

CSB Recommendations Resolution Status

March 31, 2015

After the August 6, 2012 Chevron Fire, the County's Board of Supervisors setup an Ad Hoc Committee to review the Community Warning System and the County's Industrial Safety Ordinance. When the US Chemical Safety and Hazard Investigation Board (CSB) issued the CSB investigation for this fire interim report there were four recommendations to the City of Richmond and the County that are almost identical. The Ad Hoc Committee and the Richmond City Council determine that a joint committee be formed to amend the County's and the City of Richmond Industrial Safety Ordinances and that the language would be consistent for the ordinances. The process includes a working committee made up of different stakeholders in assisting staff in writing the final ordinance language. The ordinances were changed to address the following two CSB recommendations.

Recommendation No. 2012-03-I-CA-R6:

Revise the Industrial Safety Ordinance (ISO) to require that Process Hazard Analyses include documentation of the recognized methodologies, rationale and conclusions used to claim that safeguards intended to control hazards will be effective. This process shall use established qualitative, quantitative, and/or semi-quantitative methods such as Layers of Protection Analysis (LOPA).

Actions taken to respond to this recommendation: The County's Board of Supervisors approved amendments to the County's Industrial Safety Ordinance on June 17, 2014 that includes a requirement that regulated sources perform a Safeguard Protection Analysis. Section 450-8.016(i) of the Industrial Safety Ordinance was added and reads as follows:

(j) *Safeguard Protection Analysis.*

(1) *Effective September 30, 2014, a stationary source shall conduct a Layer of Protection Analysis or an alternative type of analysis approved by the department that uses a quantitative, qualitative or equivalent semi-quantitative method to determine the effectiveness of existing safeguards and safeguards recommended in a PHA to reduce the probability and/or severity of a catastrophic release. The safeguard protection analysis may be a standalone analysis or incorporated within a PHA.*

(2) *The stationary source shall complete the safeguard protection analysis no later than June 30, 2019. A safeguard protection analysis that was completed by a stationary source within five years prior to June 30, 2019, in accordance with the standards set forth in subsection (j)(1) of this section, will be deemed to comply with this requirement. The stationary source shall update and revalidate the safeguard protection analysis at least once every five years.*

(3) *All safeguard protection analyses shall be performed by a team with expertise in engineering and process operations. The team shall include at least one*

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employee who has experience and knowledge specific to the safeguards and one member who is knowledgeable about the specific safeguard protection analysis method used.

(4) The stationary source shall prepare a written report that documents the safeguard protection analysis in accordance with the standard of practice applicable to the type of analysis conducted. The stationary source will complete the report within thirty days after the completion of the safeguard protection analysis and make the report available to the department during an audit or inspection and upon request. (Ords. 2014-07 § 5, 2006-22 § 5, 2000-20 § 1, 98-48 § 2).

Recommendation No. 2012-03-I-CA-R7:

Revise the Industrial Safety Ordinance (ISO)' to require the documented use of inherently safer systems analysis and the hierarchy of controls to the greatest extent feasible in establishing safeguards for identified process hazards. The goal shall be to drive the risk of major accidents to As Low As Reasonably Practicable (ALARP). Include requirements for inherently safer systems analysis to be automatically triggered for all Management of Change and Process Hazard Analysis reviews, prior to the construction of new processes, process unit rebuilds, significant process repairs, and in the development of corrective actions from incident investigation recommendations.

Actions take to respond to this recommendation: The County's Board of Supervisors approved amendments to the County's Industrial Safety Ordinance on June 17, 2014 that includes a requirement that regulated sources perform an Inherently Safer Systems Analysis when performing a Management of Change where there is a major change; as part of the Incident Investigation; and for all existing processes. In addition, The ISO already requires that stationary sources perform an Inherently Safer Systems Analysis for recommended actions from a Process Hazard Analysis and for new facilities, processes, and process units. Section 450-8.016(i) of the Industrial Safety Ordinance was added and reads as follows:

(i) Inherently Safer Systems Analysis.

(1) A stationary source shall conduct an inherently safer systems analysis (ISSA) for each covered process as follows:

(A) The stationary source shall conduct an ISSA on existing covered processes every five years.

(B) The stationary source shall conduct an ISSA in the development and analysis of recommended action items identified in a PHA.

(C) Effective September 30, 2014, whenever a major change is proposed at a facility that could reasonably result in a major chemical accident or release, the stationary source shall conduct an ISSA as part of a Management of Change review required by subsection (a)(6)(B) of this section.

(D) *If an incident occurs on or after September 30, 2014, an investigation of the incident is conducted pursuant to subsection (a)(9)(A) of this section and the incident investigation report recommends a major change that could reasonably result in a major chemical accident or release, the stationary source shall commence and complete an ISSA of the recommended major change as soon as administratively practicable after completion of the incident investigation report.*

(E) *If an incident occurs on or after September 30, 2014, a root cause analysis of the incident is conducted as required by subsections (c)(1) or (c)(2) of this section, and the root cause analysis report or an associated incident investigation report recommends a major change that could reasonably result in a major chemical accident or release, the stationary source shall commence and complete an ISSA of the recommended major change as soon as administratively practicable after completion of the root cause analysis report.*

(F) *The stationary source shall conduct an ISSA during the design of new processes, process units and facilities. Immediately upon completion of the ISSA report referred to in subsection (i)(2) of this section, the stationary source shall advise the department of the availability of the ISSA report.*

(2) *The stationary source shall prepare a written report documenting each ISSA within thirty days of completion of the ISSA and make the report available to the department during an audit or inspection and upon request. The ISSA report must contain, at a minimum, the following information:*

(A) *Identification and a description of the inherently safer system(s) analyzed in the ISSA;*

(B) *A description of the methodology used to analyze the inherently safer systems(s);*

(C) *The conclusions of the analysis;*

(D) *The rationale for the conclusions; and*

(E) *An action plan, including a timeline to implement the inherently safer system(s) recommended in the ISSA.*

(3) *The stationary source shall select and implement each inherently safer system identified in an ISSA report to the greatest extent feasible and as soon as administratively practicable. If a stationary source concludes that implementation of an inherently safer system is not feasible, the stationary source shall document the basis for this conclusion in meaningful detail. The documentation shall include sufficient evidence to demonstrate to the department's satisfaction that implementing the inherently safer system is not feasible and the reasons for this conclusion. A claim that implementation of an inherently safer system is not feasible shall not be based solely on evidence of reduced profits or increased costs.*

An additional change to the ordinance to section 450-8.004(10) Purpose and Goals section of the ordinance that states the following:

(10) Preventing and reducing the number, frequency, and severity of accidental releases in the county to the greatest extent feasible.

This language addresses the recommendation for the goal to reduce the potential of accidents to As Low As Reasonably Practicable or ALARP.

In additions to the changes to the ISO, the following actions are being taken by the County's Hazardous Materials Programs staff to address the following two recommendations.

Recommendation No. 2012-03-I-CA-R8:

Monitor and confirm the effective implementation of the damage mechanism hazard review program (2012-03-I-CA-R1 and 2012-03-I-CA-R2), so that all necessary mechanical integrity work at the Chevron Richmond Refinery is identified and recommendations are completed in a timely way.

County Hazardous Materials Programs is following how Chevron is performing Damage Mechanism reviews by sitting on portions of the review that was done as part of City of Richmond's Environmental Impact Review for Chevron Richmond Refinery's Modernization Project. This covered a number of the process units of the refinery but not all of the units. We have met with Chevron on their review of sulfidation corrosion review for the refinery. Chevron has completed this review for the refinery where the temperature of the different processes could be over 500°F. Chevron is performing this analysis for 450° to 500° temperatures. We have met and will continue to meet with Chevron to review their process for incorporating the damage mechanism reviews into their Process Hazard Analyses.

Recommendation No. 2013-03-I-CA-R16:

Participate in the joint regulatory program described in recommendation 2012-03-I-CA-R11 This participation shall include contributing relevant data to the repository of investigation and inspection data created by the California Department of Industrial Relations and jointly coordinating activities.

The Hazardous Materials Programs staff is working with Cal/EPA, Cal/OES, and the Department of Industrial Relations in setting up a mechanism for how to share investigation and inspection data as a statewide process. The County's and the City of Richmond's Industrial Safety Ordinances were amended to include language on sharing the audit/inspection reports to other agencies. Section 450-8.004 was changed to the following:

(6) Facilitating cooperation between industry, the county, local fire departments, Cal/OSHA, EPA, other agencies that have oversight of refineries,

Section 450-8.018 was amended to read as follows:

(c) Based upon the department's preliminary determination, review of the stationary source's responses and review of public comments on the safety plan, the preliminary determination and the stationary source's responses, the department may require modifications or additions to the safety plan submitted by the stationary source or safety program to bring the safety plan or safety program into compliance with the requirements of this chapter. Any determination that modifications or additions to the safety plan or safety program are required, and any determination that no modifications or additions to the safety plan or safety program are required shall be in writing (collectively referred to as "final determination"), shall be mailed to the stationary source and shall be made available to the public. A copy of the final determination report will be sent to Cal/OSHA, EPA and the local fire department that has oversight of the stationary source. The department may not include in a final determination any requirements to a safety plan or safety program that would cause a violation of, or conflict with, any state or federal law or regulation or a violation of any permit or order issued by any state or federal agency.

The CSB regulatory report was the second report that was issued as part of the CSB August 6, 2012 Chevron Richmond Refinery fire investigation. One recommendations was made to the Board of Supervisors from this report.

Recommendation No. 2012-03-I-CA-R25 & R24:

Implement a compensation system to ensure the regulator has the ability to attract and retain a sufficient number of employees with the necessary skills and experience to ensure regulator technical competency at all levels of process safety regulatory oversight and policy development in Contra Costa County, California. A market analysis and benchmarking review should be periodically conducted to ensure the compensation system remains competitive with California petroleum refineries.

The County's Board of Supervisors approved a wage increase of 25% for the engineers that implement the California Accidental Release Prevention Program and the County's and the City of Richmond's Industrial Safety Ordinances over a three year period. Effective on July 1, 2014 there was an increase of 12%, an additional increase of 10% will be take place on July 1, 2015 and the final 3% will occur on July 1, 2016. The annual salary range for the engineers as of July 1, 2016 will be between \$96,394 and \$117,168.

2012-03-I-CA-R36

Revise the Industrial Safety Ordinance (ISO) regulations for petroleum refineries to require a process safety culture continuous improvement program including a written procedure for periodic process safety culture surveys across the work force. Require an oversight committee comprised of the regulator, the company, the company's workforce and their

representatives, and community representatives. 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 effectively address identified process safety culture issues; and**
- d. Develop process safety culture indicators to measure major accident prevention performance.**

The periodic process safety culture report shall be made available to the plant workforce.

The Joint Committee that was developed to address the recommendations from the CSB interim report is being reformed to address this recommendation. The Joint Committee will work together on revising the County's and the City of Richmond's Industrial Safety Ordinances to address this recommendation.

In addition to the above changes to the City of Richmond and the County's Industrial Safety Ordinances, the CSB made the following recommendation to California:

2012-03-I-CA-R10

For all California oil refineries, identify and require the reporting of leading and lagging process safety indicators, such as the action item completion status of recommendations from damage mechanism hazard reviews, to state and local regulatory agencies that have chemical release prevention authority. These indicators shall be used to ensure that requirements described in 2012-03-I-CA-R9 are effective at improving mechanical integrity and process hazard analysis performance at all California oil refineries and preventing major chemical incidents.

When the interim report recommendations, the County's Hazardous Materials Programs staff was already working with the ISO regulated facilities and the United Steel Workers on establishing process safety performance indicators that include "common" indicators and indicators that would be developed by the different regulated facilities. On June 17, 2014, the County's Board of Supervisors approved the change to the County's ISO as follows:

450-8.016(13)(D) Process Safety Performance Indicators.

(i) No later than September 30, 2014, the department shall develop a list of stationary source activities and other events to be measured by each stationary

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source in order to evaluate the performance of process safety systems. This list is the “Event List.” Each stationary source shall measure these activities and other events and document the measurements. These documented measurements are “common process safety performance indicators.” No later than June 30 of each year after 2014, each stationary source will report to the department the common process safety performance indicators recorded by the stationary source in the prior calendar year. The department will include these common process safety performance indicators in the annual performance review and evaluation report required by Section 450-8.030 of this chapter.

(ii) The department shall review the Event List at least once every three years to determine if it should be revised. If the department determines that a new activity or other event will be added to the Event List, stationary sources shall report to the department the new common process safety performance indicator(s) by June 30 of the next year following the revision of the Event List.

(iii) No later than September 30, 2014, each stationary source shall develop a list of site-specific activities and other events that it will measure in order to evaluate the performance of its process safety systems. Each stationary source shall document these site-specific process safety performance indicators and make this documentation available to the department during an audit or inspection and upon request.

Four “common process safety performance indicators” have been developed that include past due inspections for piping and pressure vessels; past due Process Hazard Analysis recommendations; past due incident investigations recommendations; and API/ACC Tier I and II incidents.

Following is a link to the modified ISO that include the changes discussed above:
http://cchealth.org/hazmat/pdf/iso/2006_iso_official_code_complete.pdf.