



# U. S. Chemical Safety and Hazard Investigation Board

## RECOMMENDATIONS STATUS CHANGE

### SUMMARY

<b>Report:</b>	Tesoro Refinery Fatal Explosion Fire
<b>Recommendation Numbers:</b>	2010-8-I-WA-R2
<b>Date Issued:</b>	May 1, 2014
<b>Recipient:</b>	U.S. Environmental Protection Agency (EPA)
<b>New Status:</b>	Closed – No Longer Applicable
<b>Date of Status Change:</b>	January 11, 2017

#### Recommendation Text:

##### **CSB Recommendation No. 2010-08-I-WA-R2:**

*Until Recommendation 2010-08-I-WA-R1<sup>1</sup> is in effect, enforce through the Clean Air Act's General Duty Clause, section 112(r)(1), 42 U.S.C. §7412(r)(1) the use of inherently safer systems analysis and the hierarchy of controls to the greatest extent feasible when facilities are establishing safeguards for identified process hazards.*

#### Board Status Change Decision:

##### A. Rationale for Recommendation

On May 1, 2014, the CSB released its report on the April 2, 2010, catastrophic heat exchanger rupture at the Tesoro Anacortes refinery which fatally injured seven workers. The CSB found that the heat exchanger rupture was caused by high temperature hydrogen attack (HTHA), a damage mechanism that occurs when carbon steel equipment is exposed to hydrogen at high temperatures and pressures. We further determined that a key causal factor of the April 2010 incident was Tesoro's failure to implement more effective safeguards to prevent the heat exchanger failure, such as employing inherently safer materials that are resistant to HTHA.

The CSB found that although industry good practice guidance makes it clear that inherently safer technology (IST) is the most preferred and often the most effective safety precaution in the hierarchy of controls to prevent major accidents, the U.S. Environmental Protection Agency (EPA) does not require it through its Risk Management Plan (RMP) program. As a result, the CSB made recommendations to amend the RMP program to include IST requirements (2010-08-I-WA-R1), and in the interim, use their authority under the Clean Air Act (CAA) to enforce IST. This status change summary pertains only to 2010-08-I-WA-R2.

##### B. Response to the Recommendations

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<sup>1</sup> To the EPA: Revise the Chemical Accident Prevention Provisions under 40 CFR Part 68 to require the documented use of inherently safer systems analysis and the hierarchy of controls to the greatest extent feasible when facilities are establishing safeguards for identified process hazards. The goal shall be to reduce the risk of major accidents to the greatest extent practicable, to be interpreted as equivalent to as low as reasonably practicable (ALARP). Include requirements for inherently safer systems analysis to be automatically triggered for all management of change, incident investigation, and process hazard analysis reviews and recommendations, prior to the construction of a new process, process unit rebuilds, significant process repairs, and in the development of corrective actions.

EPA stated that they have used their CAA authority to enforce the use of inherently safer systems analysis, and have done so for several years. The EPA provided the CSB with several examples. In March 2016, the EPA published a proposed rule to the federal register – Accidental Release Prevention Requirements: Risk Management Programs under the Clean Air Act.<sup>2</sup> Within the pre-amble, EPA again explained that they use their authority under the CAA to enforce the use of inherently safer systems. In their final rule, published in December 2016, the EPA also proposes a modification to the process hazard analysis (PHA) provisions to include the analysis of safer technology and alternatives analysis (STAA).

C. Board Analysis and Decision

As EPA has stated and demonstrated that they already enforce the use of inherently safer systems under the CAA, and has made steps towards specifically outlining the use of inherently safer technology in their RMP revisions, the Board voted to designate **Recommendation No. 2010-08-I-WA-R2** as “**Closed – No Longer Applicable.**”

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<sup>2</sup> <https://www.regulations.gov/document?D=EPA-HQ-OEM-2015-0725-0001>