



## SAFETY ALERT

OISD/SA/2020-21/P&E/01

Dt.:19/08/2020

### INTRODUCTION

Title: **Fatal incident due to fall from height**

Location: **Refinery**

Loss/ Outcome: **One fatality**

### BRIEF OF INCIDENT

In one of the Indian Refinery, an electrician who climbed up to roof of a building for checking the power supply to AC outdoor units (installed at the roof of building), accidentally fell down from the monkey ladder. He was immediately taken to Refinery hospital and after preliminary examination; he was further referred to city hospital where he was declared dead.

### OBSERVATIONS/ SHORTCOMINGS

- Five outdoor units of AC machine were installed on the rooftop. On previous day evening, there was complaint of non-functioning of two of these ACs. Accordingly, during morning allocation of jobs, the electrician was advised by his immediate superior to check/ rectify the said ACs.
- There was no work permit issued for this job.
- It was a two storied building of approximately 28 feet height. A caged monkey ladder of equivalent height was provided from outside ground floor of the building to access the roof.



Incident Site

*Provided for information purpose only. This information should be evaluated to determine if it is applicable in your operations, to avoid recurrence of such incidents.*

- The ladder was found firmly secured at the base and side wall of the building. The ladder was wet due to intermittent drizzling on the day of incident.
- This monkey ladder ran straight without any landing platform in between. When checked, it was found that the ladder top was improperly designed and made difficult to land/ ascend on the roof and descend from the roof.
- A low height (300 mm) parapet wall of building roof also made ascend/ descend to/from the roof difficult and posed a danger of accidental fall.
- While descending, there was a possibility of the leg getting entangled between parapet wall and the top rung of the ladder.
- At the top conjunction point of monkey ladder and roof, side hand rail of the ladder provided a support for balancing the body while ascending on the roof. But, while descending from the roof (parapet wall) on to the ladder, there was no hand rail support to facilitate firm three point contact, which may lead to imbalance / slip and fall.

**Top of caged monkey ladder – Defective landing/difficulty faced during ascending and descending**



- The PPE worn by victim i.e. helmet, one of the safety shoes and blood stained face mask were found at incident site around the ladder.
- No fall protection system was used during the exercise.
- The possibility of electrocution was ruled out on the basis of PM report of the victim.

### **REASONS OF FAILURE/ ROOT CAUSE**

- The leg of the victim might have got entangled between the ladder top rung and parapet wall and/or loss of three-point contact due to non-availability of hand rail while descending were the most probable causes of the incident.
- The root cause of incident was fall from height most likely while descending through the caged monkey ladder due to defective monkey ladder landing & design.

### **RECOMMENDATIONS**

- No maintenance job to be carried out without proper permit to work.
- Rectification of defective design of caged monkey ladder w.r.t. following points on immediate basis.
  - a) Arrangement of safe and standard landing from top rung to building roof to be made.
  - b) Top rungs fouling with wall to be removed and remaining rungs to be realigned uniformly.

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- c) Hand rail/ Landing platform to be extended ahead/beyond the parapet wall. Parapet wall height to be extended and a U-shape cut near landing to be made to allow smooth landing.
  - d) Self-closing swinging gate at the monkey ladder landing to be provided.
- Landing platform to be provided at every 6 meter or less height.
  - Review of Design and condition of Monkey ladders installed at other locations to be done by competent authority and ladders to be certified safe to use; defects if any to be corrected. Any ladder with structural or other defects is to be immediately tagged "Dangerous: Do Not Use" and removed from service until repaired or replaced.
  - Wherever total length of the climb on a monkey ladder equals or exceeds 24 feet, fall protection system to be installed.

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