Practical Steps to Improve Process Safety Culture – Case Studies and Lessons from the Process Industry

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2010 International Symposium
October 26, 2010

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Improvements in safety performance

Technology and standards

Safety Management Systems

- Improved culture
- Visible leadership / personal accountability
- Hared purpose & belief
- Ligned performance commitment & external view
- Delivers business value

- Engineering improvements
- Hardware improvements
- Safety emphasis
- Compliance

Integrated reporting
- Assurance
- Competence
- Risk management

Incident rate

Time

Kiel Center
About EHS Culture –

- Culture is the tendency in all of us in our organization to want to do the **right thing** in the **right way** at the **right time**, **ALL the time** – even when if no one is looking.

- Good cultures evolve from common values and attitudes developed as the group seeks to properly solve common problems.

- It is hard to measure and more difficult to change.
1. Establish safety as a core value
2. Provide strong leadership
3. Establish and enforce high standards of performance
4. Formalize the safety culture emphasis/approach
5. Maintain a sense of vulnerability
6. Empower individuals to successfully fulfill their safety responsibilities
7. Defer to expertise
8. Ensure open and effective communications
9. Establish a questioning/learning environment
10. Foster mutual trust
11. Provide timely response to safety issues and concerns
12. Provide continuous monitoring of performance
Process Safety Culture – Essential Features

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Avoid complacency
High awareness of hazards
“Things are different here”
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Workers/Managers trust each other
The system is just
Willingly accept evaluation
Performance Assurance Review (PAR) Approach

- Interview Data
- Employee Survey
- Technical/Performance Data

PAR

- Safety Culture
- Strengths and Weaknesses
Remember…Perception is Reality

Two things are possible with “soft” culture data (e.g., surveys, interviews):

- The perception expressed in the data is true
  - Positive data: build on it
  - Negative data: correct the problem

- The perception expressed in the data is false
  - Positive data: need to fix it (may obscure an underlying problem)
  - Negative data: need to fix it (the person’s attitude and behavior is the same as if the perception was true)
Question: Based on the numerous safety culture studies that have been conducted, can we PREDICT safety culture strengths and weaknesses?

Answer: Not really; even within the same market sector, company, or site
## Examples of Recent Safety Culture Studies

<table>
<thead>
<tr>
<th>Business Sector</th>
<th>Relative Size</th>
<th>International</th>
<th>Multisite</th>
<th>Motivation</th>
</tr>
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<tbody>
<tr>
<td>Commodity Petrochemical</td>
<td>Medium</td>
<td>Yes</td>
<td>No</td>
<td>Transitioning organization</td>
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<tr>
<td>Pharmaceutical</td>
<td>Large</td>
<td>Yes</td>
<td>Yes</td>
<td>Baseline data</td>
</tr>
<tr>
<td>Specialty Petrochemical</td>
<td>Medium</td>
<td>Yes</td>
<td>Yes</td>
<td>Assess current attitudes</td>
</tr>
<tr>
<td>Specialty Petrochemical</td>
<td>Small</td>
<td>Yes</td>
<td>Yes</td>
<td>Concern over recent trends</td>
</tr>
<tr>
<td>Specialty Petrochemical</td>
<td>Medium</td>
<td>Yes</td>
<td>Yes</td>
<td>Recent incident history</td>
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<tr>
<td>Upstream Oil and Natural Gas</td>
<td>Large</td>
<td>Yes</td>
<td>Yes</td>
<td>Recent incident history</td>
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<tr>
<td>Pulp and Paper</td>
<td>Large</td>
<td>No</td>
<td>Yes</td>
<td>Concern over recent trends</td>
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## Process Safety Strengths and Weaknesses

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<tr>
<th>Essential Feature</th>
<th>Com PC</th>
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<th>Oil P&amp;E</th>
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<tbody>
<tr>
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<td>2. Provide strong leadership</td>
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<td>3. Establish and enforce high standards of performance</td>
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<td>4. Formalize the safety/HSE culture approach</td>
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<td>5. Maintain a sense of vulnerability</td>
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<td>6. Empower individuals to successfully fulfill their HSE responsibilities</td>
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<td>7. Defer to expertise</td>
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<td>9. Establish a questioning/learning environment</td>
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<td>10. Foster mutual trust</td>
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<tr>
<td>11. Provide timely response to safety/HSE issues and concerns</td>
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<td>12. Provide continuous monitoring of performance</td>
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*W* = Weakness
*S* = Strength
What can we conclude?

- There are no clear patterns of safety culture strengths and weaknesses
- Digging deeper, there are common concerns that can influence the process safety culture
- Based on the common concerns, there are recommendations that can enhance the safety culture at many facilities
Common Areas of Concern and Recommendations

1. Concern: Shortcuts, workarounds, and not following procedures
   Recommendations:
   (a) Ensure that all personnel clearly understand the work rules,
   (b) Remove all barriers to compliance, and
   (c) Ensure that all personnel are aware of the consequences of violating a work rule and be consistent

2. Concern: Perception that there are not enough people available to perform jobs safely
   Recommendation: Openly discuss the perception with employees. “What jobs are you having to do unsafely because of lack of resources?” Be open to the idea that they may be right
Common Areas of Concern

3. Concerns:
   (a) Hesitancy to report incidents and underutilized/non-existent near miss reporting systems
   (b) Incident and near miss reporting inhibited by a fear of retribution and a blame culture

Recommendations:
   (a) Revitalize the near miss reporting system through management support, encouragement, and example
   (b) Build an atmosphere of trust
   (c) Ask, “Why does the reporting system need to be anonymous?”
4. Concern: Lack of effective communications

- Results of hazard assessments (e.g., process hazard analysis),
- Management of change (MoC) reviews
- Process safety related metrics
- Information exchange at shift turnovers

Recommendation: De-bottleneck communication channels

(a) Be wary of email as the solution
(b) Add variety
(c) Request sign-off, but use sparingly
(d) Establish clear and specific process safety related metrics and communicate progress
Common Areas of Concern, continued

5. Concern: Engineers and operators are not communicating effectively (often have different goals)

Recommendations:
(a) Training and mentoring program for new engineers (include working on a full shift rotation)
(b) Involve operators and maintenance technicians in all stages of projects
(c) Treat all process improvement suggestions seriously and provide meaningful feedback
(d) Challenge all plant personnel to look for improvement opportunities
(e) R-E-S-P-E-C-T (hard to earn, easy to destroy)
Common Areas of Concern, continued

6. Concern: The topic and importance (what’s in it for me?) of safety culture is not commonly understood

Recommendations:
(a) Provide safety culture awareness-level training to the workforce with **highly interactive** workshops
(b) **Empower** employees to find and implement solutions

7. Concern: The quality of the training has declined (code phrase for over-reliance on CBT)

Recommendations:
(a) Evaluate/improve the training program for all employees – **Seek employee input**
(b) Keep it fresh and add variety, where possible
Common Areas of Concern, continued

9. Concerns:
   (a) Relatively low level of trust between management and employees
   (b) Work groups do not trust each other to do the right thing

Recommendations:
   (a) Management should frequently visit the operating units and support facilities (e.g., maintenance shops, labs) and LISTEN
   (b) Establish a progressive discipline policy and ensure that all employees are aware of it; then strictly adhere to it
   (c) Build trust as a key pillar in the company’s ethics values
   (d) Guard it. Like respect, one slip can undo years of effort to build it
Conclusions

1. The safety cultures at different companies and even within companies have a lot of variation. Extrapolation from one to another is difficult, at best

2. Consider site-specific safety culture assessments rather than extrapolating or interpolating data from other facilities

3. Consider conclusions that have been previously generated and ask “Do we have similar concerns at our facilities?”
   If so, consider applying solutions that have worked for others

4. The goal should be an improved safety culture with the end result being a reduction in safety related incidents
Additional Resource

*Guidelines for Risk Based Process Safety*, CCPS of the AIChE and Wiley & Sons, Inc., 2007, Chapter 3

Contact Information

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Time for Questions