



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

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| Report: | Chevron Refinery Fire |
| Recommendation Number: | 2012-3-I-CA-R33 |
| Date Issued: | January 28, 2015 |
| Recipient: | Chevron USA |
| New Status: | Closed – Acceptable Action |
| Date of Status Change: | |

Recommendation Text:

Develop a method to assign accountability at Chevron to determine whether any new Energy Technology Company (ETC) recommended program or industry best practice, such as API guidance must be followed to ensure process safety or employee personal safety. This method shall include monitoring of these practices and guidance at a refining system level and at the refinery level. Develop a tracking system to monitor the progress of implementing these selected practices and guidance to completion.

Board Status Change Decision:

A. Rationale for Recommendation

On August 6, 2012, the Chevron Refinery in Richmond, California, experienced a catastrophic pipe failure in a crude unit causing the release of flammable hydrocarbon process fluid which partially vaporized into a large cloud. Nineteen Chevron employees were engulfed by the vapor cloud. 18 of the 19 employees safely escaped from the vapor cloud just before ignition. The remaining employee, a Chevron refinery firefighter, was wearing firefighting protective clothing/equipment and was able to make his way through the flames to safety. Six Chevron employees suffered minor injuries during the incident.

The ignition and subsequent continued burning of the hydrocarbon process fluid resulted in a large plume of unknown particulates and vapor. Approximately 15,000 people from the surrounding area sought medical treatment in the weeks following the incident. The CSB's investigation found that the pipe failure resulted from sulfidation corrosion, a damage mechanism that causes piping walls to thin over time.

The U.S. Chemical Safety and Hazard Investigation Board's (CSB) investigation identified several contributing causes of the incident relating to the Chevron Richmond Refinery's safety culture, including decision-making that encouraged continued operation of the unit despite hazardous leaks, reluctance among employees to use their Stop Work Authority, and substandard equipment maintenance practices.

Among other findings, the investigation identified that Chevron introduced as a recommendation to its refineries the Energy Technology Company (ETC) Sulfidation Failure Prevention

Initiative, which focused on making improvements to the refinery inspection process to prevent sulfidation corrosion failures. For example, this initiative recommended that Chevron refineries conduct 100 percent component inspections on piping susceptible to variable sulfidation corrosion rates. The CSB found, however, that there was no formal process for ensuring this new initiative was fully implemented at each refinery. As a result, this 100 percent component inspection recommendation was not fully acted upon which allowed the incident to occur.

B. Response to the Recommendation

On September 29, 2017, CSB Investigators and Recommendations Staff participated in a video conference call presentation and discussion led by Chevron USA employees with expertise in process safety management and asset integrity. The goal of this presentation was to update the CSB on the status of Recommendation No. 2012-3-I-CA-R33 and demonstrate the system Chevron USA implemented to ensure that industry best practices, key lessons, internal Chevron technical findings, and/or industry standard updates are fully implemented at Chevron refineries. The presentation provided the CSB with information on how the process is structured in the new system and implemented.

C. Board Analysis and Decision

Based upon Chevron USA's presentation of their new system and process to the CSB, Chevron USA provided the CSB with sufficient information to determine that they fulfill the intent of the CSB's recommendation. The Board voted to designate **CSB Recommendation No. 2012-03-I-CA-R33** as **"Closed - Acceptable Action."**