Key Learning Points from Accident Case Studies

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Case Studies

I) Work At Height

II) Crane

III) Formwork
Case Studies

I) Work At Height
Fatal Accident on 20 Feb 2011

Fall of 26m

Accident location

1m

50cm

26cm

42cm

I) Work At Height (i)
Fatal Accident on 20 Feb 2011

I) Work At Height (i)

55cm wide gap between lowest guard-rail and edge of tableform

Improper barricade installation
Fatal Accident on 20 Feb 2011

PE design available but not adhered

Barricades installed by inexperienced workers

Inexperienced workers supervised by untrained Supervisor

Own control measures listed in RA not implemented

Fall not arrested as worker was not wearing PPE

I) Work At Height (i)
Fatal Accident on 7 Nov 2011

I) Work At Height

Opening

3.4m
Fatal Accident on 7 Nov 2011

- “Paper” PTW not implemented on site
- “Paper” RA with no implementation of control measures
- No supervision
- No lifelines/anchorages/fall prevention
- No PPEs worn

I) Work At Height (ii)
Fatal Accident on 23 Sep 2010

I) Work At Height (iii)

1.75m

0.9m

1st shelf

2nd shelf

1st shelf
Fatal Accident on 23 Sep 2010

- No RA or SWP
- Risk foreseeable & aware of past falls
- Slippery floor and racks
- Reach truck available but wider than aisles
- No handholds or footholds
- No training

I) Work At Height (iii)
Fatal Accident on 15 May 2010

I) Work At Height (iv)

Catwalk

Trip/Slip hazards

30cm
60cm
55cm
55cm
1.1m
Fatal Accident on 15 May 2010

“Paper” RA and PTW

Improper guardrails

No toeboards

No PPEs/lifelines/anchorages/fall prevention

Slip and trip hazards

I) Work At Height (iv)
Case Studies

II) Crane
Fatal Accident on 29 Sep 2009

II) Crane (i)

- Fractured end
- Termination end
- Radius of 36m
- Passenger hoist area
- Left slew
- Meeting Room
- Building 3 Block 3
- Building 2 Block 2
- Storage Area
- Tower crane
- Termination end

2010 Government of Singapore
Fatal Accident on 29 Sep 2009

II) Crane (i)
Fatal Accident on 29 Sep 2009

- RA, SMS, SWP, PTW, AE inspection in place
- Within SWL and limit switches in place
- Improper seizure of wire rope
- Inadequate lubrication
Fatal Accident on 15 Dec 2009

II) Crane (ii)

Barge under construction

Buckled girdle

Legs of the gantry crane mounted on a rail-track
Fatal Accident on 15 Dec 2009

Severe corrosion, significant wall thinning, and clusters of localised through-perforations

Distinct waterlines inside crane girdle

II) Crane (ii)
Fatal Accident on 15 Dec 2009

- AE inspection in place
- Gantry crane overloaded
- No method statements or lifting plan
- No maintenance regime
- No access to top of girdle
Fatal Accident on 17 Mar 2010

II) Crane (iii)

- Jib sections
- Slewing unit
- Operator’s cabin
- Tower head
- Tower section
Fatal Accident on 17 Mar 2010

II) Crane (iii)
Fatal Accident on 17 Mar 2010

- SMS, RA, SWP, PTW all in place
- Material / Mechanical failures ruled out
- Poor oversight by Employer
- Unsafe deviation from established work procedure
- Untrained crane operator
Case Studies

III) Formwork
Fatal Accident on 18 Mar 2011

III) Formwork (i)
Fatal Accident on 18 Mar 2011

- SMS, PTW, method statement in place
- “Paper” RA with no implementation of control measures, and incomplete work activities
- Incompatible work
- Inadequate training
- PPE not anchored

III) Formwork (i)
Fatal Accident on 25 Dec 2010

III) Formwork (ii)
Fatal Accident on 25 Dec 2010

III) Formwork (ii)

- SMS, PTW in place
- No specific RA
- No documented Method Statement/SWP
- Inadequate training
- No formwork supervisor on site
Fatal Accident on 5 Feb 2010

III) Formwork (iii)

- Push-pull props
- Timber planks
Fatal Accident on 5 Feb 2010

SMS, PTW in place

“Paper” RA as formwork stored upright despite toppling hazard

Inadequate transport and storage instructions

No RA review

III) Formwork (iii)
Fatal Accident on 17 Sep 2009

III) Formwork (iv)

- Tilted formwork
- Toppled ladder

Dimensions:
- 4m
- 2m
- 4.5m
Fatal Accident on 17 Sep 2009

III) Formwork (iv)

- SMS, SWP, PTW in place
- Barricades installed
- Inadequate training
- Deviation from SWP
- Tie-rods prematurely removed
### Key Learnings from Case Studies

- Proper RA and RM
- Proper management
- Proper PTW
- Proper work planning
- Proper design for equipment, work methods, etc
- Proper SWP/ Method Statement/ Lifting Plans, etc
- Proper maintenance
- Proper use of equipment
- Proper barricades
- Trained and competent workers/supervisors
- Proper supervision
- Proper inspection
- Proper use of PPE
Thank You