



U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

Report:	BP America Refinery Explosion
Recommendation Numbers:	2005-4-I-TX-6A & 6B
Date Issued:	March 20, 2007
Recipient:	American Petroleum Institute and United Steelworkers of America (USWA)
New Status:	Open-Acceptable Response
Date of Status Change	R6A: June 27, 2012 R6B: February 7, 2013

Recommendation Text:

Work together to develop two new consensus American National Standards Institute (ANSI) standards. a. 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. In the development of each standard, ensure that the committees a. are accredited and conform to ANSI principles of openness, balance, due process, and consensus; b. include representation of diverse sectors such as industry, labor, government, public interest and environmental organizations and experts from relevant scientific organizations and disciplines.

Board Status Change Decision:

A. Rationale for the Recommendation

On March 23, 2005, the BP Texas City refinery experienced explosions and fires that resulted in 15 deaths, 180 injuries and significant economic losses. A CSB investigation found that the incident was caused by multiple technical, system and organizational deficiencies, and issued recommendations to various parties. Among its most important findings, the CSB concluded that both BP and the oil refining and chemical sectors did not have an effective system of indicators to evaluate their performance *and* continually improve the control of process safety risks. Instead, the company and industry sectors were typically using personal safety indicators (i.e., “slips, trips and falls”), rather than indicators capable of preventing the risks of catastrophic failures.

The CSB recommended that the American Petroleum Institute and the United Steelworkers of American (USWA)¹ jointly lead the development of a voluntary consensus standard for leading and lagging process safety indicators for these industries.

¹ The union has since merged to become The **United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union**. USW is used in this summary for the sake of brevity.

B. Response to the Recommendation

Both recipients initially accepted the recommendation. The API formed an ANSI committee that the USWA joined. In August of 2009, however, the USWA withdrew from the committee in protest for the imbalance in voting members (management vs. union and other representatives). The API proceeded with the committee's work and issued an ANSI-approved Recommended Practice (RP) in April 2010.

C. Board Analysis and Decision

The Board found that the RP makes valuable contributions to the use of process safety indicators in the refinery, petrochemical and chemical industries. On the whole, however, the Board found that the RP falls short of meeting the intent of the CSB recommendation in many important respects. The Board also concluded that it may be advisable for regulators to have a future role in the selection, use and reporting of process safety indicators. Finally, despite the serious shortcomings, the Board decided to change the status of the recommendation to "Open—Acceptable Response," because the RP is scheduled to undergo accelerated revision in 2013, during which time the CSB would look for important improvement in these shortcomings.

The Board found that the major contributions of the RP are:

1. The RP highlights the need and establishes some obligations for the use of process safety indicators in the companies that voluntarily agree to conform to the RP.
2. The RP defines a range of four tiers of indicators that provide a useful framework, ranging from clearly defined consequences (lagging indicators) to "earlier" variables that are likely predictors of serious process failures (leading indicators). Only the first two, however, are standardized and normalized in terms of *rates* (process safety incidents per hours worked). The use of normalized indicators, or rates, is necessary for them to be comparable across different sites and companies.
3. The RP unequivocally includes incidents and hours worked by *contractor workers* in the indicator measures. This is important because as much as 50% of the workforce in these industry segments may be contractors, and in many cases they work during high-risk periods (e.g., start-ups and shutdowns).
4. The RP establishes firm obligations ("shall" language) for public reporting of Tier 1 and 2 lagging indicators, but only far more limited and ambiguous reporting for the leading indicators in Tiers 3 and 4.

The Board found that the major shortcomings of the RP are:

1. The number of Tier 1 and 2 incidents/events are likely to be too small to provide effective performance indicators for individual sites or for many or possibly most companies. Indeed, the RP entirely fails to address the central issue of the statistical validity and power of its proposed indicators.
2. Tier 3 and 4 indicators are not standardized or normalized, so they will only be useful as indicators for individual sites. This will seriously limit their ability to broadly drive

improved industry performance, or provide useful performance information to stakeholders.

3. The RP's indicator definitions fail to comprehensively count and report a likely sizable number of events that can reasonably be considered to be predictors of potentially serious process failures, such as loss of containment events that do not exceed the thresholds because control systems functioned effectively, and "routine emissions that are allowable under permit or regulation."
4. The RP fails to impose any firm or clear public reporting requirements for the "more" lagging indicators defined under Tiers 3 and 4, and the vagueness of these requirements is inconsistent with the intent of the recommendation. This will seriously limit their effectiveness in communicating performance to affected stakeholders.
5. The development of the RP did not achieve a consensus of the principal stakeholders. Even before the withdrawal of the USWA, the composition of the committee was far too heavily weighted towards industry representatives. Moreover, the committee had not representatives of other stakeholders such as civic or community leaders, regulatory agencies or environmental groups, as had been recommended by both the CSB and the Baker Panel.
6. The committee did not include expertise from relevant scientific disciplines (e.g., statistics or epidemiology) or other relevant expertise (e.g., senior managers, risk communicators, legal experts).
7. The committee had very limited participation of experts from other industrial sectors with experience using indicators, such as the nuclear, transportation or health industries, as had also been recommended by both the CSB and the Baker Panel.
8. The designation of the document as a "Recommended Practice" rather than a full-fledged ANSI standard leaves room for confusion among potential users (e.g. Does an RP have "standing" as a RAGAGEP under OSHA's PSM standard?).
9. The protection of employees, supervisors, or middle-level managers who may report near misses or insist on corrective actions following detection by indicators is not sufficiently emphasized in the RP through "shall" statements that would strongly prohibit discrimination or reprisals, as is the case, for example, in AIHA/ANSI Z10 regarding Occupational Health and Safety Management Systems (OHSMS).