



# MARY KAY O'CONNOR PROCESS SAFETY CENTER

TEXAS A&M ENGINEERING EXPERIMENT STATION

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21<sup>st</sup> Annual International Symposium  
October 23-25, 2018 | College Station, Texas

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## What to Do if PSM/HSE Performance Flattens Out? Resuming Your Drive to ZERO

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### Abstract

Most companies have a continuous improvement expectation in their PSM/HSE mission and values. Many companies measure PSM/HSE performance with lagging and leading metrics. Some companies are pursuing Operational Excellence. And some companies have adopted some form of “drive to zero”. But, what happens when their performance flattens out? People will wonder why, and there will be pressure from many directions - internal and external. Key issues that must be addressed are:

- Can you believe your measure data and methods?
- If so, can you improve the performance based upon these indicators?
- Then, how can you sustain it - How to resume driving to ZERO?

This paper/presentation presents an approach and case study that describes (1) where the company PSM/HSE performance plateaued and (2) what they did to resume their drive to ZERO that included the following steps:

- Examine learning mechanisms and corrective action processes
- Incident reporting and investigation root cause analysis effectiveness
- Audit effectiveness
- Action item completion work processes and results
- Examine leading indicators to see if they have PSM/HSE improvement value vs. just things easy to collect and are really being used to drive performance
- Examine the effectiveness of existing behavior based safety (BBS) program - many BBS programs lose value and need to be re-energized
- Do a PSM/PSM/HSE culture disease screening - determine whether there is evidence of chronic problems that never stay fixed

- Conduct an PSM/HSE culture evaluation
- Then, improve the areas where the problems are

Following this approach allowed for efficiently diagnosing performance problems, and the company was able to improve their PSM/HSE culture and resume their drive to zero with a two-year period.

## **1. INTRODUCTION**

Companies have been taught many times that organizational factors have been important contributors to PSM/HSE/process safety performance. Some of those organizational characteristics have to do with not having a proper safety culture, failing to exhibit strong leadership to support the culture, and not creating the consistent operational discipline at all organizational levels. One theme common to all three of these aspects has been the failure of companies to learn from experience – either from their own or from others.

In order to address their “learning disabilities”, companies should strive to improve operational discipline, leadership, and eventually their culture. The following sections describe examples of each of these aspects and how to improve them. This paper presents an approach and case study that describes (1) where the company PSM/HSE performance plateaued and (2) what they did to resume their drive to ZERO that included the following steps:

1. Examine learning mechanisms and corrective action processes
  - a. Incident reporting and investigation root cause analysis effectiveness
  - b. Audit effectiveness
  - c. Action item completion work processes and results
2. Examine leading indicators to see if they have PSM/HSE improvement value vs. just things easy to collect and are really being used to drive performance
3. Examine the effectiveness of existing behavior based safety (BBS) program - many BBS programs lose value and need to be re-energized
4. Do an PSM/HSE culture disease screening - determine whether there is evidence of chronic problems that never stay fixed
5. Conduct an PSM/HSE culture evaluation
6. Then, improve the areas where the problems are

The following sections describes the company’s journey to discover, diagnose, and correct the root causes of its PSM/HSE performance stagnation and the resumption of its drive to ZERO.

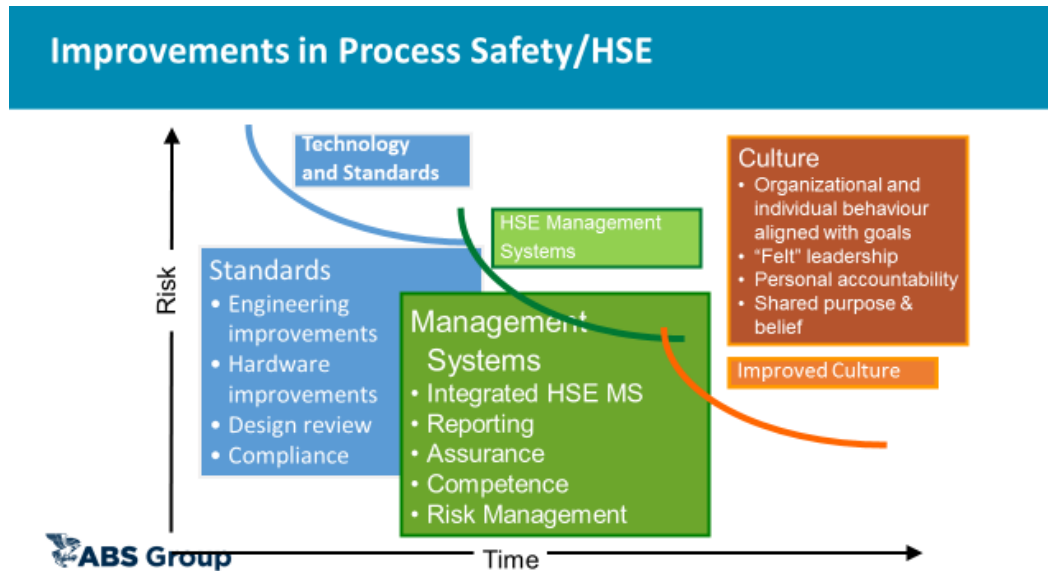
## **2. IMPORTANCE OF PSM/HSE CULTURE IN CONTINUAL IMPROVEMENT**

Companies are usually motivated to improve PSM/HSE performance by the one or more of the following reasons:

- Recent major accident
- Series of incidents
- Regulatory – new rule or enforcement actions

- Industry group membership obligation
- Peer pressure/comparisons of existing practices
- Perception that risk is not tolerable/increasing
- Resource pressures
- Company policy of continuous improvement

Over the years, the following figure illustrates the three strategies that companies have adopted to attempt to drive continuous performance improvement.



**Figure 1: Continuous Improvement Strategies**

As you can see from the figure, unless a company attempts to address behaviors and culture, they have no hope to break through performance stagnation and continue to drive to ZERO.

Arendt definition of culture is – *“Culture is the tendency in all of us – and 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.”* Leadership is an essential feature of a good culture. Operational discipline (or the lack thereof) is a behavioral result of your culture and leadership. So, a company that analyzes its performance problems, seeks out root causes, and determines a path forward will eventually realize that it needs to evaluate and improve its PSM/HSE culture.

### 3. FRAMEWORKS FOR UNDERSTANDING PSM/HSE CULTURE

The CCPS made “culture” an official safety management system (SMS) element for the first time when it published its **RBPS Guidelines**.<sup>1</sup> CCPS safety culture working group and ABS Consulting evaluated major organizational accidents and prepared a Safety Culture Awareness tool, which has been widely distributed via CCPS’s web page. Subsequently, Process Safety Culture was defined as an element in the **RBPS Guidelines** that created a culture management practice and laid out the “Twelve Essential Features of a Good Culture.”

**Table 1 - CCPS Process Safety Culture – Essential Features**

- 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

Our belief is that while the CCPS culture feature framework is the most complete one, ultimately, it will not matter which framework you follow, but that you excel in the aspects of any one of them. When this doesn't happen and a poor culture persists, here are some lessons the authors have learned about why and what needs to be done.

- If you have poor culture, marked by mistrust or needs large improvement, the worst thing you can do is too just start “talking” about it at the top
- The “top” needs to first start “behaving” better to address culture weaknesses; then, the talk will build up from the bottom
- If you survey, do it anonymous and voluntary; you should commit to sharing the results – quickly
- Any education/training, etc. should extend to ALL of the workforce, including contractors
- **BUILD OWNERSHIP**

One way to do this is look for evidence that culture problems exist and have been causing performance issues. The following are some examples you can look for to do “culture disease screening”:

- Chronic work backlogs
- Problems that never seem to get better
- Poor reporting
- Investigations identify symptoms, not root causes
- Many incidents involve “people not following procedures”
- Repetitive barrier degradation patterns
- Repeated root causes – over and over and over...
- Corrective actions don't address root causes
- Fixes don't stay fixed

If any of issues are prevalent, then your performance problems are likely root in PSM/HSE culture disease.

#### **4. HOW TO MEASURE PSM/HSE CULTURE**

PSM/HSE culture is hard to measure and more difficult to change. There are few direct indicators of PSM/HSE culture, and because of its nature, it cannot be evaluated very frequently. Leadership and operational discipline are essential attributes of sustaining a healthy PSM/HSE culture. So, how do you know if better culture or operational discipline is needed? What evidence would lead you to believe that you need better operational discipline and that you need a ConOps element? Typical ways to get a handle on PSM/HSE culture are:

***Employee surveys*** – Surveys are the most frequently used method. Typically, a company will prepare an anonymous survey (20-70 questions, shorter is better) for both hourly employees and management. The content of the survey historically has been focused more on occupational safety issues, but recently they have been adapted to address PSM/HSE issues. Survey questions are developed to see how employees “feel” about important PSM/HSE-related matters. Respondents are given a choice of five answers to gauge the strength of their feelings about the issues – strongly agree, agree, neutral, disagree, strongly disagree. Questions and results are normally placed in categories relating to the PSM/HSE issues of concern (Process Safety Reporting, Commitment to Process Safety, Supervision, Procedures and Equipment, Employee Involvement, Process Safety Training, and Safety Processes). Table 2 lists some best practices for developing/conducting PSM/HSE culture surveys.

Some difficulties with surveys are (1) that they should be voluntary, which may lead to insufficient participation to achieve statistical validity and (2) surveys cannot be repeated very often or else workers will become accustomed to it and can tend to feed back “what you want to hear” rather than what they are really feeling.

***Interviews*** – another way to elicit PSM/HSE culture insights is through limited, representative, but targeted, interviews of company personnel. These interviews may last from 15 minutes to an hour. A disadvantage of interviews is that they are very time-consuming and resource intensive and the results are more difficult to pull together in a consistent framework for analysis.

***Work observations*** – Process safety culture issues that deal with the tendency for employees to not following procedures, safe work practices, etc. can be identified via workplace observations. These can be very effective, but are difficult to conduct in a consistent fashion using a large number of observers. The biggest limitation is that they are difficult to do without the person being observed knowing that they are being watched/evaluated. If they know, you are unlikely to get the “real” information about how the worker behaves “without anyone looking.”

***Process safety leading indicator metrics*** – More companies are using leading indicators of PSM/HSE as a window into PSM/HSE culture. For example, the rate of reporting of near-misses, the rate of close-out of action items, or the completeness of training compliance can be used to gauge a company’s leadership in PSM/HSE. Metrics are good because they can be refreshed frequently, but they are usually very “indirect” measurement of PSM/HSE issues.

Depending upon the situation, we typically use a combination of these means, anchored by some variation on a culture survey.

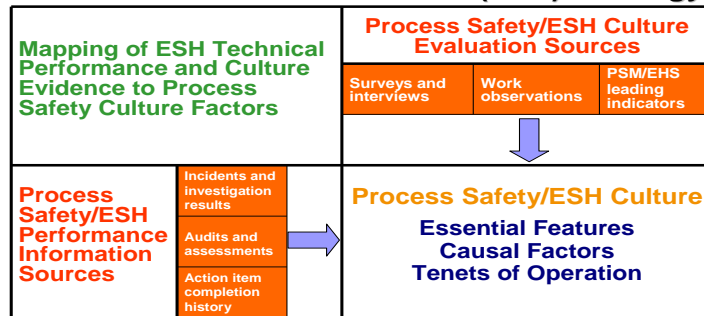
CCPS has recently published *Essential Practices for Developing, Strengthening, and Implementing Process Safety Culture* which condensed the *RBPS Essential Features of a Good Culture* into ten core principles. The following table compares the original features with the condensed core principles.

RBPS Culture Essential Features	Culture Core Principles
1. Process safety must be a core value	1. Establish the Imperative for Process Safety
2. Provide strong leadership everywhere	2. Provide Strong Leadership
3. Enforce standards of performance/accountability	9. Combat the Normalization of Deviance
4. Formalize the culture approach	10. Learn to Assess and Advance the Culture
5. Maintain a sense of vulnerability	5. Maintain a Sense of Vulnerability
6. Empower individuals	7. Empower Individuals
7. Defer to expertise	8. Defer to Expertise
8. Ensure open and effective communications	4. Ensure Open and Frank Communications
9. Establish a questioning/learning environment	6. Understand and Act Upon Hazards/Risks
10. Foster mutual trust	3. Foster Mutual Trust
11. Responsiveness to process safety issues	
12. Provide continuous monitoring of performance	10. Learn to Assess and Advance the Culture
<b>Identical</b>	
<b>Word differences only</b>	
<b>Combined into one</b>	
<b>Possible gap</b>	

Regardless of which of these two frameworks are used, a culture assessment should seek to use the selected framework items as measurement objectives for whatever survey, interviews, or observations are conducted.

ABS Consulting has devised an approach for connecting PSM/HSE culture survey results to PSM/HSE outcomes. This PSM/HSE **Performance Assurance Review** approach (Figure 2) categorizes the culture survey results and maps them to the 12 essential features of a good PSM/HSE culture, (b) categorizes the results from a review of recent and historical PSM/HSE performance at a plant (e.g., current PSM or PSM/HSE audit results) and maps these results to the same 12 essential features. The “weighted outcome” of the mapping of contributions of both the survey results and the PSM audit results to the 12 essential features are totaled and the most significant PSM/HSE culture issues are identified for the plant/company.

## Connecting the Dots – Process Safety Performance Assurance Review (PAR)<sup>®</sup> Strategy



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Figure 2: Process Safety Performance Review Culture Evaluation Approach

The results of the process safety culture survey are categorized into the 12 essential features of a good process safety culture, as shown by a typical results below

### Typical Overall HSE Culture Results

W=Weak

M=Medium

S=Strong

3. Accountability to performance standards
9. Questioning/learning environment
5. Sense of vulnerability
12. Monitoring of performance
6. Individual empowerment
4. Formalized HSE/culture approach
11. Responsiveness to HSE concerns
8. Open and effective communications
2. Strong leadership
10. Mutual trust
7. Deference to expertise
1. Core value

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Figure 3: Example of Culture Evaluation Results

### HSE Culture Improvement/Benchmarking

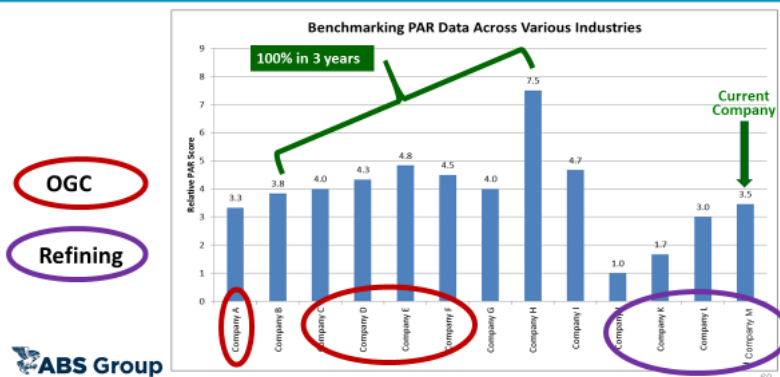


Figure 4: Example of General Improvement in Performance by Improving PSM/HSE Culture

## **5. CASE STUDY – HOW ONE COMPANY RESUMED IT’S DRIVE TO ZERO**

The Responsible Care® program at a large multi-national chemical member company was directed towards a vision of zero – zero injuries, zero process incidents, zero distribution incidents and zero environmental incidents. Towards this end, they have created a “Goal Is Zero” culture among our employees that will push every individual towards a self-sustaining cycle of improvement in safety performance.

In 2008, the senior leadership expressed a concern that the employee injury/illness frequency rate had plateaued, and took steps to drive the frequency rate towards an ACC Best in Class level. A “Goal Is Zero Vision Statement” was created and communicated throughout the corporation. To facilitate improvement, the company committed to implement a Responsible Care Management System (RCMS) at all facilities world-wide that would encompass the Goal Is Zero vision and continual improvement. A Global Commitment to Responsible Care® was developed, signed by the Executive Management Team, and communicated. Within the RCMS model of continual improvement, they determined that the root cause preventing improvement in safety performance was failures in the underlying culture of Responsible Care®.

The Responsible Care® culture that the company desired is a tendency in all employees to want to do the right thing in the right way at the right time, ALL the time – even when no one is looking. (Arendt, 2007). In mid-2009 this company initiated the identification of behavioral and cultural causes of safety performance stagnation by retaining ABS Group to conduct a culture evaluation throughout the company and to visit representative company manufacturing, research, and office locations throughout the world to interview management and employees about their culture of safety. Incident summaries and statistics, EHS audit findings, and inspections were used to evaluate existing sources of historical safety performance. Based on the findings of the culture survey, interviews, and the evaluation of historical performance, company was able to identify “cultural causal factors” and rank their significance based on the results of the evaluation (Figure 5). Primary cultural causal factors were determined to be the lack of discriminating leading indicators based on quality rather than quantity of data, a normalization of deviance, and the perceived lack of management responsiveness to safety concerns.



Cultural Causal Factor	PAR Rank
11. Non-responsiveness to safety concerns	1
3. Not meeting performance standards – “normalization of deviance”	1
7. Not deferring to expertise	1
9. Lack of a questioning/learning environment	1
2. Not providing strong leadership	2
4. Not formalizing/celebrating the safety culture emphasis/approach	2
5. Lack of sense of vulnerability	2
1. Safety is NOT a core value	3
10. Lack of mutual trust	3
6. Not empowering individuals to fulfill their safety responsibilities	3
8. Not ensuring open and effective communications	3
12. Not provide continuous monitoring of performance	

**Figure 5: Company PSM/HSE Culture Evaluation Results by Essential Feature**

Based upon the identification of significant causal factors, company developed objectives to improve workforce at-risk behaviors and safety culture issues. Leading key performance indicators were established to evaluate the “health” of facility safety programs (Figure 6). Rather than require facilities to report a specific number of safety observations, each facility was given the task of developing their own goals, objectives, improvement plans, and reporting on the quality of their own program. Facilities were required to establish and report on the quality of safety near miss programs and the quality of observation and contact programs.

To increase management’s responsiveness to safety concerns, company focused on near miss and incident root cause analysis, corrective action tracking, and communication of findings throughout the corporation. A web-based corrective action tracking system that allows all facilities to view all corrective actions corporate-wide has been implemented. In the event of an injury or serious near miss, the investigation, root cause, and corrective actions are presented to all Responsible Care managers, facility managers, business managers, and the executive management team. When appropriate, corporate-wide corrective actions are put in place. All employees are surveyed regularly for their opinion of management responsiveness.

RESPONSIBLE CARE  
PERFORMANCE MEASUREMENT  
JANUARY  
2010

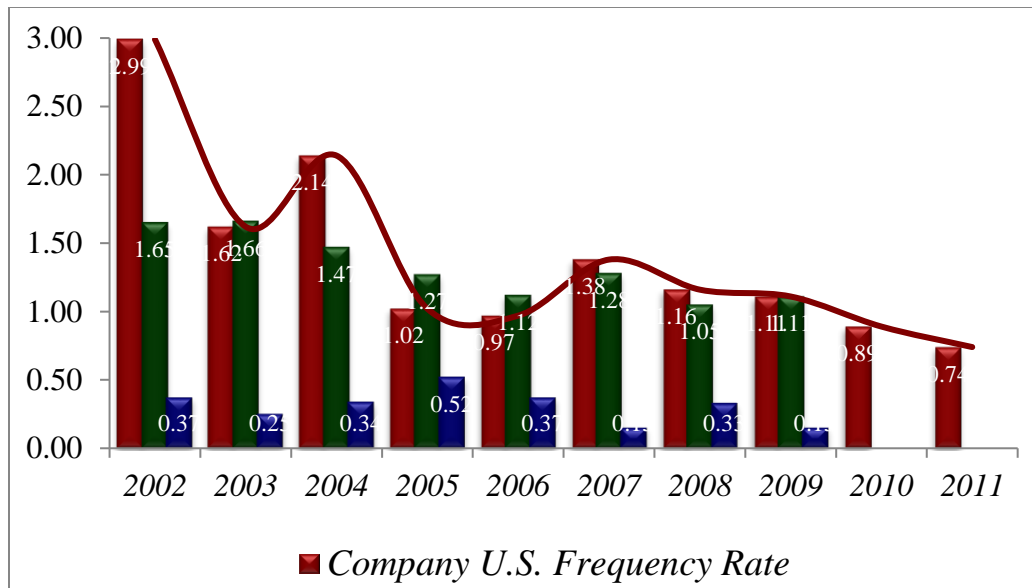
Key Measurement	This Month	1	2	3	4	5	2010 Year-End Improvement Target	Comments
Quantity of Safety Near Miss Program								
Quantity of Observation & Correction Program								
Employee Measure of Safety Management in the Classroom / Practical Application								
Effectiveness of Training								
Number of RCMS Improvement Plans								
Average								

**Figure 6: Company PSM/HSE KPIs Established to Monitor Culture Change**

Facility key performance indicator improvement plans were required to be included in the facility RCMS goals and objectives. The status and effectiveness of the KPI improvement plans and progress against the RCMS goals and objectives are tracked monthly.

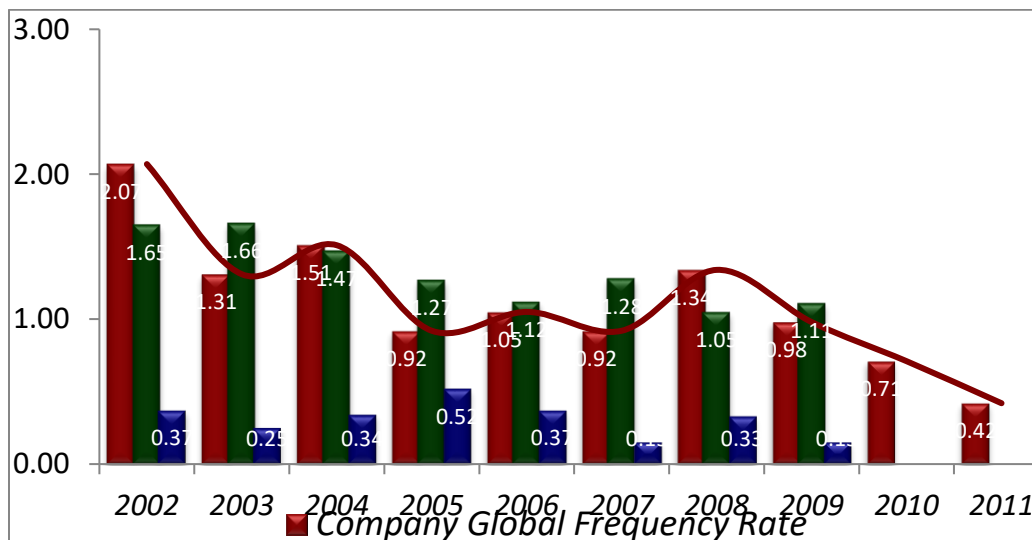
To roll out the improved Goal Is Zero program, a Global Responsible Care® and Operational Excellence Conference was held in September 2009. All Responsible Care® managers and facility managers were in attendance. Facilities began reporting on the program in January 2010. After one year, the culture evaluation was repeated in December 2010, and adjustments to the program were made as a part of the 2011 Corporate RCMS goals, objectives, and targets. All facilities were encouraged to review progress against their own programs and include KPI improvement plans in their RCMS goals, objectives, and targets.

When company began in 1999, their global employee recordable injury frequency rate was over 4.0 and in the fourth quartile for an ACC mid-sized company. The following figures show the improvement that the company made in PSM/HSE performance – all due to the PSM/HSE culture improvement initiative described above.

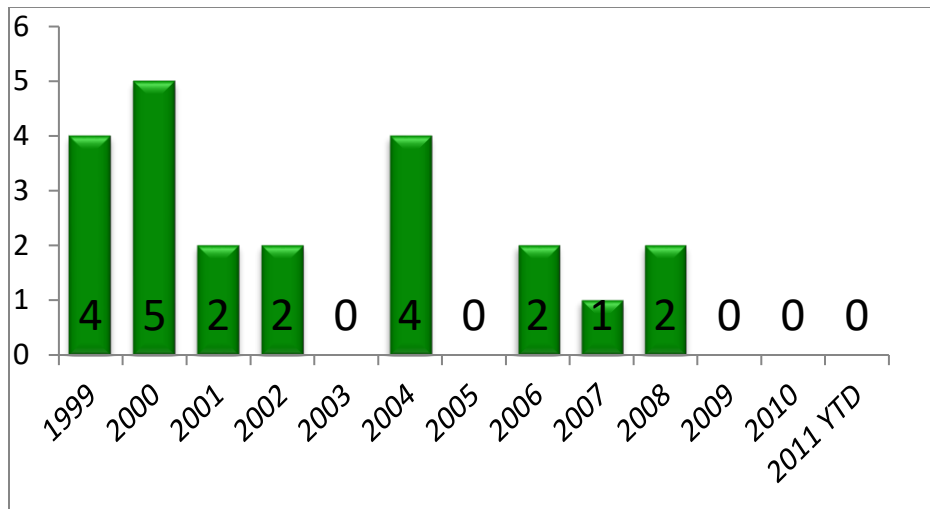


**Figure 7: Company U.S. Employee Recordables Frequency Rate Improvement**

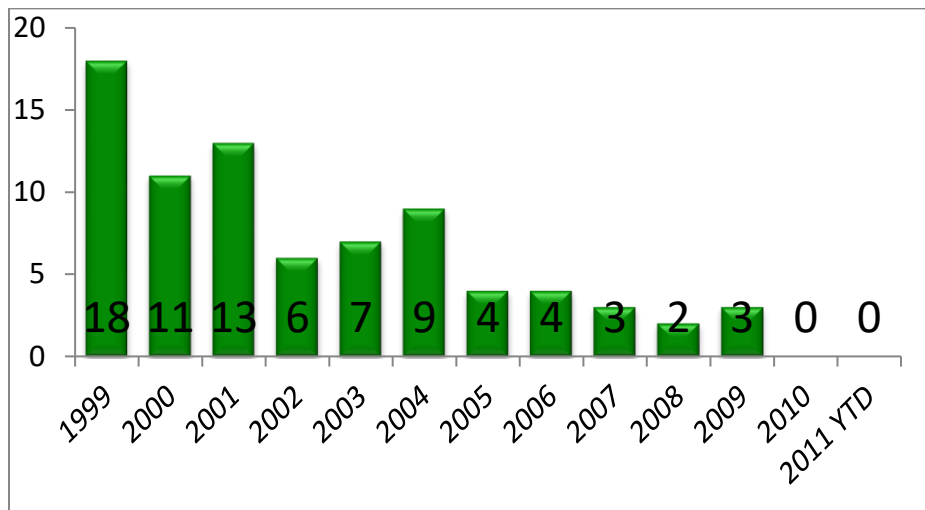
Through its Goal is Zero initiative and other process improvements, the rate was reduced to near the ACC average. Since the renewal of the Goal is Zero initiative and the emphasis on the underlying safety culture which were linked to RCMS continual improvement initiatives, company employee injury/illness frequency rate has moved to the ACC first quartile (0.42), with every expectation of improving to an ACC Best in Class position. As of February 2011, company has achieved 33 months without a process safety incident, and 21 months without an environmental incident.



**Figure 8: Company Global Recordables Frequency Rate Improvement**



**Figure 9: Company Process Safety Incident Rate**



**Figure 10: Company Environmental Incident Rate**

## 7. CONCLUSIONS

Many companies have overall safety policies or visions that embody some sort of “pursuit of zero accidents”. However, pursuit of ZERO is difficult and is often interrupted by organizational issues. This paper shows an example of one company that evaluated its PSM/HSE culture, took corrective action to address PSM/HSE culture weaknesses, and then resumed its **DRIVE TO ZERO**.

If you have PSM/HSE/process safety performance stagnation, indicated by chronic problems that never get/stay better, then you should consider examining your company’s PSM/HSE culture and improving your chances of future continuous improvement of PSM/HSE performance.