ANSI / API RP-754

Process Safety Performance Indicators for the Refining & Petrochemical Industries

Part 1: Business Case & Leadership Overview

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Chair API RP-754 Drafting Committee

Process Safety Incidents

- Highest potential for multiple injuries/deaths
- Highest potential for significant environmental harm
- Highest potential for significant property damage
- Highest potential for significant business interruption
- Highest potential for damage to reputation

"You get what you inspect, not what you expect."

Unknown

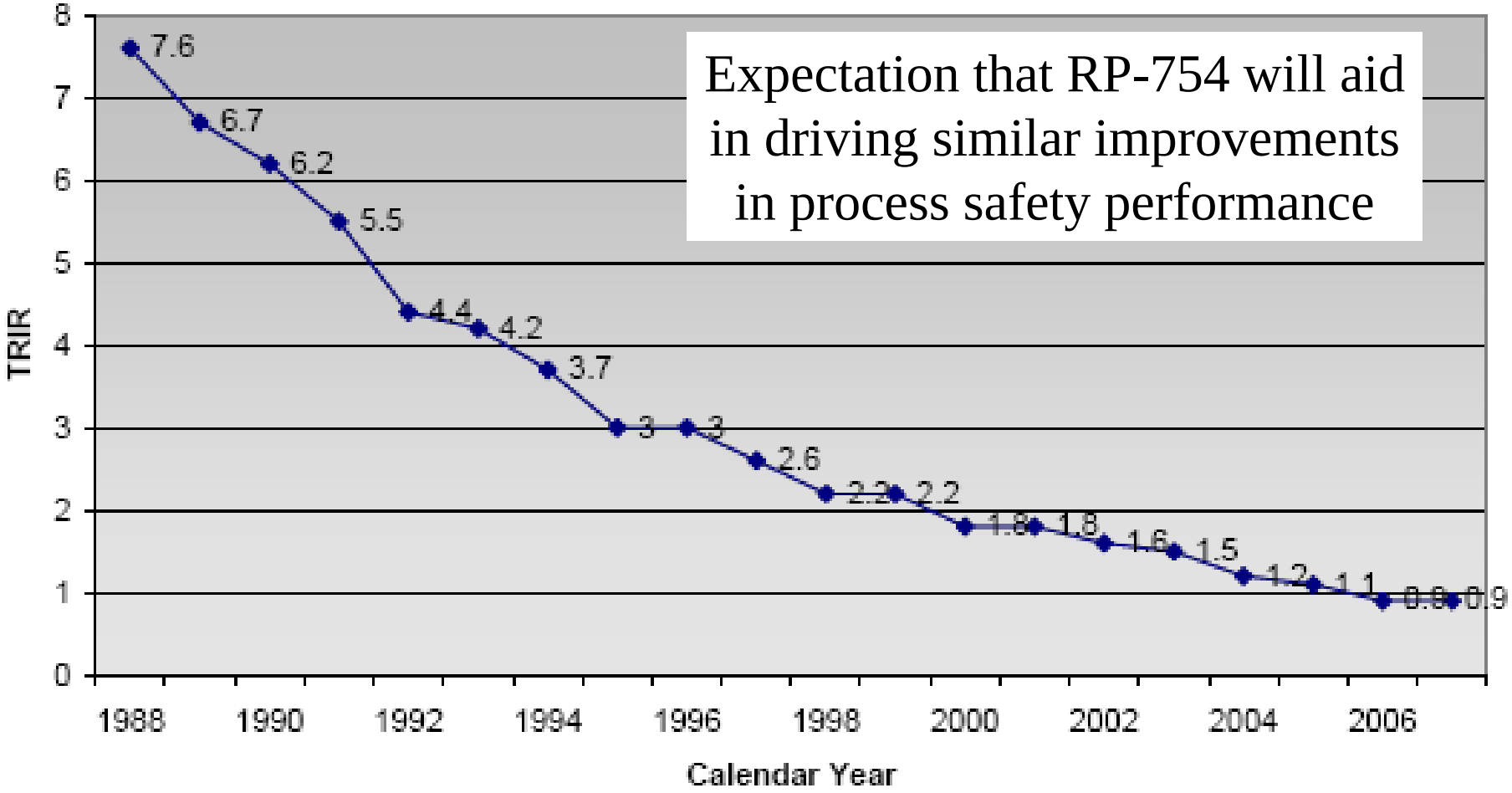
CSB Recommendation to API & USW

"Work together to develop two new consensus American National Standards Institute (ANSI) standards. In the first standard, create ***performance indicators for process safety*** in the refinery and petrochemical industries. Ensure that the standard identifies ***leading and lagging indicators for nationwide public reporting*** as well as indicators for use at individual facilities. Include methods for the development and use of the performance indicators."

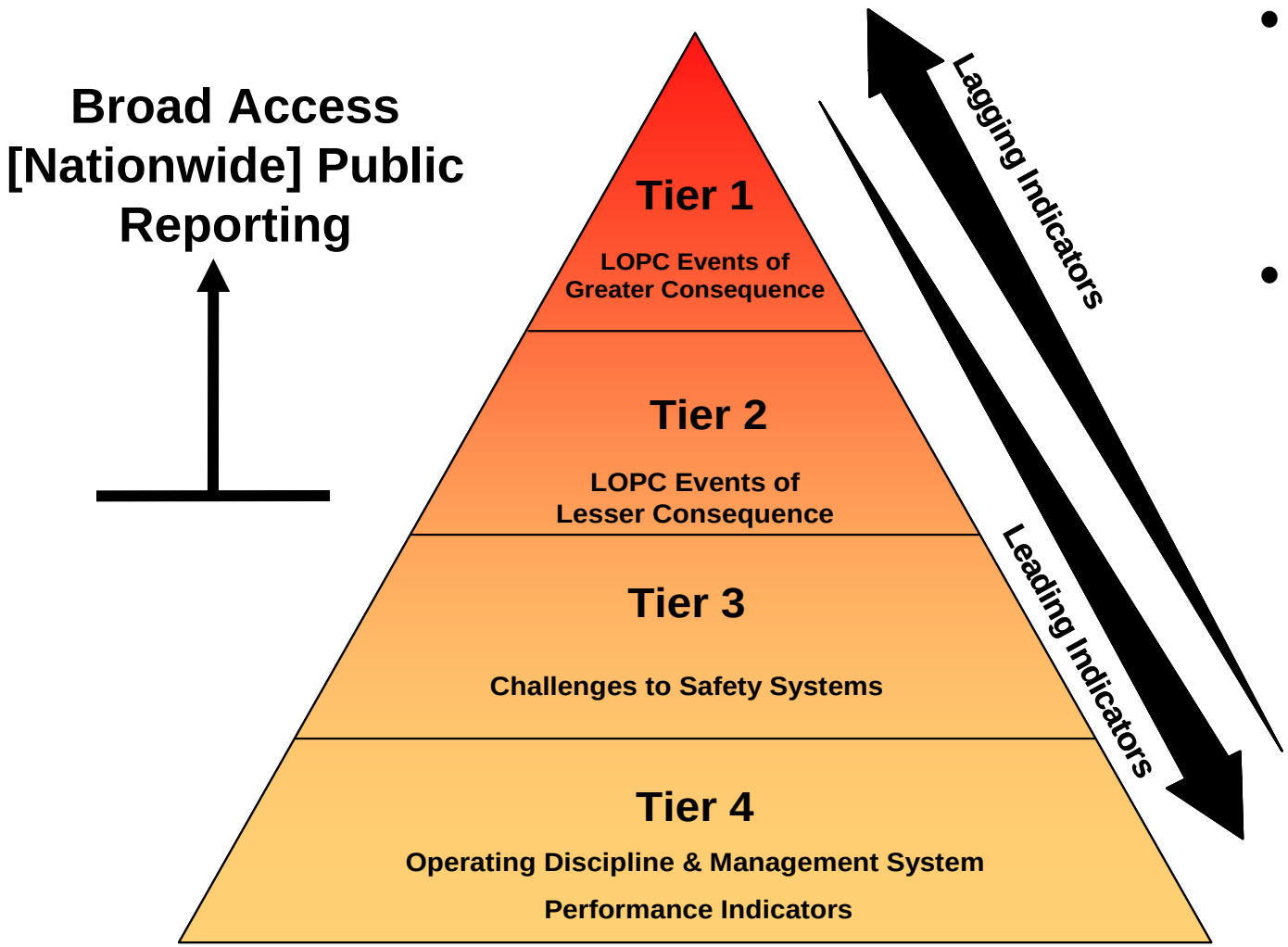
RP 754 – Drafting Committee Membership

- Academia [1]
- Associations [5]
- Engineering & Construction [1]
- Government [1]
- Labor [3]
  [Withdrew 04-Aug-09]
- Owner / Operators – Refiners [10]
- Owner / Operator – Chemicals [4]

Total Recordable Incident Rate vs. Calendar Year – U.S. Refineries



Process Safety Indicator Pyramid



- Tiers 1 & 2 are RP-754 standardized definitions
- Tiers 3 & 4 are company defined performance indicators

Tier 1 & 2 -- Process Safety Event

- An unplanned or uncontrolled release of any material, including non-toxic and non-flammable materials from a process that results in one or more of the consequences listed below:
  - Harm to people; or
  - Impact upon the community; or
  - Damage to equipment; or
  - A release of a threshold quantity
- PSE Rate = [Total PSE Count/Total Work Hours] x 200,000

Tier 3 – Challenge to Safety Systems

- Purpose
  - Typically represent challenges to the barrier system that progressed along the path to harm, but were stopped short of a Tier 1 or Tier 2 PSE consequence
- Examples
  - Safe Operating Limit Excursions
  - Primary Containment Inspection or Testing Results Outside Acceptable Limits
  - Demands on Safety Systems
  - Other LOPC Events

Tier 4 – Operating Discipline & Management System Performance

- Purpose
  - Typically represent the performance of individual components of the barrier system
  - Indicative of process safety system weaknesses that may contribute to future Tier 1, 2 or 3 PSEs
- Examples
  - Process Safety Action Item Closure
  - Training Completed on Schedule
  - Safety Critical Equipment Inspection
  - Completion of Emergency Response Drills

Primary Modes of Implementation

- Report everything . . . Database sorts it out
- Train personnel to identify and report Tier 1 & 2 events

RP-754 Adoption Plans

- API, NPRA, OGP, and CONCAWE have committed to 2010 data collection
- CCPS is revising their guide on Process Safety Leading & Lagging Metrics to align with RP-754
- ACC plans to pilot
- IPIECA is vetting the reporting requirements with their stakeholders
- UK HSE provided positive comments during the ballot period

Benefits of Participation

- Consequence analysis
  - No. & % DAFWC / Fatalities
  - No. & % Fires
  - No. & % Explosions
  - No. & % Acute Releases
- Event analysis
  - Type of process
  - Point of release
  - Mode of operation
  - Type of material
- Industry benchmarking

Broad Access [Nationwide] Public Reporting

- Annually, each Company publicly reports Tier 1 and Tier 2 PSE information.
- 2010 – Implementation
- 2011 – Data validation
- 2012 – Industry aggregated result
- 2013 – Industry and Company blinded results
- 2014 – Industry and Company transparent results
- Tier 2 reporting may lag Tier 1 by one year

Local [Site] Public Reporting

- Each site determines the appropriate methods to communicate PSE information
- Annual report of site-specific Tier 1, 2, 3 and 4 PSE information to employees and employee representatives
- Annually, each Company makes available a summary of site-specific Tier 1 and 2 PSE information and may report site-specific Tier 3 and 4 PSE information to the local community and emergency management officials

Performance Targets

- Process safety performance is dynamic and complex, and must be managed over the entire life cycle of a facility
- Due to the “long wave length,” performance targets should be multi-year
- For example, a 25% reduction in total Tier 1 PSE’s over 5 years is a more appropriate target than a 5% reduction year over year

Conclusions

- Process safety incidents result in devastating consequences
- Adopting RP-754 provides a significant opportunity for industry to improve process safety performance
- Similar success has been demonstrated in occupational safety performance

Contact Information

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Electronic Download of RP-754

http://api.org/standards/psstandards

Questions