Learning from Past Accidents

2013
SELECTED CONSTRUCTION WORKPLACE ACCIDENTS IN 2013
Selected construction workplace accidents 2013

FALLS FROM HEIGHT
Formwork Accident in March 2013

A worker was carrying out formwork erection on the 4th storey of a block under construction when he fell off the edge of the formwork and landed 9 m below. The worker was pronounced dead by attending paramedics. Investigations are ongoing.

The worker fell off the edge of the formwork and landed 9m below.
Worker fell over building edge – 7 Jul

On 7 July 2013, a worker was found dead on the ground floor of a building under construction. He had been tasked to remove some concrete at the building edge at the 8th storey, in preparation for a window frame installation at a later date, where he most likely fell over. A set of barricades which had been used to guard the open side of the building edge where the deceased worker was working, was found to have dropped onto a catch platform erected at the 3rd storey.

Figure 1: Overview of the accident scene.
Worker fell during the installation of a roof canopy – 7 Jul

On 7 July 2013, a worker was found unconscious below a roof canopy on which he had been working. He had earlier been tasked to install roofing sheets over the canopy. The worker was immediately conveyed to the hospital, where he later succumbed to his injuries.

Figure 1: Overview of the accident scene.
Worker fell to his death during installation of tower crane tie-back – 9 Jul

On 9 July 2013, a group of workers, including the Deceased, was tasked to install the tie-back of a tower crane to a building under construction at the 14th storey level. In the midst of the work process, the worker lost his footing and fell to his death.

Figure 1: Tie-back of the tower crane at the 14th storey of the building under construction
Worker was working at the 6th storey of an uncompleted building. During a concreting operation, he was rectifying a leak in a column formwork when he lost his balance and fell over the edge of the building. He was pronounced dead by the attending paramedics.
Worker fell from balcony while installing sliding door – 26 Sep

A worker was tasked to install a sliding door between the living room and the balcony of a penthouse unit on the 20th storey of an uncompleted building. While preparing for the installation work, the worker fell down together with a scaffold to the ground level and was killed on the spot.

Figure 1: Illustration of the accident scene.
Worker killed when he fell through fragile surface – 2 Oct

Hazards of working on working Fragile Surfaces

There were two cases where workers fell through fragile surfaces while working at the ceiling buildings undergoing renovation. One of them died while the other was seriously injured. In both cases, the openings at the ceiling were covered with fragile panels such as ceiling boards. Fragile surfaces may not be visually obvious to workers and can pose undetected hazards.

Figure 1
Figure 2

Figures 1 and 2: Photographs showing the overview of the two accident scenes.
Summary of Recommendations for Works at Heights* (1/4)

Industry stakeholders undertaking similar work activities are advised to consider the following:

1. A proper and thorough risk assessment must be conducted prior to the start of any work. All potential hazards are to be identified and proper risk control measures put in place. For e.g.:
   - Where worker needs to work near the edges, the hazard of falling from height can be managed by putting in place suitable fall prevention and protection measures such as effective edge protection and personal fall arrest system;
   - When working on canopy roof, the canopy roof sheet that could give way under the weight of a person should be identified and crawl boards provided where necessary to distribute the weight across a larger surface or load bearing structure;
   - In the case of the worker installing tower crane tie-back (9 Jul), the risk of workers falling from height should be identified and suitable fall prevention and fall protection measures should be in place such as safe work procedures and adequate fall protection equipment.
   - In the case of the worker falling off building edge when rectifying formwork (2 Aug), the risk of formwork and concreting workers falling from height during concreting operation must be identified and a Fall Prevention Plan (FPP) established and implemented before allowing the work at height to commence.
   - In the case of the worker falling from balcony while installing sliding door (26 Sep), the risk of workers falling off the edge of the building should be identified and a FPP established and implemented before work commencement.
   - Fragile surfaces such as ceiling board fragile panel that could give way under the weight of a person should be identified and preventive measures implemented.
Summary of Recommendations for Works at Heights* (2/4)

2. An FPP must be prepared for the purpose of reducing or eliminating risk of falls. The plan should ensure that all fall prevention and protection measures and methods have been taken prior to commencement of working at heights.

3. Establish and implement a Permit-To-Work (PTW) system for every WAH activity where any worker is liable to fall from a height of more than three metres. Remind workers to anchor their fall arrest safety harnesses to the lifeline at all times when working at height.

4. Install suitable temporary edge protection (e.g. by means of a guard rail or safety barricade) at all open sides of a building under construction to prevent workers falling from height.
   - In cases where the work requires the temporary edge protection to be removed to facilitate access, equip each worker working at height with either a travel restraints system (designed to prevent a person from falling through the open side), or a fall arrest system (designed to stop a person from falling an uncontrolled distance). A personal fall arrest system includes the use of a full body harness and lanyard along with the necessary connectors and energy absorber. The fall arrest system can be effective only if the lanyard is properly connected to a secure anchorage point.

5. Suitable signs should be erected to warn persons of fall from heights hazard and to convey the need for personal protective equipment when working near fall hazard areas.
   - In particular, fragile surfaces such as plastic skylight panels should be identified and labelled clearly to prevent persons from stepping onto it, and where practicable, barricades should be installed.

^ Note: W.e.f. 1 May 2014, as set out in Part III of the Workplace Safety and Health (Work at Heights) Regulations, the implementation of a permit-to-work (PTW) system is required for any hazardous work at height carried out at a workplace.
6. Planning and effective communication are critical to ensure that the correct work method is adopted by all workers during the work process. This includes safe means of access to the work area either by an access scaffold or mobile elevating work platform, and the use of suitable fall prevention equipment, such as fall restraint system or self retracting lifelines.

7. Develop Safe Work Procedures (SWP) and always follow the SWP.
   - When working with tower crane, the manufacturer’s manual for the tower crane should be referred to for the correct procedures for the safe installation, repair, alteration and dismantling of the crane. Where the manual is not available, the installation, repair, alteration or dismantling of any crane should be placed under the immediate supervision of an Authorised Examiner.

8. There should be adequate supervision on site to ensure that workers practise the proper and correct measures while performing work at heights. The supervisor must be adquately trained and familiar with the work processes to manage potential hazards at the work site.
   - A competent scaffold supervisor should be appointed to oversee scaffolding works such as dismantling, repositioning or alteration to ensure that such works are carried out properly and safely
   - Workers working with formwork should be supervised by a formwork supervisor who should be stationed on-site to:
     • ensure that RA has been carried out and the FPP implemented
     • ensure that the WAH permit has been received and duly authorized
     • confirm that the site condition is safe for work (e.g. safe means of access and egress is available, work site is sufficiently illuminated for work at night)
     • confirm adherence to the SWP for the formwork erection task
Summary of Recommendations for Works at Heights* (4/4)

9. Temporary work stoppage should be considered whenever weather conditions influence the safety of the workers working outdoors such as on wet/ slippery surface or expose to lightning risk. Supervisors could also be empowered to manage the work and make decision on site when condition compromises safety.

10. Provide workers with a means to safely getting to and from the work site (i.e. the formwork in this case).

11. Ensure that workers deployed to work at height:
   - are supplied and equipped with the appropriate personal protective equipment (PPE) for the work. They should be educated on the correct use of the PPE. For e.g. personal fall arrest devices should be anchored at all times during the work duration.
   - Have received adequate safety and health training and is familiar with the (i) hazards of working at height, (ii) precautions to be taken, and (iii) safe and correct use of the travel restraint/fall arrest system

12. Ensure good housekeeping is actively practiced at construction sites as this can significantly reduce incidence of slips and trips which may lead to a fall with serious consequences (especially if one is positioned near the edge of a building)
Further Information

1. Workplace Safety and Health Act (Chapter 354A), click here
2. Workplace Safety and Health (General Provisions) Regulations, click here
3. Workplace Safety and Health (Risk Management) Regulations, click here
4. Workplace Safety and Health (Operation of Cranes) Regulations 2011, click here
5. Workplace Safety and Health (Work at Heights) Regulations 2013, click here
6. Workplace Safety and Health (Construction) Regulations 2007, click here
7. Workplace Safety and Health (Scaffolds) Regulations 2011, click here
8. Code of Practice on WSH Risk Management, click here
9. Code of Practice for Working Safely at Height, click here
11. WSH Council’s Work at Height Kit, click here
12. WSH Guidelines – Personal Protective Equipment for Work-At-Heights, click here
13. WSH Guidelines – Anchorage, Lifelines and Temporary Edge Protection Systems, click here
14. WSH Guidelines – Working safely on roofs, click here
15. SS 508: Parts 1 to 4: 2004 - Graphical Symbols - Safety Colours and Safety Signs
16. SS 528: Parts 1 to 6: 2006 - Specification for personal fall-arrest systems
17. SS 570: 2011 Personal protective equipment for protection against falls from height – Single point anchor devices and flexible horizontal lifeline systems
18. MOM Circular on Safety Requirements for Formwork Structures, click here
19. Health and Safety Executive (HSE) UK. Health and safety in roof work and Falls through fragile roofs
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COLLAPSE/FAILURE OF STRUCTURE & EQUIPMENT
In June, an accident occurred during the demolition of a building. An excavator was being driven over the building’s first storey slab to transport debris into a skip bin when the slab gave way. The excavator then toppled on its side into the basement level, trapping the operator inside the operator’s cabin. The operator was subsequently extricated and pronounced dead on the spot.
Recommendations*

Stakeholders involved in similar work situations can undertake control measures such as the following to prevent recurrence:

1. An adequate demolition plan is important to ensure that demolition works are carried out safely. It should be prepared with findings from a detailed survey (carried out by a Civil & Structural Professional Engineer) of the building to be demolished and its vicinity. Particular attention should be given to special features and dangerous elements, such as structures or areas that are unstable or have deteriorated in strength.

2. Clearly demarcate and restrict entry of heavy machinery to areas that are unstable or unable to support the weight of the machinery that is being operated. Additionally, workers must be notified of such areas and instructed accordingly, as these areas may not be visually distinguishable from normal work surfaces.

3. An adequate risk assessment must be conducted before any work to identify all hazards and the risks involved. Control measures and safe work procedures must be established and implemented to make the work safe. All risks identified in the risk assessment must be addressed and the selected control measures implemented.
Further Information

1. Workplace Safety and Health Act (Chapter 354A), click here
2. Workplace Safety and Health (General Provisions) Regulations, click here
3. Workplace Safety and Health (Risk Management) Regulations, click here
4. Workplace Safety and Health (Construction) Regulations 2007, click here
5. Code of Practice on WSH Risk Management, click here
6. Technical Advisory for Demolition, click here
7. Compliance Assistance Checklist (Demolition Work), click here
8. SS 557 : 2010 - Code of Practice for Demolition (Formerly CP 11)
Fallen Tree Led to Death of Excavator Operator – 22 Sep

The worker was using an excavator to clear undergrowth on a plot of land when a tree fell onto the excavator and crushed the excavator cabin. The worker was trapped within the excavator cabin and was subsequently pronounced dead after being extricated from the damaged excavator.

Figure 1: The excavator operator was killed when a tree suddenly fell and landed on the cabin of the excavator.
Recommendations (1/2)*

Industry stakeholders undertaking similar work activities are advised to consider the following to prevent a recurrence:

1. Conduct a thorough Risk Assessment (RA) in consultation with a qualified tree specialist on the impact of work activity on trees in the vicinity prior to starting work. Site-specific hazards (taking into consideration the type of tree as well as environmental conditions such as weather, terrain, soil condition, etc) are to be identified and control measures put in place to reduce all risks associated with the work activity. In this case, the risk of trees falling while clearing undergrowth in the vicinity of trees needs to be addressed. If the risks cannot be reduced to a reasonably practicable level, the work must not proceed until suitable arrangements are in place.

2. Communicate all identified hazards and risk control measures to each worker involved in the tree work, for example, during toolbox meetings and immediately prior to work commencement.

3. Allow only workers who are fully trained in the use of the on-site equipment and machines (e.g. chainsaw and excavator) and competent for the task to proceed with the tree work.

4. Ensure that workers are supplied and equipped with the appropriate personal protective equipment (PPE), for e.g., hard hats, safety spectacles, safety gloves and safety boots, for tree work. Provide training on the correct use of the PPE.
Recommendations (2/2)*

5. For landscaping work that involves the felling of trees:
   - Develop safe work method (e.g. by pruning the tree and making initial cuts before falling the tree) so that the danger (or drop) zone can be determined and there is control over the direction of fall.
   - Plan escape routes in advance. An escape route must be:
     (i) clear of the direction of the falling tree,
     (ii) clear of obstruction, and
     (iii) lead to a safe location.
   
   As there is still a possibility that the tree may fall towards the intended escape route, it is important to always plan for more than one escape route.
   - Demarcate the work area (encompassing the danger zone) and ensure that no unauthorized persons are inside the work area during a tree-felling operation.
   - Limit the number of workers allowed in the work area to only the minimum essential to carry out the tree work. Before felling a tree, all workers should be evacuated a safe distance away from the tree (e.g. two tree lengths from the base of the tree), except for the person cutting the tree.
   - Consider alternative machine-assisted methods of tree removal where practicable, for example, by cutting the tree trunk into smaller segments starting from the top and removing each segment with the help of a winch or crane, leaving behind the tree stump which can then be removed with an excavator.

6. Supervise the tree work to ensure that the safe work method is strictly adhered to and that the environment remains safe for continued work.

7. Always establish emergency response plans (e.g. first aid, emergency contact numbers, rescue and evacuation procedure) before the work begins.
Further Information

1. Workplace Safety and Health Act (Chapter 354A), click [here](#)
2. Workplace Safety and Health (General Provisions) Regulations, click [here](#)
3. Workplace Safety and Health (Risk Management) Regulations, click [here](#)
4. Workplace Safety and Health (Construction) Regulations 2007, click [here](#)
5. Workplace Safety and Health (Scaffolds) Regulations 2011, click [here](#)
6. Code of Practice on WSH Risk Management, click [here](#)
7. WSH Guidelines on Landscape and Horticulture Management, click [here](#)
8. UK Health and Safety Executive (HSE) website on Tree Work Health and Safety
Worker Crushed by Toppled Forklift – 28 Sep

A scaffold supervisor was transporting a bundle of metal planks and bracings using a forklift. While travelling up a temporary ramp, the forklift skidded off the ramp and overturned. The supervisor was pinned under the cabin of the forklift and died.

Figure 1: Overview of the accident scene.
Recommendations*

Industry stakeholders undertaking similar work activities are advised to consider the following to prevent a recurrence:

1. A proper and thorough risk assessment must be conducted prior the start of any work. All potential hazards are to be identified and proper risk control measures put in place. In this case, for example, the risk of toppling of the forklift should be identified and preventive measures put in place.

2. A traffic management plan should be established and implemented. The plan should include, but not limited to, the safe loading and unloading of materials, and the safe movement of forklift trucks and people in the workplace.

3. Ramps used should be wide enough and stable for the safe manoeuvre of forklifts up and down the ramps.

4. All forklifts should be equipped with lap belts. The operators should secure the lap belt when operating the forklifts.

5. Ensure that only authorised and competent personnel are allowed to operate forklifts.

6. Conduct daily pre-operational checks on forklift components such as lap belts, brakes and tyres.

7. Ensure that forklifts are maintained regularly according to manufacturers’ specifications.

8. Provide adequate supervision by a competent person to ensure that workers adhere to safe work procedures (SWP) at all times.
Further Information

1. Workplace Safety and Health Act (Chapter 354A), click here
2. Workplace Safety and Health (General Provisions) Regulations, click here
3. Workplace Safety and Health (Risk Management) Regulations, click here
4. Code of Practice on WSH Risk Management, click here
5. WSH Guidelines – Safe Operation of Forklift Trucks, click here
7. SS 573 : 2012 Code of Practice for Safe use of powered counterbalanced forklifts
Scaffold collapsed, 6 workers injured – 2 Oct

A scaffold collapsed at the external façade of a building that was under reconstruction. 6 workers were injured after they fell from the scaffold. Preliminary investigations found that at the time of the incident, the scaffold was unsafe as a large proportion of the wire anchor ties that held the cantilever supports had been dismantled.

Figure 1: Photograph showing the collapsed scaffold at the façade of the building under re-construction.
Recommendations*

Industry stakeholders undertaking similar work activities are advised to consider the following to prevent a recurrence:

1. Always conduct a thorough Risk Assessment (RA) before starting any work. Site-specific hazards are to be identified and control measures put in place to reduce all risks associated with the work activity. In this case, the risk of workers falling from height when working on the scaffold must be identified and preventive measures established and implemented before allowing the work at height to commence.

2. Provide adequate supervision by a competent person for all WAH activities to ensure that workers adhere to the safe work procedures (SWP) at all times.

3. Ensure that workers are properly trained on the proper scaffold erection and dismantling procedures.

4. Ensure that workers working at height are equipped with fall arrest system (designed to stop a person from falling an uncontrolled distance). A personal fall arrest system includes the use of a full body harness and lanyard along with the necessary connectors and energy absorber. The fall arrest system can be effective only if the lanyard is properly connected to a secure anchorage point.

5. Ensure that each worker deployed to work at height has received adequate safety and health training and is familiar with the (i) hazards of working at height, (ii) precautions to be taken, and (iii) safe and correct use of personal fall arrest equipment.
Further Information

1. Workplace Safety and Health Act (Chapter 354A), click here
2. Workplace Safety and Health (Risk Management) Regulations, click here
3. Workplace Safety and Health (Work at Heights) Regulations 2013, click here
4. Workplace Safety and Health (Construction) Regulations 2007, click here
5. Workplace Safety and Health (Scaffolds) Regulations 2011, click here
6. Code of Practice on WSH Risk Management, click here
7. Code of Practice for Working Safely at Height, click here
8. WSH Council’s Work at Height Kit, click here
9. WSH Guidelines – Personal Protective Equipment for Work-At-Heights, click here
10. WSH Guidelines – Anchorage, Lifelines and Temporary Edge Protection Systems, click here
11. SS 528: Parts 1 to 6: 2006 - Specification for personal fall-arrest systems
12. SS 570: 2011 Personal protective equipment for protection against falls from height – Single point anchor devices and flexible horizontal lifeline systems
13. MOM Circular on Safety Requirements for Formwork Structures, click here
Selected construction workplace accidents 2013

COLLAPSE OF CRANES
Collapse of a Crawler Crane at a Construction Worksite – 20 Dec 2012

On 20 Dec 2012, an 80-ton crawler crane collapsed in a construction worksite.

A crane operator was using the crawler crane to lift building materials when the boom suddenly collapsed and partially landed onto a playground adjacent to the worksite.

Fortunately, there were no fatalities.

The mangled boom of the crawler crane
Workers killed in Tower Crane Collapse – 30 Sep

A tower crane was lifting an excavator when the boom of the tower crane collapsed. A fallen counterweight struck and killed a worker who was at an interior scaffold of the building under construction (Deceased 1). Another worker was struck and killed by the crane’s dislodged pulley support (Deceased 2).

Figure 1: Illustration of accident scene.
Summary of Recommendations for Working with Cranes* (1/2)

1. A proper and thorough risk assessment must be conducted prior the start of any work. All potential hazards are to be identified and proper risk control measures put in place.

2. The “responsible person” at the workplace is required to establish and implement a proper lifting plan for all lifting operations involving cranes, which shall be in accordance with the generally accepted principles of safe and sound practice.

3. Crane owners are required to ensure that the cranes are of good mechanical construction, sound material and adequate strength. They must ensure that the cranes are adequately and properly maintained in accordance with the manufacturer’s recommendations. In addition, occupiers must ensure that the cranes are examined and tested by Authorised Examiners at periodic intervals.

4. Lifting gear components such as the hoist, wires ropes and shackles should be certified fit for use by an Authorised Examiner (AE) before use.

5. Pre-operational checks on the crane should be conducted by the operator prior to the lifting operation.

6. Occupiers and persons involved in lifting operations (such as the lifting team which comprises the crane operator, lifting supervisor, rigger and signalman) must ensure the safe conduct of the lifting operations at all times. Further practical guidance on the safe conduct of lifting operations can be found in the Code of Practice on Safe Lifting Operations at Workplaces here.
Summary of Recommendations for Working with Cranes* (2/2)

7. All cranes must be operated by trained and licensed crane operators. The lifting operations must also be supervised and conducted by trained and qualified lifting personnel. The lifting team should comprise the site supervisor, lifting supervisor, crane operator, riggers and signalmen. Ensure effective communication is maintained among all lifting team members.

8. Crane owners must ensure that the limiting and indicating devices fitted on the cranes, such as load moment indicators and safety limit switches, are functional and effective and that they are properly maintained. Crane operators must also carry out operational tests on all such limiting and indicating devices under no load conditions before the start of every work shift. The crane operator must also enter the results of such tests in a log-book.

9. Crane operators must not engage in any unsafe act while operating the crane. This includes overloading as well as bypassing or disabling any limiting and indicating devices fitted on the crane. The engines of unattended cranes must also be switched off.

10. The lifting zone should be clearly demarcated. All personnel should keep clear of the lifting zone during the lifting operation.

11. Stakeholders are required to take reasonably practicable measures to ensure the safety of workers and other people who may be affected by any lifting operation being carried out. Relevant industry stakeholders need to remain vigilant at all times and work closely together to prevent accidents.
Further Information

1. Workplace Safety and Health Act (Chapter 354A), click [here](#)
2. Workplace Safety and Health (General Provisions) Regulations, click [here](#)
3. Workplace Safety and Health (Risk Management) Regulations, click [here](#)
4. Workplace Safety and Health (Operation of Cranes) Regulations 2011, click [here](#)
5. Workplace Safety and Health (Construction) Regulations 2007, click [here](#)
6. Code of Practice on WSH Risk Management, click [here](#)
7. Code of Practice on Safe Lifting in the Workplaces, click [here](#)
8. WSH Council’s Safe Lifting Operation Kit, click [here](#)
10. SS 559: 2012 Code of Practice for Safe Use of Tower Cranes
11. CP 35: 1996 Code of Practice for the Selection, care and maintenance of steel wire ropes for Hoisting
12. SS 297: 1996 - Steel wire ropes for hoisting
13. SS 343-1: 2001 - Lifting gear – Wire rope slings
15. SS 343-3: 1990 - Lifting gear – Shackles
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STRUCK BY FALLING OBJECT
The deceased (the appointed welder cum rigger / signalman) was carrying out a concrete pile driving operation together with a lifting supervisor and a piling rig operator. During the process of extracting a dolly after the piling operation, the dolly suddenly swung and struck the deceased (see Figure 1). He was pronounced dead at the scene by attending paramedics.
Recommendations*

Stakeholders involved in similar work situations should undertake control measures such as the following to prevent recurrence:

1. Carry out a task specific Risk Assessment (RA) prior to work commencement. In this case, all hazards and foreseeable risks related to struck by / caught-in-between moving objects or parts of the piling rig must be identified and addressed in the RA.

2. Establish a Permit-to-Work (PTW) system to confirm that (i) on-site RA has been carried out and (ii) reasonably practicable measures have been implemented to ensure the safety and health of all persons carrying out the piling work.

3. Ensure that all workers involved in piling operations (e.g. the piling rig operator, lifting supervisor, rigger and signalman) have received the necessary training on safe piling operations. In particular, conduct specific awareness training for piling rig operators on how accidents may occur, the preventive measures that need to be taken and the importance of exercising due care during similar operations.

4. Develop a safe work method to prevent or minimise the accidental swinging of the dolly during the dolly extraction process.
5. Emphasise to all piling rig operators and workers involved in piling operations the importance of maintaining a safety distance (for example, based on the maximum swing radius of the pile being lifted) from moving objects or parts when the piling rig is in operation. Specifically document the need for a safety distance in the safe work procedures (SWP).

6. Demarcate the danger zone of the piling operation as appropriate. Authorise the lifting supervisor and piling rig operator to stop the work should any person encroach into the danger zone or if there is incompatible work being carried out at the same time.

7. Communicate all identified hazards and risk control measures to each worker involved in the piling operation, for example, during toolbox meetings and immediately prior to work commencement.

8. Ensure that piling machines are thoroughly examined by an Authorised Examiner at least once every twelve (12) months as required under Regulation 21(3) of the Workplace Safety and Health (General Provisions) Regulations.

9. Establish a preventive maintenance regime to ensure that piling rigs are in good working condition at all times.

10. Put in place a standard protocol to require piling rig operators to perform daily pre-use inspection checks on each piling machine before starting work.
Further Information

1. Workplace Safety and Health Act (Chapter 354A), click here
2. Workplace Safety and Health (General Provisions) Regulations, click here
3. Workplace Safety and Health (Risk Management) Regulations, click here
4. Workplace Safety and Health (Construction) Regulations 2007, click here
5. Code of Practice on WSH Risk Management, click here
6. Code of Practice on Safe Lifting in the Workplaces, click here
7. WSH Council’s Safe Lifting Operation Kit, click here
8. MOM Circular on Safe Operation of Piling Machines, click here
9. MOM Inspection Requirements for Statutory Lifting Equipment, click here
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CAUGHT IN/ BETWEEN OBJECTS

On 20 April 2013, the operator of a hydraulic jack-in-piling machine was found pinned in between the piston and the guiding pin of the piling machine. He was freed and sent to the hospital where he subsequently succumbed to his injuries.
Recommendations

Stakeholders involved in similar work situations should undertake control measures such as the following to prevent recurrence:

1. An adequate Risk Assessment (RA) specific to the tasks to be carried out should be conducted before any work can commence. In this case, all potential hazards and risks related to struck by/caught in between moving objects or parts of the piling machine must be identified. The hazards and control measures must be effectively communicated to all workers involved in the operations.

2. Piling contractors or employers are advised to alert all piling machine operators and workers involved in piling operations to maintain a safe distance away from any moving objects or parts whereby they may be struck by/caught in between these moving parts.

3. The design of the machine should ensure that no inadvertent movement of any machine parts is possible at any time.

4. Appropriate and effective engineering controls such as machine guard and safety devices should be installed to ensure workers working in the vicinity do not encroach into the danger zone.

5. Effective management and control system such as adequate equipment training, safe work procedures (SWP) and pre-operation checklist should be developed, communicated and implemented to ensure the safe use and operation of such piling machines.

6. Hydraulic Jack-In-Piling machines are statutory equipment that requires thorough examination by an Authorised Examiner at least once every year. A maintenance regime should be established to ensure that the machines are in good and proper working conditions at all times. Piling machine operators should perform daily checks on the machines before commencing work.

7. Caution must be exercised to ensure that all machines are de-energised before any maintenance or inspection.
Further Information

1. Workplace Safety and Health Act (Chapter 354A), click [here](http://example.com)
2. Workplace Safety and Health (General Provisions) Regulations, click [here](http://example.com)
3. Workplace Safety and Health (Risk Management) Regulations, click [here](http://example.com)
4. Workplace Safety and Health (Construction) Regulations 2007, click [here](http://example.com)
5. Code of Practice on WSH Risk Management, click [here](http://example.com)
6. MOM Circular on Safe Operation of Piling Machines, click [here](http://example.com)
7. MOM Circular on the Use of Hydraulic Jack-In Piling Machines, click [here](http://example.com)
*Disclaimer*

Please note that the information provided is not exhaustive and for the benefit of enhancing workplace safety and health so that a similar recurrence may be prevented.

The information provided is not to be construed as implying any liability to any party nor should it be taken to encapsulate all the responsibilities and obligations of the reader of WSH Alert under the law.
More Resources

- More resources can be found at [www.wshc.sg](http://www.wshc.sg)
- Do also visit the thematic portals:
  - Work at heights: [www.wshc.sg/WAH](http://www.wshc.sg/WAH)
  - Crane Safety: [www.wshc.sg/cms/crane](http://www.wshc.sg/cms/crane)
  - Design for Safety: [www.wshc.sg/dfs](http://www.wshc.sg/dfs)
- All past WSH Alerts and WSH Bulletins can be found [HERE](http://www.wshc.sg)
- All MOM Circulars can be found [HERE](http://www.wshc.sg)