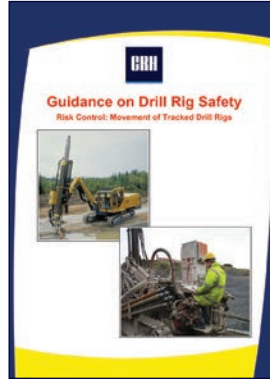
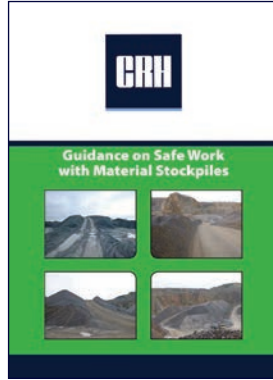


*Instructions for all users of portable electrical equipment to only use equipment with correct colour code tag for that period.*





Upgraded 2024



**Introduction**

Accidents involving mobile plant account for over 60% of fatal accidents within the aggregates industry. This rule is designed to focus on the key accident causes within this sector.

Year	Fatality Details
1997	Contractor struck by a reversing RMC truck on site
2001	Dump truck driver killed when vehicle overturned
2004	Contractor struck by reversing excavator
2004	Employee struck by reversing truck on site
2006	Truck struck an overhead power line on a road surfacing project – driver was killed when he touched the truck
2007	Contract HGV driver killed when truck went off a public road
2007	Contract HGV driver crushed between his vehicle and gate after he left the truck and did not engage the handbrake
2013	Excavator struck a control cabin where a workers was situated, the building collapsed killing the worker
2014	A truck driver stopped on a public road to check the security of a load of pipes he was transporting when the load fell onto him
2014	Contractor struck and killed by rail wagon during repair
2016	Employee struck and killed by forward moving truck
2016	A contractor died when he lost control of the tractor he was operating
2018	An employee died when his articulated dump truck went over edge protection into a water area
2018	2 employees died during the maintenance of a skid steer machine (a Bobcat) – related to hydraulic isolation
2020	Loading Shovel – brake failure : Contractor driver jumped from vehicle , fatally injured
2023	Employee run over by a truck during a road maintenance project
2024	Fuel delivery driver struck by an excavator

Year	Serious Accident Details
2023	US: A contract truck driver (standing outside his truck) received serious crush injuries when trapped between a reversing truck and a stationary truck

Note: Issues relating to Forklift Safety are specifically referred to in Life Saving Rule No. 6



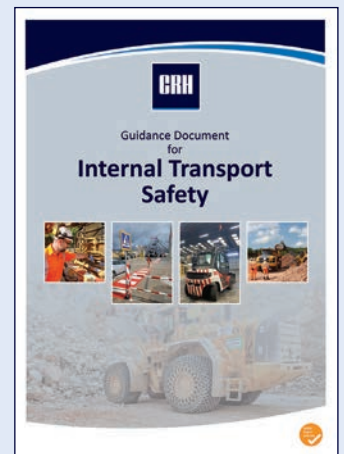
**2016 Fatal Accident - RMC Plant:**

*A worker was using a water hose to clean a yard . At the same time a RMC mixer was being cleaned out (engine running). Following the cleaning operation, the RMC mixer started to move forward. The driver was looking to his left, where his view was blocked by another RMC truck (see photo).*

*While moving forward the driver did not see the worker (cleaning the yard) and he ran over him.*

**Requirements for Rule 5**

1. Each location must have documented site transport rules in place, based on a site transport assessment which, at a minimum, address:
  - a) Vehicle / Pedestrian separation: This must include a site transport risk assessment. In effect this is an overview of truck, car, site mobile plant and people flow / movement. See a worked example in the CRH Guidance note “ Internal Transport: Safety Guidance” (pictured here).
  - b) Edge protection for slopes/benches.
  - c) Mobile plant driver competency and training requirements.
  - d) Vehicle rules –
    - a. Speed limits / restrictions.
    - b. Use of mobile phones.
    - c. Mandatory wearing of seat belts by all drivers for all vehicles.
    - d. Carrying of passengers in vehicles. Passengers must only be carried in vehicles where there is a separate seat.
  - e. **Vehicle towing:** Prior to towing, it is necessary to ensure that:
    - A risk assessment must be completed, which consider aspects such as suitability of towing vehicle, competence of personnel, proximity of vehicles, slope & gradient, attachment points, exclusion zone etc.
    - Only certified towing ropes or slings(non steel) or fixed draw-bars may be used for towing. They should be regularly examined.
    - Chains/Slings used for towing must never be used for lifting and should be clearly labelled “ Towing Only”.



A guidance document outlining specific guidance and a significant number of examples is available to assist in full implementation of this rule.

2. All loading shovels, dozers and dump trucks must be fitted with CCTV systems and external flashing beacons. The need for CCTV's on excavators should be based on a site risk assessment.

All site vehicles/mobile plant must be fitted with reverse warning alarms and concave and convex mirrors.

- All site heavy vehicles working in areas where there is a risk of material falling onto the cab of that vehicle must be fitted with a FOPS (Falling Object Protection System) Structure.
- All site heavy vehicles working in areas where roll over could occur must be fitted with a ROPS (Roll Over Protection System) Structure. See accidents photos on page 48.

3. From June 2027 each operational site will be required to have an RFID (radio frequency identification) or equivalent wireless communication/identification system to assist mobile plant operators in the identification of pedestrian proximity around their vehicles. This ambition is supported by on ongoing programs of pilots, external and internal benchmarking.

4. A system must be in place to ensure that a documented pre start check is carried out on each work vehicle at the start of the working shift.

5. Each site must have a policy which requires all employee, contractors and visitors to wear high visibility clothing where appropriate. High Visibility bibs/vests must not be used by production/maintenance staff as they may become open/ loose and present a hazard. In such cases, high visibility overalls or polo shirts should be used. High Visibility clothing must be of yellow or orange colour with reflective banding (such high visibility clothing should comply with EN ISO 20471).
6. A system must be in place to ensure that the brake systems on dump trucks and loading shovels are tested at least twice per year.
7. All employees operating site vehicles (this does not include company cars for use on public roads) must be trained, and must carry out documented daily pre-use company vehicle inspections for both on-site and off-site use. Employees operating site mobile plant must receive regular refresher training. This refresher training for employees must be carried out at a minimum of **every 3 years** and must include an assessment by a competent instructor of the plant operator actually operating the item of mobile plant. This requirement does not apply to construction projects where contract mobile plant operators hold evidence of competence from accredited external bodies.

The 3 year interval for employees is to recognise the high level of risk involved with site vehicles. The refresher training does not need to be a time consuming process, it can simply involve a competent instructor observing a driver operating the vehicle for 45/60 minutes to ensure that no bad habits or poor practices have evolved since the driver's initial training.

8. Edge protection must be in place on haul and access roads within the operation to prevent a vehicle going over an unprotected edge. The height of this edge protection must be equal to a minimum of 1.5 metres or half of the diameter of the wheel of the largest site vehicle using that road. Haul road widths and gradients must comply with the diagram outlined on page 49, unless a risk assessment of existing conditions has been completed and it is deemed not necessary.
9. All employees who drive on a public road on company business should be assessed as to a need to have refresher training. Each company can define the criteria for the selection of personnel for such training, but it is envisaged that personnel driving in excess of 10,000km (6000 miles) per annum on company business should have a form of refresher training (to be defined at country level) at least every 3 years.



## 10. Railway Safety

- All personnel with responsibilities relating to any aspect of planning , operation or maintenance around railway operations must hold evidence of competence in their area of responsibility from an accredited external body or from an accredited internal training program.
- An overall risk assessment for railway activity must be completed covering, as a minimum, the following:
  - Contacts between trains, head to head and head to tail.
  - Contacts between trains and other things (e.g. vehicles, workgroups, plant, machinery and equipment, people and animals).
  - De-railing and re-railing.
  - Decoupling during the journey or shunting.
  - Shunting.
  - Yard shunting (other than by locomotives) .
  - Locomotive/load characteristics.
  - Unexpected operator/s incapacity and impairment of operators (including traffic controllers).
  - Procedures and rules around chocking.
- The indicator which denotes the safe parking point must be clearly visible - see examples on page 45.

11. The CRH guidance note “ Work near water” must be used when devising risk assessment for work or vehicle movement close to water – see LSR No. 12, requirement 14.

12. A minimum “2 metre rule“ applies to the operation of workplace vehicles and it is the responsibility of each driver to observe this rule. The 2 metre rule states that there must be no person within 2 metres of the vehicle, before the driver will operate the machine.

13. Any tasks related to maintenance of vehicles (inflating or topping up tyres, jumpstarting batteries, cleaning of vehicles etc.) can only be undertaken by authorised employees, contractors and third parties – this authorisation must be from site management and include an assessment of risk for the particular task.

- Any tyre inflation (for heavy mobile plant), once authorised must only take place using tyre restraining devices and airlines of sufficient length to allow the user to stand safely to the side (see photos on page 51).
- All locations where tyre inflation for heavy mobile plant is carried out should consider the example shown on page 51, which allows for access controlled and pressure controlled tyre inflation.
- All locations where battery charging or jump starting of batteries is carried out must have site specific procedures to cover these tasks.

14. A warning notification (similar to the example at the top of page 46) should be in place outside site workshops/vehicle maintenance areas. A similar warning notification must be also in place making it clear that any vehicle maintenance (tyre inflation, battery charging, window cleaning) can be carried out in this area only with specific authorisation from the site manager. The purpose of this requirement is to ensure transport contractors using the site do not carry out unauthorised ad hoc vehicle maintenance on site.

15. Mechanical props, where visible must be painted in high visibility paint and must have text posted on them identifying them as safety props.

16. All site delivery drivers must be issued with a “Stop Work” authority card which will permit them to cease a site product delivery if they (the driver) is of the view that the site conditions present a serious risk. This system was highlighted as a Best Practice example previously.

17. Where reasonably practicable all car parking areas at corporate and operational sites must operate a reverse car parking policy.

18. All site jeeps must be fitted with flashing beacons and a flag system (if deemed a requirement by the site risk assessment) as shown on page 43.

19. For the refuelling of tracked machines, such refuelling must take place before the start of the shift (**ensuring that there is no lone working**) or during a scheduled break during working hours. The aim is to eliminate / minimise the movement of the tracked machines while moving into position for fuelling. A fuelling guidance note is available on the CRH Safety Sharepoint.



*Markers to clearly identify the required holding position for parked wagons.*

**2014 Accident:**

*An employee was standing on the access steps of the locomotive (using a remote control). The locomotive struck a wagon that had rolled onto the main track from a siding. The wagon brake was not engaged and the wagon was not chocked.*

**EQIOM**  
Engaged, ensemble pour la santé et la sécurité

Quels que soient les impératifs de production et les enjeux commerciaux, je vous demande de réaliser vos activités uniquement si elles peuvent s'exécuter en garantissant votre sécurité et celle des autres.

Roberto Huet, Président d'EQIOM

**STOP KÁRTYA**

Az Ön egészsége és biztonsága a legfontosabb számomra. Nem biztonságos munkavégzés esetén a kártya tulajdonosai felőloszom arra, hogy megszakítsa a tevékenységét és intézkedjen a veszély elhárítása és a munka biztonságos folytatása érdekében.

Klaus Földinger, A CRH Főiskola Duna Régió Gyvezető igazgatója

EGYETLEN MUNKA SEM LEHET OLYAN GURGÓG VAGY FONTOS, HOGY NÉ LEGYEN IDŐ A BIZTONSÁGRA!

**TARMAC** **RED = STOP**

- Details on delivery location are not clear including unclear/no maps for High Speed Network or out of hours deliveries
- You do not have the correct PPE
- Access to the site is restricted with a limited gap for the vehicle to enter
- A banksman is required but not available to guide me into a safe delivery location
- The ground conditions are poor and it is likely the vehicle will become stuck
- There are overhead obstructions or cables
- There is not enough lighting for me to see what I am doing
- The delivery area is on an incline/decline. It is likely that the vehicle may overturn when unloading
- The site is congested with many vehicles and pedestrian movements
- Unloading location does not provide a safe Zone (minimum area of two metres between the unloading vehicle and other areas of site activity)
- Offloading location does not allow room for the use of outriggers, or other vehicle safety features

If any of the items listed are present - **Do not proceed with the delivery**

Raise the concerns with the site to correct - **Do not deliver unless resolved**

**ALWAYS REPORT THE NEAR HIT TO THE WEIGHBRIDGE**

Examples of STOP WORK authority cards issued to delivery driver - allowing them to stop work where they feel that the delivery procedures cannot be completed safely

**ATTENTION ALL VISITORS**

**Do not enter unless authorised by staff**

**THE FOLLOWING HAZARDS OCCUR IN THIS WORKSHOP**

COMPRESSED AIR & GAS	HARMFUL FUMES	ARC / GAS WELDING
HARMFUL CHEMICALS	FLAMMABLE MATERIALS	NOISE HAZARD
MOVING VEHICLES	FLOOR HAZARDS	MOVING EQUIPMENT
DUST HAZARD	METAL GRINDING	OVERHEAD HAZARDS

**Please go to reception**

**No smoking  
no naked lights**

**No eating or  
drinking**

**WORKSHOP CAN ONLY BE USED BY PERSONS AUTHORIZED IN WRITING BY SITE MANAGEMENT**

A sign such as this, in compliance with local legislation, must be in place outside site workshops/vehicle maintenance areas.



Each operating company must make available where requested, personal protective equipment (overalls) designed for expectant mothers. A European supplier provides such workwear and your company safety professional will have the contact details.



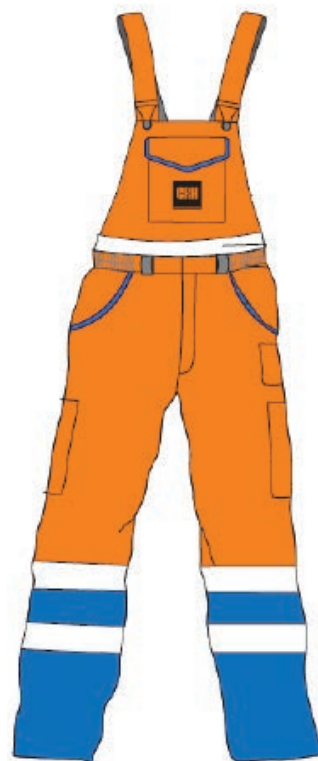


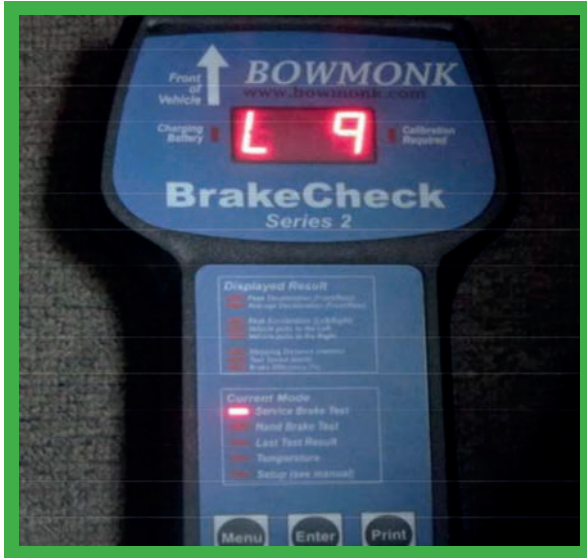
*Group Fatal Accident - Case Study 2004:  
Foreman fatally injured when he was run over by a vehicle reversing off the weighbridge.*

*Group Fatal Accident - Case Study 1998:  
Foreman run over by a reversing dump truck.*



*There are 3 persons in this photo - can you spot all 3?*







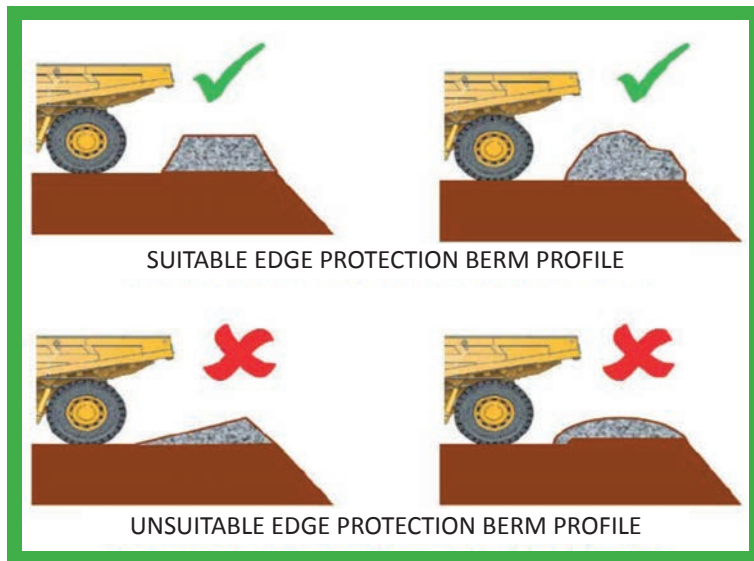
Brake tester for large site vehicles.



2 Metre Rule displayed clearly on vehicle.



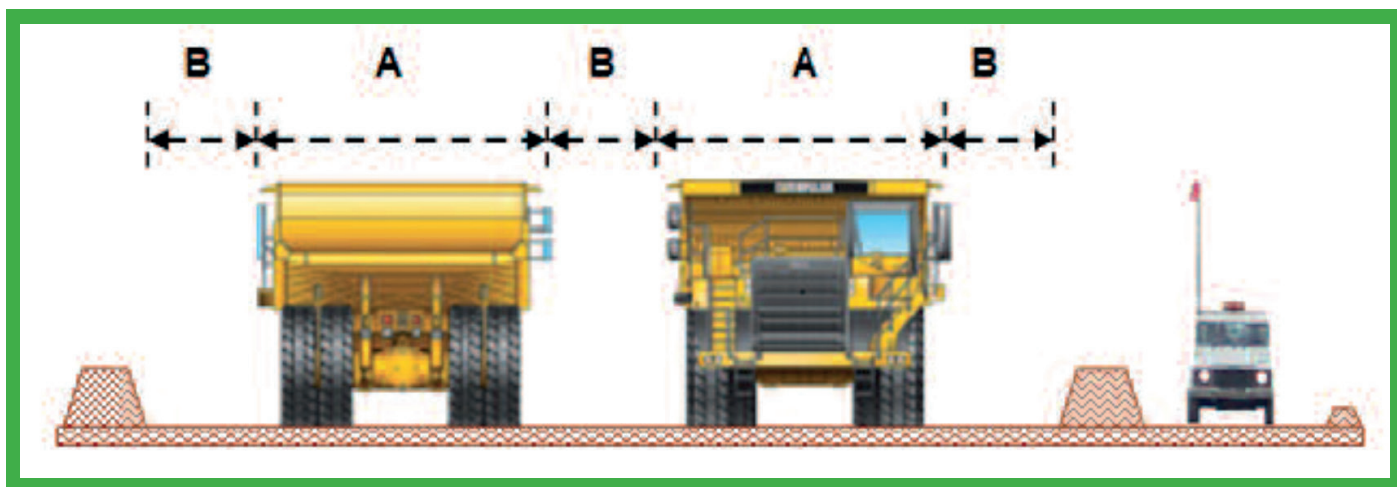
<p><b>10% &lt; slope &lt; 15%</b> Put in place the following sign "Dangerous Descent"</p> 	<p><b>15% &lt; slope &lt; 20%</b> Modify the ground to bring the slope to 15% - if this is not possible put a sign in place stating " Dangerous Descent " and also limit access to the road to authorised vehicles only.</p>  <p>USE 3RD GEAR AND USE THE RETARDER</p> <p>NO ACCESS FOR HEAVY GOODS VEHICLES</p>	<p><b>Slope &gt; 20%</b></p> <p>Not allowed for use</p>
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*Safety Banks in practice.*



*Edge Protection using precast structures.*



A = Width of widest truck using road  
 B = Half width of widest truck  
 eg. For two lane traffic - road width should be three and a half times widest truck width.



*While inflating the front offside tyre of a front end loader (which was being collected from a site by a third party), the tyre mechanism ruptured and the sealing ring was ejected and struck the operator. He died of his injuries. The airline used was connected to the compressor of the truck (of the deceased) and did not have a gauge or regulator fitted.*



*2018: 2 employees died when the arms of the bobcat unit they were working on came down and crushed them while they were carrying out a repair – the safety lock on the machine had not been engaged.*





Best Practice example: To eliminate the risk of over inflation of tyres, tyre pressure is inputted remotely into a control unit. The 15 metre airline is then fitted to the vehicle (away from the control unit ) and a preset air pressure is used to inflate the tyre. Access to the control is restricted as users require access codes.



**Introduction**

There have been a number of fatal and serious accidents involving forklift trucks within the group in recent years.

Year	Fatality Details
2007	Employee struck by a reversing forklift truck
2009	Employee struck by a reversing forklift truck
2009	Employee struck by a forward moving forklift truck carrying a load
2013	Employee struck by a forward moving forklift truck

Year	Serious Accident Details
2019	Employee struck by a forward moving FLT taking a corner
2021	FLT drove over a leg of the employee while on his knees for repair job
2021	Employee struck by a reversing FLT
2022	Employee trapped under an overturning FLT
2022	Employee got caught between forklift load and HGV
2023	Employee reversing with pallet truck collided with FLT moving forward
2023	Contractor struck by a reversing FLT

**Requirements for Rule No.6**

- The operational speed of the forklift must be restricted through the vehicle management system (where available) to
  - Forward speed: 16km/h
  - Reverse speed: 5 km/h
 For forward and reverse movement a warning light such as the blue light system shown on page 54 must be in place on all forklift trucks.
- A risk assessment must be carried out for each forklift to ensure that the visibility of the driver is not restricted when carrying typical/standard loads as part of the normal working shift.
- As a minimum, all forklifts must be fitted with:
  - A seat belt
  - A cabtop flashing beacon
  - A reverse warning alarm
  - A convex mirror
- All forklift drivers must carry out a documented pre start check before the commencement of their shift.
- All persons operating forklifts (including maintenance personnel who may only operate the units periodically) must receive formal training.
- Employees operating forklift trucks must receive regular refresher training. This refresher training for employees must be carried out at a minimum of **every 3 years** and must include an assessment by a competent instructor of the plant operator actually operating the item of mobile plant.

The 3 year interval for employees is to recognise the high level of risk involved with site vehicles. The refresher training does not need to be a time consuming process, it can simply involve a competent instructor observing a driver operating the vehicle for 45/60 minutes to ensure that no bad habits or poor practice have evolved since the driver’s initial training.

- A “2 metre rule” applies to the operation of workplace vehicles and it is the responsibility of each driver to observe this rule. The 2 metre rule states that there must be no person within 2 metres of the vehicle, before the driver will operate the machine. A sign similar to the photo on page 54, in the relevant language, should be placed on each workplace and reach truck as a means of reminding pedestrians of the 2 metre rule.



*CCTV stills of footage from a location where a van driver reversed and struck a forklift driver.*



*Group Fatal Accident - Case Study 2009:  
Employee struck and killed by a reversing forklift truck.*



*Reconstruction of a Serious accident – March 2015:  
Worker was struck by a forward moving forklift. Driver's view was restricted by load.*



*May 2009: The victim was walking towards the door when he was struck by the reversing forklift truck.*

*Group Fatal Accident - Case Study:  
Contract fitter struck and killed by a Forklift unit.*



*Blue Spot System in operation.*



*2 Metre Rule displayed clearly on vehicle.*

*This rule sets out the minimum requirements relating to the use of mobile phones in companies.  
Some companies have introduced additional measures in relation to mobile phone use.*

### Introduction

Accidents involving mobile plant account for a significant section of serious accidents in our Industry. An issue that has arisen over recent years has been the use of mobile phones by both mobile plant operators and pedestrian / workers walking in areas of traffic movement.

Year	Fatality Details
2004	Employee on a mobile phone was struck by a reversing truck
2012	Employee on a mobile phone struck by a truck moving forward

To deal with this risk, each company must implement a policy in relation to mobile phones, which as a minimum complies with the policy outline on pages 57 to 62 (a sample to assist in this process is shown on page 57).

As a minimum, each company's mobile phone policy must include:

- A requirement that the use of mobile phones in the workplace must be restricted to a minimum.
- A commitment that all company public road vehicles must be fitted with a hands free system.
- A commitment that all phone calls using the handsfree will be kept to a minimum and that the company vehicle driver will immediately inform the caller that he/she is driving.
- A clear requirement not to use mobile phones near moving machinery or near to areas where moving mobile plant is operating.
- The policy must also cover the use of a mobile phone for texting and the accessing of information through a mobile phone.

### Requirements for Rule No.7

1. A Mobile Phone policy to be formulated and implemented, and as a minimum, refer to the issues highlighted in the sample policy and guides on pages 57 to 62.
2. This policy must to be circulated to all employees and contractors. The policy must be incorporated into the safety induction process for employees and contractors (including all contract transport operators).
3. Site rules on the use of mobile phones must be specified in the site transport rules as required under Life Saving rule No.5.





**Group Fatal Accident - Case Study 2012:**

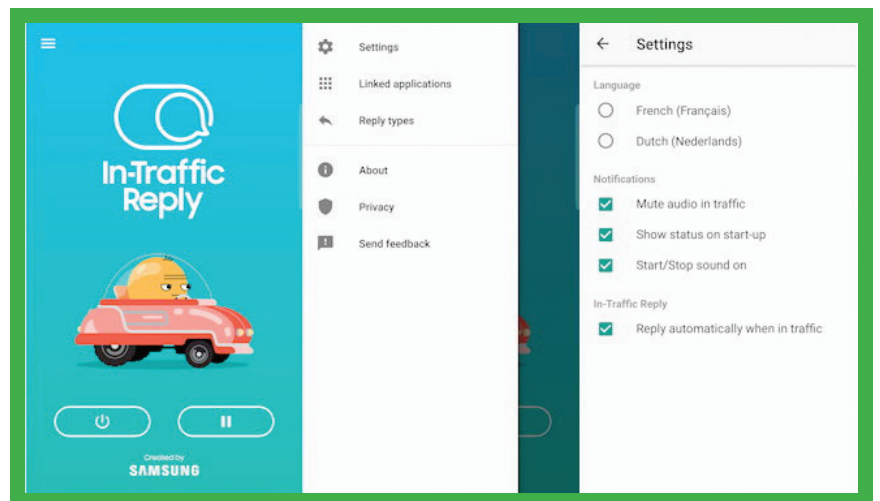
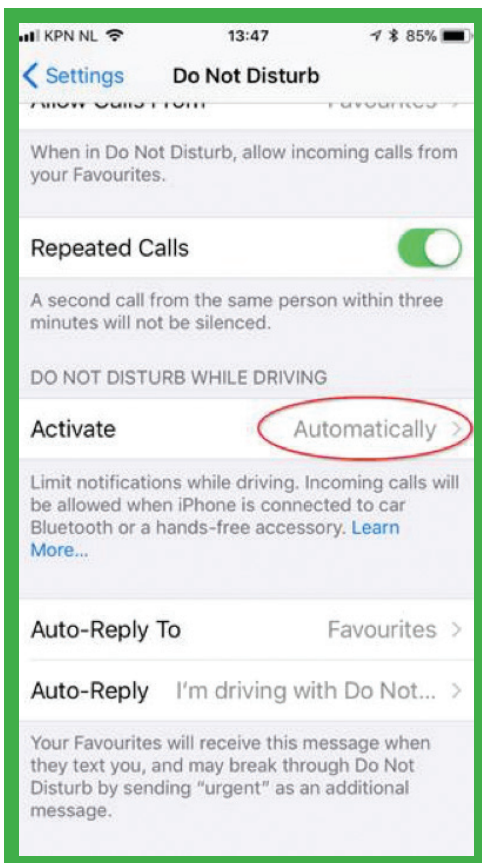
*A Foreman was run over by a concrete truck which was moving forward. He became distracted after taking a mobile phone call.*



**Group Fatal Accident - Case Study 2004:**

*Foreman run over by a vehicle reversing off the weighbridge.*

*Mobile Phone Producers are adapting their technology to reduce the risks from the use of mobile phones. In the latest iOS 11 update from Apple, it is possible to restrict texts and emails and other notifications when the “do not disturb while driving’ is activated (Automatically when connect to hands-free accessory). When the “do not disturb” is activated manually, it’s only allowing incoming calls from those on a “Favourites List”.*



*An example of mobile phone control technology for android phones is the Traffic Response app created by Samsung (for use in the Samsung Galaxy Range) the app temporarily suspends all notifications (texts, emails, social network notifications, but not calls).*

*Traffic Response automatically responds to incoming text and email notifications when you activate the feature on your phone. The app can also be activated to measure through the activity sensor or GPS and from 10 km/h, the app will automatically activate.*

## SAFE USE OF MOBILE PHONES IN THE WORKPLACE - SAMPLE POLICY

### WORKSITES

TO SITE MANAGERS / SUPERVISORS / ALL STAFF SUBCONTRACTORS:

**The Use of Personal Phones for personal calls or personal messages should be restricted to break times. Any employee who needs to make/receive an urgent personal telephone call will be accommodated – please ask your Supervisor.**

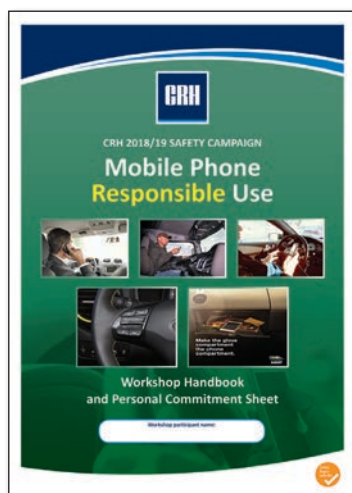
**Where Possible, machine operators and those working near fixed plant/machinery should avoid the use of mobile phones.**

### DO NOT

- DO NOT Answer a call when operating Plant and/or Machinery.
- DO NOT Answer a call if communicating with others on site radios. e.g. slinger/banksman / crane drivers.
- DO NOT Use or operate a phone when climbing a ladder or other similar structures.
- DO NOT Operate mobile phones or other electrical equipment near petrol containers or other flammable substances.
- DO NOT Permit the use of mobile phones when excavating near gas pipelines.
- DO NOT Use mobile phones in areas where the site rules strictly forbid them.
- DO NOT Operate mobile phones when crossing traffic routes.
- DO NOT Operate mobile phones near any shot-firing operations.

### DO

- Carry a mobile phone if working alone in a remote area e.g. driller.
- Carry a mobile phone if you are concerned about your safety going to or from work.
- Ensure you have quick and effective communications available for emergency situations.
- Ensure you are standing in a safe area before answering a call.



## Mobile Phone Safety Guidance

**Why are we introducing this guidance on mobile phones?**

The objective of this policy is to provide a structure on the use of mobile phones to those using phones in vehicles within our business during the course of their work. The core objective of this new guidance is to bring about the following changes:

- To eliminate the behaviour of people using phone handsets to read emails, read or send texts or to access web sites.
- To help us all to assess our driving environment before using the hands free phone system.
- To move us all towards the use of the voice activation features on our phone systems.
- To help us to consider the fact that some people who we may be calling in the course of our work may be driving.

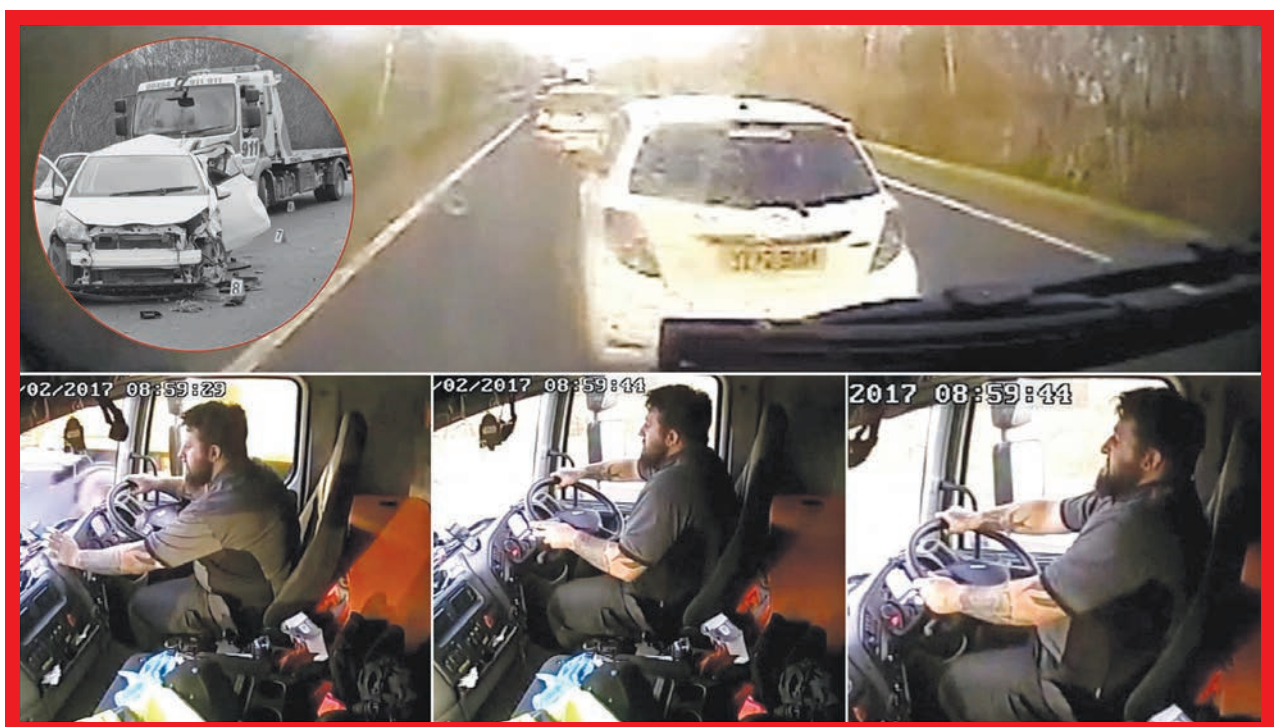
If we achieve these objectives with this new guidance, then this will represent a significant improvement in the risk management in this area.

**Introduction**

1. Mobile phones are a significant element of everyday communication and once used safely they present a very efficient communication tool for employees. The challenge with developing a safety policy in relation to mobile phone use is the need to try and allow employees to get the benefit of such a tool, but in such a way that the phone is used in a safe and controlled manner. The monitoring of compliance with this requirement will be very difficult, hence the focus on education and training as part of this overall program. The amended LSR No.7 of the 16LSR covers the issue of mobile phone use by all employees when on company business, in the company, owned (by the employee on company business) or rented vehicles.

Other points to note:

- This recommendation represents minimum standards. Companies can go beyond the recommendation if required, i.e have additional controls.
- The use of a mobile phone to review, read or send emails or texts while operating a vehicle is strictly prohibited.



## Mobile Phone Safety Guidance

## 2. Company, owned, leased or rented cars.

Key elements for mobile phone use in company, owned (on company business), leased or rented cars. (vehicles over 3.5t or over are covered in section 3).

To allow time for policy communication and awareness training through the CRH campaign - the car mobile phone policy was rolled out by January 1st 2019.

- 2.1. To support the proposed changes, a significant internal campaign entitled “Mobile Phone - Responsible Use” was developed and launched across CRH Europe in Q2 2018. This was a campaign incorporating explanation around the new policy, practical guidance on the safe use of mobile phones and personal testimonies from car accident victims where mobile phone use was a factor.

The campaign also highlighted the features which are now being added to phones to control and restrict mobile phone use while driving (see the example of the latest iPhone and Android approaches on page 56).

## 2.2. Key elements of the amended rule on mobile phone use and the “Mobile Phone- Responsible Use” program:

- 2.2.1. On completion of the program, each participant will sign a pledge undertaking to follow the key aspects of the requirements as outlined below. It should be noted that failure to comply with this program will result in disciplinary action.

- 2.2.2. The Handset cannot be used for any purpose\* related to texting, emails, or any form of web use. All handsets should, where possible, be out of reach before a car journey starts. Where the technology is available on your phone (iPhone or Android) it must be activated immediately.

*\*An exception is permitted if the phone is used for satellite navigation purposes. In such a case the phone must be mounted in a fixed device where it can be easily seen while keeping a good view of the road, it must not obstruct the driver's view and cannot be held in the hand. The driver is not allowed to manipulate the device while driving.*

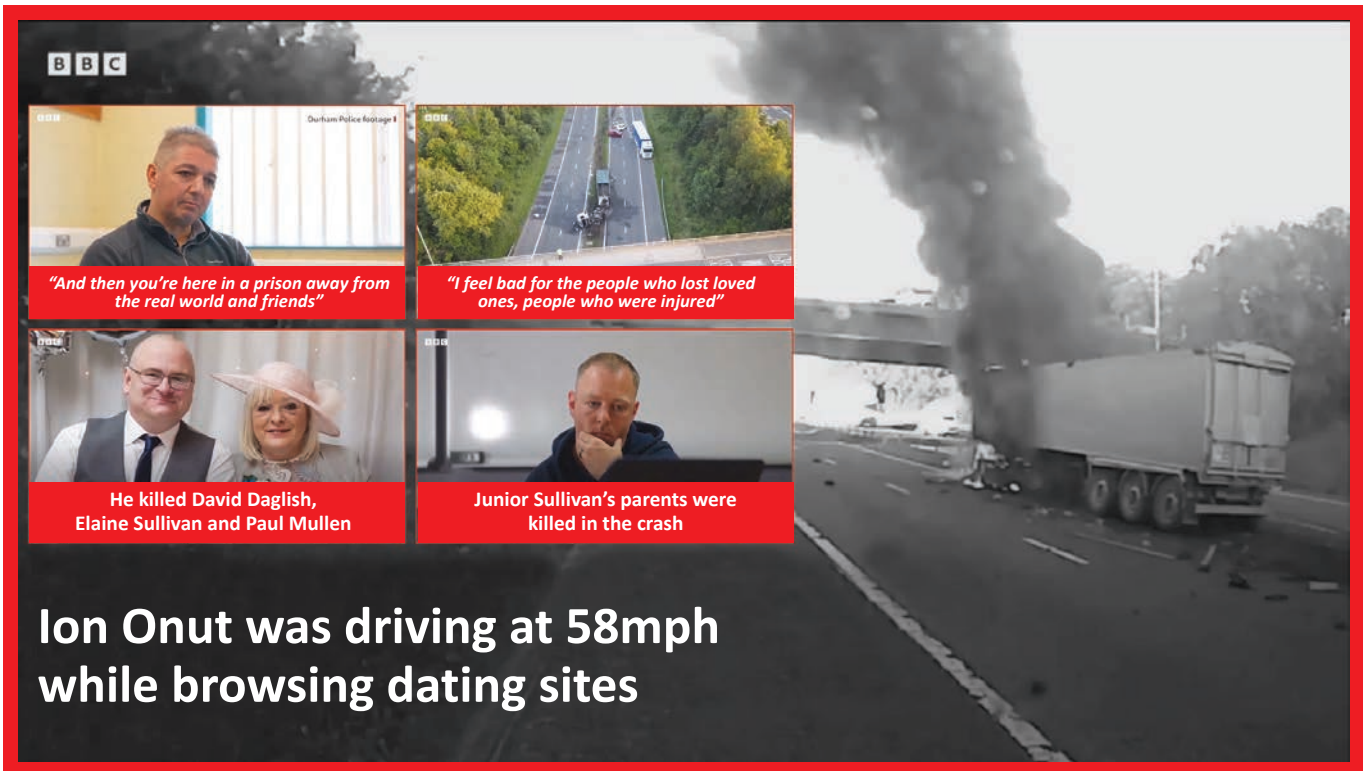


## Mobile Phone Safety Guidance



- 2.3. Drivers can receive hands free phone calls once they undertake to:
- 2.3.1. Immediately inform the caller that they are driving.
  - 2.3.2. Keep the call duration to an absolute minimum. If a conversation is unlikely to be short, the caller must be told they will be contacted as soon as the driver has found a safe place to park.
  - 2.3.3. Not to take a call when driving in an unfamiliar environment. Even in familiar areas, the awareness program (Mobile Phone-Responsible Use) will feature practical examples to focus on the need for drivers to continue to assess the overall situation, which includes other traffic, pedestrians, visibility and the weather/elements at the time.
- Please note, a driver is under no obligation to answer or make a call (using the hands free system) while operating the vehicle.
- 2.4. Drivers can make hands free mobile phone calls once they undertake to:
- 2.4.1. Only use voice activation to activate the call (or an integrated steering wheel system which allows the driver to keep their hands on the steering wheel and their eyes on the road).
    - Voice activation is a safety feature on most phones, yet is not used by the vast majority of phone users. This program would require all employees using vehicles for company business to introduce and manage this feature.
  - 2.4.2. To only initiate a call when driving in a familiar environment. Practical examples or how to assess the environment will be featured in the “Mobile Phone-Responsible Use” campaign.
  - 2.4.3. To keep such calls to a minimum - the “Responsible Use” program would allow an element of professional discretion in terms of making calls, but would envisage that only calls related to schedule issues (running late), business critical issues (a short update on plant breakdown or urgent short commercial update). It is envisaged that such calls should last no longer than a few minutes.
- 2.5. As a general principle under the “Mobile Phone-Responsible Use” program and related training:
- 2.5.1. All CRH personnel who make a work related call to a mobile phone, would be required to first ask the person they are calling if they are driving and if it is safe to take the call. If the person being called is driving and where the call is not urgent, the CRH caller has a responsibility to end the call as soon as possible.
  - 2.5.2. Where a CRH employee makes a call to the mobile phone of a colleague, and that colleague is driving, the conversation should be brief. If the call relates to anything that may be contentious or require significant discussion/debate then the responsibility is on the caller to avoid and defer such a conversation.

## Mobile Phone Safety Guidance



### 3. Vehicles over 3.5t

The challenges posed to the drivers of such vehicles is significantly ahead of those faced by other vehicle drivers. As a result the mobile phone policy applying to this category of drivers needs to allow much less discretion than for smaller vehicles.

While the requirements listed here are new and may initially be received negatively, it is important to remember that any additional unnecessary burden on the concentration and focus of a Heavy Goods Vehicle driver, is not acceptable. These changes will bring about a gradual change of culture in relation to the use of mobile phones.

For drivers of vehicles over 3.5t.

- 3.1. The Handset cannot be used for any purpose\* related to texting or emails. All handsets should where possible, be out of reach before a journey starts.

*\*An exception is permitted if the phone is used for satellite navigation purposes. In such a case the phone must be mounted in a fixed device where it can be easily seen while keeping a good view of the road, it must not obstruct the driver's view and cannot be held in the hand. The driver is not allowed to manipulate the device while driving.*

- 3.2. Drivers are not permitted to make hands free phone calls while driving. The only exceptions are in the event of an emergency or to request assistance in the event of a breakdown. One exception is permitted, where a driver needs to contact a customer to provide an accurate arrival time. This is permitted under two conditions:
1. The customer number is programmed into the phone in advance of the journey.
  2. The call is kept to an absolute minimum.

Note. A number of companies now have integrated EPS Monitoring of delivery vehicle locations. These systems should be used as much as possible to reduce the need for drivers to contact anyone.

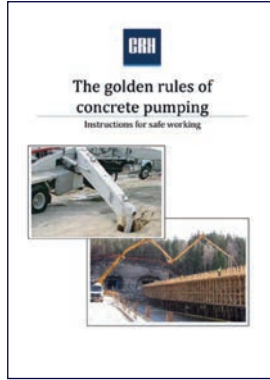
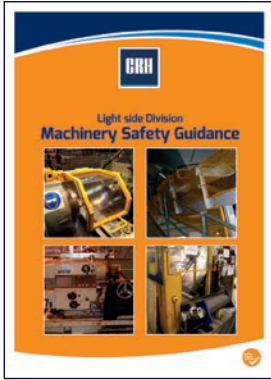
## Mobile Phone Safety Guidance

- 3.3. Drivers are permitted to take hands free phone calls while driving only under the following conditions.
- 3.3.1. The call relates to an urgent issue relating the delivery and it is safe to do so\*. There is an onus on each driver to ensure key phone numbers (which are related to the delivery e.g the CRH weighbridge) are identifiable so the driver can recognise all calls that come through to the driver's phone.
- \*Not to take a call when driving in an unfamiliar environment. Even in familiar areas, the awareness program (Mobile Phone-Responsible Use) will feature practical examples to focus on the need for drivers to continue to assess the overall situation, which includes other traffic, pedestrians, visibility and the weather/elements at the time.*
- 3.3.2. The call is taken without using the handset, for example by using the steering wheel mounted controls.
- 3.3.3. The call must be kept to an absolute minimum (to receive an additional instruction or to report on current location). A driver is under no obligation to answer a call (using the hands free system) while operating the vehicle.
- 3.4. There is an additional professional and personal responsibility on all CRH personnel who as part of their roles may be required to call Heavy Goods Vehicle drivers. This applies in particular to weighbridge personnel and sales staff. Such staff have a responsibility to ask before each call:
- Is this call necessary?
  - Should I allow some additional time before I make that call (if a customer is waiting on delivery).
- Once the call is made, such staff have a very significant responsibility to keep the call to an absolute minimum (a matter of seconds). Practical examples will be featured in the " Mobile Phone-Responsible Use" campaign.

To allow time for training and communication - the policy should be fully rolled out by April 2019 (due to the significant number of contractors involved, additional time is being allowed for this communication program).



Make the glove compartment the phone compartment.



### Introduction

A significant section of the working population within our operations are employee and contract drivers of public road HGV's ( Heavy Goods Vehicles ) transporting material on our behalf. While we cannot monitor and check every aspect of contract haulier safety and behaviour, we must have in place a system that ensures that each contractor transport company is aware of our safety requirements and that we have a system that monitors the implementation of these requirements by the transport contractor.

Drivers who are involved in the delivery and erection of precast elements are also covered by Life Saving Rule No.11.

The key elements of any such system relating to the management of contract public road transport contractors must cover the following:

- Screening drivers - in practice undertaking background screening checks on drivers to verify their driving records.
- Driver training programs.
- Monitoring driver fitness for work.
- Vehicle standards.
- Providing facilities to enable drivers to comply with company rules - rest areas etc.
- Journey management planning ( in certain countries).

It is important to note that these requirements do not apply to:

- Vehicles coming on site to collect on behalf of a customer.
- Vehicles delivering goods or products from an outside source e.g fly-ash, welding equipment etc.
- Courier companies.

It is essential that:

a) A formal system is in place to ensure that all such contract drivers have received formal induction safety training for the type of work they will be conducting. This training should include a detailed section on the hazards of:

- Overhead electrical power lines.
- The precautions required while tipping a load. This particular aspect of contract transport activity represents a significant number of high potential learning events.
- Requirement for Personal Protective Equipment (PPE).
- Site safety requirements relating to the CRH site that they are collecting material from.
- The issues to be covered in a vehicle pre start check (prestart checks must be documented).
- Where partial or mixed loads are a feature of the work carried out for CRH, the contract transport company must have training programs that cover details considerations for securing / strapping loads.
- The CRH policy on mobile phone use and the requirement for a hands free system only.

The key requirement here is that contract transport companies working on our behalf must maintain records confirming that their drivers have received this training. From time to time the CRH company must carry out random checks on the implementation of the CRH safety requirements within that company.

In summary we are requiring contract transport companies working on our behalf to train their drivers on the issues highlighted above. In many cases the CRH company may assist the contract transport company in this process by providing training material such as DVD's etc. In some cases, where regular contract transport companies are used on a long term basis the CRH company may decide to carry out some of the training requirements.

b) Each transport company working on our behalf has a system in place to ensure all of their drivers have a valid driving licence to drive/operate the particular class of vehicle. The CRH company must have a system to periodically check the implementation of such a system among it's contract transport companies.

The requirements of a) and b) above need to be included as part of a prequalification process.

### Requirements for Rule No.8

1. All transport companies (operating public road vehicles) operating on behalf of a CRH company must have a formal safety awareness training program which as a minimum covers the issues in a) above. Each CRH company must have a system to periodically check the implementation of such a program among their contract transport companies.
2. Each transport company operating on our behalf must have an internal database (a basic record system will suffice for smaller contractors) which records the licence details for each of their drivers and the insurance details for each of their vehicles (which could operate on behalf of CRH).

Each CRH company must have a system to periodically check the implementation of such a database among their contract transport companies and

3. All drivers operating for a contract transport company must carry out **documented** daily pre-use vehicle check.

As a minimum this prestart check must include:

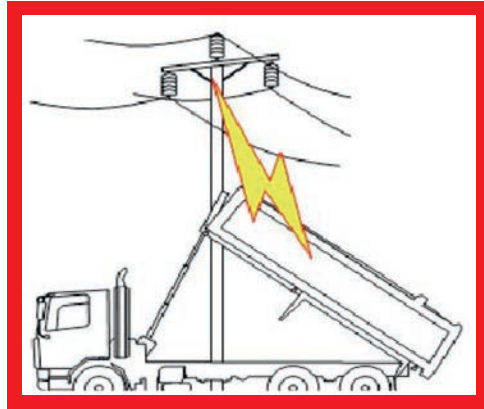
- A visual inspection of each vehicle tyre.
- The condition and position of vehicle mirrors (including the pedestrian safety mirror).
- That all vehicle lights are operational.
- That the reversing warning system is operational.

The requirement is for the CRH company to check that a documented prestart check has been carried out, the CRH company does not have to carry out that check.

4. Where partial or mixed loads are a feature of the work carried out for CRH, the contract transport company must have training programs that cover details considerations for securing / strapping loads.
5. All Heavy Goods Vehicles working for CRH will be required to have the following safety devices fitted:
  - An audible alarm which warns the driver that the handbrake is not applied when the cab door is opened.
  - To have side under run protection guards with combined pedestrian/cyclist warning sign (see photo on Page 67).
  - All rigid heavy goods vehicles (aggregate tipper trucks and RMC mixers ), either contract or owned must be fitted with a CCTV or radar system to assist with reversing.
  - All owned articulated vehicles must be fitted with a CCTV or radar system to assist with reversing.
6. All new contracts signed with Contract Transport Companies must include a safety section as outlined on page 68.
7. The Site Truck Driver Induction must include an assessment. An online safety induction prior to the driver coming to the site is permitted.
8. All site delivery drivers must be issued with a “Stop Work” authority card which will permit them to cease a site product delivery if they (the driver) is of the view that the site conditions present a serious risk. This system was highlighted as a Best Practice example previously. This will apply from January 2020.
9. Contract truck driver induction training and assessment. Such inductions and assessments are currently required under LSR No.8. An online program to allow online inductions for 4 categories of truck will be available in all languages from April 2019 - the program incorporates videos and an assessment.



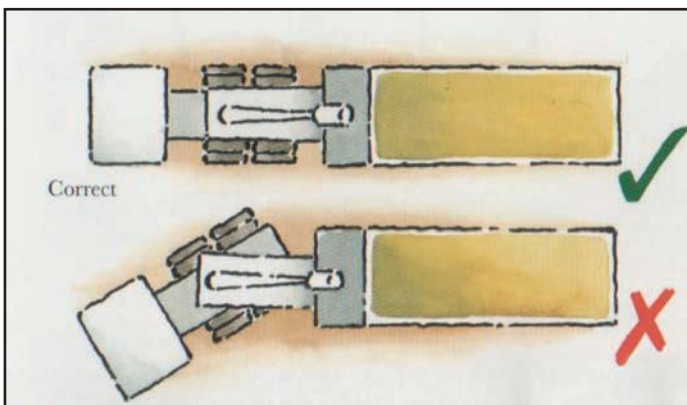
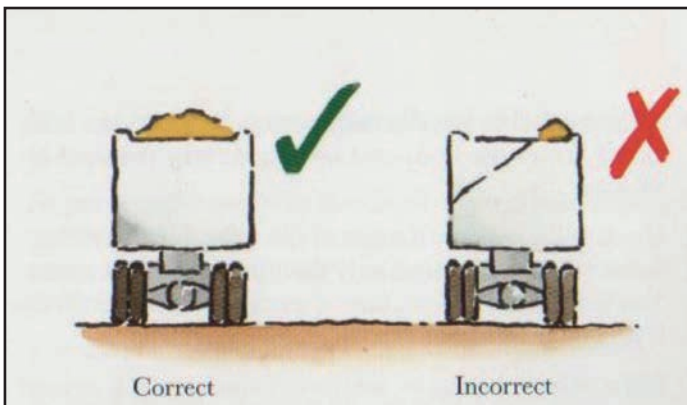
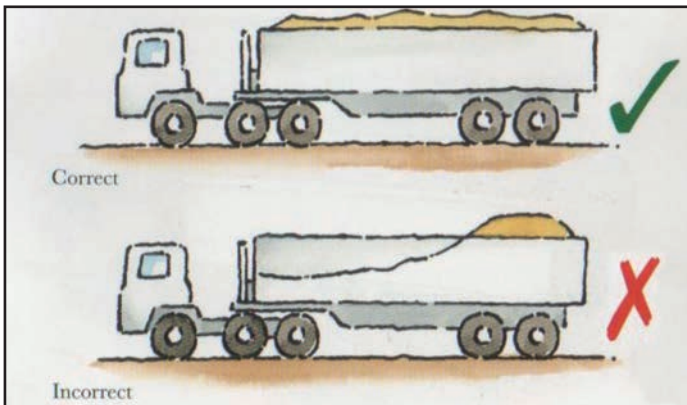
*Pedestrian Safety Mirror a CRH requirement.*



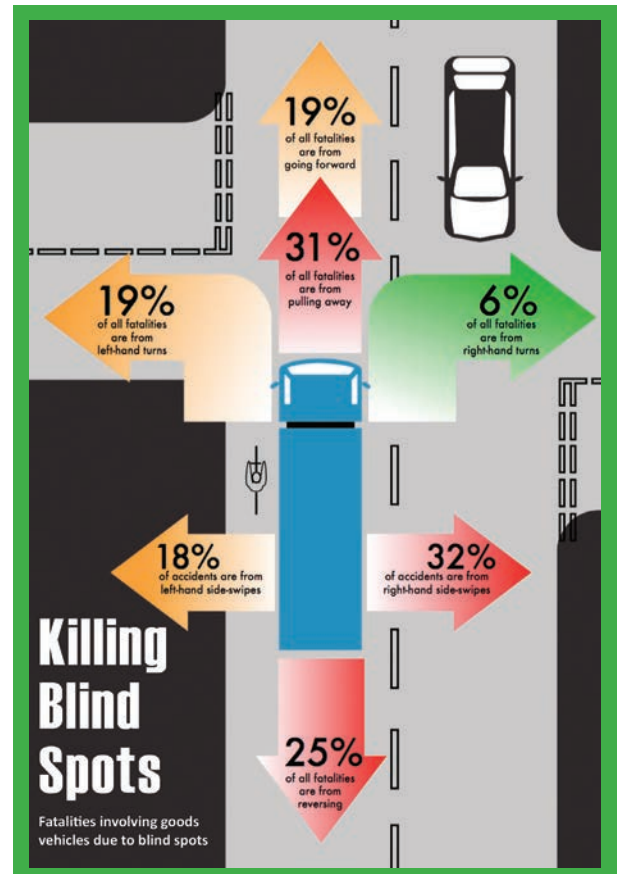
*Danger from overhead power lines must be covered in the Haulier Induction.*



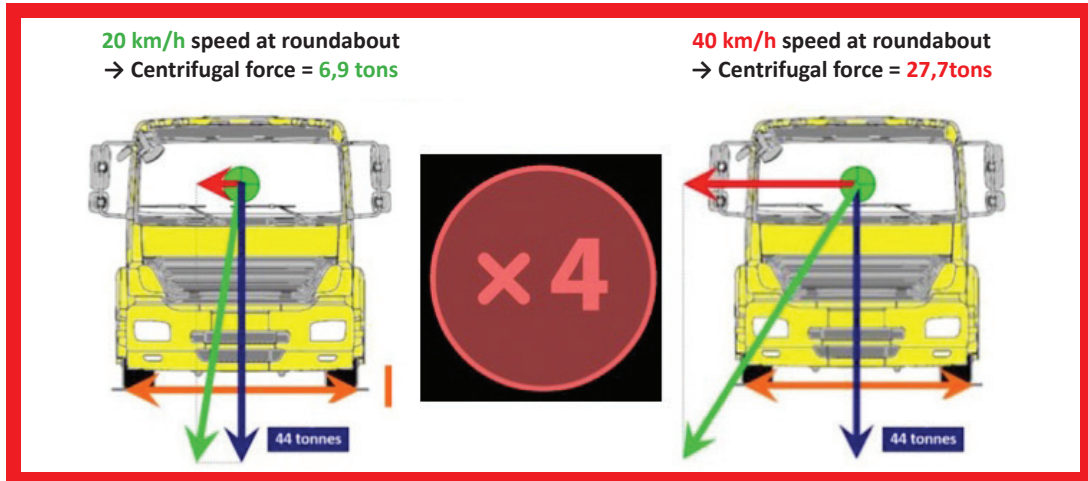
*Pre start check book for truck operator.*



*Safe loading and unloading rules must be covered in the Haulier Induction.*



*Fatalities due to blind spots.*



*Risk information around the danger of RMC trucks entering a roundabout at too high a speed.*



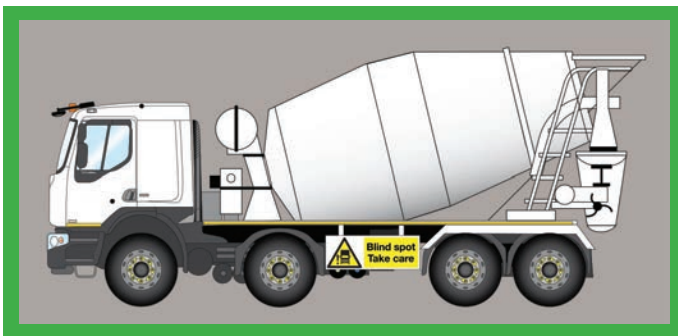
*An alcohol tester designed into the truck ignition system – driver must give a negative result for truck to start.*



*Tarmac ONECARD system whereby all driver training is recorded on a credit card sized ID card when can be scanned and read.*



Side protection warnings



Safety rules and requirements to be observed by hauliers and drivers working for CRH POLAND.

**Training map.** 3/44

After completing the general part of the course you can continue your learning and start the chapter concerning vehicle of this type you drive. You will be moved then to suitable detailed part of the course. After you have passed the test on your knowledge and completed the detailed part of the course, active certificate icon located close to the title of the course will be displayed. To open the certificate please click this icon. Print the certificate out and show it in case you are stopped to check your documents.

CONCRETE MIXER AND CONCRETE PUMPS	CEMENT TANKER
RIGID VEHICLES WITH AND WITHOUT A CRANE	DUMP TRUCK

< PREV    NEXT >

*The online safety training program for contract drivers - which allows the drivers to undertake a specific safety induction depending on the type of vehicle they are driving (tanker, concrete truck etc). The program is available in a number of languages.*

Safety Element/Addition to Contracts

A transport contractor for CRH shall on signing the contract agree to the following requirements:

- 1.1. Must pass an initial safety prequalification process in accordance with the relevant operating company procedures.
- 1.2. Must comply with CRH driver and vehicle safety requirements and the key aspects covered in the “ CRH Transport Safety Checks “ which cover verification of the following:
  1. That the driver of the contract vehicle has conducted a daily prestart check of the vehicle before the commencement of his shift.
  2. That the driver has the required personal protective equipment in the vehicle.
  3. That the reverse warning system (a reverse alarm and a CCTV (or similar detection system)) is in working order.
  4. That a pedestrian mirror is fitted to the front windscreen of the vehicle.
  5. That a handbrake warning alarm is in place where if the driver door is opened an alarm will sound if the handbrake is not engaged.
  6. Load security (where applicable).
- 1.3. All vehicles purchased by the Transport Contractor after the date of this contract are expected to comply with the safety specifications outlined in relevant heavy goods vehicle section the CRH Red Book (guidance on procurement).
- 1.4. If the Transport contractor fails to pass any element of the CRH Transport Safety Check – they shall be liable to a sanction. The system of sanction will be decided by the opco.

Example

- Failure of a CRH Transport Safety Check: €100 ( and dismissal from site if non-compliance is deemed by local management to be serious).

- 1.5. Additional sanctions, as defined by the opco may also be put in place.
- 1.6. The Transport Contractor will be required to be attend and participate in ongoing Driver health initiatives.



*New innovative designs for trucks coming onto the market, where the re-designed cabs allow the driver to have greater all round vision – see also the design on page 66.*



### Introduction

There are a wide range of project activities across the CRH group which come under the category of construction project. Such projects can range from the large undertakings such as the construction of cement plants (which can cost in the region of €250m), lime works, captive power plants and waste heat recovery plants to the installation/dismantling of a concrete plant.

Due to the scale of the activity on a construction project including the quantity and diverse nature of contractors/contractor work present, such projects carry a very significant risk of serious injury.

Such projects require considerable levels of planning and risk management in addition to significant levels of co-ordination of both processes and contractors.

To counter this risk, all construction projects within this division must comply with:

#### 1. The CRH Construction Project Protocol

This document covers the key aspects of:

- Project Management structures: Safety.
- Project Planning: Design (Safety).
- Contractor Management.
- Project safety plan development and implementation.

#### 2. The CRH Construction Project Safety Manual

- This document covers the technical safety requirements that all designers and construction contractors must comply with:

### Construction Project Definition

**Projects** for the purposes of this protocol are defined as:

- A greenfield development of a:
  - Greenfield development of an aggregate location
  - Cement manufacturing process
  - Cement grinding process
  - Installation/ preassembly of a Concrete Plant
  - Addition/extension to a concrete products facility
  - Concrete Products plant e.g precast plant
  - Lime
  - A lightside fabrication/assembly facility
  - Asphalt plant
  - Any other development deemed by the management team as a significant project
- Brownfield (refurbishment) development (or dismantling) of:
  - New cement manufacturing line
  - Captive Power Plant
  - Waste heat recovery plant

As with previous projects, CRH personnel can be integrated into the project management structure as deemed appropriate by CRH.

It is the responsibility of the manager responsible for the project to ensure that the protocol and safety manual requirements are assessed at the project planning stage.

**Requirements for Rule No.9**

All construction projects (major and non major) within this division must comply with:

- The CRH Construction Project Protocol.
- The CRH Construction Project Safety Manual.



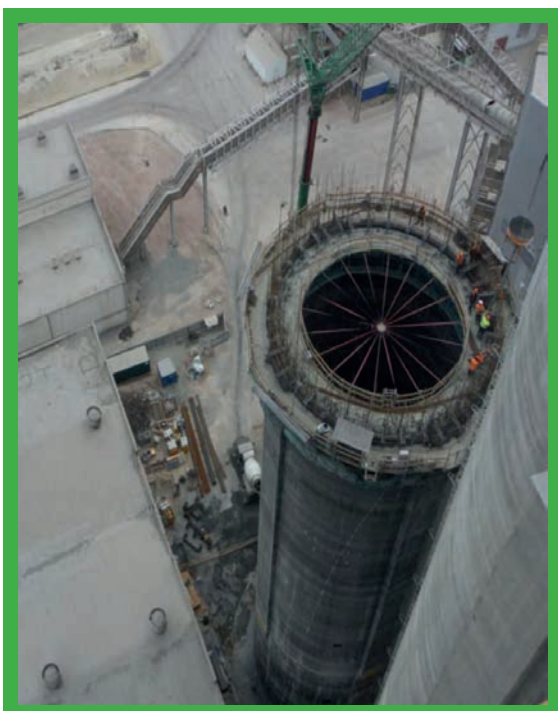
*Fatal Accident 2011:  
Contractor fell while crossing a wall during the construction of an extension.*



*Safety Netting in place.*



*Transport systems at a construction site.*



*Raw Meal Silo Project.*



*Trench Boxes in use.*

**Introduction**

Road surfacing / maintenance / repair is a significant activity within a number of our businesses. In addition to the hazards within the work site of moving vehicles, machinery and the handling of hot material, the additional very significant hazard of working close to live/moving public road traffic requires specific risk control measures.



*Checking for the presence of underground services prior to the erection of fencing.*



**Inflatable Safety Barriers:**

*Designed to resemble concrete to protect workers involved in road building / repair.*

*They act as a visual deterrent to road users, offering an extra layer of protection to employees working on the public road.*



*Road-surfacing at night close to live traffic.*

Year	Fatality Details
2023	A contractor flag person on a roadworks project died when he was struck by a reversing works vehicle

Year	Serious Accident Details
2022	An employee received serious injuries to both legs having been struck by a sweeper machine on a road maintenance project

### Requirements for Rule No.10

Each work project/job must have a specific risk assessment, which as a minimum must cover the following:

#### 1. Control Reversing Vehicles

- HGV delivery or collection vehicles must be instructed not to reverse unless they are under the direct control of a banksman/approved traffic controller.
- The banksman/approved traffic controller must be identified by wearing the designated orange jacket or vest with the word 'Banksman/Approved Traffic Controller' on the back.
- All vehicles delivering aggregates, asphalt or concrete must be fitted with:
  - i. A working CCTV rear view camera
  - ii. Audible reverse warning alarm
  - iii. White reversing lights
  - iv. Amber rotating beacon(s)

#### 2. Mobile Plant Safety Zones

- All mobile plant/vehicle drivers must maintain a safety zone (in the path of travel) between the item of mobile plant/vehicle that they are driving and any pedestrian.
- The safety zones are:
  - 5 metres in the direct line of travel of any vehicle or item of plant.
  - 20 metres for mechanical road sweepers in the direct line of travel. You are allowed access to the paver augers only for the purpose of hand shovelling, testing or back casting of material.

#### 3. Overhead Services

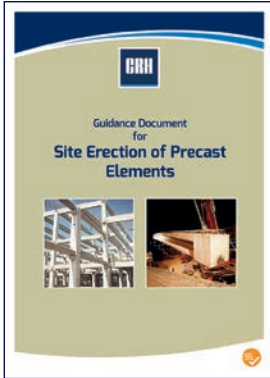
- Work adjacent to overhead service must only be carried out following the completion of a specific risk assessment and the development of a job specific safe system of work.

#### 4. Buried Services (Underground Cables)

- Excavation work must only be carried out following the completion of a survey for buried services and the development of a job specific safe system of work.
- Procedures must be in place to ensure protection of workers against the risk of engulfment while working in the excavation and the risk of falling while working around the excavation.

#### 5. Traffic Management

- Each project/job must have a specifically designed traffic management system based on a risk assessment. In addition to the issues around live traffic control, each traffic management system must include pedestrian management controls.



### Introduction

There have been a number of serious accidents within the division which have occurred during lifting operations. Such operations have often involved the use of mobile cranes and the use of gantry cranes within operations.

A summary of these accidents is as follows:

Year	Fatality Details
1997	Contractor crushed when load fell from crane
1997	Contractor struck when a frame being lifted fell on him
2005	Contractor fell from a walkway while supervising a lifting operation being carried out by a crane when the walkway he was standing was undermined and collapsed
2008	Employee, a crane operator was killed when a precast wall panel she was moving fell and she was crushed
2009	Contractor struck by a glass element which was being lifted when the special vacuum lifting system malfunctioned
2009	Contractor struck by a beam which had fallen after being struck accidentally being a crane
2010	Employee lifting a concrete panel from a mould onto a transport car using a bridge crane when the lifting attachment on the mould failed and fell
2017	Employee killed after standing moulds fell when the concrete bucket he was moving with a Gantry Crane struck the moulds
2020	Employee struck by large plate of steel which was being fitted to the end of a conveyor system
Year	Serious Accident Details
2019	Employee struck by lifting beam that fell from crane hook
2021	Employee's lower legs got crushed under hollow core slab that fell from stack after it was pulled by the lifting clamp that got stuck behind a lifting loop
2022	Employee struck by metal frame that fell out of an open hook when it was lifted and lowered on an inside loader pallet
2022	Employee squeezed between gantry crane and stack of precast elements on stock yard
2022	Employee struck by falling wall element that was pulled over by crane when crane controls were accidentally activated
2022	Contractor was making surface repairs on a stack of stored concrete elements when one element tilted over and fell on his leg

### Requirements for Rule 11

- Each company must have a system in place to ensure that in the prequalification of contractors who will be involved in lifting operations includes the verification of lifting equipment certification (See also LSR No.1).
- Each company must have a system in place to ensure all operators of lifting equipment - static or mobile - must be trained in the operation of the equipment. A training program must also be in place for those responsible for securing loads for lifting.
  - Training for operators of gantry cranes must include an assessment of work on the work (CRH) site, this is to ensure that the assessment covers the lifting work that the trainee will actually be carrying out rather than off site training only with other lifting scenarios.
  - Supervisors whose area of responsibility covers areas where lifting is carried out must also receive training in the Lifting operation safety. All supervisors in precast and paving operations, whose area of responsibility covers work areas where gantry cranes are used, must also receive certification as a gantry crane operator.
  - Refresher training must be carried out every 3 years.

3. Each company must have a system in place to ensure that the risk assessment for lifting operations covers checks on personnel competency, equipment certification and loading rates in accordance with a defined location specific policy.
4. All slings and chains in use must have a rated capacity tag (with id number) and evidence of last inspection on the sling or chain.
5. All gantry crane controls must be labelled. A system of inspections to ensure the controls are labelled must also be in place.
6. All gantry crane controls must be risk assessed for the possibility of inadvertent contact by the operator with the controls. As a minimum this will involve a barrier around the control to prevent inadvertent contact with the crane joystick - see photograph on page 76.
7. All lifting hooks must be fitted with safety latches.
8. Each company must have a system in place to ensure the regular inspection of:
  - Hoisting ropes
  - Load hooks
  - Limit switches
  - Brakes
    - Hoisting
    - Bridge
    - Trolley
  - Straps
  - Chains
  - Lifting Accessories
  - Alarms
  - All other safety features
9. In operations where cranes are operating, exclusion zones (for personnel not involved in lifting operations) must be clearly identified and established.
10. Inserts embedded in the concrete product shall be designed for an ultimate load that is 4 times the working load (Factor Safety of 4) or as per national standards/requirements.
11. Material being moved into storage should be stored in a securing mechanism similar to the photographs at the bottom of page 77.
12. Site Erection:
  - Every company involved in site erection activities must have a construction site guidance manual, covering erection issues. A sample is provided.
  - Every construction site must have a specific plan for curing/stiffening during construction time, including clear rules for curing times and the withdrawal of structural supports.
  - There must be a start-up meeting with all involved staff, to ensure correct handling, stiffening, dismantling, use of fall protection, use of scaffolds, PPE safe areas for crane use, site transport roads and other relevant items.
  - There must be clear guidelines for any adjustments to the proposed construction methods or processes.
13. At sites where lifting equipment is used, a colour coding system should be put in place, which allows a person to see if that item of lifting equipment has been inspected as per the requirements for that piece of equipment. See examples on page 75.

YOUR LOGO  
HERE

**LIFTING EQUIPMENT  
FOR THE PERIOD**

*Dry wipe date box*

**TO**

*Dry wipe date box*

**ONLY EQUIPMENT  
COLOURED**

**TO BE USED BY  
TRAINED PERSONNEL**

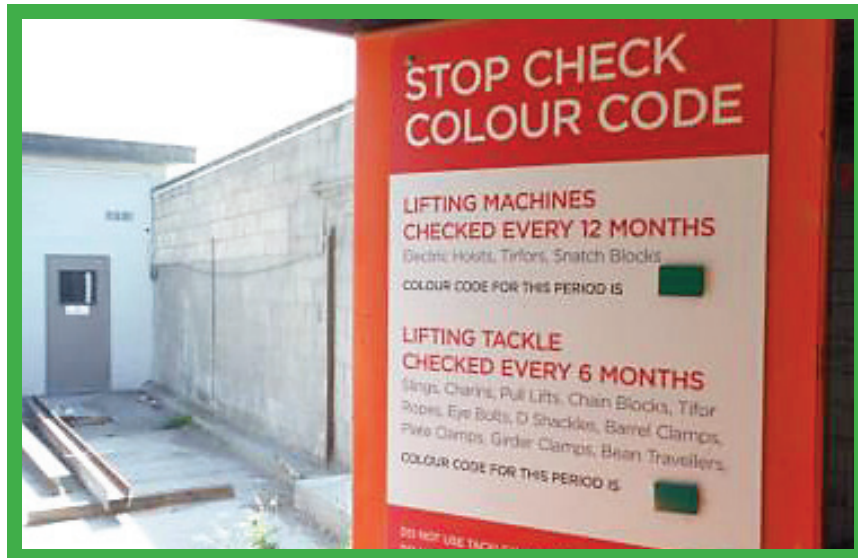
QS10 is designed to show which lifting equipment is safe tested for current use. Made in weather proof steel and is supplied with Coloured Magnetic Panels

**RED**

**BLUE**

**GREEN**

**YELLOW**



**THE CURRENT  
CHAIN / SLING COLOUR  
CODE IS   RED**

**DO NOT USE ANY  
LIFTING EQUIPMENT NOT  
MARKED THIS COLOUR**

GREEN

RED

BLUE

YELLOW



*Group Fatal Accident - Case Study 2005:  
Contractor fell from walkway as it was being lifted.*



*Group Fatal Accident - Case Study 2006:  
During a lifting operation, a supervisor was trapped  
between the load being lifted and a steel beam.*



*Dead Mans Joystick. You must push down to activate the joystick.*



*October 19th 2017:*

*A crane operator using a remote control system was fatally injured when a concrete bucket (top of photo) he was moving struck wall panel moulds. The moulds fell on him causing fatal injuries.*



2021: Serious Accident

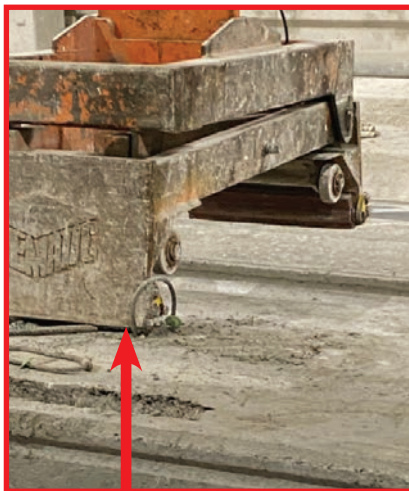


Hollowcore slab is lowered into position using the clamps / grabs from an overhead crane.

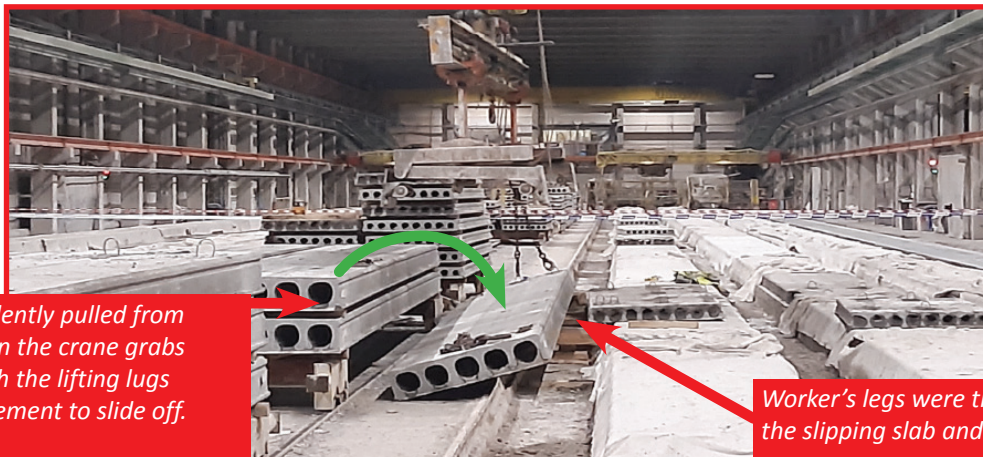
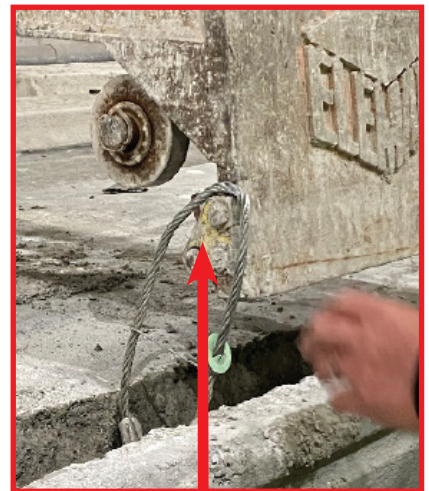
Lifting lugs cast into the precast element.



When the slab was lowered into position - the operator released the grabs / clamp and lifted the clamps higher upward to move them away from the next task.

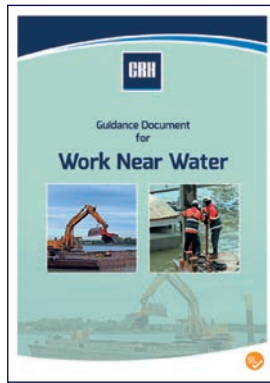
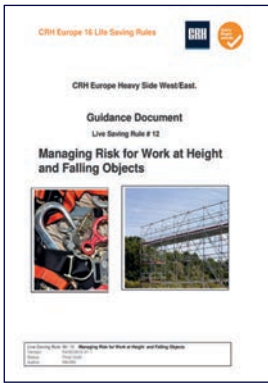


But as the clamps moved upwards they connected with the lifting lug. This pull or force on the lug caused the slab to shift and slip off the pile of slabs (see next photo) – the operator assumed that the clamps were completely free.



Slab was accidentally pulled from this stack when the crane grabs connected with the lifting lugs causing the element to slide off.

Worker's legs were trapped between the slipping slab and ground rails.



**Introduction**

Falls from height and falling objects have accounted for a number of fatal accidents across the group in recent years. Fatalities within the group relating to work at height and falling objects can be summarised as follows:

Year	Fatality Details
1997	Employee crushed when load fell from crane
2000	Contractor fell through opening in roof
2000	Contract driller fell from quarry face
2002	Contractor fell through opening in roof
2002	Employee fell through chute opening
2002	Contractor fell through roof sheeting while repairing smoke vents
2003	Contractor fell from silo while painting it
2004	Employee fell from first floor in storage area
2005	Contractor fell 10 metres while involved dismantling a walkway
2006	Employee fell 5 metres through an unprotected opening in the floor
2007	Manager fell through a steel section of walkway which gave way when he stood on it
2008	Employee fell from a walkway while trying to re-align a conveyor belt
2008	Contractor was descending from a work platform when he unclipped his safety harness, he fell while descending an access ladder
2009	Contractor entered a restricted area and fell through a section of walkway flooring which had been removed
2013	Contractor fell from height during mill repair
2014	Employee drowned while he fell from boat during maintenance work
2017	Contractor killed when load fell from truck onto him
2017	Employee fell 3 metres from a pallet loading area in distribution location
2022	Contractor fell from roof during roof maintenance / repair
2022	Contractor fell from roof during roof maintenance / repair
2022	Contractor fell from roof during roof maintenance / repair. Alpinist fatality due to using one line only and burning the rope while welding
2024	A specialist contractor fell from a scaffold during scaffold construction

Year	Serious Accident Details
2022	Leg fracture after a wooden board on a walkway broke and gave way
2023	A contractor fell 9 metres during roof work sustaining serious leg and back injuries. He was wearing his safety harness and using a safety line, but the length of his attachment rope (to the safety line) was too long
2023	A contract truck driver sustained serious head injuries when he fell backwards while getting down from the body of a flat bed truck

### Requirements for Rule No.12

1. The risk assessments for each location within each company should include an assessment for the presence on a full time basis of a MEWP (purchased or leased).
2. An inspection system for all safety harnesses and associated accessories must be in place at each operation. Where a person working at height needs to move such that he needs to attach and re-attach from an anchor point, then a double leg lanyard shall be used - see photos on page 83.
3. Man grids should be fitted to all hopper and bin openings where there is a risk of a person falling into such an opening. Maintaining “full bins” is not adequate.
4. A policy relating to the use of ladders should be in place covering the issues outlined on the previous page.
5. Where deemed appropriate, safety nets should be used as a means of reducing the risk of injuries involving falls from height during construction /modification/maintenance work.
6. Systems for work on the quarry top, such as barrier systems or bunds must operate to a site specific safe system of work. A safe system of work for the installation / removal of any barrier / protective system. See photo on page 87.
7. All locations must carry out a Risk Assessment related to working at heights and document location-specific risks and control measures. This risk assessment must cover the issue of emergencies and the need to rescue a person working at height, e.g a person who has fallen while attached to a lanyard or who has fallen into a safety net. (Please note in many cases, the use of the local emergency services, once assessed as being likely to react in a timely fashion, may be a sufficient control).
8. Where material is being lifted overhead or where machinery is moving overhead and/or where there is a risk of:
  - Material falling downwards from a manufacturing process onto an area where people may be present.
  - Storage material falling sideways onto a person’s head.
  - Products being loaded falling from the loading vehicle such as a forklift.

Then the use of safety helmets must be a requirement at that operation.
9. Specific training must be given to all relevant employees relating to working at heights.
10. From January 1st 2025, all persons (all employee, contractors, contract truck drivers) working at sites must wear a helmet with a 4 point chin helmet strap as part of their required PPE (see photograph on page 87). Exemptions at sites are only permitted where a risk assessment from a CRH safety professional specifically allows their non-use.

#### 11. Storage and Racks:

- Racks must be installed and maintained according to ISO 15635. When racks are adjusted or modifications are made, there must be a new inspection by a competent person.
- Procedures for securing and preventing storage material from falling must be in place at each location.
- A system must be in place to ensure all damage must be reported immediately to the location manager / nominated person.
- All racks must be annually inspected by a competent and certified person (internal or external).
- When racks are adjusted or modified, then there must be a new inspection by a competent person (internal or external).
- Procedures for securing and preventing storage material from falling must be in place at each location. These procedures must include a requirement that material stored at a height of over 2 metres, over the storage area floor level must be secured (plastic wrapped or strapped). The following are minimum requirements:
  - Corner protection (Does not include cantilever racks).
    - Corner protection is mandatory on corners where motorized site transport / mobile plant are in use.
  - Securing pins
    - All beams must be secured with the official securing pin from supplier.
  - Floor Fixing
    - Floor Fixing is mandatory for every new-build or replaced racking and is advised for current racks.
- A system of procedures and signs must be in place to ensure all damage to racking must be reported immediately to the location manager / responsible person.
- Key technical requirements are outlined in specific CRH Guidelines. See page 4.
- All staff involved in the placing of pallets on racking must receive formal instruction on the key elements of EN 15620 in relation to clearance distances between pallets.
- Storage racks should be labelled with maximum storage capacity.

12. A barrier system, in the adjustable form (see photograph on page 88) must be in place to protect persons having to access the top of cement tanker vehicles for loading purposes.

13. All areas on elevated floors, used for loading and unloading of products should have a revolving cage system or similar in place to prevent the risk of falling. See photo on page 86.

#### 14. Working near water.

Work near water is defined as work where pedestrians may have to work within 2 metres of water or vehicles may have to work within 4 metres of water where the water depth is in excess of 1 metre.

In the case of work near water - each operation where this may apply must have system to cover risk assessment, work practices, PPE and training. A guidance document on work near water is available to offer specific guidance on each of these key points.

15. Grids and flooring on walkways must be fixed by clamps and inspected at least annually by a competent internal person. See accident details on page 83.

16. As a non primary control measure to prevent foot injury from falling objects, locations must introduce a type of safety boot which provides metatarsal protection. This is a form of safety shoe which provides full protection to the front of the foot, not just the area of the foot covered by the traditional toe cap protection safety shoe. This type of safety footwear must be in place (see page 88). An exception to this rule only applies where a risk assessment prepared by an internal safety professional allows the non use of this type of safety shoe. The metatarsal shoe/boot to be used must be the integrated type where the metatarsal protection is part of the boot/shoe. The type of metatarsal shoe/boot with an attached flap which is over the shoe/boot is not acceptable as it may present a hazard where people are accessing stairs or using access ladders.

17. At sites where drivers are required to gain access to the body of the truck body, systems must be in place to reduce the need for such access (onto the truck of the body) or to assist in tasks which require such access. Suitable access platforms are highlighted on pages 89 and 90.

18. There have been a number of incidents in previous years of young persons gaining access, without authorisation, to sites where there are water areas (see page 91). The purpose of such unauthorised access, which usually occurs during summer/school holiday periods, is to use this water areas for swimming purposes. Each site is required to conduct a risk assessment which assesses the risk of trespass onto the site, a guidance note "Tackling Teenage Trespass" is available to assist in the preparation of such assessments. See page 5.
19. Where welding needs to be carried out in an area where helmets must be worn - then a special helmet with integrated welding mask must be used.
20. Where CRH truck drivers are required to access the body of a flatbed truck (Precast/Paving, Lightside) then that driver is required to use a helmet with a strap as a backup measure. This is only a secondary control measure - the priority remains prevention and full fall protection.
21. The use of ladders at any operation should be kept to an absolute minimum.
  - Each site must identify (and have evidence of such identification) where ladders are used on site and assess the possibility of removing the need to use a ladder by replacing with a permanent access system or remove/re-locate the item which is being accessed by the ladder.
  - Where ladders are required, it should not be possible for any person to simply take and use the ladder. Ladders must be locked away with access restricted to those nominated by the site manager.
22. Individual ladder parts of ladders with 2 or more ladder parts that are longer than 3m when retracted, are no longer allowed to be used separately (EN 131).
23. Stairs
  - All stairs should have at least one handrail, if the width of the stairs is greater than 1200mm, then there should be 2 handrails. Steps and landings should offer satisfactory slip resistance to avoid any risk of slipping, the first and last step should be made highly visible. (eg. yellow color).
24. Roof Work / Scaffolding:
  1. All roof work must be carried out where possible using Mobile Elevating Work Platforms (MEWP's) or similar e.g. scaffolding - with standard requirements around training, method statement etc.
  2. All work at height must have a dedicated supervisor. This requirement must be met/fulfilled by the contractor selected to do such work. The principal or main contractor for such work must provide a supervisor, whose sole/only role is to monitor compliance with the agreed safe systems of work around work at height. This supervisor must have formal training in the main ongoing activities e.g. scaffolding.
  3. Where the use of MEWP's or similar is not possible, then safety netting and safety railings/edge protection must be in place (see photo on page 86).  
**Note:** A MEWP will still be required to install the safety netting and for rescue (from the safety netting).
  4. Welding work from rope access can only be carried out:
    - Where the work is directly supervised by a suitably qualified person (in rope work - see last bullet point) and subject to an agreed method statement.
    - Where personnel involved have received certified training in welding.
    - The person conducting the welding / abrasive wheel work has a total of 2 (not including the positioning rope) secure attachment points in place.
    - Where each of the lines is fully separated and each line is covered by fire resistant material/protectors.
    - The usual fire precautions e.g. fire watch etc. are in place.
  5. In addition, all contractors involved with rope work / harness access, must have training linked in terms of syllabus to IRATA (Industrial Rope Access Trade Association) or national / regional equivalent.



Additional securing hooks for harness use - installed where required.



Fatal Accident 2011:  
Construction Project: contractor fell while crossing a wall during the construction of an extension.



Group Fatal Accident - Case Study 2008:  
Contractor fell from upper level while descending. Risk assessment identified the need for a MEWP (Mobile Elevating Work Platform), but none was used.



Fatal accident (non CRH site):  
Worker fell 14 metres when a section of walkway grid gave way. The grid securing bolts had become loose, over a period of time, due to the nearby vibrating screen.



**Fatal Accident - March 4, 2022:**

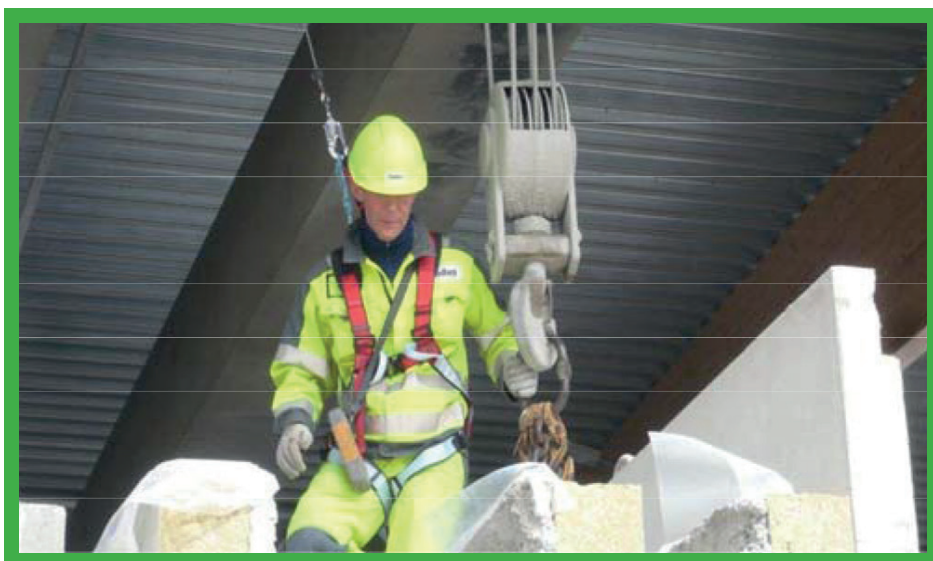
*2 contractors were in the process of removing the metal roofing to prepare the structure for demolition when they fell approximately 8 metres from the roof to the floor below. Both men were wearing a safety harness but these harnesses were not secured.*



**Fatal Accident - May 11, 2022:**

*Roofing contractor tripped on a roof skylight and fell through the skylight about 6,5m to the floor.*





*Safe access system for securing and detaching lifting slings*



*Safe access for attaching lifting hooks.*



*MEWP's in operation in brick manufacturing and cement production.*



*March 25th 2017:*

*Employee loaded a pallet into the unloading area on the 1st floor. When trying to secure some of the material on the pallet, he suffered a medical event and fell over the unguarded edge.*



*A revolving cage system which offers protection against falls.*



*Barrier system at quarry face.*



*Use of material bunds at the quarry face.*



*Man grids in place.*



*Safety Nets in use.*



*System at Finnsementti to protect the tanker driver during loading. This system has to be adjusted in terms of length and height to cover all vehicle sizes.*



*August 2017 accident: contractor suffered serious foot injury after blocks landed on area behind the steel toe cap shoe and struck the area that would have been covered by a metatarsal shoe or boot.*



*A Meta Tarsal Boot.*



*A Meta Tarsal Shoe and boot.*





*June 2017.*

*A truck driver received fatal injuries when he attempted to gain access to the flat body of the truck (to secure the load).*

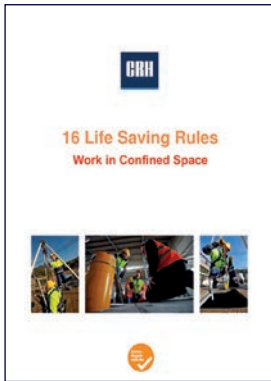
*It appears that from the ground, he placed his left foot on one of the tyres and took hold of a handle which was designed into one of the precast products. As he tried to pull himself up, the pulling force caused the precast element to be pulled down on top of the driver, who despite wearing a helmet suffered face and head injuries as he fell backwards.*





*Requirement 18 on page 81 refers to the issue of preventing trespass into sites in order to use our water areas for recreational purposes.*





### Introduction

In terms of the risk management of work in confined spaces, it was agreed that 2 key risk management approaches would be taken:

1. The definition of confined space, will be taken in the context of elimination of hazards, that is:
  - Hazard of engulfment - work in silos, work in excavations.
  - Hazard of fire/explosion - contact with underground services or overhead power lines.
  - Hazard of oxygen depletion.
  - Hazard of exposure to toxic gases.
  - Hazards of falling objects.

Some confined spaces are fairly easy to identify, eg enclosures with limited openings such as:

- Storage tanks
- Silos
- Reaction vessels
- enclosed drains
- Sewers

Others may be less obvious, but can be equally dangerous, for example:

- Open-topped chambers
- Combustion chambers in furnaces etc.
- Ductwork;
- Unventilated or poorly ventilated rooms

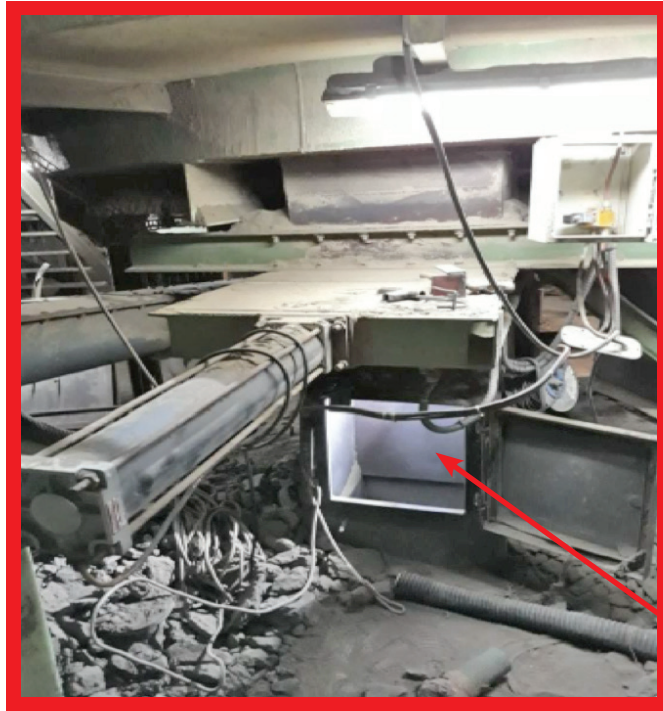
2. All risk assessments must be reviewed to ensure the following issues have been included:
  - The need to eliminate work in confined spaces, through design and procedure.
  - Risk assessment and safe systems of work for such tasks to cover:
    - Risk of engulfment.
    - Risk of fire / explosion.
    - Risk of oxygen depletion.
    - Risk of exposure to toxic gases.
    - Risk of falling objects.
  - Formal planning and resourcing of such work.
  - **NO** lone working.



## Requirements for Rule No.13

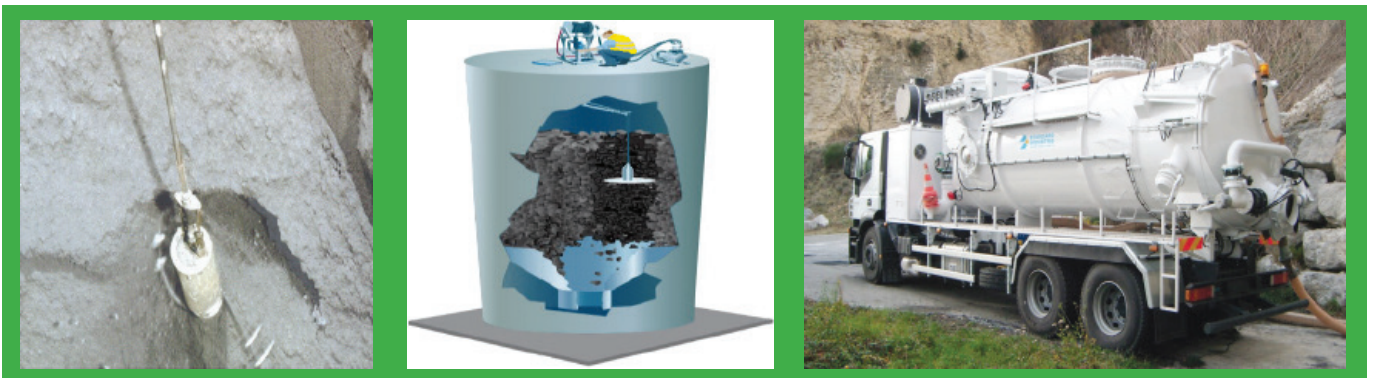
1. All locations must have a documented confined space entry policy and supporting rules for each confined space identified on site. All confined space entry points shall be identified and properly labelled as such. All confined spaces identified by the site level risk assessment must be identified by means of signs (see photos below). If as part of the confined space risk assessment, areas which are identified as confined spaces, but are not intended to be entered should be sealed off or have entry (into that space) restricted.
2. Employees must seek prior authorisation to enter a confined space and documented authorisation procedures must form part of each location's confined space entry policy.
3. All confined space permits/authorisations must include a rescue plan (see incident on page 95). The rescue procedure outlined should be tested with emergency drills at least twice per year. All employees, who may be involved in confined space work, must be trained in the confined space entry rules including rescue / emergency procedures. Annual emergency drills should be carried out where specified in the site risk assessment.
4. Shoring or appropriately designed sloping must be provided for all excavations over 1.5m (5 feet) in depth (where national legislation requires shoring at depths less than 1.5 metres, then that national requirement must be met).
5. For any work involving cleaning/clearing silos: the entry of persons into the silo is of a last resort and must be preceded by external cleaning mechanisms (see Page 94) - Persons can only enter a silo when written (not verbal) permission is provided by the section manager.
6. For all work in confined spaces (where identified as a requirement of the risk assessment ) the wearing of a helmet with straps is mandatory.





*October 31st 2017:*

*Contractor involving in cleaning entered a duct, when the air slide between the duct and the hopper overhead was opened in error - he was engulfed and fatally injured.*



*Fatal Accident 2007:*

*The deceased was attempting to clear a raw meal silo blockage, by using a makeshift "bridge" to enter the silo. While working from the bridge, material from overhead came loose, struck the bridge causing the victim to fall. He suffocated within the material.*



*Fatal Accident 2009:  
Trench (2.1m) collapsed no shoring/support.*



*Incident 2011:  
A specialist contractor was engaged to carry out a general inspection of a rail wagon used for storing waste solvent. During this process the worker showed signs of being overcome by fumes - the person observing the work from outside entered the tank to assist and also experienced difficulties - a second observer activated the rescue plan and both men were safely removed and treated.*

**Introduction**

**Notes:**

- Lone working refers to a situation where a person is the only person on site at an operation i.e there is no one else on site.
- Remote working relates to a situation where a person is not the only person on site but he is working remote from others e.g drilling personnel.

Lone working is not permitted at company operational sites unless a risk assessment has been carried out by the company safety personnel or other qualified person.

A risk assessment must be carried out for all those working remotely and that risk assessment must assess:

1. The health of the person involved - has the person any medical condition which warrants additional monitoring measures when they are working remotely.
2. Communication - that this person has a means of communication e.g a mobile phone available to him so he can contact other persons on site.
3. Has the person working alone or remotely received detailed work instructions which tell him/her what they can and cannot do.

**Example:** A worker is required to open an operational site at 6 am and to start certain machinery. A procedure must be put in place to make sure that points 1 to 3 above are covered and in this case the worker must be issued with and trained on a procedure which clearly states what he can and cannot do. For example in this case, the procedure could state that if a fault develops in the machinery (which he has started) then he cannot attempt to rectify that fault unless there is a second person in attendance.



*Man Down Unit.*



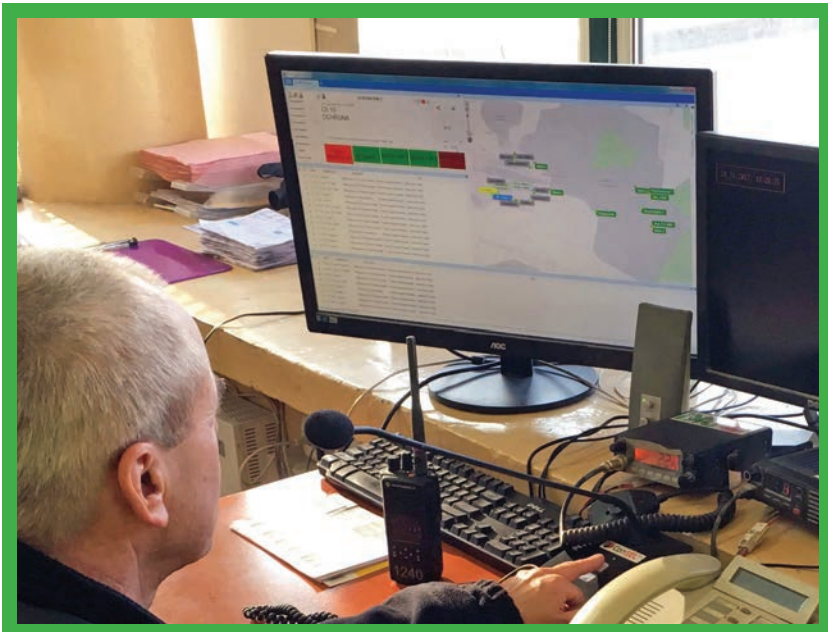
*On site Receptor (top box).*

**Requirements for Rule 14**

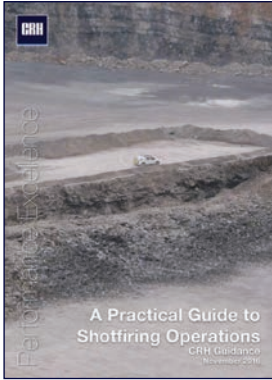
1. All lone and remote working must be identified and a formal risk assessment completed for such work.
2. The need for additional training for those working in lone or remote work must be considered in the risk assessment for that work.
3. All 2 way analogue radios should be considered for replacement with digital radio systems (with integrated man-down features).



*Man Down System.*



*On site monitoring of lone/remote worker.*



**Introduction**

There have been a number of flyrock incidents in group companies, any of which could have resulted in fatal injuries to employees, contractors and indeed members of the public.

In order to eliminate such dangerous occurrences, the following systems are required for each drilling and blasting operation.

**Drilling**

- Each driller must have completed a training course, which focuses on basic shotfiring procedures i.e burden and spacing considerations, causes of flyrock, dangers of clay in quarry faces, dangers of falling from the face, dangers from angled holes.
- Each drill rig and associated compressor must undergo a full detailed inspection at least once per year.
- Each compressor system must be fitted with a device to restrain the compressed air line in the event of it coming loose from the compressor.

**Blasting**

- All those involved in blasting operations must receive specialised training in the use of explosives.
- Key parameters such as burden, spacing, amount of explosive, hole depth and angle must be recorded for each blast.
- A risk assessment must be completed for each blast and a “ Danger Zone “ must be determined and recorded in writing for each blast.

A guidance document entitled “ A practical guide to shotfiring operations” has been designed to assist operations in implementing these requirements.

**Requirements for Rule No.15**

1. Companies should now arrange to have in place system for the formal training of all those involved in drilling and blasting. Systems to record key data for both drilling and blasting should now be introduced.
2. Each operation, where blasting takes place, must have a documented site specific “safe blast policy” and implementing rules.
3. Operating records of all blasts must be maintained.



*See also Rule No.12*



*Group Incident - Case Study 2001:*

*Fly-rock from the blast travelled some 300 metres causing extensive damage to quarry equipment and a nearby factory (fortunately no injuries).*

*Incident - Case Study 2007:*

*Fly-rock from the blast travelled some 100 metres onto a nearby public road and struck a school bus and another vehicle injuring 4 people (3 of whom were schoolchildren).*



### Introduction

This is a broad based rule covering the required safety management principles around process safety. Rule 16 deals with the following:

1. Prevention of contact with hot material, gases and surfaces.
2. Prevention of Fire & Explosions.
  - a. Including the prevention of overpressurisation in vessels.
3. Process: Change management.
4. Storage, handling and process use of hazardous substances.

#### 1. Prevention of contact with hot material

A risk assessment of the overall process must identify and record each potential discharge point and they define the:

- Operational controls
- Fail safes
- Work practices

to be applied to prevent discharges and protect personnel from exposure to hot material, gases and surfaces.

As a minimum the risk assessment must consider, where relevant, the following facilities and processes including all subcomponents within that process:

#### Cement Manufacturing:

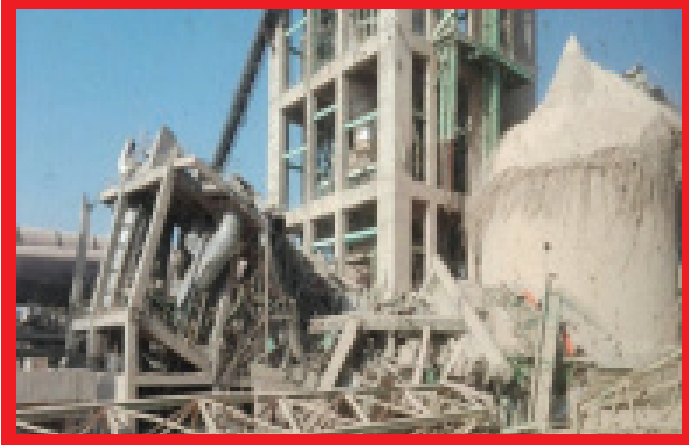
- Raw mill systems
- Pre-heaters and pre-calciners
- AFR feeding systems (kiln feeding)
- Rotary kiln – kiln lines
- Clinker cooler and clinker handling systems
- Cement mills.
- All activities involving the removal of:
  - cyclone blockages
  - coatings
  - dust settlings
  - cooler blockages
- Removal and handling of samples of hot meal and bypass dust
- Planned kiln start up and shut down
- Any maintenance or inspection activity which involves removing equipment that may expose people to hot material or gases, such as kiln inlet probes, cooler cameras, air blasters etc.





*Heat Resistant Suits.*





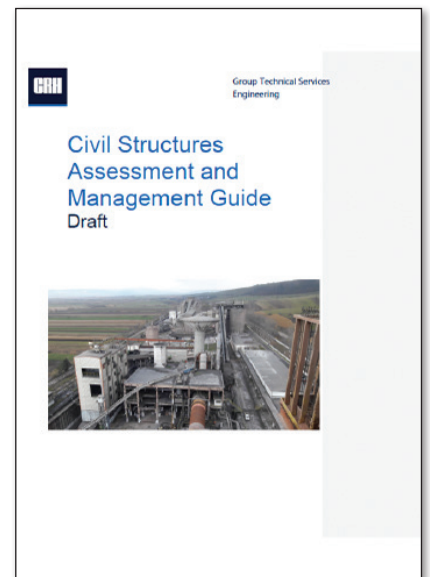


The **VDZ Guidance Document** (see page 100) must be used as a reference document when conducting and reviewing risk assessments relating to work in preheater towers and other areas where contact with hot material or dust is a risk. This guidance document covers the issue:

- Blockage detection / clearing blockages.
- PPE selection.
- Emergency procedures / design of escape routes etc.
- Sampling.

**Ancillary Services:**

- Gas bypass and dust handling systems.
- Hot gas generating, extraction and exhaust systems.
- Boiler and/or heat exchangers of heat recovery systems.
- Coal mills and other fuel preparations systems.



**Bitumen: Handling & Use**

- Transfer pipes and valves.
- Discharge pipes and valves.

**Lime Manufacture:**

- Heating
- Cooling
- Hydration

COAL AREA SAFETY AUDIT 2019					
Area	Findings	Priority	Responsible	Due Date	Completed
General	...	...	...	...	...
Structures	...	...	...	...	...
Electrical	...	...	...	...	...
Process Safety	...	...	...	...	...
Occupational Health & Safety	...	...	...	...	...
Environmental	...	...	...	...	...
Other	...	...	...	...	...

*Coal Plant Safety Checklist- see requirement 18 on page 109.*

ALTERNATIVE FUEL SAFETY AUDIT 2019					
Area	Findings	Priority	Responsible	Due Date	Completed
General	...	...	...	...	...
Structures	...	...	...	...	...
Electrical	...	...	...	...	...
Process Safety	...	...	...	...	...
Occupational Health & Safety	...	...	...	...	...
Environmental	...	...	...	...	...
Other	...	...	...	...	...

*Alternative Fuel Safety Checklist- see requirement 18 on page 109.*

## 2. Prevention of Fires & Explosions

- Each operation will be required to develop a dedicated risk assessment which identifies potential areas of fire and explosive risk within their operations.
- The risk assessment will have to cover:
  - Identification of situations where the development of an explosive atmosphere is possible and the risk control measures required.
  - Control measures in place to prevent fire arising out of maintenance activities:
    - Oxy-Fuel and Electric arc welding.
  - An assessment of current fire detection and fire suppression systems.
  - An assessment of current extraction and ventilation system to prevent the build-up of an explosive atmosphere.
  - Assessment of current measures in terms of fighting a fire including personal protective clothing and equipment.

**Silo pressurisation:** There have been a number of incidents where overpressurisation in silos has resulted in parts such as filters being blown some distance from the plant. Blocked filters and damaged or under-rated relief valves have been some of the causes of such accidents. The MPA ( Mineral Producers Association ) guidance note in relation to the prevention of overpressurisation. ***“Guidance to prevent overpressurisation of storage silos during the delivery of (non explosive) powder in the cement, concrete and quarrying industries”*** provides specific information to assist in the development of these risk assessments. As a minimum each silo, which is capable of being pressurised, must be fitted with:

- High Level Alarm.
- Pressure Relief Valve.
- A means to ensure the level of available capacity within the silo can be determined.
- Pinch valve on filling pipe to prevent back flow of material.
- The use of chains to secure the filter (as a final backup in the event of failure of primary measures) should also be considered.

## 3. Process: Change Management

A system must be in place at each operation to ensure that changes or modifications to the manufacturing process and ancillary services which contain, process or transfer materials at high temperature must be subjected to a risk assessment and risk controls defined and communicated prior to the change or modification being performed.



*Silo Filter.*

*Pressure Relief Valve.*

Year	Serious Accident Details
2023	An employee lost his eye when he was struck by a ricochet when using an industrial gun to clear a blockage at a cement operation
2023	An employee lost an eye when struck in the face by cold raw meal which struck him after a blockage in the PHT was cleared



*Incident - Near Miss 2019:  
Filter blown onto nearby area*



*Last line of defence:  
Filter chained to silo structure.*



*Whipcheck Safety Cable.*

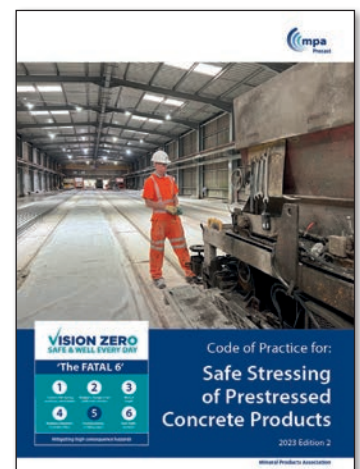
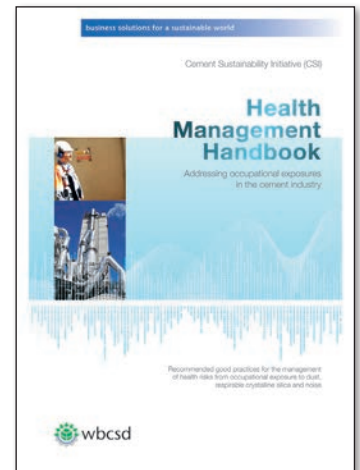
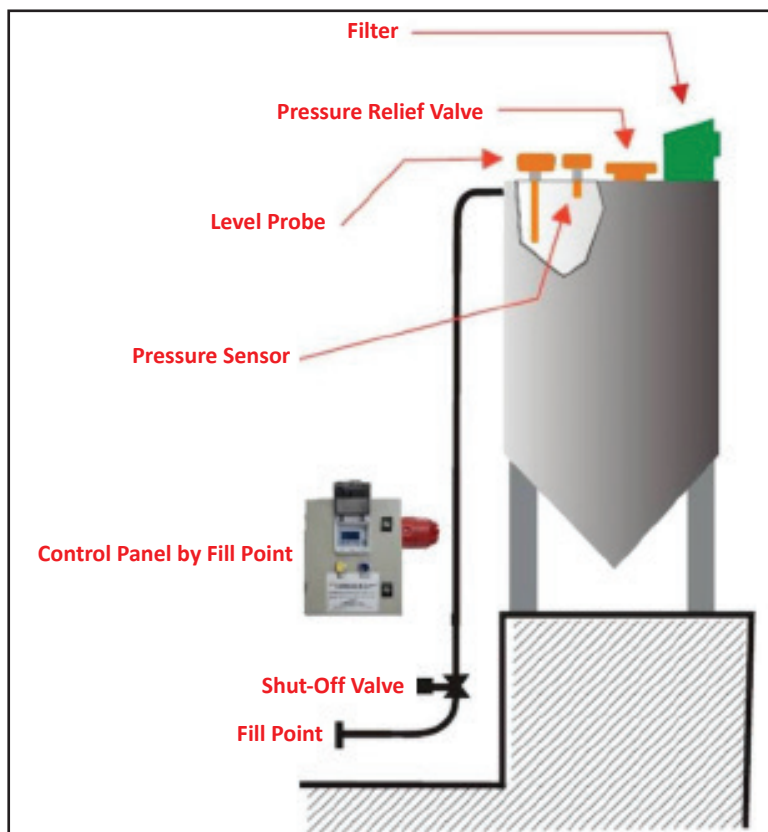
**4. Storage, handling and process use of hazardous substances**

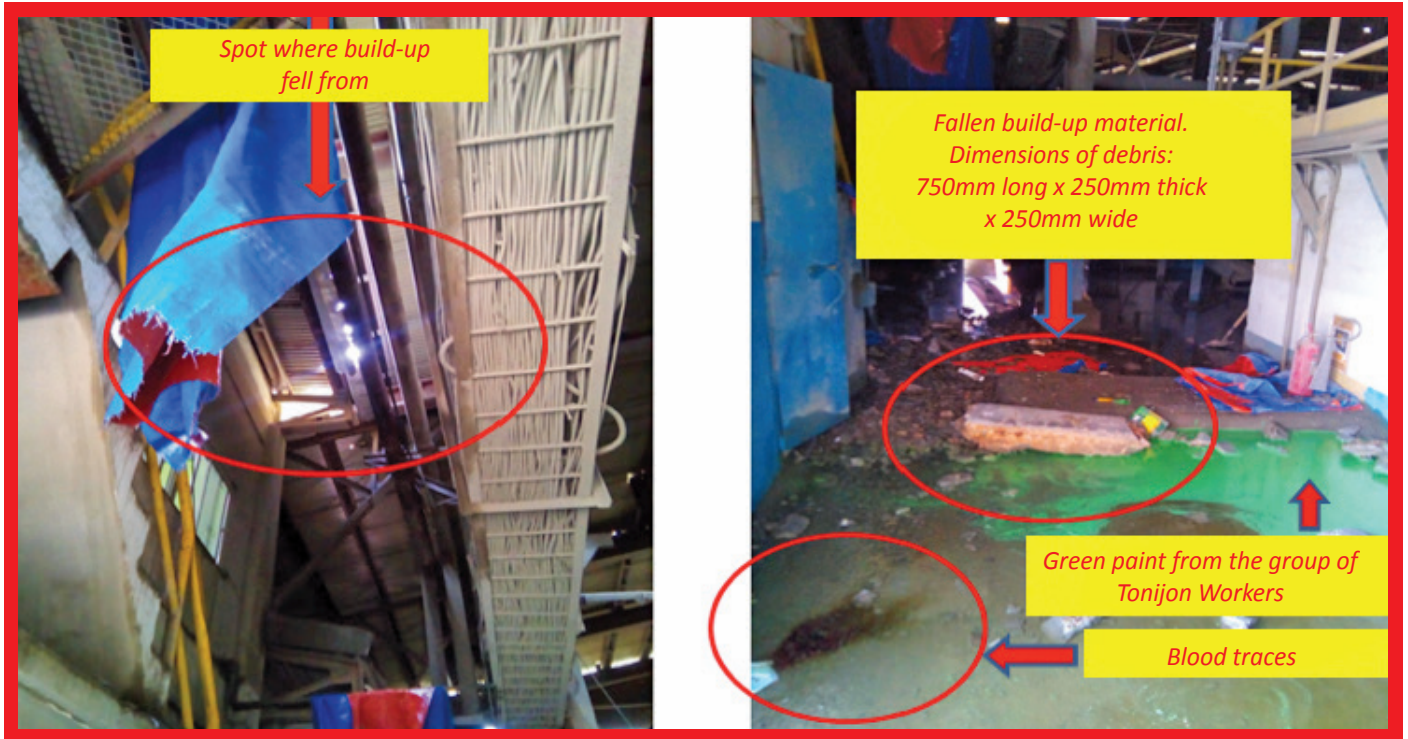
The requirements here focus on hazardous substances in use at our operations, ranging from various types of alternative fuels, some admixtures, bitumen and process gases.

For each type of hazardous material, a dedicated risk assessment must be developed covering the following:

- Storage safety requirements:
  - Location.
  - Storage area infrastructure/design.
  - Condition of tanks, drums etc / Required inspection regimes.
  - Stock control.
  - Site security.
  - Ventilation and extraction requirements.
  - Earthing.
  
- Handling
  - Material handling requirements.
  - Occupational Health risks.
  - PPE requirements.
  - Training and competency.
  
- Use
  - Risk of Fire:
    - Risk of incorrect fire fighting medium being used.
  - Risk of explosion.
  - Required process parameters and risk when those paramaters change.

A CRH safety guidance note relating to the safe handling, storage and use of alternatives fuels is available.





September 2016:

2 contract workers were taking shelter during a storm when a portion of the roof's center gutter, about 6 meters above their location, partially collapsed and released hardened cement material deposits to fall. A large piece of debris, approximately 750mm long x 250mm thick x 250mm wide struck the deceased on the back of the head under his helmet, knocking him down unconscious. He later died of his injuries.

#### Requirements for Rule No.16

1. A risk assessment of the overall process must identify and record each potential discharge point and the define the
  - Operational controls
  - Fail safe mechanisms
  - Work practices
 to be applied to prevent discharges and protect personnel from exposure to hot material, gases and surfaces.
2. The VDZ guidance document (see page 100) must be used as a reference document when conducting and reviewing risk assessments relating to work in preheater towers and other areas where contact with hot material or dust is a risk. This guidance document covers the issue.
3. Each operation will be required to develop a dedicated risk assessment which identifies potential areas of fire and explosive risk within their operations. Guidance notes on Alternative Fuel Fire Risk Management and Coal Risk Management are available on the Safety Sharepoint - see page 12.
4. A system must be in place at each operation to ensure that changes or modifications to the manufacturing process and ancillary services which contain, process or transfer materials at high temperature must be subjected to a risk assessment and risk controls defined and communicated prior to the change or modification being performed.
5. For each type of hazardous material, a dedicated risk assessment must be developed covering the issues of storage, handling and use.
6. The MPA (Mineral Producers Association) guidance note in relation to the prevention of over-pressurisation. ***"Guidance to prevent over-pressurisation of storage silos during the delivery of powder in the Cement, Concrete and Quarrying Industries"*** must be used in the development of relevant risk assessments.

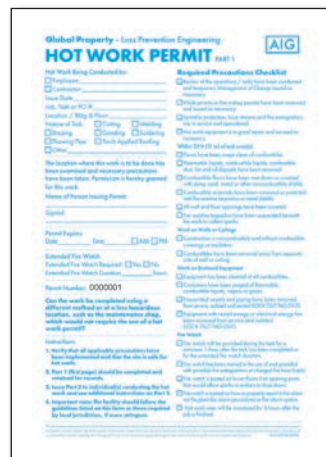
7. All operations where prestressing of cables is an element of manufacture must:
  - Fulfil the requirements of the MPA (UK Minerals Producers Association) guidance note “ The safe stressing of prestressed concrete products “. In particular, the use of pre-start check procedures (before pre-stressing occurs) must be in place.
  - Complete on an annual basis, the BPA (British Precast Association) “ Audit checklist for pre stressing operations”.
8. Cement tanker discharge pipes have the potential to disconnect from the plant if the retaining clasp fails. With no secondary catchment device to hold the pipe, it can whip due to the pressure in the pipe, with the potential to cause serious injury to anyone in the vicinity. To protect any this risk, a whipcheck safety cable (see photo on page 105) must be in place at the discharge point(s).
9. Occupational Health:
  - Where dust masks are issued to personnel, as a control measure to reduce exposure to dust, then each such employee should have an individual face fitting for that dust mask, to ensure a correctly fitting and suitable dust mask is made available.
  - Where the risk of Legionnaire’s disease is present at a location (risk in water systems incorporating a cooling tower or evaporative condenser, humidifiers and water misting systems) then a risk assessment seeking specialist advice where deemed necessary by the site must be completed.
10. Structural Safety: Each operating company must have in place an overall risk assessment which covers the issue of structural safety at it’s operations. This opco level risk assessment should cover:
  - Reference to (and the presence of) an internal database which includes all structural safety issues raised previously from internal inspections and external inspections e.g insurance company surveys.
    - This internal database must detail remedial measures in place for each structural safety issue raised.
  - An overall approach to an ongoing program and schedule of inspections of structures within the opco.
    - CRH Group Technical Services have produced a guidance note on Structural Safety.
11. Housekeeping: all sites must have procedures in place to demonstrate a systematic approach to housekeeping. This overall program should cover:
  - Standard required/expected in terms of housekeeping at the site.
  - A fugitive dust control assessment and corrective action program.
  - Clear area (of the operation) line management responsibility for housekeeping.
12. On Pressure vessels / air blasters, each air blaster shall be tightly secured by installing a restraining cable. They shall be equipped with at least one quick exhaust valve, one safety relief valve and one manual ball valve on the body of the tank. The air supply isolation valve should be lockable. This should be in place by March 2020.
13. To prevent the risk of fire where a misaligned conveyor belt creates friction with a conveyor drum - leading to a risk of fire - rotational switches must be fitted to belts conveying heated material. The purpose of the rotational switch is to indicate a mis-aligned/mistensioned belt, which could contribute to a fire.
14. Each year CRH arranges for a program of site visits by engineers from our Insurance company. As part of this survey process , the survey engineers issue a series of recommendations. Where a RED (Critical) level recommendation is made by an engineer as part of this survey , the Plant manager of the operation will be required to inform the relevant managing director (Company or Country Level) within 2 working days (after the close out meeting between the site and survey engineer).
15. Fire/Explosion safety. Each cement and lime operation must appoint an “Atex Owner “. This person must be a senior maintenance or production manager within the individual cement or lime operation (see Guidance note reference on page 7).

## MANAGEMENT PROGRAMS

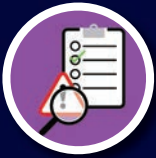
Element	Excellent	Good	Adequate	Nearly Adeq.	Inadequate
Emergency Organization & Planning					
Self-Inspection Program					
Impairment Procedures					
Contractor Management					
Hot Work Permit					
Smoking					
Housekeeping					
Planned Preventative Maintenance					
Management Interest					
Site Level Business Continuity Planning					

16. Fire/Explosion safety. Each cement and lime operation must complete an assessment of all conveyor belts to identify conveyor belts deemed to be critical (see Guidance note reference on page 7).
17. Fire/Explosion safety. Each maintenance operator must complete the e-learning training package entitled “ Critical Conveyor: Fire Prevention” (see Guidance note reference on page 7).
18. Each cement and lime plant must complete a gap analysis at their plant using a) the AF Safety Checklist and b) the Coal Safety Checklist (see page 103). This gap analysis, which should be completed using external assistance from a fire engineer, must be completed by May 1st 2022.
19. A documented Management of Change (MOC) process must be in place at each operating company. An MOC risk assessment must be developed and submitted for all Capex applications. In addition an MOC risk assessment must be completed for:
  - Newly installed equipment / machinery (including new fuel or energy sources )
  - New waste streams of alternative fuel (to include fire risk assessment)

Any other significant change that has the potential to alter existing or introduce new Health & Safety Risks.







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