

ANNUAL PERFORMANCE REVIEW & EVALUATION



2014

INDUSTRIAL SAFETY ORDINANCE

ISO REPORT



www.cchealth.org/hazmat

December 9, 2014

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Executive Summary

On December 15, 1998, the Contra Costa County Board of Supervisors adopted a landmark Industrial Safety Ordinance requiring regulated facilities in the County to implement a multitude of safety programs aimed to prevent chemical accidents that could have detrimental impacts to the surrounding communities. The requirements of the Industrial Safety Ordinance (ISO) are some of the most stringent in the United States, if not the world. Additionally, the Industrial Safety Ordinance is mandated to include participation from all stakeholders, including industries, agencies, elected officials and the public at large.

The ISO now covers seven stationary sources in Contra Costa County, including several oil refineries. The ordinance is administered by Contra Costa Hazardous Materials Programs (CCHMP), a division of Contra Costa Health Services, the county health department. CCHMP also administers the City of Richmond's Industrial Safety Ordinance (RISO), which covers the Chevron Refinery and Chemtrade Richmond Works. RISO activities are covered in more detail later in this report. As part of the ISO's requirements, CCHMP produces and a regular performance review and evaluation report and submits it to the Board of Supervisors.

Over a 15-year period, there has been a trend of fewer and less severe Major Chemical Accidents or Releases (MCAR) incidents in the County since the adoption of the Ordinance and no MCAR incidents at an Industrial Safety Ordinance facility this year. There were several Community Warning System (CWS) Level II and CWS Level III incidents in 2012 and, to a lesser extent, in 2010 that caused some concern. However, CCHMP believes that this is not directly reflective of the effectiveness of the Industrial Safety Ordinance requirements, but serves as a reminder that we all have to stay vigilant in ensuring safe facility operations and that implementation of mature prevention programs are challenging.

The Accidental Release Prevention Program engineers in CCHMP have oversight of the ISO and are continuing to explore ways to improve the overall implementation of the ISO and the prevention program elements. CCHMP staff continues to work with other agencies such as the U.S. Environmental Protection Agency, the California Occupational Safety and Health Administration and other local program agencies for sharing of regulatory interpretations and inspection results. CCHMP staff also cooperated with the U.S. Chemical Safety and Hazard Investigation Board's (CSB) investigation of the No. 4 Crude Unit fire at Chevron that occurred August 6, 2012. The Board of Supervisors has adopted amendments to the ISO as recommended by CSB. CCHMP is also working closely with Department of Industrial Relations and California Environmental Protection Agency to implement the revised regulations for the California Accidental Release Prevention Program, which will further improve safety programs at all California petroleum refineries.



Public Participation

Contra Costa Hazardous Materials Programs has an established public outreach process and is continually looking at ways to improve. The following community-engagement efforts took place this year on behalf of the county ISO and Richmond ISO:

- Public outreach information booths at existing venues
 - Air Products' and Shell Martinez Refinery's Safety Audits were shared at the John Muir Birthday/Earth Day celebration at the John Muir National Historic Site in Martinez on April 20, 2013
 - Phillips 66 Refinery's Safety Plan and Audit and Air Liquide Large Industries' Safety Plan were shared at the Sugartown Festival & Street Fair in Crockett on July 21, 2013 and also at the Rodeo-Hercules Fire District Open House on October 5, 2013
 - West County Emergency Preparedness Fair at San Pablo Towne Center Parking Lot on Saturday, October 5, 2013, from 10 a.m. to 2 p.m. for the review of the Chevron Refinery Safety Plan and the General Chemical Richmond Audit Findings.
- Presentations to Interested Groups
 - Phillips 66's audit results and general ISO information to Phillips 66's Community Advisory Panels members in January 2013.
- Attend public meetings after major incidents:
 - There were no major incidents during this reporting period
- Most recent audit findings summarized in an easily read format in English and Spanish
- Information on regulated businesses in an easily read format in English and Spanish
- Industrial Safety Ordinance Information Sheet in English and Spanish

The Board of Supervisors also requested that staff provides copies of the Annual Report to communities through the Community Advisory Panels (CAP). CCHMP provided copies of the 2010, 2011 and 2012 ISO Annual Reports to CAP representatives for distribution for Phillips 66, General Chemical Bay Point Works, General Chemical Richmond, Shell Martinez Refinery and Tesoro Golden Eagle Refinery. This 2014 Annual Report is available on our website and will be sent to CAP representatives for distribution.

Audits

Audits of the regulated businesses are required at least once every three years to ensure that the facilities have the required programs in place and are implementing the programs. We completed four County ISO and two Richmond ISO audits since the last annual report:

- Air Liquide–June 2013
- Chemtrade Bay Point Works–August 2013
- Chevron Richmond Refinery–October 2013
- Tesoro Golden Eagle Refinery–January 2014
- Phillips-66–May 2014
- Chemtrade Richmond Works–September 2014

Major Chemical Accidents or Releases

There have been no Major Chemical Accidents or Releases (MCAR) for the County Industrial Safety Ordinance facilities in this reporting period.

Conclusion

The severity of the Major Chemical Accidents or Releases in Contra Costa County have been in a general declining trend since the implementation of Industrial Safety Ordinance with a few exceptions in 2010 and 2012. The implementation of the Industrial Safety Ordinance has improved safety programs and operations at the facilities that are regulated. Additionally, CCHMP has sought assistance from stakeholders, including the regulated facilities, workers and community members and included additional measures as recommended by the U.S. Chemical Safety and Hazard Investigation Board that will further reduce likelihood of chemical accidents at these industrial facilities.

Introduction

The Contra Costa County Board of Supervisors passed the Industrial Safety Ordinance due to accidents that occurred at oil refineries and chemical plants in Contra Costa County. The effective date of the Industrial Safety Ordinance was January 15, 1999. The ordinance applies to oil refineries and chemical plants with specified North American Industry Classification System (NAICS) codes that were required to submit a Risk Management Plan to the U.S. EPA and are program level 3 stationary sources as defined by the California Accidental Release Prevention (CalARP) Program. The ordinance specifies the following:

- Stationary sources had one year to submit a Safety Plan to Contra Costa Hazardous Materials Programs stating how the stationary source is complying with the ordinance, except the Human Factors portion (completed January 15, 2000)
- Contra Costa Hazardous Materials Programs develop a Human Factors Guidance Document (completed January 15, 2000)



- Stationary sources had one year to comply with the requirements of the Human Factor Guidance Document that was developed by Contra Costa Hazardous Materials Programs (completed January 15, 2001)
- For Major Chemical Accidents or Releases, the stationary sources are required to perform a root cause analysis as part of their incident investigations (ongoing)
- Contra Costa Hazardous Materials Programs may perform its own incident investigation, including a root cause analysis (ongoing)
- All of the processes at the stationary source are covered as program level 3 processes as defined by the California Accidental Release Prevention Program
- The stationary sources are required to consider Inherently Safer Systems for new processes or facilities or for mitigations resulting from a process hazard analysis
- Contra Costa Hazardous Materials Programs will review all of the submitted Safety Plans and audit/inspect all of the stationary sources' Safety Programs within one year of the receipt of the Safety Plan (completed January 15, 2001) and every three years after the initial audit/inspection (ongoing)
- Contra Costa Hazardous Materials Programs will give an annual performance review and evaluation report to the County Board of Supervisors

The 2006 amendments to the Industrial Safety Ordinance require or expand the following:

1. Expand the Human Factors Program to include Maintenance
2. Expand the Management of Organizational Change to include Maintenance and all of Health and Safety positions
3. Require the stationary sources to perform Safety Culture Assessments one year after the Hazardous Materials Programs develop guidance on performing a Safety Culture Assessment (November 2009)
4. Perform Security Vulnerability Analysis

The seven stationary sources now covered by the county's Industrial Safety Ordinance are:

1. Air Products at the Shell Martinez Refining Company
2. Air Products at the Tesoro Golden Eagle Refinery
3. Shell Martinez Refining Company
4. Chemtrade West in Bay Point
5. Phillips 66 Rodeo Refinery
6. Tesoro Golden Eagle Refinery
7. Air Liquide Rodeo Hydrogen Plant

The Board of Supervisors approved an amendment to the Industrial Safety Ordinance in June 2014 to address recommendations by CSB set forth in the Chevron refinery fire interim investigation report (August 2012) which broadens the goals of the regulation by requiring the following:

1. Use of process safety performance indicators in the evaluation of the performance of process safety systems and to provide required contents in the annual performance review and evaluation report that is provided to the board of supervisors
2. Expand the implementation of inherently safer systems to be implemented to the greatest extent feasible and as soon as administratively practicable. Stationary source is now required to evaluate and document inherently safer system analysis :

- a. Every five years for existing covered processes,
 - b. In the development and analysis of recommended action items identified in a process hazard analysis,
 - c. As part of a management of change review, whenever a major change is proposed at a facility that could reasonably result in a major chemical accident or release,
 - d. When an incident investigation report recommends a major change that could reasonably result in a major chemical accident or release,
 - e. When a root cause analysis report recommends a major change that could reasonably result in a major chemical accident or release, and
 - f. During the design of new processes, process units and facilities.
3. Conduct, document and complete a safeguard protection analysis for all processes by June 30, 2019, and every five years thereafter.

The Air Liquide Rodeo Hydrogen Plant began operation in July 2009 and is located adjacent to the Phillips 66 Rodeo Refinery. The facility produces purified hydrogen for Phillips 66 Refinery and other industrial customers, and also produces steam and electricity for the Phillips 66 Refinery.

Contra Costa Hazardous Materials Programs completed and issued the first Contra Costa County Safety Program Guidance Document on January 15, 2000. The stationary sources were required to comply with the Human Factors section of this guidance document by January 15, 2001. Hazardous Materials Programs staff has worked with the stationary sources to develop a Safety Culture Assessment Guidance Document, which was finalized and issued November 10, 2009. Staff began reviewing these Safety Culture Assessments in December 2010. Additionally, staff issued a revised Safety Program Guidance Document to reflect the ISO amendments, and clarifications based on the audit findings in July 2011.

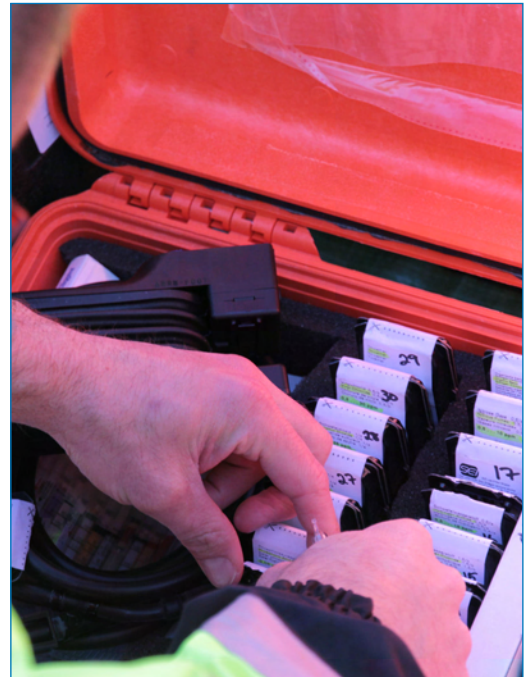
Contra Costa Hazardous Materials Programs reviewed all submitted Safety Plans and started the sixth round of audits of the stationary sources during this report period, as required by the ordinance. In addition, Contra Costa Hazardous Materials Programs performed a specialized audit for all the stationary sources for their Human Factors programs and for Inherently Safer Systems in 2002. The status of the reviews and all audits are discussed in Table I within the report.

Annual Performance Review and Evaluation Report

The Industrial Safety Ordinance specifies that the contents of the annual performance review and evaluation report contain the following:

- A brief description of how CCHMP is meeting the requirements of the ordinance as follows:
 - The program's effectiveness in getting regulated businesses to comply with the ordinance
 - Effectiveness of the procedures for records management
 - Number and type of audits and inspections conducted by Hazardous Materials Programs as required by the ordinance
 - Number of root cause analyses and/or incident investigations conducted by Hazardous Materials Programs
 - Hazardous Materials Programs' process for public participation
 - Effectiveness of the Public Information Bank

- Effectiveness of the Hazardous Materials Ombudsperson
- Other required program elements necessary to implement and manage the ordinance
- A listing of stationary sources covered by the ordinance, including for each:
 - The status of the stationary source's Safety Plan and Program
 - A summary of the stationary source's Safety Plan updates and a listing of where the Safety Plans are publicly available
 - The annual accident history report submitted by the regulated stationary sources and required by the ordinance
 - A summary, including the status, of any root cause analyses and incident investigations conducted or being conducted by the stationary sources and required by the ordinance, including the status of implementation of recommendations
 - A summary, including the status, of any audits, inspections, root cause analyses and/or incident investigations conducted by Hazardous Materials Programs, including the status for implementing the recommendations
 - Description of Inherently Safer Systems implemented by the regulated stationary source
 - Legal enforcement actions initiated by Hazardous Materials Programs, including administrative, civil and criminal actions
- Total penalties assessed as a result of enforcement of the ordinance
- Total fees, service charges and other assessments collected specifically for the support of the ordinance
- Total personnel and personnel years used by the jurisdiction to directly implement or administer the ordinance
- Comments that raise public safety issues from interested parties regarding the effectiveness of the local program
- The impact of the ordinance in improving industrial safety



Effectiveness of Contra Costa Hazardous Materials Programs' Implementation of the Industrial Safety Ordinance

Contra Costa Hazardous Materials Programs has developed policies, procedures, protocols and questionnaires to implement the California Accidental Release Prevention Program and the Industrial Safety Ordinance. The policies, procedures, protocols and questionnaires for these programs are listed below:

- Audits/Inspections Policy
- Conducting the Risk Management Plan/Safety Plan Completeness Review Protocol
- Risk Management Plan Completeness Review Questionnaires
- Safety Plan Completeness Review Questionnaires
- Conducting Audits/Inspections Protocol
- Safe Work Practices Questionnaires

- CalARP Program Audit Questionnaires
- Safety Program Audit Questionnaires
- Conducting Employee Interviews Protocol
- Employee Interview Questionnaires
- Public Participation Policy
- Dispute Resolution Policy
- Reclassification Policy
- Covered Process Modification Policy
- CalARP Internal Performance Audit Policy
- Conducting the Internal Performance Audit
- CalARP Internal Audit Performance Audit Submission
- Fee Policy
- Notification Policy
- Unannounced Inspection Policy
- Risk Management Plan Public Review Policy

Hazardous Materials Programs has developed the Contra Costa County CalARP Program Guidance Document and the Contra Costa County Safety Program Guidance Document including the Safety Culture Assessment. An updated Contra Costa County Safety Program Guidance Document, which incorporated updates from the 2006 ISO amendments and additional clarifications from all the audits, was issued July 22, 2011, to the regulated facilities. These documents give guidance to the stationary sources for complying with the Industrial Safety Ordinance. The policies, procedures, protocols and questionnaires are available through Hazardous Materials Programs. The guidance documents can be downloaded through Health Services' website:

http://www.cchealth.org/groups/hazmat/california_accidental_release_prevention_guidance_document.php and http://www.cchealth.org/groups/hazmat/industrial_safety_ordinance_guidance.php

Effectiveness of the Procedures for Records Management

Hazardous Materials Program has set up hard copy and digital files for each stationary source. The files include the following folders:

1. Annual status reports
2. Audits & Inspections
3. Communications
4. Completeness Review
5. Emergency Response
6. Incident Investigation
7. Trade Secret Information

Hard copy files for the stationary sources are kept in a central location. Digital copies of the files are stored on the Hazardous Materials Programs network and are accessible to the Accidental Release Prevention Programs Engineers, Supervisor and the Environmental Health and Hazardous Materials Chief. Portable document format (PDF) versions of these files are also available at the Hazardous Materials Programs office for public access and viewing. The Accidental Release Prevention Program files contain regulations, policies, information from the U.S. EPA, the Governor's

Office of Emergency Services, the U.S. Chemical Safety and Hazards Investigation Board, and other information pertinent to the engineers. The risk management and safety plans received are kept at the Hazardous Materials Programs office.

Number and Type of Audits and Inspections Conducted

The Hazardous Materials Programs staff was required to audit and inspect all seven stationary sources regulated under the Industrial Safety Ordinance within one year after the initial submittal of their Safety Plans. Hazardous Materials Programs reviewed all of the Safety Plans and audited/inspected all of the stationary sources' Safety Programs within that year (2000). Hazardous Materials Programs performed focused audits of the stationary sources for their Human Factors Programs (this was not included in the original audit/inspection since the stationary sources were not required to have their Human Factors Program in place until January 2001) and Inherently Safer Systems in 2001 and 2002. Additional focused audits were performed to look at how two stationary sources would manage organizational change in case there was a strike and non-striking personnel were used instead of the striking personnel (2002). Hazardous Materials Programs completed the second round of audits for all of the Industrial Safety Ordinance stationary sources in 2003 and 2004 and began a third round of audits in the autumn of 2005, which were completed in the spring of 2007. The fourth round of audits was completed in August 2009. Air Liquide submitted a Risk Management Plan and Safety Plan to Hazardous Materials Program in July 2009 and was audited for the first time in June 2010. CCHMP began the fifth round of audits of ISO facilities in spring of 2011 and completed these audits in spring of 2012. CCHMP began the sixth round of audits of ISO facilities in 2013 and will complete these audits in summer of 2015. When Hazardous Materials Programs staff reviews a Safety Plan, a Notice of Deficiencies is produced that documents what changes to a Safety Plan the stationary source is required to make before the Safety Plan is determined to be complete. The stationary source has 60 to 90 days to respond to the Notice of Deficiencies. When the stationary source has responded to this Notice of Deficiencies, the Hazardous Materials Programs staff will review the response. Hazardous Materials Programs will either determine that the Safety Plan is complete or will work with the stationary source until the Safety Plan contains the required information for it to be considered complete. When the Safety Plan is deemed complete, Hazardous Materials Programs will open a public comment period on the Safety Plan and will make available the plan in a public meeting or venue. The Hazardous Materials Programs staff will respond to all written comments in writing and, when appropriate, use the comments in the audit/inspection of the regulated stationary sources.

The Hazardous Materials Programs staff will issue Preliminary Audit Findings after an audit/inspection is complete. The stationary source will have 90 days to respond to these findings. Hazardous Materials Programs will review the response from the stationary source on the Preliminary Audit Findings. When the stationary source has developed an action plan to come into compliance with the regulations, the Hazardous Materials Programs staff will issue the Preliminary Audit Findings for public comment and will make available the findings in a public meeting or venue. The Hazardous Materials Programs staff will consider any public comments that were received during the public comment period and if appropriate will revise the Preliminary Audit Findings. When this is complete, the Hazardous Materials Programs staff will issue the Final Audit Findings and will respond in writing to any written public comments received. Table I lists the status of the Hazardous

Materials Programs staff review of each stationary source's Safety Plan, and audit and inspections of their Safety Programs.

Number of Root Cause Analyses and/or Incident Investigations Conducted by Hazardous Materials Program

The Hazardous Materials Programs staff has not performed any root cause analyses or incident investigations since the last annual report. The Hazardous Materials Programs staff did work closely with the U.S. Chemical Safety and Hazard Investigation Board, Cal/OSHA, US EPA, and the Bay Area Air Quality Management District during their investigations and follow-up audits and inspections. A historical listing of Major Chemical Accidents or Releases starting in 1992 is on the Health Services website at cchealth.org/groups/hazmat/accident_history.php. This list includes major accidents that occurred prior to the adoption of the Industrial Safety Ordinance.

Hazardous Materials Programs' Process for Public Participation

Hazardous Materials Programs in 2005 worked with the community and developed materials that would describe the Industrial Safety Ordinance using a number of different approaches. The community representatives suggested that the Hazardous Materials Programs staff look at existing venues that are attended by the public that the Hazardous Materials Programs staff can share and receive comments on Preliminary Audit Findings and the stationary source's Safety Plans. Additionally, based on Board recommendation in 2012, CCHMP are making presentations and distributing audit reports to Community Advisory Panel members.

Effectiveness of the Public Information Bank

The Hazardous Materials Programs section of Health Services website cchealth.org/groups/hazmat/ includes the following information:

- Industrial Safety Ordinance
 - Description of covered facilities
 - Risk Management Chapter discussion

- » Copy of the ordinance
- Land Use Permit Chapter discussion
 - » Copy of the ordinance
- Safety Program Guidance Document
- Frequently Asked Questions
- Public Outreach strategies
- California Accidental Release Prevention (CalARP) Program
 - Contra Costa County's California Accidental Release Prevention Program Guidance Document
 - Program Level description
 - Discussion on Public Participation for both CalARP Program and the Industrial Safety Ordinance
 - A map locating the facilities that are subject to the CalARP Program and are required to submit a Risk Management Plan to Hazardous Materials Program. The map links to a description of each of the facilities and the regulated substances handled.
- Hazardous Materials Inventories and Emergency Response Program
 - Descriptions
 - Forms
- Underground Storage Tanks
 - Description of the program
 - Copies of the Underground Storage Tanks Health & Safety Code sections
 - Underground Storage Tanks forms
- Green Business Program
 - Description of the Green Business Program with a link to the Association of Bay Area Government's website on the Green Business Program
- Hazardous Materials Incident Response Team
 - Including information of the Major Chemical Accidents or Releases that have occurred
 - The County's Hazardous Materials Incident Notification Policy
- A link to the Phillips 66 Fenceline Monitors
- A link to the Chevron Richmond Refinery

Fenceline Monitors

- Unannounced Inspection Program
 - Lists the facilities that are subject to unannounced inspections under the Unannounced Inspection Program
- Incident Response
 - Accident history that lists summaries of major accidents from industrial facilities in Contra Costa County from most recent to 1992
 - Additional resource links for more information
- Incidents
 - Information on the June 15, 2012 Phillips 66 incident, including the follow-up reports and the public meetings
 - Information on the August 6, 2012 Chevron Crude Unit fire, including the follow-up reports and the public meetings

Table I
Industrial Safety Ordinance Stationary Source Status

NAME	Safety Plan (SP) Received	Notice of Deficiencies (NOD) Issued-SP	Safety Plan Complete	SP Public Meeting Date	Audit/ Inspection	Audit Public Meeting
Air Liquide Rodeo Hydrogen Plant	7/10/09 7/14/2010	12/13/2012	3/1/2013	7/21/2013	6/1/2010 5/28/2013	10/8/11 10/5/2013
Air Products – Shell & Tesoro	1/14/00 1/16/01 (HF update) 6/26/03 7/14/05 12/01/06 6/20/2008 6/30/2010 6/27/2013	6/15/00 5/10/01 (HF update) 8/24/07 3/14/2011	8/30/00 6/19/01 (HF update) 9/14/07 7/1/2008	9/13/00 5/8/03 9/23/07 6/19/2010 4/21/2012	11/22/00 5/3/02 (HF) 2/27/04 1/22/07 7/20/09 4/16/2012	5/8/03 9/24/06 9/23/07 6/19/2010 4/20/2013
Chemtrade BPW (formerly General Chemical/Bay Pt. Works)	1/14/00 1/15/01 (HF update) 12/10/03 10/9/07 10/24/2011 6/13/2014	6/12/00 7/23/01 (HF update) 7/28/2008 9/10/2012	12/20/00 11/16/01 (HF update) 3/17/04 12/13/08 9/20/2012	1/2/01 5/1/03 11/16/05 1/31/06 11/04/08 10/2/2012	8/11/00 5/20/02 (HF) 6/20/03 8/29/05 1/7/08 3/21/11 8/7/2013	1/2/01 5/1/03 11/16/05 1/31/06 11/8/06 1/2/07 11/04/08 10/2/2012
Phillips 66 (formerly ConocoPhillips) – Rodeo	1/15/00 1/12/01 (HF update) 8/10/05 8/7/09 8/7/2012	3/14/00 9/10/01 (HF update) 3/28/06 11/22/2010	5/30/00 3/18/02 (HF update) 8/9/02 11/5/07 1/27/2011 7/3/2013	6/15/00 5/9/02 10/7,13/07 10/8/2011 10/5/2013 7/21/2013	6/30/00 11/5/01 (HF) 8/1/03 8/15/06 10/6/08 8/1/11 4/28/2014	4/9/02 6/22/04 7/8/04 10/7,13/07 7/18/10, 10/9/10 10/8/11 7/21/2013 10/5/2013
Shell Martinez Refinery	1/14/00 1/16/01 (HF update)7/22/02 1/11/06 9/3/2010 9/3/2013	7/19/00 11/9/01 (HF update) 3/21/03 8/15/06 10/25/2011	4/9/01 1/3/02 (HF update) 9/15/03 11/2/06 3/27/2012	5/8/03 9/24/06 9/23/07 4/21/2012	10/31/00 4/29/02 (HF) 11/26/04 10/23/06 4/30/09 2/13/2012	5/8/03 9/24/2006 9/23/07 6/19/2010 4/20/2013
Tesoro Golden Eagle Refinery	1/14/00 1/12/01 (HF update) 6/21/02 6/22/07 12/11/09 6/1/2012	8/16/00 9/18/01 (HF update) 7/30/07 8/6/2012	1/31/01 12/14/01 (HF update) 6/21/03 11/5/07 6/4/10 8/27/2012	5/6/03 9/23/07 6/10/10 9/6/2012	9/15/00 12/3/01 (HF) 9/8/03 11/07/05 8/18/08 4/18/2011 1/6/2014	5/6/03 9/24/06 9/23/07 6/10/2010 9/6/2012

Effectiveness of the Hazardous Materials Ombudsperson

The County Board of Supervisors created the Hazardous Materials Ombudsperson position in 1997. This position was filled in April 1998. The Board believed that the ombudsperson would be a conduit for the public to express their concerns about how Hazardous Materials Programs personnel are performing their duties. Attachment A is a report from the Hazardous Materials Ombudsperson on the effectiveness of the position for this reporting period.

Other Required Program Elements Necessary to Implement and Manage the Industrial Safety Ordinance

The California Accidental Release Prevention (CalARP) Program is administered in Contra Costa County by CCHMP. The Industrial Safety Ordinance expands on this program. Stationary sources are required to submit a Risk Management Plan that is similar to the Safety Plans that are submitted. Hazardous Materials Programs reviews these Risk Management Plans and performs the CalARP Program audit simultaneously with the Industrial Safety Ordinance audit.

Hazardous Materials Programs performs unannounced inspections of stationary sources that are part of the CalARP Program and are also required to submit a Risk Management Plan to the U.S. EPA. These inspections look at a focused portion of the CalARP Program or Industrial Safety Ordinance requirements, as well as elements from the other Hazardous Materials Programs.

Regulated Stationary Sources Listing

The Status of the Regulated Stationary Sources' Safety Plans and Programs

All of the stationary sources regulated by the Industrial Safety Ordinance were required to submit their Safety Plans to CCHMP by January 15, 2000 and to have their Safety Programs completed and implemented. The stationary sources were also required to have a Human Factors Program in place that follows the County's Safety Program Guidance Document by January 15, 2001. The status of each of the regulated stationary sources is given in Table I and includes the following:

- When the latest updated Safety Plan was submitted
- When the Notice of Deficiencies was issued
- When the plan was determined to be complete by Hazardous Materials Programs
- When the public meeting was held on the Safety Plan
- When the audits were complete
- When the public meetings were held on the preliminary audit findings



- When the Human Factors to the Safety Plan were revised
- When the Notice of Deficiencies was issued for the Human Factors revised Safety Plan
- When the Human Factors Safety Plan was determined to be complete
- When the Audit/Inspection was completed
- When the Human Factors Audit preliminary findings public meeting was held

Locations of the Regulated Stationary Sources Safety Plans

Each of the regulated stationary sources was required to submit a Safety Plan to Hazardous Materials Program on January 15, 2000 and an updated Safety Plan that includes the implementation of the stationary source's Human Factors Program by January 15, 2001. The regulated stationary sources are required to update their Safety Plan at least once every three years. These plans are available for public review at the Hazardous Materials Programs Offices at 4585 Pacheco Blvd., Suite 100, Martinez. When Hazardous Materials Programs determines that the Safety Plan is complete, and prior to going out for a 45-day public comment period, Hazardous Materials Programs will place the plan in the library(ies) closest to the regulated stationary source. Table II lists the regulated stationary sources with the location of each Safety Plan.

Annual Accident History Report and Inherently Safer Systems Implemented as Submitted by the Regulated Stationary Sources

The Industrial Safety Ordinance requires the stationary sources to update the information on their accident history in their Safety Plans and include how they have used inherently safer processes within the last year. Table III lists some of the Inherently Safer Systems that have been implemented by the different stationary sources during the same period. Attachment B includes the individual reports from the stationary sources.

Table II
Location of Safety Plans—Libraries

Regulated Stationary Source	Location 1	Location 2	Location 3
Air Liquide Large Industries	Hazardous Materials Programs Office	Rodeo Public Library	Crockett Public Library
Air Products at Shell	Hazardous Materials Programs Office	Martinez Public Library	
Air Products at Tesoro	Hazardous Materials Programs Office	Martinez Public Library	
Shell Refining-Martinez	Hazardous Materials Programs Office	Martinez Public Library	
General Chemical West Bay Point Works	Hazardous Materials Programs Office	Bay Point Public Library	
Phillips 66 (formerly ConocoPhillips) Rodeo Refinery	Hazardous Materials Programs Office	Rodeo Public Library	Crockett Public Library
Tesoro Golden Eagle Refinery	Hazardous Materials Programs Office	Martinez Public Library	

Table III
Inherently Safer Systems

Regulated Stationary Source	Inherently Safer System Implemented	Design Strategy	Category
Air Liquide Large Industries	No new inherently safer systems have been implemented (in this period)		
Air Products at Shell Martinez Refinery	No new inherently safer systems have been implemented (in this period)		
Air Products at Tesoro	No new inherently safer systems have been implemented (in this period)		
General Chemical West Bay Point Works	No new inherently safer systems have been implemented (in this period) though the facility aims to use smaller sample sizes		
Phillips 66 (formerly ConocoPhillips)—Rodeo Refinery	Reduced inventory by combining or removing equipment from the process (1 times)	Inherent	Minimization
	Simplified unit design and chemical inventory by changing/ re-routing equipment (9 times)	Inherent	Simplify
	Changed equipment design to reduce potential of a hazard (1 time)	Inherent	Substitute
	Reduced the potential of a hazard by relocation and equipment design (3 times)	Passive	Moderate
	Reduced the potential of a hazard by changing equipment design (2 times)	Passive	Simplify
	Reduced potential of exposure by changing equipment metallurgy or design (16 times)	Passive	Substitute
Shell Martinez Refinery	Reduction of inventory by removing dead-leg piping (2 times)	Inherent	Minimization
	Eliminated exposure potential by changing chemical and equipment design (3 times)	Inherent	Substitute
	Reduced the potential of a hazard by changing operating conditions (3 times)	Inherent	Moderate
	Reduced potential of exposure by changing equipment metallurgy or design (9 times)	Passive	Moderate
	Change equipment configuration or design to reduce potential of a hazard (3 times)	Passive	Simplify
	Reduced potential of exposure by changing equipment layout or design (2 times)	Passive	Minimization
	Reduced the potential of a hazard by adding equipment, or controls (9 times)	Active	Moderate
Tesoro Golden Eagle Refinery	Eliminated hazardous material release points from equipment modification or removal (1 time)	Inherent	Minimization
	Reduced potential of the hazardous condition by equipment design features. (6 times)	Passive	Moderate
	Reduced potential of the hazardous condition by reducing inventory (2 Times)	Passive	Minimization

Status of the Incident Investigations, Including the Root Cause Analyses Conducted by the Regulated Stationary Sources

The Industrial Safety Ordinance requires the regulated stationary sources to do an incident investigation with a root cause analysis for each of the major chemical accidents or releases as defined by the following: "Major Chemical Accident or Release means an incident that meets the definition of a Level 3 or Level 2 incident in the Community Warning System incident level classification system defined in the Hazardous Materials Incident Notification Policy, as determined by Contra Costa Health Services; or results in the release of a regulated substance and meets one or more of the following criteria:

- Results in one or more fatalities
- Results in greater than 24 hours of hospital treatment of three or more persons
- Causes on- and/or off-site property damage (including cleanup and restoration activities) initially estimated at \$500,000 or more. On-site estimates shall be performed by the regulated stationary source. Off-site estimates shall be performed by appropriate agencies and compiled by Health Services
- Results in a vapor cloud of flammables and/or combustibles that is more than 5,000 pounds"

The regulated stationary source is required to submit a report to Hazardous Materials Programs 30 days after the root cause analysis is complete. There were no Major Chemical Accidents or Releases that occurred since the last annual report in Contra Costa County at the ISO facilities. However, there was a level 2 incident at K2 Pure that lasted 6 minutes. The 72-hour report related to the K2 incident and the final RCA reports for previous MCAR incident reports are available at the Hazardous Materials Programs office and website.

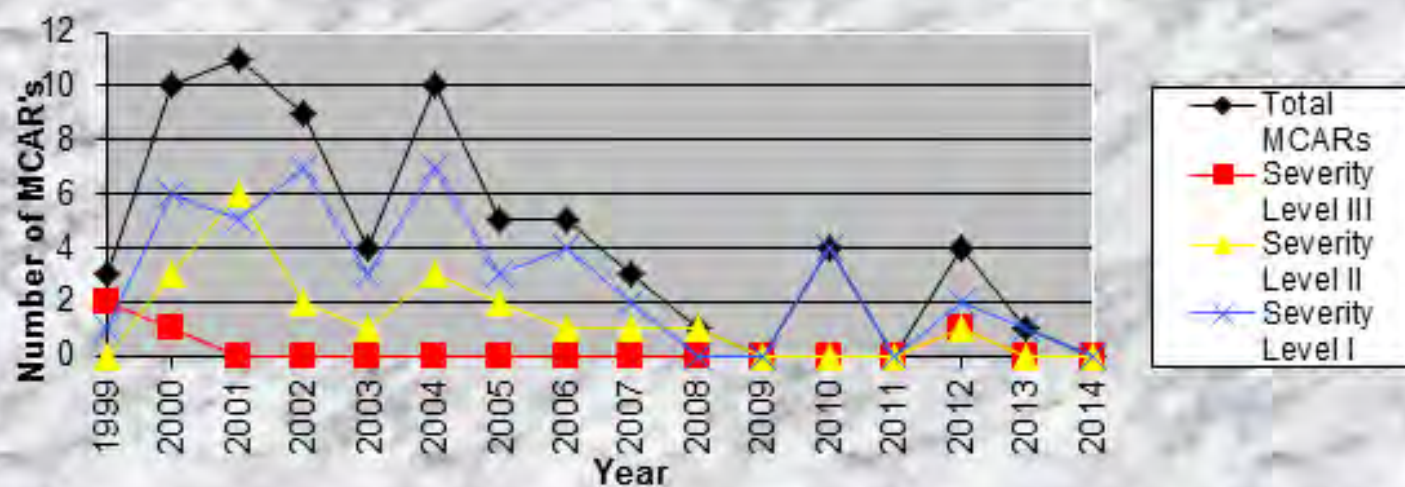
Major Chemical Accidents or Releases

Hazardous Materials Programs analyzed the Major Chemical Accidents or Releases (MCAR) that occurred since the implementation of the Industrial Safety Ordinance. The analysis includes the number of MCARs and the severity of the MCARs. Three different levels of severity were assigned:

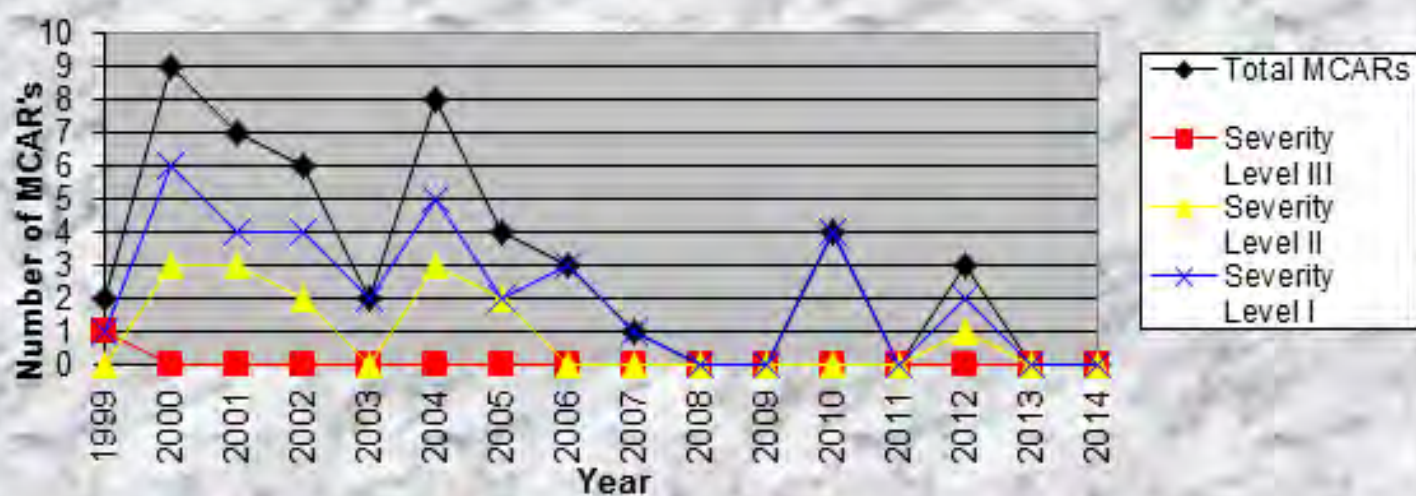
- **Severity Level III**—A fatality, serious injuries or major on-site and/or off-site damage occurred
- **Severity Level II**—An impact to the community occurred, or if the situation was slightly different the accident may have been considered major, or there is a recurring type of incident at that facility
- **Severity Level I**—A release where there was no or minor injuries, the release had no or slight impact to the community, or there was no or minor onsite damage

Below are charts showing the number of MCARs from January 1999 through October 2014 for all stationary sources in Contra Costa County, the MCARs that occurred at stationary sources regulated by the County's Industrial Safety Ordinance, and a chart showing the MCARs that have occurred at the County and the City of Richmond's Industrial Safety Ordinance stationary sources. The charts also show the number of severity level I, II and III MCARs for this period. **NOTE: The charts do not include any transportation MCARs that have occurred.**

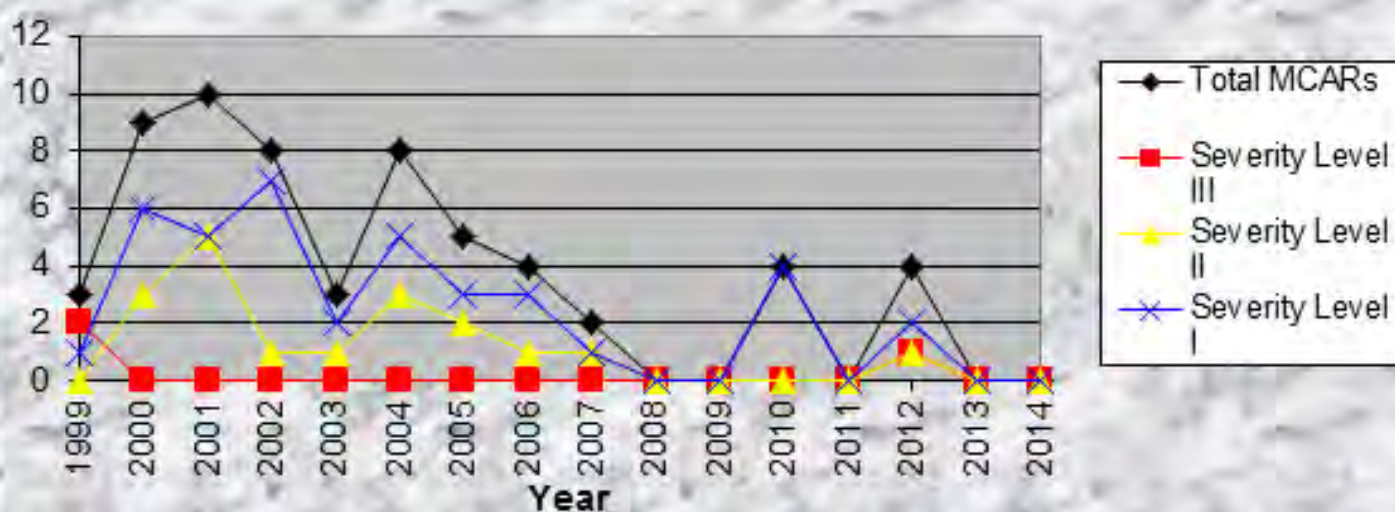
Major Chemical Accidents and Releases



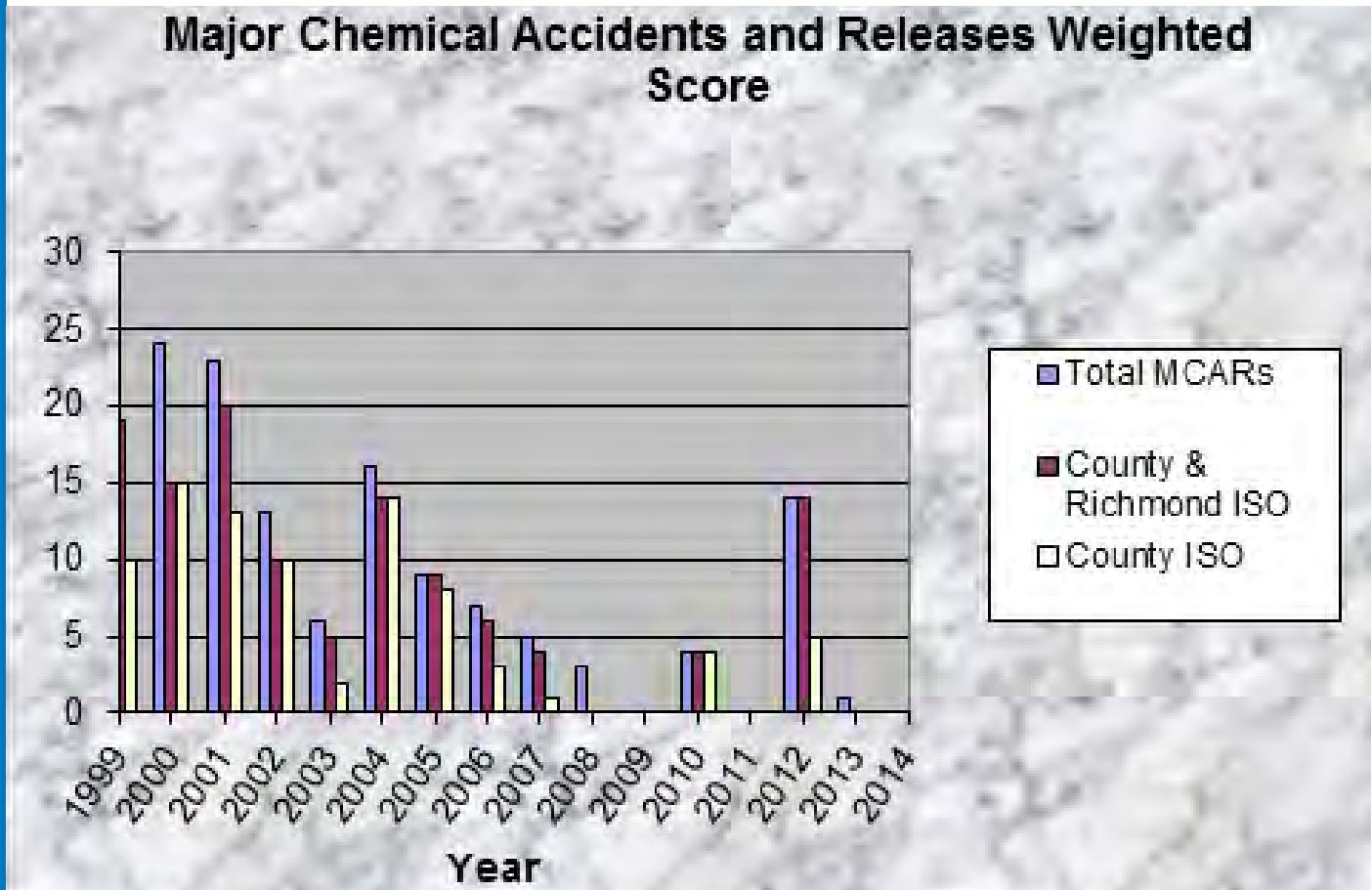
ISO Stationary Sources MCARs



County and Richmond ISO MCARs



A weighted score has been developed giving more weight to the higher severity incidents and a lower weight to the less severe incidents. The purpose is to develop a metric of the overall process safety of facilities in the County, the facilities that are covered by the County and the City of Richmond Industrial Safety Ordinances, and the facilities that are covered by the County's Industrial Safety Ordinance. A severity level III incident is given 9 points, severity level II is given 3 points and severity level I is given 1 point. Below is a graph of this weighted scoring.



Legal Enforcement Actions Initiated by Contra Costa Hazardous Materials Programs

As part of the enforcement of the Industrial Safety Ordinance and the CalARP Program, Hazardous Materials Programs issues Notices of Deficiencies on the Safety and Risk Management Plans and issues Audit Findings on what a stationary source is required to change to come into compliance with the regulations. Table I shows the action that has been taken by Hazardous Materials Programs. Hazardous Materials Programs has not taken any action through the District Attorney's Office for noncompliance with the requirements of the Industrial Safety Ordinance.

Penalties Assessed as a Result of Enforcement

No penalties have been assessed this period for noncompliance with the Industrial Safety Ordinance.

Total Fees, Service Charges and Other Assessments Collected Specifically for the Industrial Safety Ordinance

The fees charged for the Industrial Safety Ordinance are to cover the time that the Accidental Release Prevention Engineers use to enforce the ordinance, the position of the Hazardous Materials

Ombudsperson, outreach material and to cover a portion of the overhead for the Hazardous Materials Programs. The fees charged for administering this ordinance for the fiscal year 2013-14 is \$317,823.

Total Personnel and Personnel Years Used by Hazardous Materials Program to Implement the Industrial Safety Ordinance

The Accidental Release Prevention Programs Engineers have reviewed resubmitted Safety Plans, prepared and presented information for public meetings, performed audits of the stationary sources for compliance with both the California Accidental Release Prevention Program and Industrial Safety Ordinance and did follow-up work after a Major Chemical Accident or Release. The following is a breakdown of the time that was spent on the County's and the City of Richmond's Industrial Safety Ordinances:

- Six ISO/CalARP Program facility audits were performed since the last ISO report with four done between October 2013 and October 2014. It takes four to five engineers four weeks to perform the on-site portion of an ISO/CalARP Program audit. The audit process encompasses off-site time that includes a quality assurance process, working with the facility to address any questions, posting public notices, attending a public forum to share audit findings, addressing any questions from the public and issuing the final report. The total time taken to perform these audits in 2014 was 3,600 hours. Approximately one-third of the time was dedicated to the Industrial Safety Ordinance, for a total of 1,200 hours.
- Reviewing information for the website—50 hours
- Reviewing Safety Plans and following up with the facilities on any deficiencies—205 hours
- Review and participate in investigation, root cause analysis and proposed recommendations—500 hours
- Health Services Community Education and Information Office or the Accidental Release Prevention Engineers prepare material for presentations and public meetings—total approximately 150 personnel hours.
- Total of 2,105 hours is the approximate personnel time spent on the Industrial Safety Ordinance.
- This is not including the Ombudsperson time spent helping prepare for the public meetings, working with the engineers on questions arising from the Industrial Safety Ordinance, and answering questions from the public on the Industrial Safety Ordinance.

Comments from Interested Parties Regarding the Effectiveness of the Industrial Safety Ordinance

No comments were received on the County's or the City of Richmond's Industrial Safety Ordinances since the last annual report.

The Impact of the Industrial Safety Ordinance on Improving Industrial Safety

Four programs are in place to reduce the potential of an accidental release from a regulated stationary source that could impact the surrounding community. The four programs are the Process Safety Management Program administered by Cal/OSHA, the federal Accidental Release Prevention Program administered by the U.S. EPA, the California Accidental Release Prevention Program administered locally by CCHMP, and the Industrial Safety Ordinance, which is also administered by

CCHMP. Each of the programs is very similar in requirements, with the Industrial Safety Ordinance being the most stringent. The prevention elements of the program level 3 regulated stationary sources under the federal Accidental Release Prevention Program is almost identical to the Process Safety Management Program. CalARP differs from the federal Accidental Release Prevention Program in the following ways:

- The number of chemicals regulated
- The threshold quantity of these chemicals
- An external events analysis, including seismic and security and vulnerability analysis, is required
- Additional information in the Risk Management Plan
- CCHMP is required to audit and inspect stationary sources at least once every three years
- The interaction required between the stationary source and CCHMP
- The ISO differs from CalARP in the following ways:
 - Stationary sources are required to include a root cause analysis with the incident investigations for Major Chemical Accidents or Releases
 - The stationary sources are required to consider inherently safer systems
 - All of the processes at the regulated stationary sources are covered
 - Managing changes in the organization for operations, maintenance and emergency response
 - The implementation of a Human Factors Program
 - Expand the Human Factors section of the Industrial Safety Ordinance to include the following:
 - Maintenance procedures
 - Management of Organizational Changes
 - » Maintenance personnel
 - » A job task analysis for each of the positions that work in operations, maintenance, emergency response and Health and Safety
 - » Include temporary changes in the Management of Organizational Change
- A requirement that the stationary sources perform a Security and Vulnerability Analysis and test the effectiveness of the changes made as a result of the Security and Vulnerability Analysis
- The stationary sources perform a Safety Culture Assessment
- The Board of Supervisors amended the County's Industrial Safety Ordinance to expand the requirements of the ordinance in 2014. These amendments are:
 - Expand the requirement to implement Inherently Safer Systems to existing processes, as part of the Management of Change Process, for new projects and processes, and implementation of recommendations from an incident investigation
 - To develop process safety performance indicators with "common" indicators being made public
 - Require a Safeguard Protection Analysis to determine the effectiveness of safeguards used during a Process Hazard Analysis

The Safety Culture Assessment guidance chapter was finalized in November 2009. The Industrial Safety Ordinance Guidance Document is being updated to include the remaining changes to the ordinance and a draft was issued in September 2010. The Accidental Release Prevention Engineers have participated with the Center for Chemical Process Safety on developing the second edition of *Inherently Safer Chemical Processes*, a book that is referenced in the ordinance and with the Center for Chemical Process Safety on developing process safety metrics for leading and lagging indicators.

All of these requirements have lowered the probability of an accident occurring.

Contra Costa County was recognized as an alternative model for doing process-safety inspections by the Chemical Safety and Hazard Investigation Board in its report on a 2005 refinery accident in Texas City. The report states, “Contra Costa County and the U.K. Health and Safety Executive conduct frequent scheduled inspections of PSM and major hazard facilities with highly qualified staff.” This was done to compare to the number of OSHA process safety management audits. The Chemical Safety and Hazard Investigation Board also mentions Contra Costa County in a DVD, *Anatomy of a Disaster: Explosion at BP Texas City Refinery*, on the resources given to audit and ensure facilities are complying with regulations.

Carolyn W. Merritt, the Chemical Safety and Hazard Investigation Board Chair at that time, also recognized Contra Costa County in 2007 testimony to the House of Representatives Committee on Education and Labor chaired by U.S. Rep. George Miller. U.S. Sen. Barbara Boxer, during a hearing to consider John Bresland’s nomination to the Chemical Safety and Hazard Investigation Board as the Chair (replacing Carolyn Merritt) in December 2007, asked Mr. Bresland about the Contra Costa County program for process safety audits of refineries and chemical companies.

In its final investigation report on an incident that occurred in 2008 at the Bayer Crop Science in Institute, West Virginia, the CSB recommended that regulatory agencies in the area audit their chemical facilities using Contra Costa County’s auditing process. CCHMP staff and a representative from the local United Steelworkers Union were part of a panel when the Chemical Safety and Hazard Investigation Board presented this report to the Kanawha Valley community.

Contra Costa Hazardous Materials Programs was asked to give testimony at the hearing on “Work Place Safety and Worker Protections in the Gas and Oil Industry” before the U.S. Senate Committee on Health, Education, Labor, and Pensions Subcommittee on Employment and Workplace Safety. The testimony was on the success of the Accidental Release Prevention Programs that are in place in Contra Costa County. The hearing was specific on two major incidents that occurred in Anacortes, Wash. at a Tesoro Refinery and the Deepwater Horizon incident in the Gulf of Mexico. A link to the testimony is posted on the Health Services website and can be found at <http://help.senate.gov/hearings/hearing/?id=fe34048f-5056-9502-5d69-2609a5d5501a>.

In September 2012, Contra Costa Hazardous Materials Programs was asked to be a presenter at the “Expert Forum on the Use of Performance-based Regulatory Models in the U.S. Oil and Gas Industry: Offshore and Onshore” in Texas City, Texas to share the regulatory experience at Contra Costa County. And give testimony on how local, state and Federal agencies can work together and have an unprecedented alignment on regulations that is required for the same facilities. This informational meeting was spearheaded by Federal Occupational Safety and Health Administration and attended by Bureau of Safety and Environmental Enforcement, United States Coast Guard, United States Environmental Protection Agency, Pipeline and Hazardous Materials Safety Administration, United Steelworkers, American Petroleum Institute, academia and industry representatives.

City of Richmond Industrial Safety Ordinance

The City of Richmond on December 18, 2001 passed its version of the Industrial Safety Ordinance, which became effective January 17, 2002. Richmond's Industrial Safety Ordinance (RISO) mirrors the County's Industrial Safety Ordinance. Richmond's Industrial Safety Ordinance covers two stationary sources: Chevron Richmond Refinery and Chemtrade Richmond Works. CCHMP administers the Richmond ISO.

Chevron and Chemtrade Richmond Works submitted their Safety Plans to Hazardous Materials Programs, which have been reviewed and considered complete. The public comment period for these plans ended in January 2004. Public meetings held in 2004 in North Richmond and Richmond discussed Chevron and Chemtrade Richmond Works audit findings. The second Richmond Industrial Safety Ordinance/CalARP Program audits for these facilities occurred in 2006 and public meetings were held in June 2007 at Hilltop Mall at "Lessons from Katrina," the 2007 Neighbor Works Week Homeownership Faire & Disaster Preparedness Expo.

CCHMP followed up on the January 15, 2007 fire at the Chevron Refinery. The follow-up included a public meeting, City Council meetings, meetings with Chevron on the investigation and the root cause analysis. Chevron Richmond Refinery was audited for the third time for RISO/CalARP program in April 2008. The report was finalized and results were available at the Recycle More Earth Day Event in Richmond in June 2009. Copies of the audit results are available at the Richmond Library and a summary of the audit is also available on Hazardous Materials Programs' website.

CCHMP performed an RISO/CalARP program audit at Chemtrade Richmond Works in January 2012 and is working with Chemtrade on the proposed remedies to the audit actions. The final report from the 2009 audit was shared in a public event in Richmond in September 2010. CCHMP performed the fifth RISO/CalARP program audit at Chevron Richmond Refinery in February 2011. The final audit report was shared at the West County Emergency Preparedness Fair in El Cerrito in September 2011. CCHMP also made presentation to Point Richmond Neighborhood Council at the Point Richmond Firehouse about Chemtrade Richmond Works and Chevron Richmond Refinery's audit history, incidents and general Industrial Safety Ordinance information on January 25, 2012.

Hazard Materials Program followed up with Chevron Richmond Refinery and worked each with U.S. EPA, Cal OSHA, BAAQMD and CSB in their independent investigation of the August 6, 2012 fire at the No. 4 Crude Unit. To date, CCHMP co-hosted two public meetings in conjunction with the City of Richmond to share information regarding this severity level III incident. CCHMP, City of Richmond and representatives of the agencies performing the investigation shared preliminary results and addressed public issues and concerns. Written comments were gathered and are posted on the Health Services' website. CCHMP hired a third party to perform a safety evaluation of the Chevron Richmond Refinery after the August 6, 2012 fire. The evaluation is looking at the safety culture of the refinery, the process safety management systems, and human factors. The final report is almost complete and will go through a public review process including a review from the oversight committee that was selected for this process.

CCHMP presented the 2010 annual RISO report to the Richmond City Council on July 26, 2011. Copies of the 2011 RISO report were submitted to the Richmond City Council and posted on cchealth.org. Select community members were also included in the distribution.

CCHMP staff worked closely with the City of Richmond staff in preparation of the Richmond Industrial Safety Ordinance amendment (adopted in January 2013) that made the Richmond Industrial Safety Ordinance consistent with the Contra Costa County Industrial Safety Ordinance. CCHMP again worked with the City of Richmond staff on the 2014 amendments to the Richmond Industrial Safety Ordinance and the County Industrial Safety Ordinance designed to address recommendations by the US Chemical Safety and Investigation Board following the August 6, 2012 Chevron fire that further improves process safety operations in Contra Costa County refineries and Chemical facilities.

**ATTACHMENT A
HAZARDOUS MATERIALS
OMBUDSMAN REPORT**

**Hazardous Materials
Ombudsperson Evaluation**

October 2013–September 2014

2014

ISO REPORT

www.cchealth.org/hazmat

I. INTRODUCTION

On July 15, 1997 the Contra Costa County Board of Supervisors authorized creation of an Ombudsman position for the County's Hazardous Materials Programs. The first Hazardous Materials Ombudsman began work on May 1, 1998. The Contra Costa County Board of Supervisors adopted an Industrial Safety Ordinance on December 15, 1998. Section 450-8.022 of the Industrial Safety Ordinance requires the Health Services Department to continue to employ an Ombudsman for the Hazardous Materials Programs. Section 450-8.030(B)(vii) of the Industrial Safety Ordinance requires an annual evaluation of the effectiveness of the Hazardous Materials Ombudsman, with the first evaluation to be completed on or before October 31, 2000.

The goals of section 450-8.022 of the Industrial Safety Ordinance for the Hazardous Materials Ombudsman are:

1. To serve as a single point of contact for people who live or work in Contra Costa County regarding environmental health concerns, and questions and complaints about the Hazardous Materials Programs.
2. To investigate concerns and complaints, facilitate their resolution, and assist people in gathering information about programs, procedures, or issues.
3. To provide technical assistance to the public.

The Hazardous Materials Ombudsman currently accomplishes these goals through the following program elements:

1. Continuing an outreach strategy so that the people who live and work in Contra Costa County can know about and utilize the program.
2. Investigating and responding to questions and complaints, and assisting people in gathering information about programs, procedures, or issues.
3. Participating in a network of environmental programs for the purpose of providing technical assistance.

This evaluation covers the period from November, 2013 through October, 2014 for the Hazardous Materials Ombudsman program. The effectiveness of the program shall be demonstrated by showing that the activities of the Hazardous Materials Ombudsman meet the goals established in the Industrial Safety Ordinance.

II. PROGRAM ELEMENTS

1. Continuing an Outreach Strategy

This period efforts were focused on maintaining the outreach tools currently available. Copies of the Ombudsman Brochure were translated into Spanish and were distributed to the public at meetings, presentations, public events, and through the mail. A contact person was also established in Public Health that could receive calls from the public in Spanish and serve as an interpreter to respond to these calls. In addition to explaining the services provided by the position, the brochure also provides the phone numbers of several other related County and State programs. The web page was maintained for the program as part of Contra Costa Health Services web site. This page contains information about the program, links to other related web sites, and information about upcoming meetings and events. A toll-free phone number is published in all three Contra Costa County phone books in the Government section.

2. Investigating and Responding to Questions and Complaints, and Assisting in Information Gathering

During this period, the Hazardous Materials Ombudsman received 148 information requests. Over 95 percent of these requests occurred via the telephone, and have been requests for information about environmental issues. Requests via e-mail are slowly increasing, mainly through referrals from Health Services' main web page. Most of these requests concern problems around the home such as asbestos removal, household hazardous waste disposal, pesticide misuse, mold and lead contamination.

Information requests about environmental issues received via the telephone were generally responded to within one business day of being received. Many of the information requests were answered during the initial call. Some requests required the collection of information or written materials that often took several days to compile. Telephone requests were responded to by telephone unless written materials needed to be sent as part of the response.

Complaints about the Hazardous Materials Programs can also be received via telephone and in writing. Persons that make complaints via telephone are also asked to provide those complaints in writing. During this period, tThe Hazardous Materials Ombudsman did not receive any complaints about the Hazardous Materials Program this period.

The Ombudsman facilitated two community meetings during this period on behalf of the State Refinery Safety Task Force concerning their its efforts to improve refinery safety regulations and programs.

The Ombudsman conducted a half-day training session and tour about environmental health issues for 8 students in the joint UC Berkeley/UC San Francisco MPH/MD program.

3. Participating in a Network of Environmental Programs for the Purpose of Providing Technical Assistance.

Technical assistance means helping the public understand the regulatory, scientific, political, and legal aspects of issues. It also means helping them understand how to effectively communicate their concerns within these different arenas. This year, the Ombudsman continued to staff a number of County programs and participate in other programs to be able to provide technical assistance to the participants and the public.

- **CAER (Community Awareness and Emergency Response)**—This non-profit organization addresses industrial accident prevention, response and communication. The Ombudsman participated in the Emergency Notification subcommittee of CAER.
- **Hazardous Materials Commission** – In 2001, the Ombudsman took over as staff for the Commission. As staff to the Commission, the Ombudsman conducts research, prepared prepares reports, drafts letters and provides support for 3 monthly Commission meetings.
- In addition, during this period the Ombudsman represented the Commission at meetings of the Contra Costa County Prescription Drug Abuse Prevention Task Force and facilitated a workgroup of local agencies in the development and dissemination of an educational poster concerning proper disposal of unused medication. The Ombudsman also represented the Commission in task force meetings of the Northern Waterfront Revitalization Effort. The Ombudsman also supported the Commission’s response to a request from one of the members of the Board of Supervisors about an issue related to pipeline safety. Related to this effort, the Ombudsman assisted a County resident in the application for a grant to conduct outreach and education efforts around pipeline safety issues.
- **Integrated Pest Management Advisory Committee**—During this period the Ombudsman represented the Health Services Department on the County Integrated Pest Management Advisory Committee. This Committee brings Department representatives and members of the public together to help implement the County’s Integrated Pest Management policy.
- **Asthma Program**—The Ombudsman participated in the Public Health Department’s Division’s asthma program as a resource on environmental health issues. The Ombudsman represented the Asthma asthma program in two regional collaboratives related to asthma issues, particularly diesel pollution—the Ditching Dirty Diesel Collaborative and the Bay Area Environmental Health Collaborative. The Ombudsman served on the Technical Advisory Board for RAMP, the Regional Astham Asthma Management Prevention program. Also, the Ombudsman facilitated the coordination of the County’s Asthma clinical care program with the efforts of a non-profit organization hired by the Department of Conservation and Development to provide asthma trigger check-ups to homes in West Contra Costa County.

The Ombudsman also worked with the Bay Area Air Quality Management District and the Alameda County Public Health Department to successfully apply for a grant from the National Fish and Wildlife Foundation that will provide \$230,000 dollars to Contra Costa County agencies and private entities to replace gas powered lawn equipment with electric powered lawn equipment.

- **Bay Area Air Quality Management District's Community Air Risk Evaluation Program**

During this period the Ombudsman represented the Public Health Division on the advisory board to this Air District program. This advisory board meets quarterly to discuss implementation of this program that identifies and creates strategies to address health risks in communities with high air pollution emissions in the Bay Area. Three of these areas are in Contra Costa County.

- **Climate Change**

During this period the Ombudsman worked with other staff in the Public Health Department to prepare a health vulnerability assessment to the impacts of Climate Change as part of a grant the County received from the State California Department of Public Health. The Ombudsman also represented the Public Health Department Public Health Division in regional, state and national efforts on addressing the impacts of Climate Change. The Ombudsman recently was appointed co-chair of the Bay Area Regional Health Inequities Initiative's Built Environment committee which addresses climate change, and represented Bay Area Health health Departments departments at a National national Conference conference on Climate climate cChange. The Ombudsman also facilitated the development of a panel presentation at a climate change conference sponsored by the Local Government Commission.

- **Bay Delta Stakeholder Advisory Group for Contaminated Fish Consumption**

The Ombudsman was invited to serve on the California Department of Public Health's Bay Delta Stakeholder Advisory Group for Contaminated Fish Consumption. This is a two y-year effort to develop updated and effective public messaging for the new fish consumption advisories for the Bay Delta that have been developed by the State.

The Hazardous Materials Ombudsman also attended workshops, presentations, meetings and trainings on a variety of environmental issues to be better able to provide technical assistance to the public. Topics included Environmental environmental Justicejustice, Cumulative cumulative impacts assessment, emergency management practices, health mitigations for consumption of contaminated fish, and land-use planning for greenhouse gas reduction.

III. PROGRAM MANAGEMENT

The Hazardous Material Ombudsman continued to report to the Public Health Director on a day-to-day basis during this period, while still handling complaints and recommendations about the Hazardous Materials Programs through the Health Services Director. The Ombudsman also

was a member of Health Services' Emergency Management Team and participates on its the department's HEEP management team.

IV. GOALS FOR THE 2014-2015 PERIOD

In this period, the Ombudsman will provide essentially the same services to Contra Costa residents as was provided in the last period. The Ombudsman will continue respond to questions and complaints about the actions of the Hazardous Materials Programs; answer general questions that come from the public and assist them in understanding regulatory programs; staff the Hazardous Materials Commission; represent the Public Health DepartmentPublic Health Division as part of the Ditching Dirty Diesel Collaborative, the Bay Area Regional Health Inequities Initiative and the Bay Area Environmental Health Collaborative; represent the Health Services Department on the Integrated Pest Management Advisory Committee and participate in the CAER Emergency Notification committee. The Ombudsman will also represent the Hazardous Materials Commission in the Northern Shoreline Revitalization effort and the Contra Costa Prescription Abuse Prevention Coalition, and will represent the Public Health DepartmentPublic Health Division in the Bay Delta Stakeholder Advisory Group. The Ombudsman has also applied to be on the Technical Advisory Committee for the Metropolitan Transportation Commission's Goods Movement Plan development.

During this period the Ombudsman will continue to work with the Public Health DepartmentPublic Health Division on Climate climate change issues by working with collaboratives at the regional and state level, and by reaching out to other agencies and interested parties in Contra Costa County, to promote addressing health equity issues in climate change planning efforts.

The Ombudsman will also assist the State Refinery Safety Task Force by assisting the in the development and facilitation of Community community Safety safety Forums forums throughout the County over the course of the next year.

ATTACHMENT B

**REGULATED SOURCES
ANNUAL PERFORMANCE
WITH ACCIDENT HISTORY
AND INHERENT SAFETY
IMPLEMENTATION**

2014

ISO REPORT

www.cchealth.org/hazmat

Annual Performance Review and Evaluation Submittal

June 30, 2014

*Attach additional pages as necessary

1. **Name and address of Stationary Source:** Air Liquide Rodeo Hydrogen Plant, 1391 San Pablo Ave., Rodeo, California 94572
2. **Contact name and telephone number (should CCHMP have questions):** Jared Wittry—(510) 245-7285 x 2204
3. **Summarize the status of the Stationary Source's Safety Plan and Program (450-8.030(B)(2)(i)):** The revised safety plan was submitted in April 2013 as part of the 3 year review and incorporated the NODs received by the county in December 2012. The audit conducted in June of 2013 provided more guidance for the improve of the safety program at the Rodeo Facility and progress is being made to address the additional NODs based on all the new programs implimented at the Rodeo SMR.
4. **Summarize Safety Plan updates (i.e., brief explanation of update and corresponding date) (450-8.030(B)(2)(ii)):** Since the audit in June of 2013, we continue to meet monthly to address recommendations from the audit and improve the safety systems at the Rodeo SMR. As an organization, we have centralized many of the life critical procedures and have begun to introduce the Procedural PHAs at other facilities with success.
5. **List of locations where Safety Plans are/will be available for review, including contact telephone numbers if the source will provide individuals with copies of the document (450-8.030(B)(2)(ii)):** CCHMP Office at 4585 Pacheco Boulevard, Suite 100, Martinez; Martinez Library; Rodeo Public Library; Crockett Public Library (library closest to the stationary source).
6. **Provide any additions to the annual accident history reports (i.e. updates) submitted pursuant to Section 450-8.016(E)(2) of County Ordinance 98-48 (450-8.030(B)(2)(iii)) (i.e., provide information identified in Section 450-8.016(E)(1) for all major chemical accidents or releases occurring between the last annual performance review report and the current annual performance review and evaluation submittal (12-month history)):** There have been no incidents since the previous annual review.
7. **Summary of each Root Cause Analysis (Section 450-8.016(C)) including the status of the analysis and the status of implementation of recommendations formulated during the analysis (450-8.030(B)(2)(iv)):** There have been no incidents since the previous review.
8. **Summary of the status of implementation of recommendations formulated during audits, inspections, Root Cause Analyses, or Incident Investigations conducted by the Department (450-8.030(B)(2)(v)):** There have been no incidents since the previous review. The 2010 ISO audit actions items were incorporated into the revised April 2013 Safety Plan.

9. **Summary of inherently safer systems implemented by the source including but not limited to inventory reduction (i.e., intensification) and substitution (450-8.030(B)(2)(vi)):** No new inherently safer systems have been implemented at the facility.
10. **Summarize the enforcement actions (including Notice of Deficiencies, Audit Reports, and any actions turned over to the Contra Costa County District Attorney's Office) taken with the Stationary Source pursuant to Section 450-8.028 of County Ordinance 98-48 (450-8.030(B)(2)(vii)):** There were no enforcement actions during this period.
11. **Summarize total penalties assessed as a result of enforcement of this Chapter (450-8.030(3)):** No penalties have been assessed against this facility.
12. **Summarize the total fees, service charges, and other assessments collected specifically for the support of the ISO (450-8.030(B)(4)):** The total CalARP Program fees for the seven County ISO facilities subject to the Industrial Safety Ordinance was \$515,347. The total Industrial Safety Ordinance program fees for the seven County ISO facilities was \$317,823. (NOTE: These fees do not include the two City of Richmond ISO facilities).
13. **Summarize total personnel and personnel years utilized by the jurisdiction to directly implement or administer this Chapter (450-8.030(B)(5)):** 5518 hours were used to audit/inspect and issue reports on the Risk Management Chapter of the Industrial Safety Ordinance.
14. **Copies of any comments received by the source (that may not have been received by the Department) regarding the effectiveness of the local program that raise public safety issues(450-8.030(B)(6)):** None
15. **Summarize how this Chapter improves industrial safety at your stationary source (450-8.030(B)(7)):** This chapter helps to reinforce the need to maintain and follow our structured safety program to help ensure that safety of our employees and the communities in which we operate.
16. **List examples of changes made at your stationary source due to implementation of the Industrial Safety Ordinance (e.g., recommendations from PHA's, Compliance Audits, and Incident Investigations in units not subject to CalARP regulations; recommendations from RCA's) that significantly decrease the severity or likelihood of accidental releases.** The Human Factors Program that was developed and implemented continues to reduce the potential for injury. In addition, LIVES 102 Training ensures that all essential life critical procedures are communicated and understood. All Life Critical Procedures have been centralized including Hot Work, Confined Space, Safe Work Permit and LOTO procedures. The fall protection procedure has also been revised to include new regulatory requirements additional safety precautions. The SPCC plan was recertified by a Professional Engineer in May of 2014 along with the RMP plan in June of 2014 to incorporate recommendations given in the June 2013 ISO Audit.
17. **Summarize the emergency response activities conducted at the source (e.g., CWS or TEN activation) in response to major chemical accidents or releases:** None

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*Attach additional pages as necessary

1. Name and address of Stationary Source:

Chemtrade West US LLC - Bay Point Works (BPW), 501 Nichols Road, Pittsburg, CA 94565

2. Contact name and telephone number (should CCHMP have questions):

Bradford D. Anderson 925-458-7362 or Todd M. Ravazza 925-458-7301

3. Summarize the status of the Stationary Source's Safety Plan and Program (450-8.030(B)(2)(i)):

BPW Safety Plan and Prevention Programs (e.g. Cal ARP, ISO, RMP, PSM) have recently been revised to reflect recent CCHMP ISO Audit findings action items, PHA recommendations and Third party Audit, recent acquisition of BPW by Chemtrade West US LLC, current staffing levels, decommissioned processes and emergency response capabilities. Personnel have been trained as to all the aforementioned revisions. Due to significant changes (e.g. process decommissioning, reductions in force, etc.) major overhauls of all of these programs were necessary and have been completed.

4. Summarize Safety Plan updates (i.e., brief explanation of update and corresponding date) (450-8.030(B)(2)(ii)):

BPW Safety Plan was recently revised to reflect action items from the past 2 ISO audits, these revisions include the following: Name change from General Chemical to Chemtrade West US LLC as new owner/operator; Section I (C)—updates to remove decommissioned processes in the Chemically Pure process; Section I (D)—Updated volumes in Table 1a for CalARP/RMP Regulated Substances on site; updated Table 1b Non-Regulated Substances on site; Section II—Process Hazard Analysis, added Procedural PHA requirement; Section II (O)—Safety Program Management, added Chemtrade goal to become Responsible Care 14001 certified ASAP.

5. List of locations where Safety Plans are/will be available for review, including contact telephone numbers if the source will provide individuals with copies of the document (450-8.030(B)(2)(ii)):

CCHMP Office at 4585 Pacheco Boulevard, Suite 100, Martinez; Bay Point 205 Pacifica Ave., Bay Point, CA 94565 (library closest to the stationary source).

6. Provide any additions to the annual accident history reports (i.e. updates) submitted pursuant to Section 450-8.016(E)(2) of County Ordinance 98-48 (450-8.030(B)(2)(iii)) (i.e., provide information identified in Section 450-8.016(E)(1) for all major chemical accidents or releases occurring between the last annual performance review report and the current annual performance review and evaluation submittal (12-month history)):

There have been no major chemical accidents or releases in the last 12 months.

7. Summary of each Root Cause Analysis (Section 450-8.016(C)) including the status of the analysis and the status of implementation of recommendations formulated during the analysis (450-8.030(B)(2)(iv)):

NA.

- 8. Summary of the status of implementation of recommendations formulated during audits, inspections, Root Cause Analyses, or Incident Investigations conducted by the Department (450-8.030(B)(2)(v)):** Since the August 2013 ISO Audit conducted by the department, of the 38 Ensure items 18 have been closed; of the 27 Consider items 10 have been closed, these closures have been based on the Administrative Draft of the Preliminary Determination Audit Report for Chemtrade West /Bay Point Works—CalARP/ISO Program Audit.
- 9. Summary of inherently safer systems implemented by the source including but not limited to inventory reduction (i.e., intensification) and substitution (450-8.030(B)(2)(vi)):** Continued reduction in diversity and volume of hazardous materials handled on site and of the amount of samples obtained.
- 10. Summarize the enforcement actions (including Notice of Deficiencies, Audit Reports, and any actions turned over to the Contra Costa County District Attorney's Office) taken with the Stationary Source pursuant to Section 450-8.028 of County Ordinance 98-48 (450-8.030(B)(2)(vii)):** There were no enforcement actions during this period.
- 11. Summarize total penalties assessed as a result of enforcement of this Chapter (450-8.030(3)):**
No penalties have been assessed against this facility.
- 12. Summarize the total fees, service charges, and other assessments collected specifically for the support of the ISO (450-8.030(B)(4)):** The total CalARP Program fees for the seven County ISO facilities subject to the Industrial Safety Ordinance was \$515,347. The total Industrial Safety Ordinance program fees for the seven County ISO facilities was \$317,823. (NOTE: These fees do not include the two City of Richmond ISO facilities).
- 13. Summarize total personnel and personnel years utilized by the jurisdiction to directly implement or administer this Chapter (450-8.030(B)(5)):** 5518 hours were used to audit/inspect and issue reports on the Risk Management Chapter of the Industrial Safety Ordinance.
- 14. Copies of any comments received by the source (that may not have been received by the Department) regarding the effectiveness of the local program that raise public safety issues(450-8.030(B)(6)):** None.
- 15. Summarize how this Chapter improves industrial safety at your stationary source (450-8.030(B)(7)):** This chapter has assisted the facility by sharing best practices within the industry and by helping the facility achieve consistency amongst the various programs regulated by the County and other agencies.
- 16. List examples of changes made at your stationary source due to implementation of the Industrial Safety Ordinance (e.g., recommendations from PHA's, Compliance Audits, and Incident Investigations in units not subject to CalARP regulations; recommendations from RCA's) that significantly decrease the severity or likelihood of accidental releases.**
The recent Siting PHA of regulated substances offered recommendations to improve receiving, storing and distribution of regulated and non-regulated hazardous substances.

The recent Procedural PHA of bulk transfer operations provided actual operating practice improvement recommendations and clarity of the written operating procedures for both regulated and non-regulated substances.

- 17. Summarize the emergency response activities conducted at the source (e.g., CWS or TEN activation) in response to major chemical accidents or releases:** No MCAR's occurred during the past 12 months, this question is N/A.

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*Attach additional pages as necessary

- 1. Name and address of Stationary Source:** Phillips 66 Rodeo Refinery, 1380 San Pablo Avenue, Rodeo, CA 94572
- 2. Contact name and telephone number (should CCHMP have questions):**
Jim Ferris 510-245-4517
- 3. Summarize the status of the Stationary Source's Safety Plan and Program (450-8.030(B)(2)(i)):** The Safety Plan was last revised in August 2012 per the 3 year update cycle required by the County. The plan was made available to the public at the July 21, 2013 Sugartown Festival & Street Fair in Crockett after addressing comments from the CCHMP review.
- 4. Summarize Safety Plan updates (i.e., brief explanation of update and corresponding date) (450-8.030(B)(2)(ii)):** The original Safety Plan for this facility was filed with Contra Costa Health Services on January 14, 2000. A revised plan was filed on April 7, 2000 with the updated recommendations requested by CCHS. A Human Factors Amendment was submitted on January 15, 2001. In conjunction with CCHSs required 2nd public meeting on our plan and audit findings, we submitted a complete revision of the plan to reflect the change in ownership of our facility and to update where needed. We took this opportunity to include Human Factors within the plan instead of having it as an amendment. On August 9, 2002 the plan was resubmitted. Public meetings for our plans were held on June 22, 2004 in Rodeo and July 8, 2004 in Crockett. As required the Plan was fully updated in August 2005 on the 3 year cycle. The Plan was reviewed by CCHS and was revised on July 28, 2006 with recommended changes. The Safety Plan was updated in July 2009 per the 3 year cycle. Recommendations requested by CCHMP were incorporated into the Safety Plan 11-4-2010. Safety Plan was again updated in August 2012 per the 3 year cycle.
- 5. List of locations where Safety Plans are/will be available for review, including contact telephone numbers if the source will provide individuals with copies of the document (450-8.030(B)(2)(ii)):** CCHMP Office at 4585 Pacheco Boulevard, Suite 100, Martinez; Rodeo Public Library; Crockett Public Library (libraries closest to the stationary source).
- 6. Provide any additions to the annual accident history reports (i.e. updates) submitted pursuant to Section 450-8.016(E)(2) of County Ordinance 98-48 (450-8.030(B)(2)(iii)) (i.e., provide information identified in Section 450-8.016(E)(1) for all major chemical accidents or releases occurring between the last annual performance review report and the current annual performance review and evaluation submittal (12-month history)):** There have been no major chemical accidents or releases (MCARs) during the current reporting year.

- 7. Summary of each Root Cause Analysis (Section 450-8.016(C)) including the status of the analysis and the status of implementation of recommendations formulated during the analysis (450-8.030(B)(2)(iv)):** There have been no MCARs therefore no RCAs were required in the past year.
- 8. Summary of the status of implementation of recommendations formulated during audits, inspections, Root Cause Analyses, or Incident Investigations conducted by the Department (450-8.030(B)(2)(v)):** There are two remaining action items from the 2011 CalARP audit that will be closed this year with an update to the RMP (October). We expect to receive a preliminary report from CCHMP for an audit that was conducted in May 2014 of the CalARP and ISO programs.
- 9. Summary of inherently safer systems implemented by the source including but not limited to inventory reduction (i.e., intensification) and substitution (450-8.030(B)(2)(vi)):** See Attachment 1 for the listing of Inherently Safer Systems improvements.
- 10. Summarize the enforcement actions (including Notice of Deficiencies, Audit Reports, and any actions turned over to the Contra Costa County District Attorney's Office) taken with the Stationary Source pursuant to Section 450-8.028 of County Ordinance 98-48 (450-8.030(B)(2)(vii)):** There were no enforcement actions during this period.
- 11. Summarize total penalties assessed as a result of enforcement of this Chapter (450-8.030(3)):**
No penalties have been assessed against this facility.
- 12. Summarize the total fees, service charges, and other assessments collected specifically for the support of the ISO (450-8.030(B)(4)):** The total CalARP Program fees for the seven County ISO facilities subject to the Industrial Safety Ordinance was \$515,347. The total Industrial Safety Ordinance program fees for the seven County ISO facilities was \$317823. (NOTE: These fees do not include the two City of Richmond ISO facilities).
- 13. Summarize total personnel and personnel years utilized by the jurisdiction to directly implement or administer this Chapter (450-8.030(B)(5)):** 5518 hours were used to audit/inspect and issue reports on the Risk Management Chapter of the Industrial Safety Ordinance.
- 14. Copies of any comments received by the source (that may not have been received by the Department) regarding the effectiveness of the local program that raise public safety issues(450-8.030(B)(6)):** No comments have been received.
- 15. Summarize how this Chapter improves industrial safety at your stationary source (450-8.030(B)(7)):** In addition to the Phillips 66 Corporate Health Safety Environment Management Systems the ISO provides another tool for the improvement of process safety performance.

16. **List examples of changes made at your stationary source due to implementation of the Industrial Safety Ordinance (e.g., recommendations from PHA's, Compliance Audits, and Incident Investigations in units not subject to CalARP regulations; recommendations from RCA's) that significantly decrease the severity or likelihood of accidental releases.** Units not covered by RMP, CalARP, and PSM are covered under the ISO and PHAs are scheduled and performed on all these units. Recommendations from the PHAs are implemented at an accelerated rate. A list of inherently safer system improvements, required by the ISO for PHA recommendations and projects, are listed in Attachment 1.
17. **Summarize the emergency response activities conducted at the source (e.g., CWS or TEN activation) in response to major chemical accidents or releases:** None have occurred since the last report.

Attachment 1: June 2013–June 2014 ISS improvements

Reference	Approach	ISS Category	MOC Description
M20121605-001	Simplify	Inherent	Remove the FD Fan and ID Fan turbine drivers from service.
M2013381-003	Simplify	Inherent	Decommission Plant 4, including removal of all associated graphics, alarming, logic, yoking/registry, and documentation.
M2013437-001	Substitute	Passive	Replace the existing asphalt in the Selenium Plant Bin Yard with an engineered concrete slab.
M2013915-001	Simplify	Inherent	Remove the currently installed oversized Biocide injection pumps and install smaller injection pumps to allow continuous injection.
M20132825-001	Substitute	Inherent	Remove insufficient lights at Butane Loading Rack and add additional lights.
M20133345-001	Simplify	Inherent	Eliminate the unused water cooling at the jacket pump and bearing housing
M20132090-001	Substitute	Passive	Upgrade sample station with closed loop at 1D-101 OVHD Naphta Sample off 1G-110 discharge.
M2014607-001	Moderate	Passive	Replace the API view port doors at the Sludge Ejectors and Roll Drum Skimmers in the Afterbays with Plexiglas view panels to prevent personnel exposure.
M2014574-001	Substitute	Passive	Upgrade the spool upstream of 31LV-203 to stainless steel.
M2013682-001	Substitute	Passive	Upgrade G-104A from Packing to Mechanical Seal
M20134614-001	Simplify	Inherent	Rewire control circuit to remove unused klixon switch.
M20134607-001	Substitute	Passive	Replace 500 ft of new carbon steel/HDPE piping to route storm water to Junction Box 1 at Unit 100
M2013458-001	Substitute	Passive	Upgrade 3-inch Resid Piping from G-218 to D-206 with 317L SS
M20134464-001	Substitute	Passive	Upgrade the Unit 200 E-525 shell and shell cover metallurgy from 316L SS clad to Alloy 825 clad CS.
M20134437-001	Substitute	Passive	Replace existing P-503 conveyor system with a new conveyor comprised of corrosion resistant rollers, tensioners, and a stainless steel frame. The new conveyor will include the appropriate roll off bin pad and shelter replacement.
M20134265-001	Simplify	Inherent	Remove abandoned piping and associated supports, re-route other piping, and modify other equipment orientation to improve the access around pumps G-37A/B, G-31, and G-209.
M2013381-002	Simplify	Inherent	Remove all Unicracker Triconex SIS (safety instrumented system) interlock programming associated with out of service Plant 4 equipment.
M2013381-001	Minimize	Inherent	Decommission Unit 240 Plant 4 Hydrogen Plant. Major equipment to be isolated and removed from service; utility and blowdown connections throughout the unit will be separated and blocked-in from the rest of the Unit 240 complex; hazardous waste will be removed and disposed.
M20133307-001	Simplify	Passive	Plug remaining 3 surface drains that are at elevations under 10-feet in U100.
M20132649-001	Simplify	Inherent	Remove Sample Station on Concord Line
M20131742-001	Substitute	Passive	The existing Butane Loading Rack (BLR) vapor arms are mechanically limited from reaching the vent connection of a rail car when the connection is on the far side of the railcar. This limitation is due to interference with the personnel fall protection rails. Phase 1 of this project will replace the last hard piped joint of one vapor recovery arm with a flexible hose.
M20131642-001	Substitute	Passive	Replace the bundle on exchanger 200: E-108B, upgrade the tube metallurgy from 316 SST to Incoloy 825.
M20131641-001	Substitute	Passive	Replace the shell on exchanger 200: E-111A-1, upgrade the metallurgy from CS to Hastelloy Clad CS.
M20131640-001	Substitute	Passive	Replace the shell on exchanger 200: E-111A-2, upgrade the metallurgy from CS to Hastelloy Clad CS.
M20131638-001	Substitute	Passive	Replace the Administration Building Water Heater heat exchanger, E-603U, with an upgraded metallurgy (Duplex 2205).
M2013097-002	Simplify	Inherent	Plant 4 Catacarb Area Demolition: Demolish all equipment, foundation, instrumentation and piping in Plant 4. The Catacarb system will be cleaned from the storage tank and removed from the unit.
M20123996-001	Substitute	Passive	Replace the entire LCGO line from the tower draw to the suction of the G-216/A pumps with new 10" line and upgrade the piping metallurgy to 316L per ME&I recommendation.
M20123819-001	Moderate	Passive	Replace the noisy transformer located in the utility closet in the Unit 80 Control Room. Locate the new transformer outside of the control room.
M20122408-001	Simplify	Passive	Upgrade the butane loading rack and rail car sampling stations on both racks so that samples can be taken without venting any product to atmosphere.
M20121894-001	Substitute	Passive	Replace temporary underground piping with permanent piping routed above ground for Decoking Water Line.
M20112915-002	Substitute	Passive	Replace leaking 10" cement lined firewater pipe with carbon steel
M20101727-003	Moderate	Passive	Upgrade sample station with closed loop for the D-202 effluent stream.

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*Attach additional pages as necessary

1. **Name and address of Stationary Source:** Shell Oil Products U.S. Martinez Refinery, 3485 Pacheco Blvd., Martinez, CA 94553
2. **Contact name and telephone number (should CCHMP have questions):** Mary Kay Nye: 925-313-3358
3. **Summarize the status of the Stationary Source's Safety Plan and Program (450-8.030(B)(2)(i)):** SMR's Safety Plan was last updated in August 2013. SMR's Safety Program was reviewed by the CCHS during the CalARP/ISO audit conducted in February 2012.
4. **Summarize Safety Plan updates (i.e., brief explanation of update and corresponding date) (450-8.030(B)(2)(ii)):** SMR's Safety Plan was last updated in August 2013. The changes addressed actions from the CCHS 2012 audit. The next update is due August 28, 2016.
5. **List of locations where Safety Plans are/will be available for review, including contact telephone numbers if the source will provide individuals with copies of the document (450-8.030(B)(2)(ii)):** CCHMP Office at 4585 Pacheco Boulevard, Suite 100, Martinez; Martinez Public Library (library closest to the stationary source).
6. **Provide any additions to the annual accident history reports (i.e. updates) submitted pursuant to Section 450-8.016(E)(2) of County Ordinance 98-48 (450-8.030(B)(2)(iii)) (i.e., provide information identified in Section 450-8.016(E)(1) for all major chemical accidents or releases occurring between the last annual performance review report and the current annual performance review and evaluation submittal (12-month history)):** There were no MCAR's in the current reporting period (July 1, 2013 to June 30, 2014), and therefore no updates to the Accident History.
7. **Summary of each Root Cause Analysis (Section 450-8.016(C)) including the status of the analysis and the status of implementation of recommendations formulated during the analysis (450-8.030(B)(2)(iv)):** There were no MCAR's in the current reporting period (July 1, 2013 to June 30, 2014), and therefore no RCA's were required.
8. **Summary of the status of implementation of recommendations formulated during audits, inspections, Root Cause Analyses, or Incident Investigations conducted by the Department (450-8.030(B)(2)(v)):** The status of the recommendations from the February 2012 CalARP/ISO Audit are: 59 of 60 Action items were completed. The last action will be completed in 2015. All of the actions from the December 2013 Unannounced Inspection are complete. There have been no RCA's or Incident Investigations conducted by the Department.

9. **Summary of inherently safer systems implemented by the source including but not limited to inventory reduction (i.e., intensification) and substitution (450-8.030(B)(2)(vi)):** See Attachment 1, Table 1
10. **Summarize the enforcement actions (including Notice of Deficiencies, Audit Reports, and any actions turned over to the Contra Costa County District Attorney's Office) taken with the Stationary Source pursuant to Section 450-8.028 of County Ordinance 98-48 (450-8.030(B)(2)(vii)):** There were no enforcement actions during this period.
11. **Summarize total penalties assessed as a result of enforcement of this Chapter (450-8.030(3)):**
No penalties have been assessed against this facility.
12. **Summarize the total fees, service charges, and other assessments collected specifically for the support of the ISO (450-8.030(B)(4)):** The total CalARP Program fees for the seven County ISO facilities subject to the Industrial Safety Ordinance was \$515,347. The total Industrial Safety Ordinance program fees for the seven County ISO facilities was \$317823. (NOTE: These fees do not include the two City of Richmond ISO facilities).
13. **Summarize total personnel and personnel years utilized by the jurisdiction to directly implement or administer this Chapter (450-8.030(B)(5)):** 5518 hours were used to audit/inspect and issue reports on the Risk Management Chapter of the Industrial Safety Ordinance.
14. **Copies of any comments received by the source (that may not have been received by the Department) regarding the effectiveness of the local program that raise public safety issues(450-8.030(B)(6)):** None received
15. **Summarize how this Chapter improves industrial safety at your stationary source (450-8.030(B)(7)):** SMR has integrated requirements of the Industrial Safety Ordinance into our Health, Safety, and Environment Management System; in the context of our HSE MS, the ISO requirements drive continual improvement in our HSE performance.
16. **List examples of changes made at your stationary source due to implementation of the Industrial Safety Ordinance (e.g., recommendations from PHA's, Compliance Audits, and Incident Investigations in units not subject to CalARP regulations; recommendations from RCA's) that significantly decrease the severity or likelihood of accidental releases.** See Attachment 1, Table 2
17. **Summarize the emergency response activities conducted at the source (e.g., CWS or TEN activation) in response to major chemical accidents or releases:** There were no MCAR's in the current reporting period (July 1, 2013 to June 30, 2014).

Attachment 1

Table 1. Summary of Implemented ISS			
ISS Item Number	ISS Type	Source/Study	Description
M20132508-001	Passive / Moderate	ISS Review of Existing Units	Apply fireproof insulation to DSHT Feed Cooler Supports
M20132414-001	Passive / Minimize	ISS Review of Existing Units	Modify routing of the RFG fuel piping from king tool filter to heaters F-66 and F-67 to avoid long run first away from heater and then back to heater.
M20131199-001	Inherent / Minimize	ISS Review of Existing Units	Remove Drain Piping from V-485; V-488; V-753; V-755. The drain piping was a dead-led due to lack of use.
M2010936-001	Passive / Simplify	ISS Review of Existing Units	Improve CO Boiler Circulation Pumps Isolation
M20103217-001	Passive / Moderate	ISS Review of Existing Units	Replace CFH Product (C118) Sample Station Cooler with upgraded metallurgy and capacity
M2013461-001	Passive / Moderate	ISS Review of Existing Units	HP1 Replace E809A/B/C bundles, channel, and shells with upgraded materials
M2013813-001	Passive / Moderate	ISS Review of Existing Units	Re-design of E-729 with upgraded materials and anti vibrations bars
M2013455-001	Passive / Moderate	ISS Review of Existing Units	Replace SGP EB604A/B bundles with upgraded materials
M20121392-001	Passive / Moderate	ISS Review of Existing Units	Change From Carbon Steel to Duplex SS Bundle for E-17362
M2012123-001	Passive / Moderate	ISS Review of Existing Units	E-646A-H Exchanger Bundles - Materials Upgrade
M20113404-001	Passive / Moderate	ISS Review of Existing Units	EA-804A/B/C/D - Materials upgrade of header boxes due to leaking plug sheets
M2012646-003	Inherent / Minimize	ISS Review of Existing Units	Remove Caustic Washout Line from Settler, line was a dead-leg
M20122694-001	Active / Moderate	ISS Review from Projects	Install Dimersol High Temperature Shutdown to mitigate the risk of vessel overpressure due to high reactor temperature
M20131049-001	Inherent / Moderate	ISS Review from Projects	Enhanced DHT Processing Project - Reduced Air Cooler pressure drop/backpressure
M20131049-001	Passive / Minimize	ISS Review from Projects	Enhanced DHT Processing Project - Added tandem seal pots for Frac Btms Pumps that vent to flare rather than to atmosphere
M2011147-001	Inherent / Moderate	ISS Review from Projects	New Biotreater and Clarifier - Water treatment chemicals injected into top of tanks rather than into pressurized line
M2011147-001	Inherent / Substitute	ISS Review from Projects	New Biotreater and Clarifier - Chose air injection rather than pure O2
M2011147-001	Passive / Simplify	ISS Review from Projects	New Biotreater and Clarifier - Chose open tank rather than covered tank

Table 1. Summary of Implemented ISS (cont)			
ISS Item Number	ISS Type	Source/Study	Description
M2013227-001	Passive / Moderate	ISS Review from Projects	Recovery LPG from Isom Vent - Routing of Vent Gas to Frac Ovhd Drum rather than WGC 2nd Stage Suction lowers risk of filling KO drum and causing flaring event.
M20123424-001	Active / Moderate	ISS Review from Projects	Install IPF on Columns C-236 and C15602 - Added Instrumented Protective Function Systems shutdown to avoid liquid full column and release through Atmospheric Pressure Relief Valves
M20121479-001	Active / Moderate	ISS Review from Projects	Upgrade COB1 IPF - Added shutoff valves for RFG, a low air flow trip, and a high burner pressure trip.
M20121480-001	Active / Moderate	ISS Review from Projects	Upgrade COB3 IPF Added shutoff valves for RFG, a low air flow trip, and a high burner pressure trip.
M20122502-001	Active / Moderate	ISS Review from Projects	CGP Column Relief Enhancement - Added new PSV to WGC discharge to prevent overpressure
M20122502-001	Passive / Simplify	ISS Review from Projects	CGP Column Relief Enhancement - Replaced EA-746 with higher design pressure rating, rerated design pressure for E-747A/B and various piping.
M20122262-001	Inherent / Moderate	ISS Review from Projects	F-40 Air Preheater - reduces firing required, hence lower heat flux and operating conditions.
M20122262-001	Active / Moderate	ISS Review from Projects	F-40 Air Preheater - project included provisions to enable lead-lag control of fuel-to- air ratio, which assures adequate combustion air is always supplied to firebox, providing an extra degree of safety.
M2013321-004	Active / Moderate	ISS Review from Projects	Review CCU CGP PSV's per PHA - Added 3rd PSV to CCU MF to accommodate new relief scenario
M20121339-001	Inherent / Substitute	ISS Review from Projects	DHT Sight Glass Mitigation - Sight glasses replaced by magnetic level indicators to reduce risk of leakage to atmosphere
M20131790-001	Inherent / Substitute	ISS Review from Projects	Isom Sight Glass Mitigation - Sight glasses replaced by magnetic level indicators to reduce risk of leakage to atmosphere
M2013164-001	Active / Moderate	ISS Review from Projects	Upgrade Alky IPF - Upgrade existing IPF to latest standards
M20121479-001	Active / Moderate	ISS Review from Projects	Upgrade CGH IPF - Upgrade existing IPF to latest standards

Table 2. ISO-only Recommendations Implemented (not required by CalARP)		
Number	Source	Description
R2012046-002	2012 CO Boiler PHA Revalidation	Complete SIFPro project to add ZT positioner input to the COB1 ES-5 and COB3 ES-7 shutdown systems.
R2012046-001	2012 CO Boiler PHA Revalidation	Repair piping for raw or alternate water make-up to the CO Bypass Water seal.
R2012021-007	2012 Flexsorb PHA Revalidation	Add a sign at the tank to warn of presence of N2 blanket on tank.
R2012021-006	2012 Flexsorb PHA Revalidation	Modify PSV SV 15536 and P-17102 to ease the prepping for maintenance
R2012021-006	2012 Flexsorb PHA Revalidation	Add labeling in field to warn that High H2S is present at sample station.
R2012021-004	2012 Flexsorb PHA Revalidation	Add ESP high level alarm on hydrocarbon drain drum; 19LI211.

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*Attach additional pages as necessary

- 1. Name and address of Stationary Source:** Tesoro Golden Eagle Refinery, 150 Solano Way, Martinez, CA 94553
- 2. Contact name and telephone number (should CCHS have questions):** Claire Spencer at 925-370-3274, Rich Leland at 925-370-3264 or Sabiha Gokcen at 925-370-3620.
- 3. Summarize the status of the Stationary Source's Safety Plan and Program (450-8.030(B)(2)(i)):** An updated Safety Plan was submitted to Contra Costa Health Services on June 1, 2012. Contra Costa Health Services has completed six audits on the safety programs. The first audit was in September 2000 on the safety programs. The second audit was in December 2001 and focused on Inherently Safer Systems and Human Factors. CalARP/ISO audits were conducted in August 2003, November–December 2005, August–October 2008, April–May 2011 and most recently January, 2014. All safety program elements required by the ISO have been developed and are implemented.
- 4. Summarize Safety Plan updates (i.e., brief explanation of update and corresponding date) (450-8.030(B)(2)(ii)):** The original Safety Plan for this facility was filed with Contra Costa Health Services on January 14, 2000. An amended plan, updated to reflect CCHS recommendations and ownership change, was filed on November 30, 2000. A Human Factors Amendment was submitted on January 15, 2001. A Power Disruption Plan was submitted, per Board of Supervisor request, on June 1, 2001. An amended Safety Plan, updated to reflect ownership change was submitted on June 17, 2002.

The Safety Plan for this facility will be updated whenever changes at the facility warrant an update or every three years from June 17, 2002. In addition, the accident history along with other information is updated every year on June 30. Most recently, updated Safety Plan was submitted to Contra Costa Health Services on June 1, 2012.
- 5. List of locations where Safety Plans are/will be available for review, including contact telephone numbers if the source will provide individuals with copies of the document (450-8.030(B)(2)(ii)):** CCHMP Office at 4585 Pacheco Boulevard, Suite 100, Martinez; Martinez Library (library closest to the stationary source)
- 6. Provide any additions to the annual accident history reports (i.e. updates) submitted pursuant to Section 450-8.016(£)(2) of County Ordinance 98-48 (450-8.030(B)(2)(iii)) (i.e., provide information identified in Section 450-8.016(£)(1) for all major chemical accidents or releases occurring between the last accident history report submittal (January 15) and the annual performance review and evaluation submittal (June 30)):** There was one incident in 2013 meeting the Major Chemical Accident or Release criteria. The incident was a power outage on November 15, 2013 and was a CWS Level 2 event. Please refer to the attached root cause analysis report.

- 7. Summary of each Root Cause Analysis (Section 450-8.016(C)) including the status of the analysis and the status of implementation of recommendations formulated during the analysis (450-8.030(B)(2)(iv)):** Status of Root Cause Analysis Recommendations: The recommended action items from the November 15, 2013 power outage are on schedule for completion in November, 2014.
- 8. Summary of the status of implementation of recommendations formulated during audits, inspections, Root Cause Analyses, or Incident Investigations conducted by the Department (450-8.030(B)(2)(v)):** "CCHS Information": CCHS completed an audit on September 15, 2000, December, 2001, August, 2003, November/December, 2005, August–October, 2008, April–May 2011 and January, 2014. There are no RCA or Incident Investigations that have been conducted by the Department.

Facility status of audit recommendations: All recommendations from CCHS audits prior to 2014 are closed. The recommendations from the 2014 audit have not yet been received by the facility at this time.
- 9. Summary of inherently safer systems implemented by the source including but not limited to inventory reduction (i.e., intensification) and substitution (450-8.030(B)(2)(vi)):** Golden Eagle is submitting a list of the Inherently Safer Systems (ISS) that meet the criteria for Inherent or Passive levels only and that were completed within the last year (see attached).
- 10. Summarize the enforcement actions (including Notice of Deficiencies, Audit Reports, and any actions turned over to the Contra Costa County District Attorney's Office) taken with the Stationary Source pursuant to Section 450-8.028 of County Ordinance 98-48 (450-8.030(B)(2)(vii)):** "CCHS Information": none
- 11. Summarize total penalties assessed as a result of enforcement of this Chapter (450-8.030(3)):** "CCHS information": No penalties have been assessed against this facility.
- 12. Summarize the total fees, service charges, and other assessments collected specifically for the support of the ISO (450-8.030(B)(4)):** The total CalARP Program fees for the seven County ISO facilities subject to the Industrial Safety Ordinance was \$515,347. The total Industrial Safety Ordinance program fees for the seven County ISO facilities was \$317823. (NOTE: These fees do not include the two City of Richmond ISO facilities).
- 13. Summarize total personnel and personnel years utilized by the jurisdiction to directly implement or administer this Chapter (450-8.030(B)(5)):** "CCHS Information": 5518 Hours were used to audit/inspect and issue reports on the Risk Management Chapter of the Industrial Safety Ordinance.
- 14. Copies of any comments received by the source (that may not have been received by the Department) regarding the effectiveness of the local program that raise public safety issues(450-8.030(B)(6)):** This facility has not received any comments to date regarding the effectiveness of the local program.

15. **Summarize how this Chapter improves industrial safety at your stationary source (450-8.030(B)(7)):** Chapter 450-8 improves industrial safety by expanding the safety programs to all units in the refinery. In addition, the timeframe is shorter to implement recommendations generated from the Process Hazard Analysis (PHA) safety program than state or federal law. This has resulted in a faster implementation of these recommendations.

Chapter 450-8 also includes requirements for inherently safer systems as part of implementing PHA recommendations and new construction. This facility has developed an aggressive approach to implementing inherently safer systems in these areas.

Chapter 450-8 has requirements to perform root cause analyses on any major chemical accidents or releases (MCAR). This facility has applied that rigorous methodology to investigate any MCARs that have occurred since January, 1999.

Chapter 450-8 requires a human factors program. This facility has developed a comprehensive human factors program and is in the process of implementing the program.

Chapter 450-8 requires a safety culture assessment. This facility has developed a safety culture assessment program that meets the requirements in the ordinance.

16. **List examples of changes made at your stationary source due to implementation of the Industrial Safety Ordinance (e.g., recommendations from PHA's, Compliance Audits, and Incident Investigations in units not subject to CalARP regulations; recommendations from RCAs) that significantly decrease the severity or likelihood of accidental releases.**

This question was broadly answered under question 15 above. Some examples of changes that have been made due to implementation of the ordinance are as follows. There are some units that were not covered by RMP, CalARP or PSM. Those units are now subject to the same safety programs as the units covered by RMP, CalARP and PSM. They have had PHAs performed on them according to the timeline specified in the ISO and the PHA recommendations have been resolved on the timeline specified in the ISO. A list of inherently safer systems as required by the ISO for PHA recommendations and new construction is attached to this filing as mentioned in the response to question 9. With respect to Compliance Audits, there was a compliance audit performed in April 2012 in addition to the CCHS audits mentioned above. All audit findings are being actively resolved. Root Cause Analysis findings and recommendations for MCARs are listed in the response under question 6.

17. **Summarize the emergency response activities conducted at the source (e.g., CWS or TEN activation) in response to major chemical accidents or releases:** Please refer to #6 which has the CWS classifications for the major chemical accidents and releases as well as any information regarding emergency responses by agency personnel.

Root Cause Analysis Report Tesoro Golden Eagle Refinery November 15, 2013

Power Outage

Summary of Event:

At approximately 11:29 A.M. on November 15, 2013, the Tesoro Golden Eagle Refinery experienced a brief power outage. The outage resulted in the shutdown of several refinery units and consequent flaring of excess hydrocarbons. Notifications were made to requisite outside agencies including the Contra Costa County Health Department's Hazardous Materials Division (CWS Level 2) and the Bay Area Air Quality Management District. Reportable quantities of Sulfur Dioxide were detected as a result of the flaring, and requisite notifications were made to the Bay Area Air Quality Management District. (Note: to detect Sulfur Dioxide emissions, the Hydrogen Sulfide concentration is measured in the gas going to the flare system; based on this concentration, the amount of Sulfur Dioxide emissions can be calculated.) No community complaints of odors were received, and the ground level monitors at the refinery's perimeter did not indicate any exceedances. Based on odor patrols conducted by Tesoro's contractor Odor Science and Engineering (OS&E), no odors were detectable off site. Visible pluming was detected at the Delayed Coker Unit (DCU) flare. Separately, a hydrocarbon leak and consequent fire occurred at the No. 3 Crude unit. The fire was immediately extinguished. Power was quickly restored and process units were started up in a controlled manner.

The initiating event of the partial power outage occurred at Switching Station #4 (SS#4). SS#4, which is normally fed by two separate power feeds, was only being fed by one power feed due to scheduled project work on the electrical system. Circuit breaker 1420 was feeding power to Bus B while power to Bus A was being fed through tie breaker 1415. A new protection circuit for tie breaker 1415 energized unexpectedly during commissioning of the new equipment. The energized circuit sent a trip signal to open the tie breaker resulting in loss of power on Bus A. Tesoro electricians and specialty contractors for the project work were on site when the outage occurred and were able to immediately respond.

A brief primer on electrical systems: Switching stations contain electrical switch gear and are used to distribute electricity. Substations contain both electrical switch gear and transformers. Substations are used to step down the voltage of the electricity to feed equipment. When power comes into the refinery, it is at the 12470 Volt level. The voltage needs to be reduced before the electricity is fed to the process unit equipment; this voltage transformation is the function of the substation. A Bus is an electrical switchgear conductor internal to the switching station or substation. For reliability purposes, switching stations and substations have two parallel feeder cables supplying them electricity. A breaker is a piece of switchgear equipment that can interrupt the electrical current by opening up upon detection of a fault. A tie breaker is a piece of electrical equipment that performs two functions; it ties the two busses together to make them parallel as well as can perform the breaker function to interrupt current when a fault is detected.

A brief timeline follows:

11:29 hrs:	Power failure at Switching Station No. 4
11:40 hrs:	Shut down of seven refinery process units
11:44 hrs:	CWS Level 1 Notification
11:45 hrs:	Power to Switching Station No. 4 restored
11:50 hrs:	BAAQMD Notified. Visible plume detected by BAAQMD inspector
11:56 hrs:	OS&E personnel dispatched to monitor community
12:10 hrs:	CWS Level 2 Notification sent over terminal due to visible plume from DCU flare
12:15 hrs:	DCU Flare cleared, visible plume eliminated
12:20 hrs:	Fire reported at the No. 3 Crude Unit
12:25 hrs:	Fire at the No. 3 Crude Unit extinguished and monitoring commenced
12:27 hrs:	BAAQMD inspector arrives on scene
13:15 hrs:	BAAQMD inspector leaves facility
14:00 hrs:	All Clear notification issued to the refinery

Agency Notification and Response:

The following agencies were immediately notified: Contra Costa Hazardous Materials Program (CCHMP) via the CWS, the Bay Area Air Quality Management District (BAAQMD) via the CWS, Contra Costa Fire Protection District, and the Contra Costa County Office of Emergency Services. The following agencies responded with personnel to the scene: BAAQMD.

[Note: Notifications over the CWS terminal: CWS level 1 notifies CCHMP, Contra Costa OES, and the Contra Costa Sheriff with a specific message. Additional notice informs BAAQMD, Contra Costa Fire Protection District, Martinez Police, Antioch Police, Pinole Police and Richmond Police. CWS level 2 notifies CCHMP, Contra Costa OES, Contra Costa Sheriff and BAAQMD with a specific message. Additional notice informs Contra Costa Fire Protection District, California Highway Patrol, California Dept. of Health, San Ramon Valley Fire, Martinez Police, Antioch Police, Pinole Police and Richmond Police. CWS level 3 notifies CCHMP, Contra Costa OES, Contra Costa Sheriff and BAAQMD with a specific message. Additional notice informs Contra Costa Fire Protection District, California Highway Patrol, California Dept. of Health, San Ramon Valley Fire, Martinez Police, Antioch Police, Pinole Police, Richmond Police, EDIS and National Weather Service. CWS level 3 also activates sirens and the news media with a shelter in place message.]

Emergency Response Actions:

Operations personnel shut down the units and worked to restore power. Emergency response crews immediately responded to the scene of the fire at the No. 3 Crude unit and activated the fire water suppression monitors.

Material Released:

Hydrocarbon compounds were routed to the flare system as a result of the emergency shutdown. These compounds were mostly consumed (burned off) during the combustion process, resulting in the release of Carbon Dioxide and other gases present during combustion. The refinery flares have a hydrocarbon destruction efficiency of greater than 98% converting any hydrocarbon to Carbon Dioxide. Hydrogen Sulfide in the flare gas is oxidized to Sulfur Dioxide. The consequent sulfur dioxide emissions exceeded 7,000 lbs.

Meteorological Conditions:

The weather was clear, with wind direction varying from 200 to 330 degrees (wind blowing toward the ESE to ENE). The wind speed varied from 1.5 to 9.5 MPH. The temperature was about 62 degrees F minimum at 11:30 AM and warmed to about 66 degrees F at 2:00 PM.

Injuries:

No injuries were reported on or off site.

Community Impact:

No community complaints were received. The Bay Area Air Quality Management District reported evidence of visible pluming.

Incident Investigation of the event:

This investigation focused mainly on the unexpected trip of tie breaker 1415, causing the breaker to “Open” and subsequent loss of power to process units.

Background:

Under normal conditions, Switching Station #4 (SS#4) is fed by two separate feeders (1107 & 1108) from Foster Wheeler (FW). Each feeder has a breaker at FW and a corresponding breaker at SS#4. Both feeders are joined together via a normally closed tie breaker (1415). Feeder 1107 goes to breaker 1410 then to Bus 4A. Feeder 1108 goes to breaker 1420 then to Bus 4B. Bus 4A and 4B are joined together by the normally closed tie breaker 1415. SS#4 feeds power to a number of other switching stations and substations in the refinery.

There is a protective system consisting of various relays at SS#4. Protective relays act to protect switching station equipment from potentially damaging electrical faults by immediately isolating the equipment if a fault is detected. A Protective relay is a piece of equipment that monitors specific electrical parameters such as current, voltage, temperature and breaker positions. They have pre-programmed alarms and trip values that if exceeded will cause the protective relay to act opening the appropriate breaker. This action occurs automatically upon fault detection and isolates the electrical equipment as close to the fault as possible while continuing to power other devices not affected by the fault.

On November 15, a project was under construction to improve the reliability of the electrical system at the refinery. The objective of the project was to add line differential protection against faults occurring between the FW breakers and Tesoro’s breakers on eight feeders and to install an additional level of protection at tie breaker 1415 to increase reliability of the overall protection scheme. Line differential protection is a system to measure the current leaving FW and arriving at the switching station. If there is an electrical short somewhere in this path, a differential in the current will be detected indicating a problem in the system; the line differential protection equipment would then act to open breakers to isolate the electrical issue. In order to install the new equipment, one feeder to SS#4 had to be isolated and was no longer supplying power to the switching station. (This means during the period of this work, the normal “double ended” switching station becomes “single ended”. “Double ended” refers to the switching station having two feeders to it, which decreases the likelihood of a power interruption. “Single ended” refers to the switching station having only one feeder to it supplying power.)

The work on the switching station was expected to last approximately two weeks. Due to the length of time the switching station would be “single ended”, an MOC was prepared and a PHA performed for this unusual mode of operation. On November 15, feeder 1107 to Bus 4A was isolated to begin the work.

Partial Power Outage at SS#4:

On Thursday November 15, at approximately 11:18 PST while SS#4 was “single ended”, the recently installed protection circuitry for tie breaker 1415 unexpectedly energized. The circuitry energized when the last test switch was closed during the commissioning of the new circuit. This sent a spurious trip signal to breaker 1415, which opened as part of its designed function to protect against detected faults.

The opening of tie breaker 1415 caused a complete loss of power to Bus A at SS#4. As a result of losing power at Bus A, all downstream switching stations and substations lost power. This power loss resulted in the loss of several refinery units including the Fluidized Catalytic Cracking Unit (FCCU), Sulfuric Acid Plant, Sulfur Recovery Unit (SRU), No. 2 Hydrogen Desulfurization Unit (2 HDS), No. 5 Gas Plant, No. 4 Gas Plant, and the No. 3 Crude Unit.

During the investigation, it was found that the newly installed backup protection circuit for the tie breaker 1415 contained a Direct Current (DC) polarity sensitive (+ I -) surge suppressor component, which was not installed correctly. Even though the positive of the new suppressor component was connected to the DC positive voltage as shown on the switchgear manufacturer’s drawings, it was determined the reason for the incorrect installation was because the original factory drawings for SS#4 switchgear indicated the opposite (wrong) polarity at the connection point of the new surge suppressor. Note: SS#4 is approximately 30 years old; the drawing was from the original installation of the switching station.

A procedure had been developed to install and commission the line differential protection equipment by a specialty contractor company who is familiar with this type of work. They were given the original factory drawings for SS#4 and developed the procedure from this information.

The investigation also revealed that the surge suppressor product information from the manufacturer did not clearly describe its behavior in relation to polarity, nor did it describe proper testing procedures for the equipment. The surge suppressor was one of the pieces of equipment being installed as part of the line differential protection. In addition, the investigation team noted that the commissioning procedure failed to recognize that the circuit was polarity sensitive, and therefore did not include steps to verify that the surge suppressor component was installed in the correct position. During the commissioning of the circuit, the trip circuitry energized unexpectedly when the test switch was manually closed. The energized trip circuitry sent a spurious trip signal to breaker 1415 to trip “Open”, resulting in complete loss of power on Bus A of SS#4.

Root Causes:

The causal analysis for this incident yielded the following root causes and corrective actions (see table):

Root Cause #1: Existing procedures for working on in-service electrical equipment did not contain adequate requirements to prevent power supply interruptions while work is being performed.

Root Cause #2: The original factory switch gear drawing for SS#4 contained an error regarding the polarity at the point of connection for the new trip circuit. The source of the error was not able to be determined.

Root Cause #3: The electrical installation procedures and manufacturer product information did not adequately address the hazard of the polar sensitivity of new equipment and proper testing to verify correct installation.

Corrective Actions

	Corrective Actions	Anticipated Date of Completion	Root Cause
1	Review refinery Rules and Standing Instructions and electrical procedures regarding working on in- service electrical equipment. As applicable, revise these documents to include the implementation of a workflow process to ensure multi-discipline review prior to performing any work on in-service electrical equipment. Include the requirement that as part of the multi-discipline review, a plan will be developed to prevent power supply interruptions while work is being performed should be developed along with a hazard mitigation plan in the event that power supply is interrupted.	11/30/14	1
2	Correct the original factory switch gear drawings to indicate the correct polarity of the trip circuit (note: this will require polarity testing to obtain the necessary information to correct the drawings)	11/30/14	2
3	Review electrical system installation procedures and schematics and revise as applicable to clearly indicate the hazard of polarity sensitivity of new equipment and account for testing of correct circuit polarity prior to commissioning of equipment	11/30/14	3

Inherently Safer Systems Implemented

Item Identifier	Implementation Category	Risk Reduction Category	ISS Approach
A055-2009-001	PHA	Passive	Moderate – Incorporation of equipment design features which reduce the potential to release hazardous material.
A055-2009-004	PHA	Inherent	Eliminate – Eliminated the hazard by removal of hazardous material equipment and potential release points.
A068-2009-002	PHA	Passive	Moderate – Incorporation of equipment design features which reduce potential to release hazardous material.
A082-2006-189	PHA	Passive	Moderate – Incorporation of equipment design features which reduce the potential to release hazardous material.
PTS 12524	Project	Passive	Minimize – Reduction of hazardous material inventory.
PTS 12375	Project	Passive	Minimize – Reduction of hazardous material inventory.
MOC 9451	Project	Passive	Moderate – Incorporation of equipment design features which reduce the potential to release hazardous material.
MOC 9681	Project	Passive	Moderate – Incorporation of equipment design features which reduce the potential to release hazardous material.
MOC 9714	Project	Passive	Moderate – Incorporation of equipment design features which reduce the potential to release hazardous material.

ISO REPORT

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