CAL/VPP WORKSHOP









Incident Investigation

- Objective
 - Fundamental objective of incident investigation is to prevent recurrence of the similar accident
 - Protect health and safety of workers and public
 - Respond to regulatory, corporate, community, and employee concerns
 - Demonstrate management commitment and promote employee involvement
 - Advise others on unrecognized risk and more effective strategies
- Mistaken Objective
 - Stipulate blame and/or liability
 - Perform investigation only to satisfy the requirement/policies





Basic Investigation Process





Cal/VPP Checklist

9) ACCIDENT INVESTIGATIONS

Is there an accident/near-miss investigation system? Does it include the following:

- 1. Written procedures or guidance describing:
 - a. Explanation of when and at what level incident investigations will be conducted?
 - b. Definition of Near-misses?
 - c. Analytical method of incident analysis (Root Cause Analysis)?
 - d. Root causes focus on breakdowns in management systems/VPP Elements rather than human error or blame?
 - e. Method of tracking corrective actions to closure?
 - f. How records will be retained?
 - g. How results of incident investigations will be communicated?
 - h. When injuries and illnesses must be reported to Cal/OSHA Compliance?
- Documentation of accidents, near-misses, and first aids that have occurred in the past 3 years?
- 3. Employees knowledgeable on recognition and reporting of near-misses?
- 4. Facilitator trained in site's chosen method of Root Cause Analysis?
- 5. Documentation of corrective actions taken?
- 6. Documented trend analysis regarding incidents?
- 7. Communication of investigation findings to affected employees?

Management Responsibilities

Encourage	Support	Commit	Communicate	Focus	Monitor
Encourage employees to report all incidents including near misses	Strongly support reporting and investigation of near misses	Commit to resources appropriate to the investigation and resolution of recommendation	Communicate management commitment to prevent reoccurrence by determining root causes, action items, and follow up	Focus clearly on the intention to "find cause" rather than "assign Blame"	Monitor the quality of investigation



Why Aren't Near Misses Reported?

- Lack of understanding:
 - -Near miss definition
 - Importance of data/situation
- Lack of Management follow up
- Fear of impact on job appraisal
- Peer Pressure





What is a Near Miss?

✓ A near miss is an incident in which no property was damaged and no personal injury was sustained, but where, given a slight shift in time or position, damage or injury easily could have occurred. Near misses also may be referred to as near accidents, accident precursors, injury-free events and, in the case of moving objects, near collisions.

An opportunity to improve environmental, health and safety practice based on a condition, or an incident with potential for more serious consequences.

Phimister J, et al., "Near-Miss Incident Management in the Chemical Process Industry," 2003





Investigation Report & Implementation Plans

- Weakest part of incident investigation process
- Avoid terms such as; consider, should, study, evaluate, review
- Only causal factors identified without root causes
- Address every root cause
- Do not discipline
- List action items with responsible persons
- Measure and track
- Share key learnings with site and throughout company





Incident Contributors

Causal Factor Examples

- -Insufficient Policies
- -Input deviations
- -Equipment failures
- -Human errors(less accountability)
- Root Causes

-Management systems (Cal/VPP Elements) deficiencies which result in learning your organization weaknesses





What is a Root Cause?

A root cause is a fundamental, underlying, system related reason why an incident occurred that identifies one or more correctable system failures.

OSHA/EPA Factsheet: The importance of Root Cause Analysis During Investigation, 2016







What is Root Cause Analysis?

Root cause if corrected, would prevent recurrence of the same or similar accidents Root causes may be derived from or encompass several contributing causal factors

DOE Handbook; Accident and Operational Safety Analysis, Volume I Accident Analysis, P.2-79







Benefits of Root Cause Analysis (RCA)

- Prevent similar events from happening again- Reduction of risk of death and or injuries to workers, or community, or damage to environment.
- Avoid unnecessary cost to business interruption, emergency response and clean up, increased regulations, audits, inspections and OSHA and EPA fines.
- ✓ Gaining public trust.
- Attaining more effective control of hazards, improve process reliability, increased revenue, decreased production costs, lower maintenance costs, and lower insurance premium.

OSHA/EPA Factsheet: The importance of Root Cause Analysis During Investigation, 2016





Characteristics of RCA

Strengths

- Helps identify sequences of events
- Indicates Cal/VPP element/sub element weaknesses

Weaknesses/Traps

- Stop at causal factors
 - Procedure was not followed
 - Worker did not practice the training
 - Equipment failed worn out
- Miss latent conditions
- Overlook emergency procedures





Procedure to determine root causes



Identify causal factors, and root causes Identify weaknesses in Cal/VPP elements instead of worker error, equipment failure, did not follow policy

Generate systematic action items, instead of very specific to the piece of equipment

Importance of RCA

 Correcting root causes would not only prevent the same accident from recurring, but would also solve line management, oversight and management system deficiencies that could contribute to other accidents. (DOE, P.2-81)





Align RCAs with Cal/VPP Elements

Management Commitment Employee Involvement Contractor Employee Notification Medical & Hygiene program Training Comprehensive Survey

*Refer to Cal/VPP Checklist for details.

Accident Investigation Emergency Preparedness JSA Preventive Maintenance Self-inspection Pre use Analysis





Incident Investigation Warning Signs

- Previous incidents without proper RCA, systematic analysis, only causal factors.
- Superficial incident investigations and improper findings.
- Trends only for injuries and serious accidents.
- Minor incidents are not reported.
- Failure to report near misses and substandard conditions.
- Trends are apparent but not well tracked or analyzed.
- Frequent equipment failures.





Catastrophic Incidents by Element Analysis

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Incident	Year	Leadership & Culture	Process Safety Information	Hazard ID & Risk Analysis	Management of Change	Operating Procedures	Training	Incident Investigation	Contractor Management	Emergency Preparedness	Pre-startup Safety Review	
Phillips 66	1989	v	v	v	v	v	v		v	v		Veede View
Explosion		X	X	X	X		X	-	X	X		
NASA	1986	x		x	x				x		x	
Challenger		^		^	^				^		^	2 (a) (a)
Piper Alpha Platform	1988	X		X	X	X	X		X	X	X	The second secon
Chernobyl	1986	Х	x	х	X	X	x			х	X	The second
Longford	1998											Con - El Alt
Explosion		X	X	X	X	X	X	X		X		
Jilin, China Explosion	2005	Х		X	X	X	X			X		
Bhopal Toxic	1984											
Gas Belease		X	X	X	X	X	X	X		X		