



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

Report:	Tesoro Refinery Fatal Explosion and Fire
Recommendation Number:	2010-08-I-WA-R15
Date Issued:	May 1, 2014
Recipient:	Tesoro Anacortes Refinery
New Status:	Closed – Acceptable Alternative Action
Date of Status Change:	December 20, 2017

Recommendation Text:

Implement a process safety culture continuous improvement program at the Tesoro Anacortes Refinery including a written procedure for periodic process safety culture surveys across the work force. The process safety culture program shall be overseen by a tripartite committee of Tesoro management, USW representatives, Washington State Department of Labor and Industries Division of Occupational Safety and Health, and the U.S. Environmental Protection Agency. This oversight committee shall:

- a. Select an expert third party that will administer a periodic process safety culture survey;*
- b. Review and comment on the third party expert report developed from the survey;*
- c. Oversee the development and effective implementation of action items to address identified process safety culture issues; and*
- d. Develop process safety culture indicators to measure major accident prevention performance. The process safety program shall include a focus on items that measure, at a minimum, willingness to report incidents, normalization of hazardous conditions, burden of proof of safety in plant process safety programs and practices, and management involvement and commitment to process safety.*

The periodic process safety culture report shall be made available to the plant workforce. The minimum frequency of process safety culture surveys shall be at least once every three years.

Board Status Change Decision:

A. Rationale for Recommendation

On April 2, 2010, a catastrophic heat exchanger rupture at the Tesoro Anacortes refinery fatally injured seven workers. The U.S. Chemical Safety Board's (CSB) investigation identified numerous deficiencies in the safety culture at the Anacortes refinery that contributed to the severity of the incident, including:

- The acceptance of frequent heat exchanger leaks during unit start-up activities as “normal”;
- The use of excessive numbers of personnel to participate in hazardous, non-routine operations;
- The failure to verify actual process conditions in assessing the potential for high temperature hydrogen attack; and

- The use of Process Hazard Analysis assumptions that contributed to ineffective hazard evaluations.

Based on these findings, the CSB issued Recommendation No. 2010-08-I-WA-R15 to the Tesoro Anacortes Refinery, which recommended that the facility implement a process safety culture continuous improvement program that included a written procedure for periodic process safety culture surveys across the workforce. The recommendation specified that the process safety culture program shall be overseen by a tripartite committee of Tesoro management, United Steelworkers (USW) representatives, Washington State Department of Labor and Industries Division of Occupational Safety and Health (Washington L&I), and the U.S. Environmental Protection Agency (U.S. EPA).

The CSB made parallel recommendations to the other entities to effectively participate in the Tesoro Anacortes Refinery process safety culture survey oversight committee (Recommendation 2010-08-I-WA-R4 to the U.S. EPA, Recommendation 2010-08-I-WA-R9 to Washington L&I, and Recommendation 2010-08-I-WA-R16 to USW).

B. Response to the Recommendation

On October 2, 2016, and in a follow-up letter dated July 21, 2017, Tesoro informed the CSB that they had developed and implemented a process safety continuous improvement program containing the elements laid out in the recommendation. Tesoro conducted the first survey in August of 2016, which was distributed to all Tesoro refineries. The plan, which the CSB agreed to, is to conduct another survey in 2019, and then every five years following. The Process Safety Council, which was newly formed to oversee the program, developed a supplemental survey for the Anacortes Refinery, reviewed the survey results and established a prioritized plan with action items to address the findings.

Finally, regarding leading and lagging indicators, Tesoro told the CSB that the Anacortes Refinery currently tracks several different indicators and plans to review its system that collects, tracks, and analyzes indicators in order to develop a strategy for improving analysis of the data. Tesoro claims to also be working on a new software platform for analyzing personal safety indicators.

C. Board Analysis and Decision

In terms of the U.S. EPA's participation in this oversight committee, the CSB reconsidered the appropriateness of the recommendation for a federal agency to implement a company specific program. As such, the Board voted on February 1, 2017, to designate Recommendation No. 2010-08-I-WA-R4, which recommended that EPA participate in the Tesoro Anacortes Refinery process safety culture survey oversight committee, as **“Closed-Reconsidered/Superseded.”**

Based on Tesoro's development and implementation of the process safety continuous improvement program and the Process Safety Council, as described above, the Board voted to designate **CSB Recommendation No. 2010-08-I-WA-R15** as: **“Closed – Acceptable Alternative Action.”**