



# U. S. Chemical Safety and Hazard Investigation Board

## RECOMMENDATIONS STATUS CHANGE SUMMARY

<b>Report:</b>	Chevron Refinery Fire
<b>Recommendation Number(s):</b>	2012-3-I-CA-R32
<b>Date Issued:</b>	January 28, 2015
<b>Recipient:</b>	American Society of Mechanical Engineers (ASME)
<b>New Status:</b>	Open – Unacceptable Response
<b>Date of Status Change:</b>	January 11, 2017

### Recommendation Text:

#### CSB Recommendation No. 2012-3-I-CA-R32

*Revise ASME PCC-2-2011: Repair of Pressure Equipment and Piping to require users to follow the minimum process fluid leak response requirements established in API RP 2001: Fire Protection in Refineries, developed in response to recommendation 2012-03-I-CA-R31<sup>1</sup>, before conducting process fluid leak repair.*

#### A. Rationale for Recommendation

On January 29, 2015, the U.S. Chemical Safety and Hazard Investigation Board (CSB) issued its final investigation report pertaining to the August 6, 2012 incident at the Chevron Refinery in Richmond, California. On that date the refinery experienced a catastrophic pipe failure in a crude unit causing the release of flammable hydrocarbon process fluid which partially vaporized into a large vapor cloud. Nineteen Chevron employees engulfed by the vapor cloud escaped, narrowly avoiding serious injury. The ignition and subsequent continued burning of the hydrocarbon process fluid resulted in a large plume of unknown and quantified particulates and vapor. Approximately 15,000 people from the surrounding area sought medical treatment in the weeks following the incident.

The CSB noted that the American Society of Mechanical Engineers (ASME) issued PCC-2-2011, *Repair of Pressure Equipment and Piping* which provides methods for repair of equipment and piping within the scope of ASME Pressure Technology Codes and Standards after they have been placed in service. It gives requirements for installing leak mitigation devices, such as clamps, which Chevron personnel considered installing at the location of the leak before the pipe rupture. The CSB found that while the standard does discuss safety requirements before installing a clamp, they are vague and lack needed preventative safety

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<sup>1</sup> To the American Petroleum Institute: Revise API RP 2001: Fire Protection in Refineries to require users to develop a process fluid leak response protocol specific to their own facility that must be followed when a process fluid leak is discovered. Recommend users to incorporate the following actions into their leak response protocol:

- a. Establish an Incident Command structure upon identification of a process fluid leak;
- b. Conduct a pre-response meeting with personnel with specific technical expertise (e.g., inspectors, operators, metallurgists, engineers, and management) and the Incident Commander to determine pressure, temperature, remaining inventory of process fluids, potential damage mechanisms that caused the leak, and worst-case leak scenario;
- c. Establish a hot zone that identifies the area of risk of exposure or injuries due to flame contact, radiant heat, or contact to hazardous materials, taking into consideration the worst-case leak scenario;
- d. Limit site access around leak location to essential personnel only;
- e. Isolate the leaking piping or vessel, or if isolation is not possible, shutdown of the unit when the leaking process fluid poses immediate danger to safety, health, or the environment—such as piping fluid that is toxic or near the autoignition temperature.

**Recommendation Response Evaluation**  
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measures. The CSB determined that referencing other standards and recommended practices that give better guidance on leak mitigation and response would add significant value to the user. As a result of this finding, the CSB issued the following recommendation to the ASME.

**B. Response to the Recommendation**

ASME stated that the Post Construction Subcommittee on Repair and Testing (PCC-2) had considered the CSB's recommendation, but found that "to add a reference of this nature is outside the scope of PCC-2" and "to add a reference of this nature goes beyond providing information, procedures and recommendations of a technical nature." Finally, they stated that American Petroleum Institute (API) Recommended Practice (RP) 2001, *Fire Protection in Refineries*, has not been updated since the incident, which is correct.<sup>2</sup>

Although ASME has indicated that they do not plan to fulfill the CSB's recommendation, CSB is hopeful that when API RP 2001 is amended, ASME will reconsider. CSB also does not believe that the rationale provided by the subcommittee is sufficient; that by stating the reference is outside the scope of the standard is an administrative rationale rather than a reasoned opposition to the content of API RP 2001. The CSB requests further information from ASME, and seeks examples of why ASME disagrees with adding a widely used recommended practice such as API RP 2001. Finally, CSB will encourage ASME to re-assess their position upon revision of API RP 2001.

**C. Board Analysis and Decision**

The Board voted to designate CSB Recommendation, **2012-3-I-CA-R32** as "**Open – Unacceptable Response.**"

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<sup>2</sup> API votes to amend or re-affirm standards every five years, with the possibility of a two year extension.