



Improving Process Safety Culture Through Behavioral Based Process Safety

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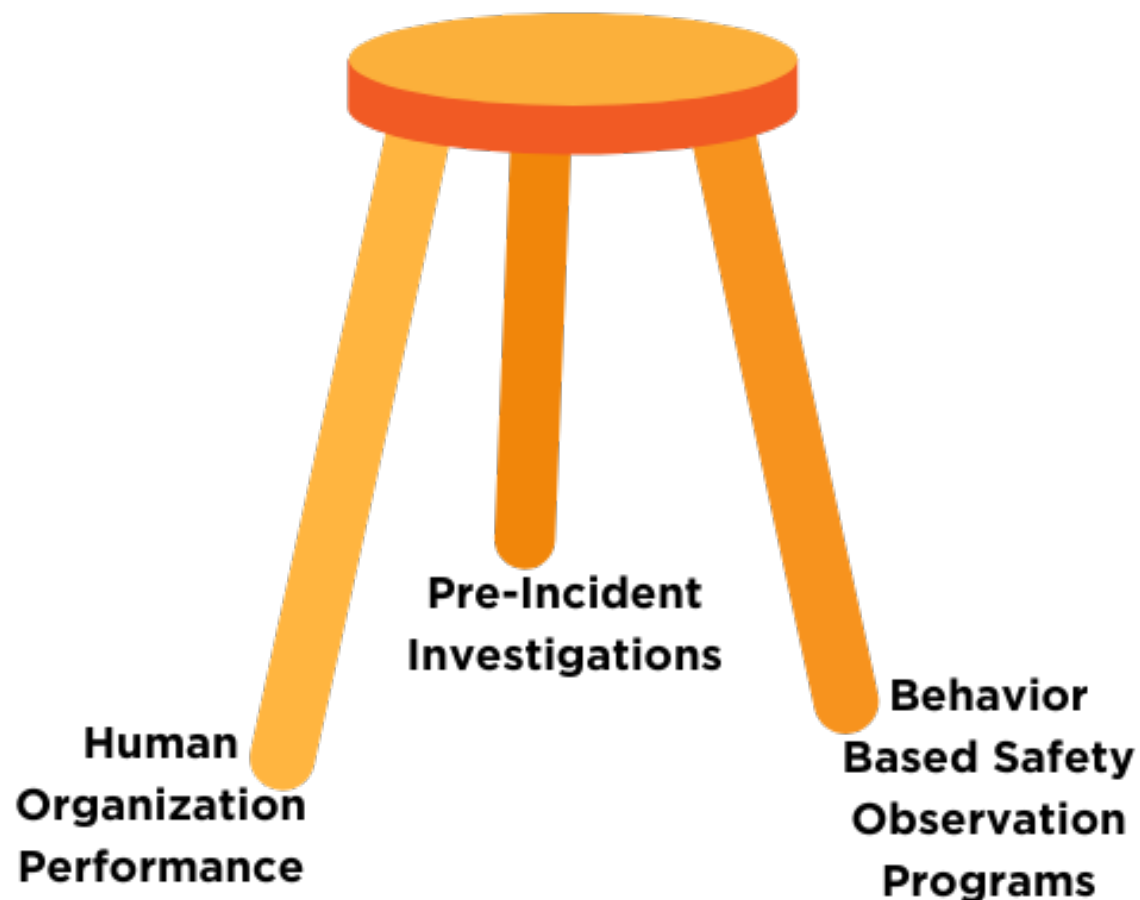


David M. Heller, CSP, CPSA

- Chemical Engineer, RPI
- Began career as production and plant engineer – Carbide, American Cyanamid
- In safety since 1984
- Corporate PSM engineer
- Plant Safety Manager
- Lead Investigator at CSB – 1999-2005
- AcuTech Consulting since 2005



Behavioral Based Process Safety (BBPS)



Process Safety training is often delivered without concurrent process safety culture training.

Recommendation:

Provide 1 hr of Process Safety Culture training to review the process safety elements and contextualize them with CCPS Safety Culture Principles (right).

Result:

Reinforces Process Safety elements by repeat exposure and ensures all personnel have a common understanding of process safety cultural aspects.

10 Culture Principles:

1. Establish an Imperative for Safety
2. Provide Strong Leadership
3. Maintain a Sense of Vulnerability (Risk Awareness/ Vulnerability)
4. Understand and Act Upon Hazards/ Risks
5. Empower Individuals to Successfully Fulfill their Safety Responsibilities
6. Defer to Expertise
7. Ensure Open and Honest Communications
8. Strengthening Mutual Trust
9. Combat the Normalization of Deviation
10. Learn to Assess and Advance the Culture



Process Safety Toolbox Talks

- Aimed to facilitate dialogue with hourly operations & maintenance personnel
- Communication reinforces trust amongst hourly, union, salaried and management employees.
- Often lead to tangible solutions from collaborative, cross-functional teamwork
- Can be used to maintain focus on PSM Safety Culture

Toolbox Talk Examples

- Overview of Operational Excellence
- Normalization of Deviation
- Catastrophic event warning signs
- Stop work and emergency shutdown authority
- Incident Investigations
- Process Safety Initiatives

Field Conversations

Gemba:

- Field conversations are based around the practice of Gemba walks, developed at Toyota in the 90's.
- Gemba translates to “*the real place.*” the place where the operations are taking place in real time.
- It's an opportunity to observe how the process is actually implemented.

Pre-Incident Investigation (element of HOP program):

- Field conversations focus on real-time observations involving safety barriers, defeated, bypassed or missing barriers and systems utilized to implement or identify risks and mitigations.
- The staff often volunteer the pain points in the operation that should be investigated further.

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Does the training prepare you to
adequately perform this task?

Related CCPS Culture Element
Establish an imperative for Safety

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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How's the LOTO going? Is there anything I can help you with?

Related CCPS Culture Element
Provide Strong Leadership

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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What risks are you looking out for?

Related CCPS Culture Element
Maintain a sense of vulnerability

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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What are you working on?
What mistakes can happen during
this task?

Related CCPS Culture Element

Understand and Act Upon
Hazards/Risks

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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Do operating procedures
adequately cover this task?

Related CCPS Culture Element

Empower individuals to successfully
fulfill their safety responsibilities

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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I was walking by and saw your team going to torch off the bolts on the flange. I think the shop has a nut splitter if you want to give that a try. Might save you some time.

Related CCPS Culture Element

Defer to Expertise

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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Who are you communicating with
when you do this task?

Related CCPS Culture Element

Ensure Open and Honest
Communications

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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Thank you for using your
stop work authority.

Related CCPS Culture Element
Strengthening Mutual Trust

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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Are you facing any pressure with this task – either now or in the past?

Related CCPS Culture Element
Combat the Normalization of
Deviation

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

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How did the Job Safety Assessment (JSA) go this morning for the welding on the hydrogen tank?

Related CCPS Culture Element
Learn to Assess and Advance the Culture

Conversation: Leader with Hourly Personnel (Operator/Mechanic)

Field Conversations

- Field conversations are not limited to process areas, but include other work environments where maintenance, contractors, engineers, and managers work.
- When conducting conversations with office staff, the field conversations often focus on the management systems.
- Pain points highlighted in the management systems should be investigated further in order to identify and eliminate emerging threats.



Conversation: Leader with Engineer/Manager

Field Conversations

Conversation Starter	Related CCPS Culture Element
What are you working on now ?	Establish an Imperative for Safety
When was the last time you went to the unit and walked around and engaged people?	Provide Strong Leadership
What risks are you looking out for?	Maintain a Sense of Vulnerability (Risk Awareness/Vulnerability)
Do you have a defined process for doing this work?	Understand and Act Upon Hazards/Risks
I rescheduled that meeting to this afternoon so you would have time to conduct your safety walk around.	Empower Individuals to Successfully Fulfill their Safety Responsibilities
Did you invite the process specialist to your PHA?	Defer to Expertise
Who are you communicating with/collaborating with on this task?	Ensure Open and Honest Communications
I know you expressed interest in getting more experience with the flares. Do you want to join me on this project?	Strengthening Mutual Trust
Do you have a defined process for doing this work of sizing a relief device?	Combat the Normalization of Deviation
Are you facing any pressure with this task (such as keeping costs down, speeding up a project)?	Learn to Assess and Advance the Culture

Conversation: Leader with Engineer/Manager

Management Walkarounds

- Management walkarounds take the concept of Field Walks one step further by involving management.
- **Why Management?**
 - Managers bring a different viewpoint to problem-solving given that they have an understanding of the bigger process.
 - Creates connections between tiers in a workplace that don't normally interact.
 - Solutions implemented due to active management engagement demonstrate their genuine concern and commitment toward their employees.

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Identify an open-minded individual to compile and classify the data.

This person is tasked with:

- a. Gathering comments, anecdotes, examples.
- b. Organizing the data – either by PSM element or by PSM culture principle (or both).

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Collect
Information



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02

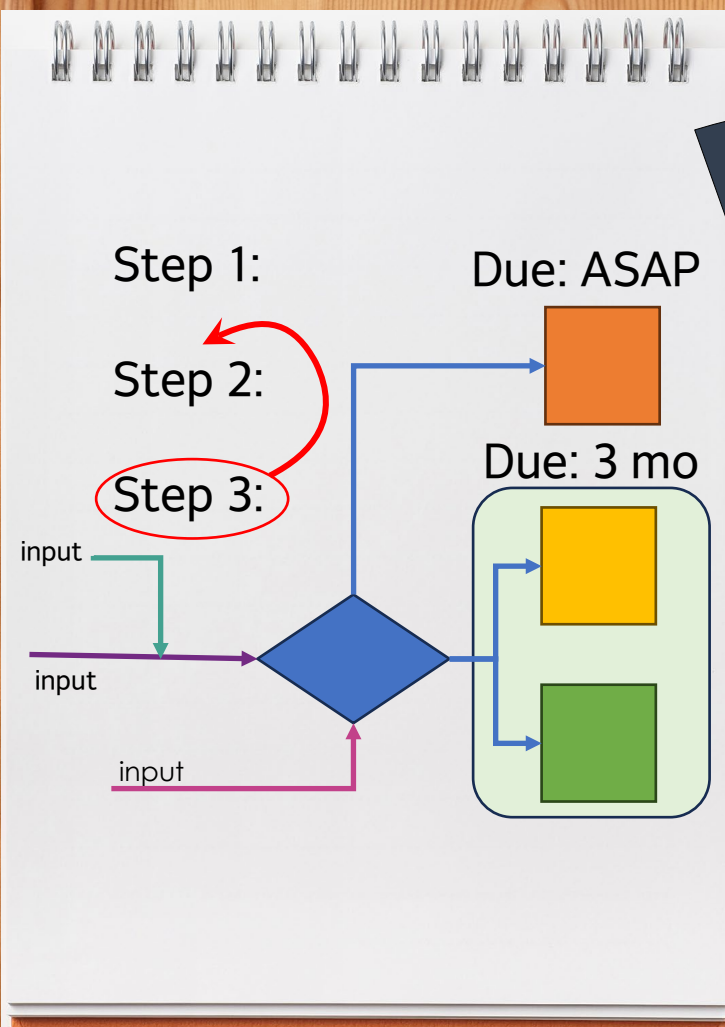
Analyze
Data

Analyze the gathered information to identify root causes and contributing factors leading to undesired behaviors/deviations.



03

Develop Solutions



Develop action plans to address and correct any root causes and/or contributing factors as identified from analysis.

- Evaluate root causes already being addressed as part of other initiatives to ensure they are being fully addressed or if supplemental action items are needed
- Consider hourly operations and maintenance effects from the developed plans (i.e. develop plans with time / effort / resource constraints in mind)
- Consider union/management safety committee interests
- Consider other site/industry solutions with proven success



Present the developed action plans and supporting data to plant leadership for buy-in and to develop implementation timing.

Understanding separate ongoing initiatives will help leadership make informed decisions regarding priority and resource loading.



Implement the action plans including communication with the following:

- a. PSM Committee (if available)
- b. Hourly operations and maintenance are informed
- c. Union/management safety committee
- d. Corporate wide PSM network where each site shares their learnings.

Communication at this stage helps to show the full cycle of the BBPS efforts from data gathering through solution implementation.

Involvement of PSM team (as necessary) can help ensure appropriate employee participation and coordinate additional efforts to drive impactful change (i.e. incorporating elements into appropriately timed toolbox talks, etc).



Implement
Solutions

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Questions?