BLI2028: Apparent Cause Analysis
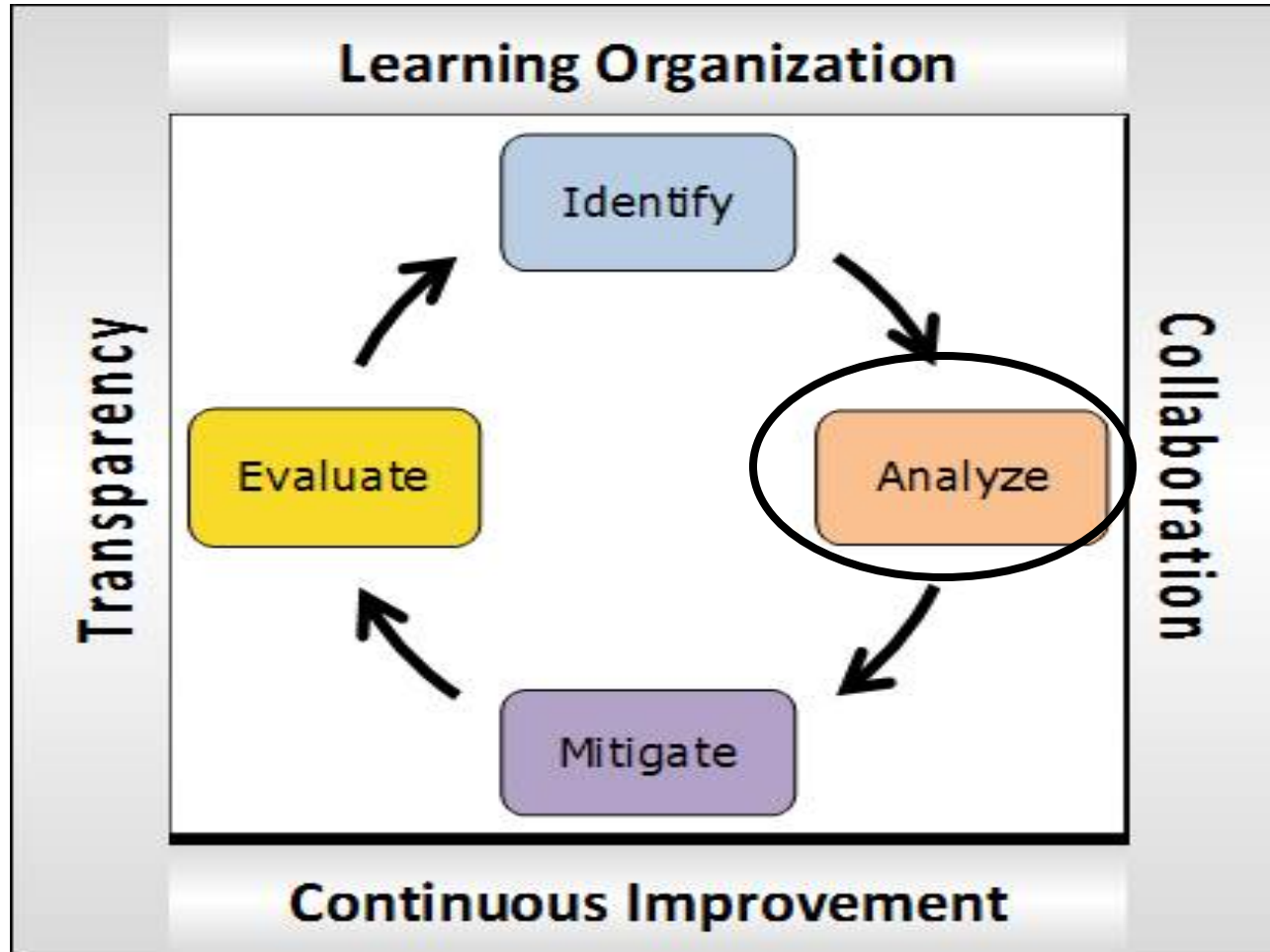
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Course Objectives

Participants will learn:

– What is an Apparent Cause Analysis

– When to perform an Apparent Cause Analysis

– How to perform an Apparent Cause Analysis

Issues Management Process

Apparent Cause Analysis Definitions

What is an Apparent Cause?

The dominant reasonable cause of an incident / finding that management has the control to fix through effective corrective actions.

Key Points:

- Generally involves a mistake / failure / problem that explains why the event happened

- Conclusion involves some degree of judgment that is based on factual evidence

- May have more than one Apparent Cause

Apparent Cause Analysis Definitions

What is an Apparent Cause Analysis (ACA)?

A straightforward analytical approach used to identify obvious causes based on the facts pertaining to the incident / finding.

Key Points:

- Not the same level of depth as a formal root cause analysis (RCA);

- Addresses the circumstances/conditions surrounding the incident, but not the underlying cause(s)

- Examines the facts associated with the incident based on the best available information

- What is being analyzed needs to be identified / scoped

Apparent Cause Analysis Requirements

When to perform an Apparent Cause Analysis?

- Medium and low risk level issues analysis and resolution

- Smaller-scale, low complexity-level events / conditions

- Events where the likelihood of recurrence is minimal

Examples:

- PAAA Internally-Reportable incidents

- Occurrence Reporting and Processing System (ORPS) Category 2 and 3 Reportable incidents

- Non-reportable Worker Safety & Health and operational issues that do not fall into high risk levels

- Observations from external assessments

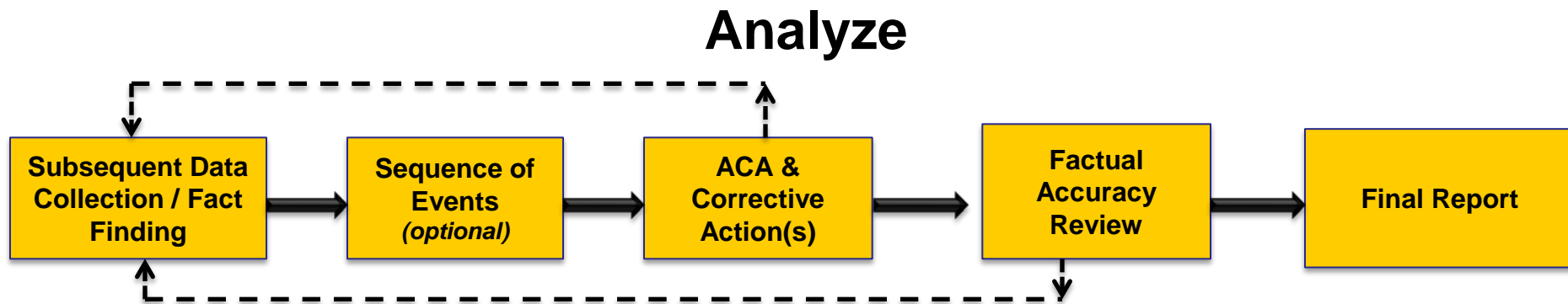*Resource: LBNL/PUB 5519 (2), Causal Analysis Program Manual*

Scoping the Analysis

Identify
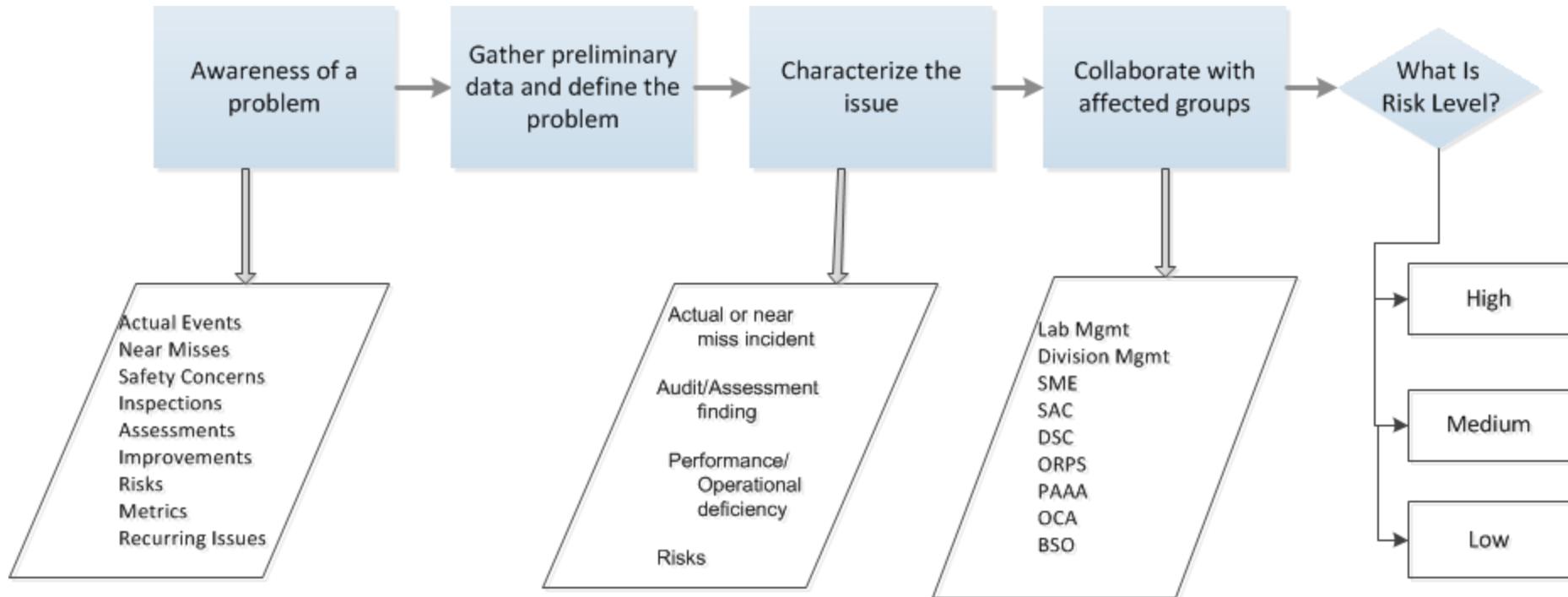
- Characterize the issue to describe the exposure, deficiency, hazard or risk the adverse condition presents.

- Determine the risk level to ensure that the appropriate levels of analysis and mitigation are commensurate with the issue severity.

Apparent Cause Analysis Process

Analyze

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Subsequent Data       Sequence of        ACA &            Factual
Collection / Fact  →   Events        →    Corrective   →   Accuracy    →   Final Report
Finding               (optional)         Action(s)        Review
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- Application of a formal causal analysis methodology is not required

- Process is not sequential; activities may be concurrent and iterative

- Factual Accuracy review may vary depending on the method of report documentation; Also serves as a quality assurance review

- Additional facts may be uncovered during the Causal Analysis and/or Factual Accuracy Review that must be analyzed

- Apparent Causes may be documented in ORPS Reports or other methods as determined by management *(OIA has a template available for use)*

Continued

- Analysis must be based on factual / objective evidence

- Data Collection may include interviewing personnel involved in the incident and reviewing physical evidence (such as, policies, procedures, other applicable documents/records and the incident location)

Performing Apparent Cause Analysis

The Analysis involves reviewing the facts and determining a cause(s) based on factual data. The Analysis uncovers:

Who – who was involved?

What – what happened, what is/are the issue(s)?

When – when did it happen?

Where – where did it happen?

How – how did it happen?

Why – *why did it happen?*

Performing Apparent Cause Analysis

First: The "Who" and "What" of the incident / finding
"Who" did "What"?

Then: The "When", "Where" and "How"

This is used to inform: The "Why"

– ***The "Why" is the Apparent Cause***
– Generally it is the causal factor = The mistake/failure, event or condition that led to the incident

– Typically the level below the direct cause

– Typically the level above the underlying cause (Root Cause)

Performing Apparent Cause Analysis

Who – who was involved?
- ➢ *Worker (s)Trained*
- ➢ *Workers (s) proficient/experienced with task, process, activity*
- ➢ *Appropriate selection of worker*
- ➢ *Appropriate oversight of worker*

What – what happened, what are the problem?
- ➢ *Task, process, activity performed*
- ➢ *Weakness, vulnerability or error*
- ➢ *Requirement not met*
- ➢ *Assumptions made*

When – when did it happen?
- ➢ *Alertness*
- ➢ *Distractions*
- ➢ *Time Pressures*
- ➢ *Multiple Tasks*

Where – where did it happen?
- ➢ *Location equipped for the task, process, activity*
- ➢ *Tools / resources available*
- ➢ *Co-located hazards*
- ➢ *Housekeeping*

How – how did it happen?
- ➢ *ISM Followed*
- ➢ *Process / Procedure / Checklist in place and functioning properly*
- ➢ *Technique used / Process / Procedure / Checklist followed*
- ➢ *Controls/Barriers designed and functioning properly*
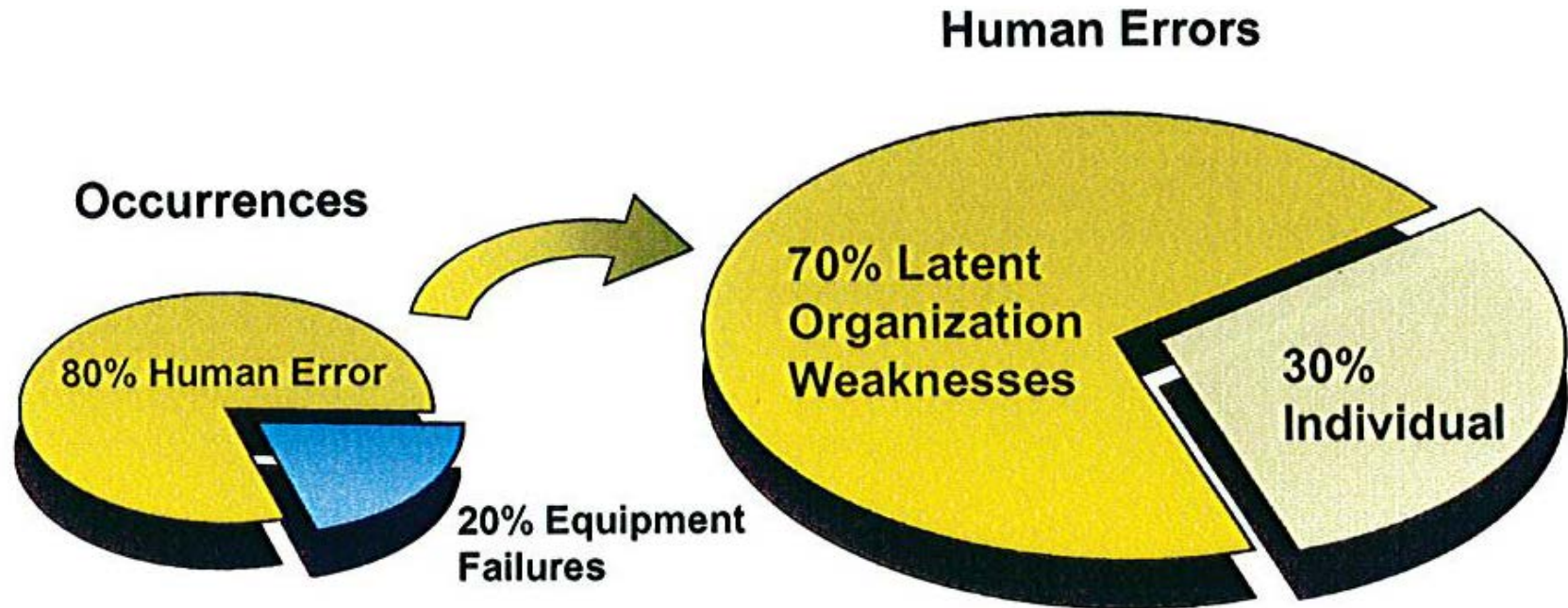- ➢ *Departure from routine / shortcuts*

Why – *why did it happen?*

Examine the facts and determine the most probable cause(s)

➢ What mistake(s)/failure(s), event(s) or condition(s) led to the incident / finding

  – Identify and define common themes

  – Group the common themes into a common apparent cause or higher-level Apparent Cause(s) and Contributing Cause(s)

Balancing Human Performance and Organization Causes

Human Errors

Occurrences

80% Human Error

20% Equipment Failures

70% Latent Organization Weaknesses

30% Individual

Human errors are causal factors for many incidents, but latent organizational weaknesses frequently lead to these causal errors.

Performing Apparent Cause Analysis

Balancing Human Performance and Organization Causes

- Analysis should focus on latent organization weaknesses rather than on individual's actions / errors

Examples:

Human Performance Cause	Organization Cause
The Researcher did not place the rinse syringe in the radiation waste bag at the end of the workday.	Consider: Management policy/procedures or expectations were not well-defined, understood or enforced
The shipping requester did not verify the shipment contents prior to completing the shipping and transportation process.	Consider: Work was assigned to an inexperienced worker
The electrician performed electrical work without signing the LOTO permit and affixing his lock and tag to the gang lock box.	Consider: Insufficient time allotted for completion of the task / poor work planning

Examples of Apparent Cause Statements

- The system did not send out the customary warning messages to alert staff of the impending failure.

- The Responsible Individual did not submit the as-built blueprints with the penetration permit application.

- There was no warning label on the equipment indicating that a potential electrical hazard was present.

- A water valve was not properly restored to the opened position after the maintenance activity.

- Management has not clearly defined and implemented a comprehensive XYZ program that is fully compliant with DOE requirements.

Corrective Actions Should Be SMART

S = Specific
   The corrective action must address / resolve the apparent cause.

M = Measurable
   The corrective action must be actionable, verifiable and demonstrate endurance.

A = Accountable
   Accountability & responsibility must be assigned to someone who has the authority and resources to implement the correction action.

R = Reasonable
   The correction action must be feasible (a cost effective control measure) and not introduce negative consequences.

T = Timely
   The corrective action must be implemented in a realistic timeframe to prevent recurrence. Compensatory actions may be required.

Performing Apparent Cause Analysis

Key Points:

- Apparent Cause Analysis may be led / performed by a Causal Analyst, within a team setting or solely

- The Causal Analyst is selected by the responsible Cognizant Manager and may not be trained in a formal methodology

- Corrective actions address fixing the problems and should minimize the likelihood of recurrence, if possible
  - *Corrective actions must be entered into the CATS Database*

Causal Analysis Comparison

Criteria	Apparent Cause Analysis	Root Cause Analysis
Analyst	No formal RCA training required	Must be formally trained
Analysis Methodology	No formal RCA methodology required	Formal RCA methodology required
Type of Issue	Medium and low risk issues, and other issues as determine by management	High risk issues and other issues as determined by management
Cause	Obvious mistake / failure	Underlying reason for the mistake / failure
Report	No formal RCA report required	Formal root cause analysis (RCA) report required
Corrective Action	Must fix the mistake / failure; should prevent recurrence	Must address the root cause and prevent recurrence
Issue Management Process	No Extent of Condition (EOC) review or Effectiveness Review (ER) required	EOC and ER required for High Risk issues

Causal Analysis Comparison Quiz

Match the characteristics with the type of Analysis

Apparent Cause

- Actions developed to remedy the problem
- Involves some degree of judgment based on factual evidence
- Straightforward process of collecting & analyzing information
- Identifies probable / reasonable cause(s)
- Medium and low risk issues

Root Cause

- Formal, systematic process of collecting & analyzing information
- High risk issues or as determined by Management
- Identify underlying / basic cause(s)
- Actions developed to address cause(s) and prevents recurrence
- Performed by trained personnel

Characteristics

- Formal, systematic process of collecting & analyzing information
- Actions developed to remedy the problem
- Involves some degree of judgment based on factual evidence
- High risk issues or as determined by Management
- Identify underlying / basic cause(s)
- Straightforward process of collecting & analyzing information
- Identifies probable / reasonable cause(s)
- Actions developed to address cause(s) and prevents recurrence
- Performed by trained personnel
- Medium and low risk issues

21