Case Studies and Inspection Findings on Warehouse Safety

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30 June 2016
Overview

• Statistics for Transportation & Storage*

• Common Contraventions

• Sharing of Accident Cases

*Logistics & Transport is a sub sector of Transportation & Storage

*The logistics & transport sector includes the following activities:
  • Warehousing and Storage
  • Supporting services to land transport (exclude car management services, taxi booking services, towing services)
  • Supporting services to water transport (exclude marine surveying services, salvaging distressed vessels & cargo)
  • Supporting services to air transport
Statistics are obtained from WSH Institute

WORKPLACE SAFETY and HEALTH REPORT 2015
Number of workplace fatal injuries by industry, 2014 and 2015

<table>
<thead>
<tr>
<th>Industry</th>
<th>2015</th>
<th>2014</th>
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<tbody>
<tr>
<td>All Sectors</td>
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<td>Construction</td>
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<td>Manufacture of Rubber and Plastic Products</td>
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<td>Logistics &amp; Transport$^9$</td>
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Figure 14: Workplace fatal injury rate for Transportation & Storage sector, 2006-2015

Fatal injury rate → 5.1 to 6.3
TRANSPORT & STORAGE SECTOR

- an increasing trend was seen
- Workplace fatal injuries increased from 12 cases in 2014 to 15 cases in 2015
- Workplace fatal injury rate rose from 5.1 per 100000 employed in 2014 to 6.3 per 100000 employed in 2015
Common Contraventions observed during inspections
TRANSPORT & STORAGE SECTOR

Inspection findings on the common contraventions include:

- Poor traffic management
- unsafe use of racks
- work at height
Workplace Traffic Safety Management

- could prevent or minimise injuries to employees as well as
downtime to business

- Employees who drives or work near vehicles (e.g. prime movers,
vans, forklifts etc) are most at risk

- collide with pedestrians (both employees and visitors) or with other
vehicles

- crucial for companies to identify potential hazards and risks when
using vehicles within their premises and on the road

- important to inform your employees on the potential hazards and
risks at work.
Poor traffic management

Some common contraventions:

- No proper management of vehicular and pedestrian traffic within the premises
- No mandated parking area for their prime movers
- Pedestrian passageways were also not marked out at the premises.
- Occupier did not conduct formal training to the drivers
- No Tool Box meeting or briefings conducted before drivers commencement of works
Safe use of racks

Common contraventions:

- Overloaded crate
- Bent supporting base
- Rusty components
- Unstable stacking
- Collapse of goods
- Lack of SOPs to handle toppling of goods
- Poor lighting conditions and obstruction to sprinkler system
Work at heights is defined as work:

- in an elevated workplace from which a person could fall,
- near a floor opening through which a person could fall,
- near an open edge over which a person could fall,
- on a fragile surface through which a person could fall, or
- in any other place (whether above or below ground) from which a person could fall from one level to another and the person or other person would be injured due to the distance of the fall.

- No proper asses and egress to work platform
- Open sides
- Unsafe work platform
Sharing of Accident Cases
Case Study 1

Crashed by object

Parked position of the truck

Location where the C was discovered. C was found with his bottom seated on the right-hand front tyre while his upper body laid flat on the parts of the Engine.
Case Study 1
Synopsis of Accident

- Day 1,  C was tasked to work on the truck for the mandatory annual vehicle inspection at a premises which was used as office, storage vehicle parts, resting area, and built-up sheltered area for maintenance work. C carried out the vehicle inspection work alone.

- On the following day 2, C was found sandwiched between the said truck’s cabin and its chassis. He was found seated on the right front tyre, while his upper body was facing down and in contact with part of the running engine of the said truck.

- C was working on the said truck when the elevated cabin of the truck suddenly descended. As a result, he was trapped beneath the cabin and subsequently passed away due traumatic asphyxia.
Case Study 1

Observation and Findings

When C was found, the truck engine was still running. The warming buzzer of the truck was also sounding due to the cabin having not seated fully onto the truck’s chassis.

Forensic examination revealed the following Damaged and missing components:-

- A faulty inlet valve with a broken o-ring,
- A missing ball (vital component of the check valve) and
- highly contaminated hydraulic fluid.
Case Study 1

Observation and Findings

Lever B

Hydraulic cylinder Assembly.

Ratchet slots for sitting of Lever B

Cabin tilt system assembly
Case Study 1

**Observation and Findings**

**Consequences of Damaged and missing components:**

- **Broken o-ring** -> allowed air to enter into the hydraulic cylinder’s inlet valve during the tilting up operation => formation of an air gap within the said valve, which could be compressed under the weight of the cabin => allowing the cabin to descend unexpectedly.

- **Broken o-ring** could also result in Hydraulic fluid leak out from the valve when it is in the holding mode => could have resulted in the release of holding pressure.

- **Missing ball** => No pressure at the inlet valve => Over pressure on the outlet valve (to prevent the cabin from descending);

- **Contaminated fluid** => could interfered with the proper seating of the ball in the outlet valve & caused seepage at the outlet valve (subsequently resulted in the cabin descending as well).
Case Study 1
Observation and Findings

- The damaged and missing components could most probably due to mishandling and/or lack of due care from substandard maintenance.

- Examinations also revealed that the spring lever of the mechanical safety interlock was worn. As a result of the degradation, Lever B could not be properly inserted into the ratchet type stopper.

- Occupier did not maintain a record of RA, specifically on such work activities at the premises.

- Occupier also did not maintain records for their SWP for the work activities.
Case Study 1

Lessons Learnt

✓ Had the mechanical interlock been able to function properly and secure in place, it would have prevented the cabin from descending even if there was a hydraulic failure of the cabin tilt system.

✓ It was also established that measures to prop the cabin, such as placing a rod or strut between the elevated cabin and chassis, could have been implemented to prevent accidental lowering of the cabin. However, such measures were not implemented at the time of the accident.
Case Study 2

Synopsis of Accident

- on 10 April 2013, at about 1400hrs, a fatal accident involving a worker occurred at a T-Junction along East Road, near Pipe Workshop 4 and Toolbox area located within the company’s premises.
- Deceased was knocked down and ran over by a 7-Ton forklift truck at the T-Junction along East Road.
- Deceased was subsequently conveyed to hospital but passed away on the same day at 1506hrs.
- The cause of his death was certified as “multiple injuries”.
Deceased

B1 Forklift Truck

Forklift Truck

B5 Eye Witness on his bicycle

Metal Tool box lockers

Probable route taken by Deceased before impact

East Road

Pipe shop No. 4
Case Study 2

Forklift involved in the accident
The forklift was observed to have no visible defects and the signal, brake lights and the reversing alarm were working.
VICOM Vehicle Inspector testing the braking efficiency of the forklift truck
Probable cause of accident

- The Deceased probably failed to keep a lookout for oncoming forklift while crossing the East Road.
- Forklift driver also failed to keep a lookout for the Deceased

Observations and findings

- Traffic management plan was established with road marking and speed signs/mirror
- However no designated crossing for person to cross to the workshop
- Warning signs were not put up at the accident location to warn drivers although the said accident area was heavily utilized in morning, lunch and in the evening
Observation and findings

- Driver was trained and had 10 years of forklift operating experience
- RA and SWP for safe operation of forklift truck was established and briefed to all forklift operators
- Forklift tested by VICOM after accident established to be in working order
- Forklift was also regularly serviced (by Occupier’s Operation department) and was issued with a valid permit to operate in the premises.
Other findings

- Deceased was not on hand phone at time of accident
- Deceased was not on medication
- Deceased was suffering from NID and thus impeded his ability to hear the sound from incoming vehicles such as the forklift truck
Lessons learn

- Occupier taken measures in establishing a traffic management plan;
- However, investigation revealed there was no designated crossing for person to cross to the workshop and vice versa as the said area was heavily utilized in the morning, lunch and in the evening;
- No warning signs to warn drivers or person using that said area