

Shri Ranjan Mehrotra ,
Director (Marketing Ops.)
Oil Industry Safety Directorate

Shri Ranjan Mehrotra has done his Bachelors in Mechanical Engineering from Motilal Nehru National Institute of Technology, Allahabad.

He has more than three decades of experience in Indian LPG industry. Ranjan has rich experience in LPG Plant Operations and Maintenance, both as operating hand and overall In-charge of location.

Due to his two stints in LPG Projects, spread over 12 years, he has accumulated a vast resource of knowledge and expertise in LPG Plant design.

According to him, the biggest and brightest feather in his cap is design and coordination for LPG Bottling Plant at Leh – world's highest altitude LPG Bottling Plant.

He is presently holding the position of Director (Marketing Operations) at Oil Industry Safety Directorate, Noida and is overseeing and steering the safety in Indian Oil & Gas industry especially LPG.

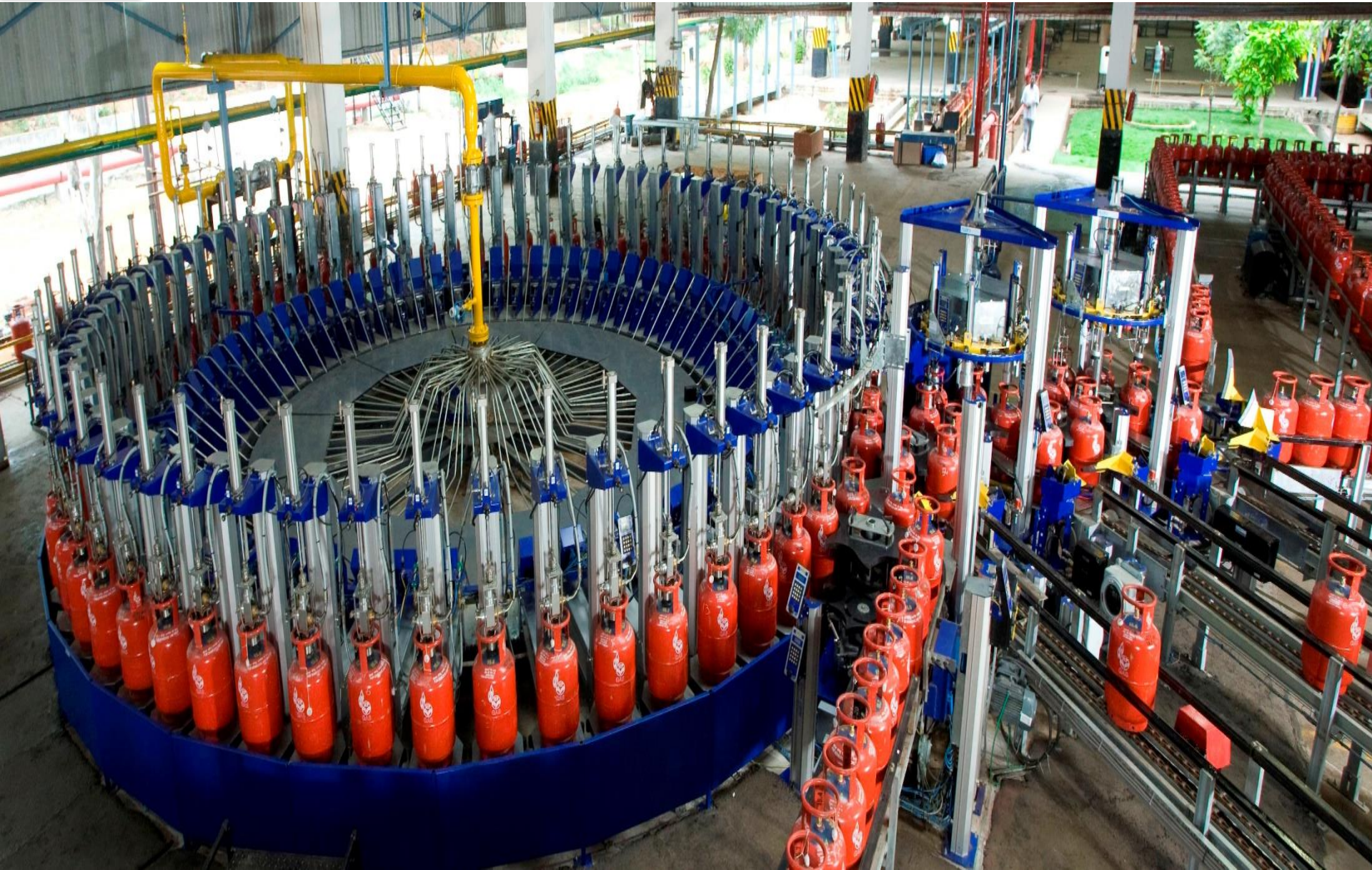
Incident Investigation Procedure

Ranjan Mehrotra
Director (Marketing Operations)

Oil Industry Safety Directorate

तेल उद्योग सुरक्षा निदेशालय
Oil Industry Safety Directorate
ISO 9001:2015 certified

Our Job as an incident investigator is to…….



तेल उद्योग सुरक्षा निदेशालय
Oil Industry Safety Directorate
ISO 9001:2015 certified

.....prevent this from happening



Checklist and list of typical documents for incident investigation

a) Meet the Unit Head

b) Visit the incident site

c) Location, timeline and date the incident occurred.

d) Photographs of the area and any property damage.

e) Collect the names, email ids and contact nos. of all involved parties and witnesses and plan the interviews

f) Interaction with all concerned stakeholders including contractors.

g) Interview of operating personnel's/ persons who have seen the fire first/ injured – get it signed

h) Interview Occupier, Mines Manager, installation safety personnel - get it signed

Checklist and list of typical documents for incident investigation

i) Details of medical aid provided to affected

j) A description of the damages that resulted.

k) Following document (but not limited to) should be checked and signed copy of the same to be collected:

1. Logbook (Field, Panel)
2. History card of the related equipment
3. Process related changes; Related Management of Change documents
4. Work Plan
5. Start-up procedure
6. SOP document

Checklist and list of typical documents for incident investigation

7. Instruction Register/ Mails
8. HAZOP/ QRA/ ERDMP (if required)
9. Training record
10. Licence/ approvals/ contract agreement
11. Alarm History
12. Sequence of Events (SOE) logs
13. Interlocks/ bypass records
14. DCS trend of various parameters including gas detectors
15. CCTV recordings/ footage
16. Unit report on Firefighting w.r.t. incident
17. Copy of preliminary Internal Investigation Report

Checklist and list of typical documents for incident investigation

18. Relevant Work Permit record, LOTO, JSA, TBT.
19. Last 3 years' records of following w.r.t. issues related to incident and also check its compliance and record the same in the report:
    - Previous history of incident – related or not
    - Copy of the policy/ circular issued related with incident/ standing instructions related with the incident/ cause of incident
    - Safety Committee/ Safety Circle meetings
    - Maintenance & Inspection records
    - Calibration records
    - Internal Safety Audit reports
    - Inspection Reports of Senior Management/ Mines Manager/ Workmen Inspector
    - Last ESA/ SSA/ PCSA Reports

Checklist and list of typical documents for incident investigation

20. Gate records
21. Statement, if any, given to other investigation agencies
22. Details of previous incidents investigations and compliance
23. Relevant Incidents (Major/ Minor/ Near Miss/ Unsafe Act/ Unsafe Conditions) reported in past
24. Related lab results
25. Inspection reports/ Asset integrity Reports
26. Maintenance schedule and compliance (PDM/ PM/ Overhauling/ Break down)
27. Relevant mock drill reports

Sample questionnaire for incident investigation

List of sample questions which an Investigators should ask is appended below

WHO?

- Who was injured?
- Who saw the incident?
- Who was working with the employee?
- Who had instructed/ assigned the employee?
- Who else were involved?
- Who else could have help prevent the incident?
- Where did the incident occur?

Sample questionnaire for incident investigation

WHERE?

- Where did the incident occur?
- Where was the employee at the time?
- Where was the supervisor at the time?
- Where were fellow workers at the time?
- Where were other people who were involved at the time?
- Where were witnesses when incident occurred?

Sample questionnaire for incident investigation

WHAT?

- What was the incident?
- What was the injury?
- What was the employee doing?
- What had the employee been told to do?
- What tools was the employee using?
- What machine was involved?
- What operation was the employee performing?
- What instructions had the employee been given?
- What specific precautions were necessary?
- What specific precautions was the employee using?

Sample questionnaire for incident investigation

- What protective equipment should have been used?
- What protective equipment was the employee using?
- What had other persons done that contributed to the incident?
- What problem or questions did the employee encounter?
- What did the employee or witnesses do when the incident occurred?
- What extenuating circumstances were involved?
- What did the employee or witnesses see?
- What will be done to prevent recurrence?
- What safety rules were violated?
- What new rules are needed?

Sample questionnaire for incident investigation

WHY?

- Why was the employee injured?
- Why and what did the employee do?
- Why and what did the other person do?
- Why wasn't protective equipment used?
- Why weren't specific instructions given to the employee?
- Why was the employee in the position?
- Why was the employee using the tools or machine?
- Why didn't the employee check with the supervisor when the employee noted things weren't as they should be?
- Why did the employee continue working under the circumstances?
- Why wasn't the supervisor there at the time?

Sample questionnaire for incident investigation

WHEN?

- When did the incident occur?
- When did the employee start on that job?
- When was the employee assigned on the job?
- When were the hazards pointed out to the employee?
- When was the employee's supervisor last check on job progress?
- When did the employee first sense something was wrong?

Sample questionnaire for incident investigation

HOW?

- How did the employee get injured?
- How could the employee have avoided it?
- How could fellow workers have avoided it?
- How could supervisor have prevented it - could it be prevented?

List of sample questions for identifying incident root causes

- Did a written or well-established procedure exist for employees to follow?
- Did job procedures or standards properly identify the potential hazards of job performance?
- Were there any hazardous environmental conditions that may have contributed to the incident?
- Were the hazardous environmental conditions in the work area recognized by employees or supervisors?
- Were any actions taken by employees, supervisors, or both to eliminate or control environmental hazards?
- Were employees trained to deal with any hazardous environmental conditions that could arise?
- Was sufficient space provided to accomplish the job task?

List of sample questions for identifying incident root causes

- Was there adequate lighting to properly perform all the assigned tasks associated with the job?
- Were employees familiar with job procedures?
- Was there any deviation from the established job procedures?
- Were the proper equipment and tools available and being used for the job?
- Did any mental or physical conditions prevent the employee(s) from properly performing their jobs?
- Were there any tasks in the job considered more demanding or difficult than usual (e.g., strenuous activities, excessive concentration required, etc.)?
- Was the proper personal protective equipment specified for the job or task?

List of sample questions for identifying incident root causes

- Was there anything different or unusual from normal operations? (e.g., different parts, new or different chemicals used, recent adjustments/ maintenance/ cleaning on equipment)
- Were employees trained in the proper use of any personal protective equipment?
- Did the employees use the prescribed personal protective equipment?
- Was personal protective equipment damaged or not properly functioning?
- Were employees trained and familiar with the proper emergency procedures, including the use of any special emergency equipment and was it available?

List of sample questions for identifying incident root causes

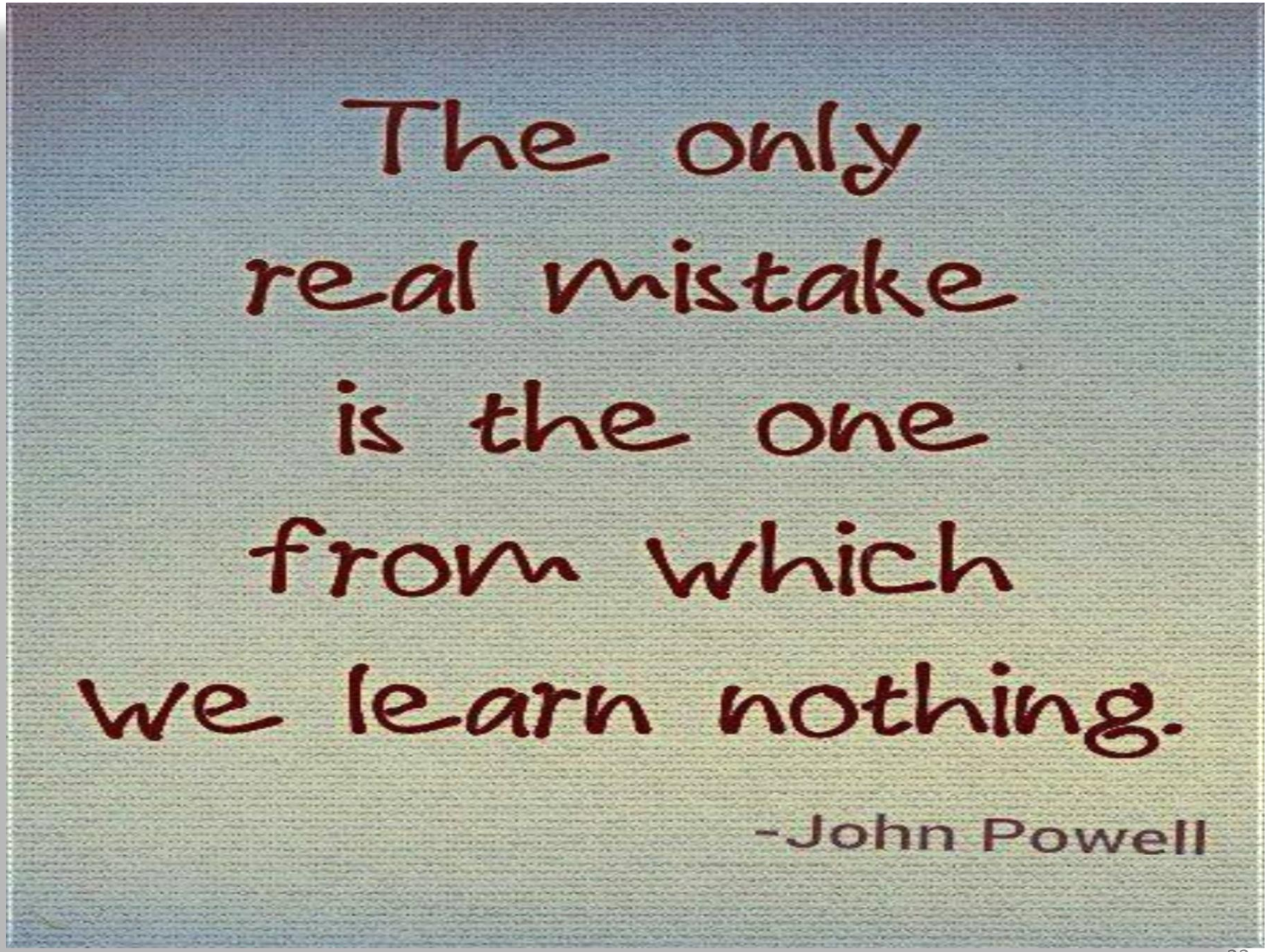
- Was there any indication of misuse or abuse of equipment and/or materials at the incident site?
- Is there any history of equipment failure, were all safety alerts and safeguards operational and was the equipment functioning properly?
- If applicable, are all employee certification and training records current and up-to-date?
- Was there any shortage of personnel on the day of the incident?
- Did supervisors detect, anticipate, or report an unsafe or hazardous condition?
- Did supervisors recognize deviations from the normal job procedure?

List of sample questions for identifying incident root causes

- Did supervisors and employees participate in job review sessions, especially for those jobs performed on an infrequent basis?
- Were supervisors made aware of their responsibilities for the safety of their work areas and employees?
- Were supervisors properly trained in the principles of incident prevention?
- Was there any history of personnel problems or any conflicts with or between supervisors and employees or between employees themselves?
- Did supervisors conduct regular safety meetings with their employees?

List of sample questions for identifying incident root causes

- Were the topics discussed and actions taken during the safety meetings recorded in the minutes?
- Were the proper resources (i.e., equipment, tools, materials, etc.) required to perform the job or task readily available and in proper condition?
- Did supervisors ensure employees were trained and proficient before assigning them to their jobs?


The only
real mistake
is the one
from which
we learn nothing.
-John Powell







Whenever a PSV pops up,
Why-Why is must.



तेल उद्योग सुरक्षा निदेशालय
Oil Industry Safety Directorate
ISO 9001:2015 certified

SEE *Near misses*







Whenever an incident is averted because of PPEs, Why-Why is must.




Thank you!