

ANNUAL PERFORMANCE REVIEW & EVALUATION



2014

INDUSTRIAL SAFETY ORDINANCE

RISO REPORT



CONTRA COSTA
HEALTH SERVICES

www.cchealth.org/hazmat

April 28, 2015

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Executive Summary

In 2002, the City of Richmond adopted the Richmond Industrial Safety Ordinance requiring regulated facilities to implement safety programs similar to those required for facilities in Contra Costa County. A multitude of safety programs are required to be developed that aims to prevent chemical accidents that could have detrimental impacts to the surrounding communities. These requirements are some of the most stringent in the United States. Additionally, the Industrial Safety Ordinance (ISO) is mandated to include participation from all stakeholders, including industries, agencies, elected officials and the public at large.

Contra Costa Hazardous Materials Programs (CCHMP), a division of Contra Costa Health Services, administers the County and the City of Richmond's Industrial Safety Ordinance (RISO). The Richmond Industrial Safety Ordinance (RISO) covers the Chevron Refinery and Chemtrade West West Richmond Works.

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 incidents in the County and one CWS Level III incident in City of Richmond in 2012 and, to a lesser extent, incidents in 2010 that caused some concern. However, CCHMP believes that this is not directly reflective of the effectiveness of the ISO or RISO 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 RISO program and are continuing to explore ways to improve the overall implementation of ISO and RISO and the prevention program elements. The 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. The 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 City of Richmond and the County Board of Supervisors has adopted amendments in 2014 to the ISO and RISO 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

The Hazardous Materials Programs have an established public outreach process and is continually looking at ways to improve. The following items have been implemented based on recommendations from stakeholders:

- Public outreach information booths at existing venues
 - Chevron Richmond Refinery's Audit Report, Risk Management Plan and Safety Plan were available for review at the Richmond Emergency Preparedness Expo on November 17, 2012 at the Craneway Pavilion, Richmond.
 - Chemtrade West Richmond Works' Audit Report, Risk Management Plan, Safety Plan and Chevron Richmond's Safety Plan were available for review at the West County Emergency Preparedness Fair, at San Pablo Towne Center Parking Lot on October 5, 2013, San Pablo.
- Presentations to Interested Groups
 - Chevron Richmond Refinery's Audit results, Safety Plan and general Richmond Industrial Safety Ordinance information were shared with Point Richmond Neighborhood Council on January 25, 2012.
- Attend public meetings after major incidents:
 - CCHMP attended Chevron's public meeting on Aug 7, 2012 to share incident information and gather community questions and concerns.
 - CCHMP co-hosted with City of Richmond on Sep. 24, 2012, a public meeting to update the community on the Chevron No. 4 Crude incident investigations by Chevron, CalOSHA and CSB.
 - CCHMP attended City of Richmond's meeting on Nov. 26, 2012 to discuss preliminary investigation results and Chevron's construction permits from City of Richmond.
 - CCHMP attended and participated on a panel at a public meeting by the Chemical Safety and Hazard Investigation Board (CSB) to present an Interim investigation report to the community on the Chevron No. 4 Crude incident on April 19, 2013.
- CCHMP participated as a panel speaker on CSB's public meeting on January 15, 2014 for the Regulatory Report of the August 6, 2012 fire at the Chevron Refinery in Richmond.
- CCHMP participated as a panel speaker on January 28, 2015 in CSB's presentation of the final investigation report on the Chevron Refinery and fire at the City of Richmond public meeting.

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 and 2011 RISO Annual Reports to CAP representatives for distribution for Phillips 66, Chemtrade West Bay Point Works, Chemtrade West Richmond, Shell Martinez Refinery and Tesoro Golden Eagle Refinery. This 2014 Annual Report is available on our website and will be sent to available 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. CCHMP completed three RISO audits since the last annual report:

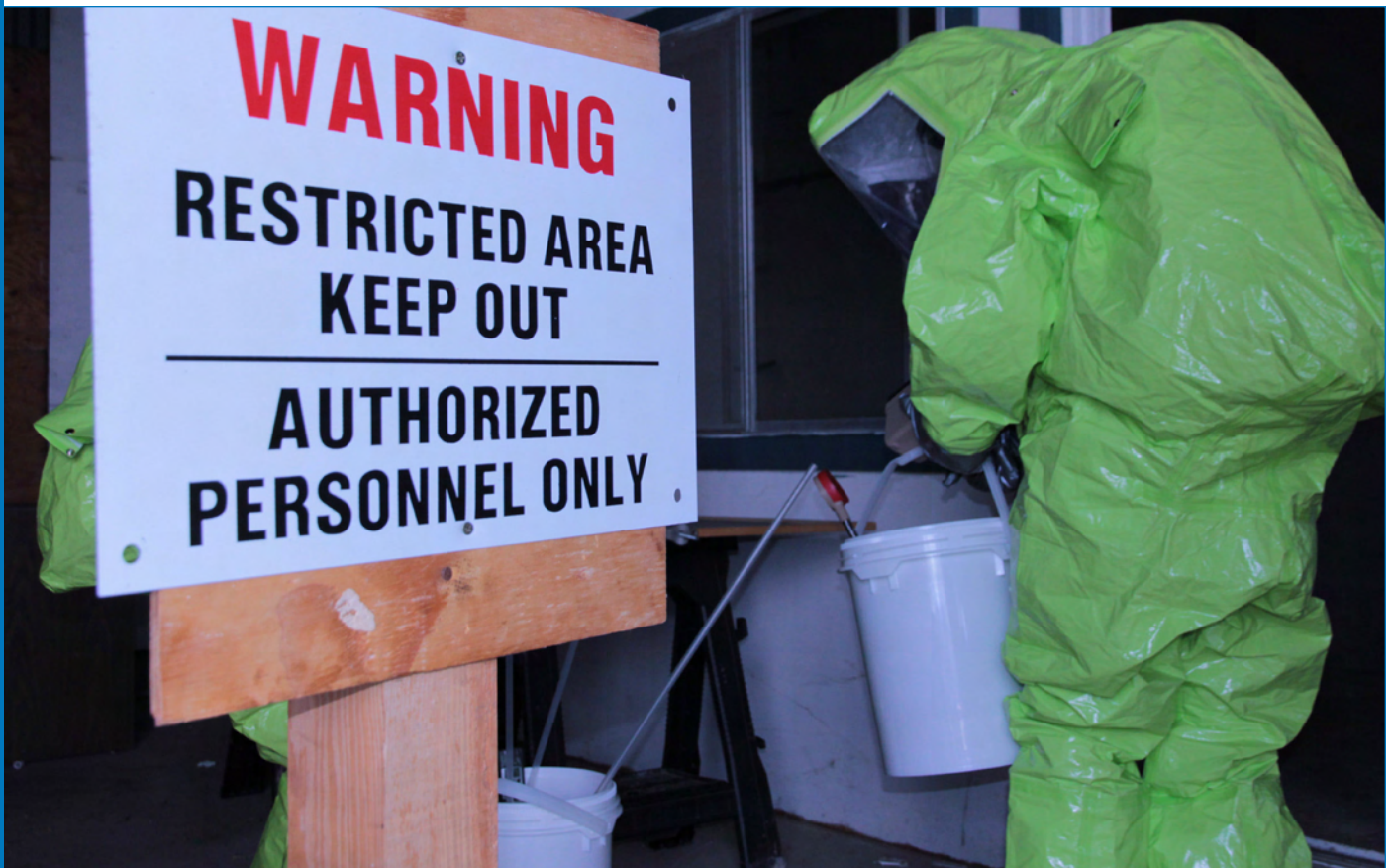
- General Chemical Richmond (now Chemtrade West West Richmond) in Jan 2012.
- Chevron Richmond Refinery in Oct 2013
- Chemtrade West West Richmond in September 2014

Major Chemical Accidents or Releases

There have been no Major Chemical Accidents or Releases (MCAR) for the County Industrial Safety Ordinance or Richmond Industrial Safety Ordinance facilities in the 2014 reporting period. Since the 2011 report to the Richmond City Council, there was one severity level III incident in 2012 at the Chevron Refinery which is under the jurisdiction of the Richmond Industrial Safety Ordinance.

Conclusion

The severity of the Major Chemical Accidents or Releases in Contra Costa County has 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 City of Richmond adopted the Industrial Safety Ordinance after the Contra Costa County Board of Supervisors passed the County Industrial Safety Ordinance because of accidents that occurred at oil refineries and chemical plants in Contra Costa County. The effective date of the Richmond Industrial Safety Ordinance was January 7, 2002. 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 must submit a Safety Plan to Contra Costa Health Services stating how the stationary source is complying with the ordinance, including the Human Factors program
- Stationary sources must comply with the requirements of the Human Factor Guidance Document that was developed by Contra Costa Health Services and was adopted by reference
- For Major Chemical Accidents or Releases, stationary sources are required to perform a root cause analysis as part of their incident investigations (ongoing)
- Contra Costa Health Services may perform its own incident investigation, including a root cause analysis (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 Health Services 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 Plans and every three years after the initial audit/inspection (ongoing)
- Contra Costa Health Services will give an annual performance review and evaluation report to the City Council

City of Richmond in February 2013 adopted the 2006 County ISO amendment that further expanded the program requirements and mandates 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

City of Richmond in June 2014 adopted revisions to the Industrial Safety Ordinance to address the recommendations that the CSB made in the Interim Chevron August 2012 Fire Investigation Report. The changes include the following:

1. Requires regulated sources to submit “common” process safety performance indicators and develop additional process safety performance indicators
2. Expands the requirements when an Inherently Safer System Analysis is to be performed to include all the existing processes, part of the management of change process when there is a major change; and as part of an Major Chemical Accident or Release incident investigation.
3. Requires the regulated sources to perform a safeguard protection analysis to determine the effectiveness of safeguards that are used during a process hazard analysis, and
4. Revision of the goals of the ordinance that the purpose of the ordinance is to prevent accidents from occurring to the greatest extent feasible.

CCHMP staff issued a revised Safety Program Guidance Document in July 2011, to reflect the amendment requirements along with clarifications based on a decade of auditing and facility audit findings.

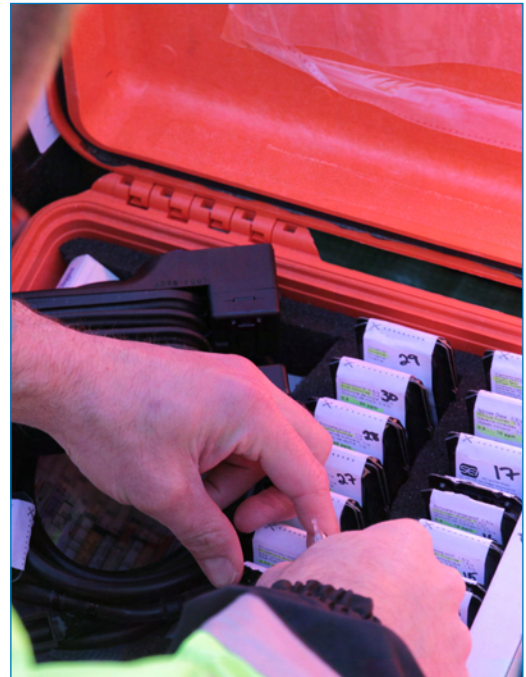
Chevron and Chemtrade West West Richmond submitted their Safety Plans to Hazardous Materials Programs; these have been reviewed and are considered complete. The public comment period for these plans ended in January 2004. Safety Plans are required to be updated every three years. Contra Costa Hazardous Materials Program has completed the fifth round of RISO audit of these stationary sources. This also corresponds to the sixth round of California Accidental Release Prevention Program audit. The status of revised Safety Plan reviews and all audits are discussed in Table I within this 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 Hazardous Materials Program is meeting the requirements of the ordinance as follows:
 - Effectiveness of the Department’s program to ensure stationary sources 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

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 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/calarp/guidance-document.php> and <http://www.cchealth.org/hazmat/iso/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) of these files is 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 the two regulated stationary sources that were required to comply with the Richmond Industrial Safety Ordinance (RISO) within one year after the initial submittal of their Safety Plans. Hazardous Materials Programs reviewed all of the Safety Plans and audited/ inspected the stationary sources' Safety Programs within that year (2003). When Hazardous Materials Programs reviews a Safety Plan, a Notice of Deficiencies is produced that documents what changes to their Safety Plan a stationary source are required to make before Health Services determines that the Safety Plan is 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, Hazardous Materials Programs 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 Program will open a public comment period on the Safety Plan and will make available the plan in a public meeting or venue. Hazardous Materials Programs will respond to all written comments in writing and when appropriate use the comments in the audit/inspection of the regulated stationary sources.

Public Comment

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 West 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.

Chevron Richmond Refinery was audited for the third time for RISO/CalARP program in April 2008 and the final report were finalized and results were available at the Recycle More Earth Day Event in Richmond in June 2009. Health Services performed an RISO/CalARP program audit at Chemtrade West Richmond Works in January 2009. The final report was shared at a public event in Richmond in September 2010. The fourth round of RISO audits began in February 2011 with Chevron. The final audit report was shared at the West County Emergency Preparedness Fair in El Cerrito in September 2011. Hazardous Materials Program staff performed the fifth audit at Chemtrade West Richmond Works in January 2012. The final audit report was shared at the West County Emergency Preparedness Fair, in San Pablo Towne on October 5, 2013. The fifth round of RISO audit for Chevron was completed in November 2013 and the sixth round of audit at Chemtrade West Richmond Works was completed in September 2014. The audit reports will be shared with the Richmond communities at the next available public event and will be provided to the Richmond library as well. Copies of audit reports are available at the Richmond Library and a summary of the most current audit is also available on Hazardous Materials Programs' website (cchealth.org/hazmat/rmp).

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 this past year. The Hazardous Materials Programs staff did work closely with the U.S. Chemical Safety and Hazard Investigation Board, California Occupational Safety and Health Association (Cal OSHA), US Environmental Protection Agency (EPA), and the Bay Area Air Quality Management District (BAAQMD) during their investigations. CCHMP staff participated in follow-up audits and inspections with CalOSHA and US EPA personnel. A historical listing of Major Chemical Accidents or Releases starting in 1992 is on the Health Services website at www.cchealth.org/hazmat/accident-history.php. This list includes major accidents that occurred prior to the adoption of the Industrial Safety Ordinance and the City of Richmond 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.

Effectiveness of the Public Information Bank

The Hazardous Materials Programs section of Health Services website cchealth.org/hazmat/ includes links to 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. Including links to a description of each of the facilities, the regulated substances handled and summaries of the audit findings
- 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 and Chevron Fenceline Monitors
 - Hazardous Materials Program Incident Search
 - Online search of the hazardous materials incident database for incidents that occurred from 1993 to present by entering a date range, address, city or facility name
- Facility Search
 - Online search of the facilities that handle hazardous materials by name of the facility, street name and city, or any combination of the three
- Unannounced Inspection Program
 - Lists the facilities that are subject to unannounced inspections under the Unannounced Inspection Program
- Hazardous Materials Interagency Task Force
 - Includes a matrix of who has what hazardous materials and regulatory responsibilities
 - Minutes from past meetings
 - Presentations from past meetings
- 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
Richmond 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
Chevron	1/21/03 6/21/04 9/29/06 9/25/09 9/24/12	4/23/03 11/8/2012	10/10/03 6/22/04 5/21/07 11/4/09 11/12/13	10/14/03 6/24/04 6/2/07 9/25/10 10/5/13	1/11/01(Non-RISO) 9/29/03 2/13/06 4/14/08 2/8/2011 10/3/2013	6/24/04 6/2/07 4/25/09 9/24/11
Chemtrade West Richmond Works	1/17/03 6/21/04 4/17/09 8/5/14	4/11/03 2/18/10	10/10/03 4/17/06 5/26/10	10/14/03 6/2/07 9/25/10	5/29/01 (Non-RISO) 4/24/06 8/18/03 1/5/09 1/5/2012 9/8/14	6/24/04 6/2/07 9/25/10 10/5/13

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.

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 the Hazardous Materials Division of Contra Costa Health Services. 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 perform 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 Hazardous Materials Program 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, 2002 and an updated Safety Plan that includes the implementation of the stationary source's Human Factors Program by January 15, 2003. 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
Chevron	Hazardous Materials Programs Office	Point Richmond and Richmond Main Public Library
Chemtrade West Richmond Works	Hazardous Materials Programs Office	Point Richmond and Richmond Main Public Library

**Table III
Inherently Safer Systems**

Regulated Stationary Source	Inherently Safer System Implemented	Design Strategy	Category
Chevron	Reduce the inventory of hazardous substance by eliminating piping and equipment (33 times)	Inherent	Minimization
	Reduced potential of exposure and hazard by removing piping and equipment (19 times)	Inherent	Simplify
	Reduced potential of exposure and hazard by eliminating and/or change piping and equipment (6 times)	Passive	Minimization
	Reduced potential of exposure and hazard by changing and/or removing controls and equipment (49 times)	Passive	Simplify
Chemtrade West Richmond Works	None	N/A	N/A

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 (MCAR) that occurred in City of Richmond or in Contra Costa County in 2014. There was a level 2 incident in Contra Costa County that lasted 6 minutes. However, there was one MCAR incident since the last RISO report in City of Richmond in Aug 2012. The status of this incident investigation is included in Table IV. The 72-hour reports and the final RCA reports for this and previous MCAR incident reports are available at the Hazardous Materials Programs office and website.

**Table IV
Major Chemical Or Accidental Release List**

facility	mcAR date	cws	severity	mcAR description	onsite impact	offsite impact	date RCA report
Chevron-#4 Crude fire	Aug 6, 2012	3	3	# 4 Crude Unit Fire. An 8” line from the atmospheric distillation column, number 4 side cut, with hot diesel like material, leaked and caught fire.	5 Chevron emergency responders were treated for minor burns, and received first aid.	Between 400 and 900 people sought immediate medical attention. Post incident, approximately 15,000 people sought medical attention.	April 12, 2013

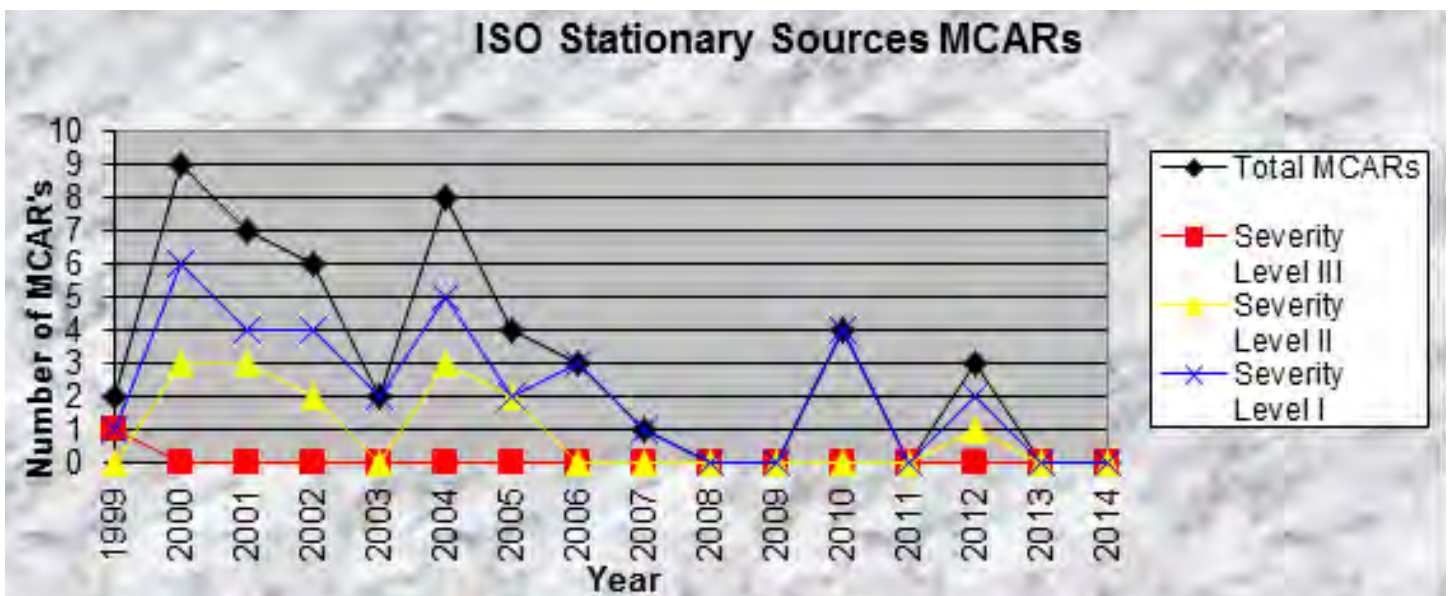
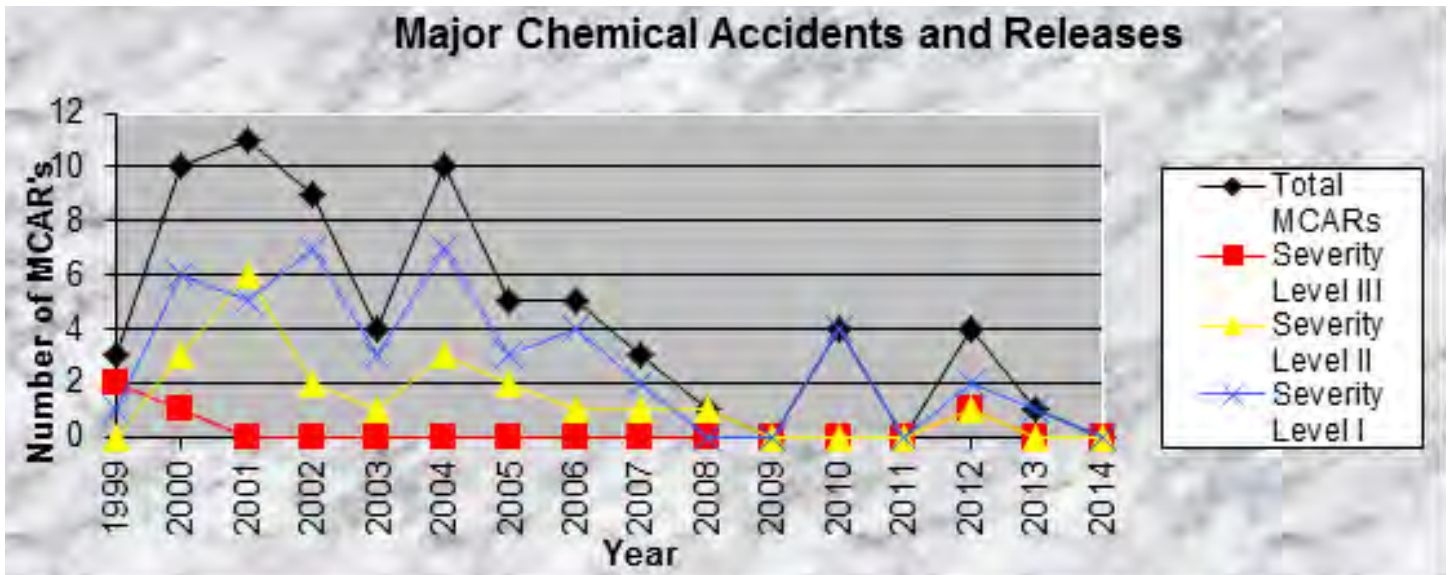
Major Chemical Accidents or Releases

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:

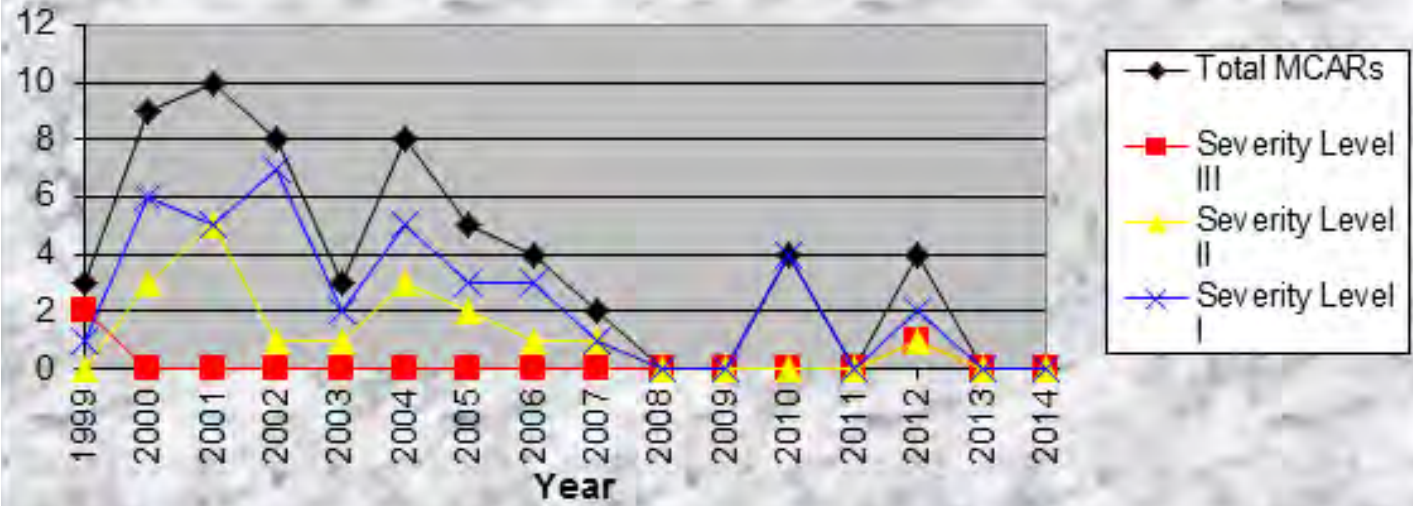
- **Severity Level III**—A fatality, serious injuries or major on-site and/or off-site damage occurred
- **Severity Level II**—An impact to the community occurred, or if the situation was slightly different the accident may have been considered major, or there is a recurring type of incident at that 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 2012 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.**



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 Industrial Safety Ordinance. A severity level II incident is given 9 points, severity level I 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

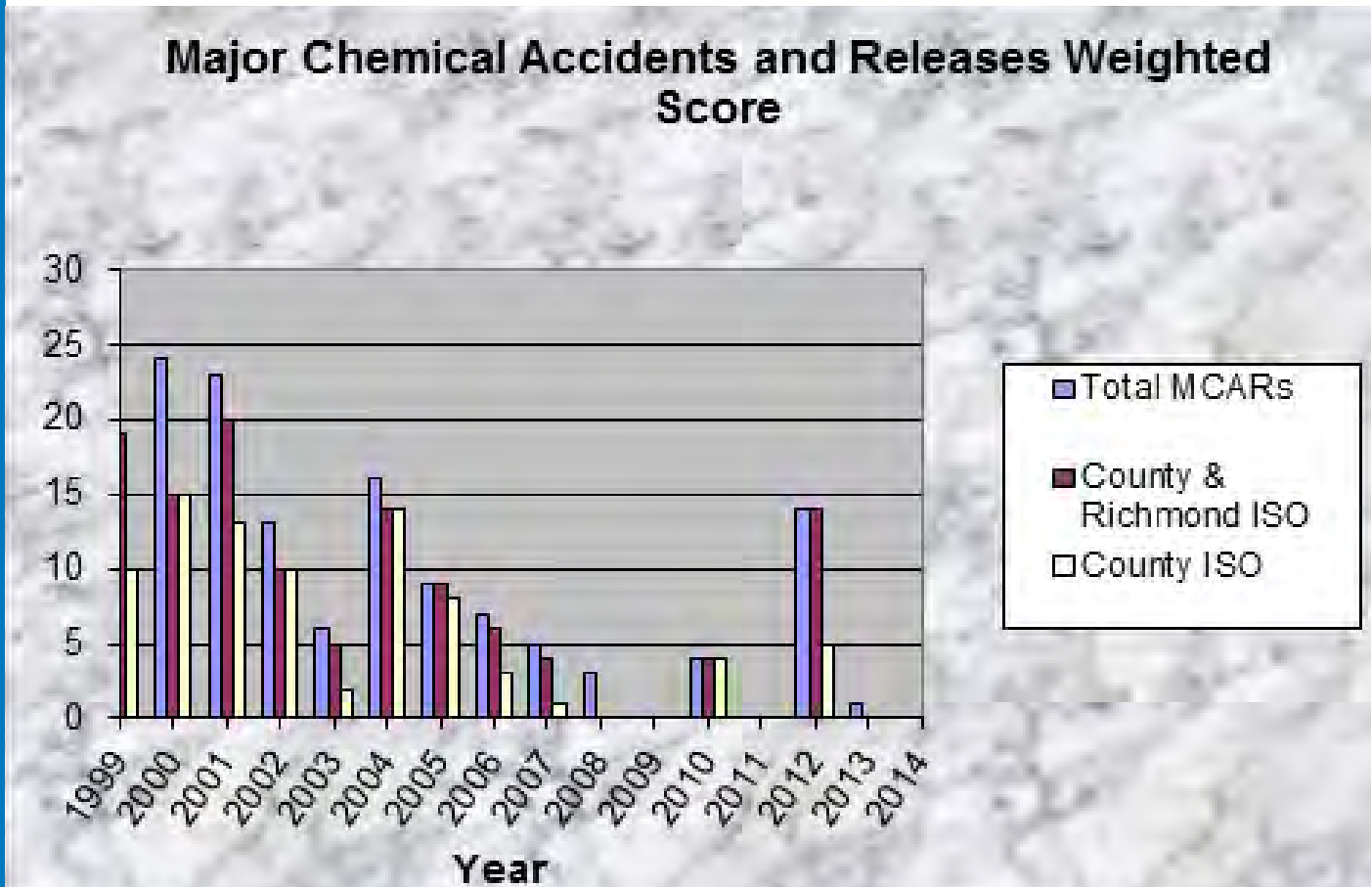
No penalties have been assessed this year for non-compliance with the Industrial Safety Ordinance.

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:

- Two RISO/CalARP Program facility audits were done between October 2013 and September 2014. It takes four to five engineers four weeks to perform the on-site portion of an RISO/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 and the ISO 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 during the last year.

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 the Hazardous Materials Programs staff, and the Industrial Safety Ordinance administered by the Hazardous Materials Programs staff. 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. The main differences between the federal Accidental Release Prevention and the CalARP Programs are:

- 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
- Hazardous Materials Program is required to audit and inspect stationary sources at least once every three years
- The interaction required between the stationary source and Hazardous Materials Program

The differences between the CalARP and the Industrial Safety Ordinance Safety Programs are:

- 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 Programs

The Board of Supervisors amended the County's Industrial Safety Ordinance to expand the requirement of the ordinance in 2006. City of Richmond adopted the same amendments in February 2013. These amendments are:

- • Expand the Human Factors section of the Industrial Safety Ordinance to include the following:
 - Maintenance procedures (effective February 1, 2015)
 - 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 Safety Culture Assessment guidance chapter was finalized in November 2009. The Industrial Safety Ordinance Guidance Document has been updated to include the remaining changes to the ordinance and a draft was issued in on July 2011. The Accidental Release Prevention Engineers have participated with the Center for Chemical Process Safety on developing the second edition of the "Inherently Safer Chemical Processes" 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.

The City of Richmond City Council and the County's Board of Supervisor adopted amendments to the Industrial Safety Ordinances to address the recommendations that the CSB made in their interim report on their investigation of the August 6, 2012 Chevron Richmond Refinery fire. The amendments include the following:

1. Requires regulated sources to submit "common" process safety performance indicators and develop additional process safety performance indicators,
2. Expands on the requirements when an Inherently Safer System Analysis is to be performed that includes all the existing processes, when performing a management of change when there is a major change, and as part of the incident investigation where there has been an Major Chemical Accident or Release
3. Requires the regulated sources to perform a safeguard protection analysis to determine the effectiveness of safeguards that are used during a process hazard analysis, and
4. Revision of the goals of the ordinance that the purpose of the ordinance is to prevent accidents from occurring to the greatest extent feasible.

All of these requirements will and have lowered the probability of an accident occurring. Contra Costa County has been recognized in the Chemical Safety and Hazard Investigation Board Report on the BP March 23, 2005 Texas City Investigation as an alternative model for doing process safety inspections. 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. Carolyn W. Merritt, the Chemical Safety and Hazard Investigation Board Chair at that time, also

recognized Contra Costa County in 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), asked Mr. Bresland about the Contra Costa County program for process safety audits of refineries and chemical companies. 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 the regulations. The Chemical Safety and Hazard Investigation Board made a recommendation in their final investigation report on an incident that occurred at the Bayer CropScience Institute, West Virginia facility that West Virginia or the Kanawha Valley adopts a process of auditing their chemical facilities using the Contra Costa County auditing process. The Hazardous Materials Programs 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.

**ATTACHMENT A
HAZARDOUS MATERIALS
OMBUDSMAN REPORT**
Hazardous Materials
Ombudsperson Evaluation

November 2013–October 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 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 website. This page contains information about the program, links to other related websites, 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. The 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 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, 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 Division's asthma program as a resource on environmental health issues. The Ombudsman represented the 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 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 California Department of Public Health. The Ombudsman also represented the 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 departments at a national conference on climate change. 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-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 justice, 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 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 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 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 Division on 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 in the development and facilitation of community safety 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:** Chevron Richmond Refinery, 841 Chevron Way, Richmond, California 94802
- 2. Contact name and telephone number (should CCHMP have questions):** Karla Salomon, 510-242-2508
- 3. Summarize the status of the Stationary Source's Safety Plan and Program (450-8.030(B)(2)(i)):** The CUSA Richmond Refinery (Refinery) Site Safety Plan (SSP) was most recently revised on February 22, 2013. A revised SSP was prepared in accordance with the City of Richmond Industrial Safety Ordinance 42-03 (RISO), which was adopted by the Richmond City Council on January 17, 2002.
- 4. Summarize Safety Plan updates (i.e., brief explanation of update and corresponding date) (450-8.030(B)(2)(ii)):** No Site Safety Plan updates have occurred from June 1, 2013 to June 1, 2014. The last update occurred February 2013.
- 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; Richmond Public Library at 324 Civic Center Plaza, Richmond, CA 94804 and Point Richmond Public Library at 135 Washington Ave., Richmond, CA 94801.
- 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 events between June 1, 2013 and June 1, 2014.
- 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 events between June 1, 2013 and June 1, 2014 and no root cause analysis are being conducted between these dates.

¹While not considered a direct cause of the Incident, these additional considerations represent opportunities to prevent a similar incident from recurring.

Causal Factor or Additional Consideration	Recommendations	Status of Implementation of Recommendations
<p><u>Causal Factor 1:</u></p> <p>The response and assessment after discovery of the leak did not recognize the risk of piping rupture of the possibility of auto-ignition.</p>	<p>Revise Refinery policies and checklists to ensure appropriate information—including process safety and inspection information—is considered when evaluating leaks and addressing the issue of whether to shut down or continue operation of equipment.</p>	<ul style="list-style-type: none"> • We have implemented a new protocol for evaluating leaks with simple guidance for making sometimes necessary rapid decisions around leak response and further enhancing situational awareness skills. • We have shared our new leak response protocol with CCHS and the County.
<p><u>Causal Factor 2:</u></p> <p>A measurement performed in 2002 showed one-third wall loss in the failed pipe component just downstream of corrosion monitoring location (“CML”). This information was only captured as a comment in the inspection management software tool and not elsewhere in the inspection management system. Documenting wall thickness information in a comment without adding it to the inspection management software database limited the ability for future decision-makers to utilize the data.</p>	<p>Enhance the Refinery’s mechanical integrity program to ensure the Refinery properly identifies and monitors piping circuits for appropriate damage mechanisms using a standardized methodology and documentation system.</p>	<ul style="list-style-type: none"> • We are strengthening the Refinery’s reliability program for piping and equipment to ensure it covers potential damage mechanisms applicable to those systems. • Pilot will be conducted with external technical expert to determine how to best enhance existing work process to formalize the evaluation of known damage mechanisms, the consequences of failure and the necessary mitigations.
<p><u>Causal Factor 3:</u></p> <p>Inspection during the 2011 Turnaround did not include every component in the 4-sidecut piping circuit because the recommendation to identify and inspect every component was not built into the inspection plans for the 4 Crude Unit. A 100% component-by-component inspection would have required the inspection of the pipe component that failed in August 2012, which could have alerted the Refinery to the component’s accelerated metal loss.</p>	<ul style="list-style-type: none"> • Implement certain improvements concerning inspector training and competency, oversight of mechanical integrity, inspection plans and escalation procedures. • Develop and implement a process to review and act upon mechanical integrity-related recommendations from industry alerts, Chevron Energy Technology Company (“ETC”), and other subject-matter experts. • Inspect Crude Unit piping that falls under the ETC Sulfidation Inspection Guidelines criteria for sulfidation corrosion prior to restarting the Crude Unit, and implement the ETC Sulfidation Inspection Guidelines for the remainder of the Refinery. 	<ul style="list-style-type: none"> • Essential Inspector Competencies have been identified. Evaluations will be conducted to assess training needs for individuals and training plans will be developed to ensure inspectors meet competency requirements. • The Refinery has implemented a process that provides additional oversight of mechanical integrity-related inspection recommendations. This process will be enhanced to ensure long term sustainability. • The refinery is implementing an enhanced process to better review, prioritize, and act upon mechanical integrity-related recommendations from internal and external technical experts, including industry standards and alerts, to ensure that the right information gets into the hands of the right people at the right time so the right decisions can be made. • The Refinery has inspected every piping component in the Crude Unit potentially susceptible to sulfidation corrosion. Of the approximately 4,600 piping components inspected, four carbon steel piping components were replaced that appeared to have higher corrosion rates than other piping components in the system. • Enhanced inspection programs are being implemented throughout the Refinery, and every component found is being replaced as indicated by the results of these inspections. To date, the Refinery has inspected every carbon steel piping

Causal Factor or Additional Consideration	Recommendations	Status of Implementation of Recommendations
		component in sulfidation service over 500 degrees Fahrenheit.
<p><u>Causal Factor 4:</u></p> <p>Relevant information regarding carbon steel sulfidation corrosion- including the understanding that components with low-silicon are especially susceptible to sulfidation corrosion and the recommendation to perform 100% component-by-component inspection- was not transferred to the Refinery inspection management system. The 2009 Reliability Opportunity Identification/Intensive Process Review (“ROI/IPR”) did not identify the need for 100% component-by-component inspection or the replacement of the 4-sidecut piping.</p>	<p>Ensure relevant technical studies and inspection data are considered for the Refinery’s equipment reliability plans and incorporated into the ROI/IPR process.</p>	<ul style="list-style-type: none"> • The ROI/IPR process has been revised to ensure pre-read for ROI/IPR study includes known failure mechanisms, relevant technical studies and industry incidents. • Impacted employees are being trained on these changes.
<p><u>Additional Consideration 1:</u></p> <p>The Chevron Fire Department did not complete a Hazard Material Data Sheet and positioned Engine Foam 60 too close to the leak source when responding to the Incident.</p>	<p>Review the Pre-Fire Plan to ensure sufficient guidance is provided on equipment positioning.</p>	<ul style="list-style-type: none"> • Richmond Refinery Pre-Fire plans have been reviewed and modified to ensure sufficient guidance is provided on equipment positioning. • Employees are being trained on modified plans.
<p><u>Additional Consideration 2:</u></p> <p>The leaking line could not be isolated on the upstream side to mitigate loss of containment.</p>	<p>Review company/industry history on large fractionating towers to determine if internal Engineering Standard FRS-DU-5267 (Emergency Isolation and Depressuring Valves) adequately addresses mitigation of accidental release from these systems. Revise the standard as warranted by the findings of this review.</p>	<ul style="list-style-type: none"> • Review of company/industry loss history on large fractionating towers is near completion. Internal engineering and fire protection standards have been reviewed. • The Refinery is currently determining if internal engineering standards adequately address mitigation of accidental release from these systems. Revisions to the standard will be made as warranted by the findings of this review.
<p><u>Additional Consideration 3:</u></p> <p>The ETC Sulfidation Inspection Guidelines were not fully implemented and action items were not tracked to completion.</p>	<p>Ensure Refinery business plans provide for the appropriate implementation of process safety recommendations.</p>	<ul style="list-style-type: none"> • See Status of Implementation of Recommendations for Causal Factor 3 above.
<p><u>Additional Consideration 4:</u></p> <p><u>The minimum thicknesses calculated for the 4-sidecut washout spool piping did not include safety factors considered in the Refinery Piping Inspection Guideline and American Petroleum Institute Recommended</u></p>	<p>Ensure sufficient organizational capacity and competency for minimum thickness Fitness for Service determinations.</p>	<ul style="list-style-type: none"> • Procedure developed for use by Design Engineering personnel when performing minimum thickness Fitness for Service determinations. • Training requirements are being developed and new procedure will be deployed.

Causal Factor or Additional Consideration	Recommendations	Status of Implementation of Recommendations
<p><u>Practice 574, which may have triggered a Fitness for Service analysis and led to additional inspections and resulting data.</u></p>		
<p><u>Additional Consideration 5:</u></p> <p><u>The June 2012 inspection of the P-1149/A suction piping was not entered into the inspection management system.</u></p>	<p>Consider additional training on expectations under the “Richmond Refinery Piping Inspection Guidelines” and “RFMS Piping Data Entry (Reliability Focused Maintenance System) and ACD (Add/Change/Delete) Guideline.”</p>	<ul style="list-style-type: none"> • <i>See Status of Implementation of Recommendations for Causal Factors 2 and 3, above.</i>
<p><u>Additional Consideration 6:</u></p> <p><u>The Crude Unit Process Hazard Analyses did not consider the potential for sulfidation corrosion.</u></p>	<ul style="list-style-type: none"> • Review and modify the Process Hazard Analysis (“PHA”) procedures to ensure that teams consider known corrosion threats/mechanisms. • Consider a project to evaluate the purpose and methods of various process safety management (“PSM”) reviews to determine if these activities can be combined or better sequenced to improve risk understanding across the various functions and promote better process safety outcomes. 	<ul style="list-style-type: none"> • <i>Piloted enhanced process for damage mechanism review as part of the PHA cycle.</i> • <i>Conducted discussion of known corrosion threats/mechanisms with the PHA team to ensure damage mechanisms were considered.</i> • <i>Work process to be finalized after draft work process is vetted with experts.</i> • <i>PSM processes being evaluated for identification of possible improvements to work processes.</i>

- 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)):** Recommendations from the March 2011 CCHMP Cal-ARP & RISO audits have been finalized and 21 of the 27 action items have been completed. Five of the remaining six items will be implemented as part of a multiyear project and are scheduled to be completed in 2017. CCHMP conducted an unannounced inspection in March of 2013 of the Underground Storage Tank Program and of the CalARP program. Four action items were identified, two of the action items are complete.
- 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 Pages 37-38, below.
- 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 the Refinery.
- 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 nine facilities subject to the Industrial Safety Ordinance was \$473,204.00. The total Industrial Safety Ordinance program fees for these nine facilities was \$439,460.00. (NOTE: These amounts include fees for the County and 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)):** 6044 hours were used to audit/inspect and issue reports on the Risk Management Chapter of the Industrial Safety Ordinance. (NOTE: This includes those hours for the County and City of Richmond ISO facilities.)
- 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 were received during this period.
- 15. Summarize how this Chapter improves industrial safety at your stationary source (450-8.030(B)(7)):** Operating safely is one of CUSA's core values and underpins our commitment to enhancing our process safety programs. The RISO assists CUSA in improving our process safety performance. We have worked closely with CCHMP in its implementation of the RISO and its oversight of our operations, including during its periodic reviews of our operations. CUSA also is committed to learning from the Incident. To this end, CUSA has worked closely and cooperatively with local, state, and federal agencies to determine the root causes of the Incident. We are committed to considering recommendations from all agency investigations and taking appropriate actions in response. Consistent with this commitment, and as part of the company's efforts to

continually improve its process safety performance, CUSA will continue to confer with the CCHMP as it refines and implements these actions. We also are conferring with CCHMP as it considers potential amendments to the County's ISO. Lastly we are working with CCHMP in preparation for the forthcoming Safety Evaluation at the Richmond Refinery.

- 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.** IProcess Hazard Analyses were performed on units not regulated by CalARP during the last year, including a cooling tower and a Hazardous Waste Treatment Facility. We also started a multi-year project reviewing procedures with the new criticality index. In addition, we implemented numerous ISS solutions, as listed on pages 37–38 below.

- 17. Summarize the emergency response activities conducted at the source (e.g., CWS or TEN activation) in response to major chemical accidents or releases:** The Incident on August 6 caused a primary fire that burned for approximately 4 hours. As a result of this fire, the CWS sirens on the perimeter of the Refinery were activated consistent with the instructions for CWS activation. This activation occurred in less than 6 minutes and an "all clear" was called approximately 6 hours later. CUSA's fire department along with mutual aid from several cities and other companies safely extinguished the fire with no significant injuries.

Strategy	ISS Solution Employed
Minimize	Eliminated 1296 Dead Leg to the 13 DL/ISO #1622-001-029
Minimize	32SRU SD - E-2202 Removed Deadleg (N19) and Install Flush Patch
Minimize	2SRU SD - E-2203 Removed Deadleg (N12) and Install Flush Patch
Minimize	Removed steam 150# sources to Asphalt plant for demo project
Minimize	Demo Leaking Condensate Piping
Minimize	Dead Leg Removed #1620-003-016B
Minimize	A Train / Butane Piping Removed
Minimize	Demo'd unused 3/4" piping from P/TP-360 to PT-361
Minimize	NHT Cold Feed Filter(s) Demo'd ~30' of relief piping on V-475
Minimize	RDC Pipeway project - removed abandoned piping
Minimize	Removed V-7, V-8, V-9 and V-10 from DEBRU area
Minimize	Removed #1A Separator Drain Line
Minimize	P-1665 Wash Oil Piping - Eliminated of dead leg
Minimize	Removed 150# Steam dead leg piping to old SGRU caustic treating area.
Minimize	Modified V-690 caustic mix manifold and eliminated unused controller/FE/filter
Minimize	Removed FC-4019 from service and air gap abandoned C3 to Isomax line.
Minimize	Removed unused pipe from out of service TP-104A
Minimize	Removed 75 ft dead leg on 500N line to berth # 9 and connections to old 317 and 318 laterals
Minimize	Removed dead leg pipe on the propane supply to E-745
Minimize	65# Condensate Dead Leg Removed Near E-2203
Minimize	Removed the Old Wax Plant Railcar Loading abandoned piping
Minimize	Modified 5 sidecut piping and removed it permanently from P1159/A
Minimize	SISO / Plant 9 / Removed Branch on K-950/960 Stage 1A Suction Header
Minimize	Removed steam out piping on C1110 and C1120
Minimize	Installed blind on 150# steam header to decommission dead legs
Minimize	19 Gas Pipeline Repairs ISO#1620-003-027B & removed dead leg
Minimize	Repaired 137 Line ISO#1021-004-005 and eliminated dead leg
Minimize	#1 Diesel ISO #1620-001-008A dead leg eliminated
Minimize	8" 232 ISO# 1621-006-006 Eliminated dead leg
Minimize	Removed K-930 Lube Oil Strainer K-932 as it is not needed
Minimize	C-1660 - Removed a Tee section of condensate piping and replaced with a straight section of piping

Moderate	The motor on P-40 was replaced with one that has a lower horsepower.
Simplify	P-473A, upgraded mechanical seal gland material to Alloy 20 to prevent process corrosion.
Simplify	17PS LPG Relief Line Upgraded/ ISO #1624-001-065 and unnecessary flanges removed
Simplify	P-1411A upgraded existing seal to a John Crane Type 48 with integral steam jacket and VOC ports.
Simplify	Replaced 2 Backpressure valves with one upgraded Backpressure valve
Simplify	P-660, upgraded existing mechanical seal to latest technology. John Crane Type 48 low VOC emission.
Simplify	P-1402, upgraded existing mechanical seal to latest technology. John Crane Type 48 low VOC emission.
Simplify	P-480 upgraded existing seal gland to Alloy 20 with identified gland attachment ports
Simplify	P-590 Seal Flush/Relief Manifold Upgraded
Simplify	K-1060 & K-1070 Flare Gas Compressor Suction Valve and Unloader Upgraded
Simplify	Replaced Pad Area Drip Pan No. 2 with new 316L Stainless Steel Pan
Simplify	Replaced Pad Area Drip Pan No. 3 with New 316L Stainless Steel Pan
Simplify	F-2202/F-2203 Burner Tip Upgraded to Haynes 556 with Cetek 670 coating
Simplify	E-410 A-F Heat Exchanger bundle metallurgy upgraded
Simplify	E-2240 – Tubes upgraded to SA192 (seamless)
Simplify	2SRU - F-2230 Eductor Nozzle tip upgraded from 310SS to Inconel 625
Simplify	Upgraded P-361A Packing to Mechanical Seal with Plan 23 Seal Flush
Simplify	YDIB- Removed SS tubing connection from old Amine injection quill on 45# steam line near V-490
Simplify	Upgraded V-309 Gauge glass screwed pipe design to seal welded connections
Simplify	Upgraded Diesel Alley PRDs piping to current Pipe Class
Simplify	R-320 Bottoms Piping Upgraded from CS to 304L SS
Simplify	Metallurgy Changed on F-305 Radiant Furnace Tubes - Bottom flanges from Carbon Steel and C 1/2 Mo to 1-1/4 Cr 1/2 Mo to prevent High Temperature Hydrogen Attack. - Cast Radiant Tube Sections and Catalyst Cone from HP-Modified to Micro Alloy
Simplify	Removed 800lb steam back-door control valve and installed a pipe spool

Simplify	Upgraded top & bottom MW flanges on T-1622 and outlet blowdown piping from 150# flanges to 300# flanges.
Simplify	4 CU - P1195/A - Upgraded Seal Flush Cooler to API Plan 23
Simplify	NISO / TKC 4 / Replaced Leaking Wash Water Orbit With Straight Pipe
Simplify	Removed PSV FC-6033 from service and blind off as it is not needed
Simplify	RLOP/Plant 15/HNC #2 Sidecut Piping Upgraded from CS to SS
Simplify	V-642 to E-653 tube side upgraded block valves from CS to SS
Simplify	E-325 Shell and Shell Cover Internal HVAF Thermal Spray Coated (C-276)
Simplify	E-325 – Five ¾” couplings upgraded to Hastelloy
Simplify	RLOP / 18 Plant / 1-1/2" Sour Water Recycle Piping upgraded to 304L SS
Simplify	RLOP / 18 Plant / 10" Pipe from E-1820A/B to V-1820 upgraded to Hastelloy
Simplify	T-3197 - 1" Sample and Process Valves Upgraded
Simplify	E-2202 / E-2203 Lookbox - Metallurgy Changed from 304L to Alloy 20
Simplify	Removed feed gas/fuel gas ratio control for A train and B train
Simplify	V-1820 Reflux Drum Level Control Valve 88LV216, control valve stem material upgraded
Simplify	MOV-320 A/B gate valve metallurgy upgraded from CS Body to 316 SS body
Simplify	E-335 Shell and Shell Cover Metallurgy Upgraded from Carbon Steel to 304L SS
Simplify	V-471 - Upgraded the Outlet Piping Spool from CS to Alloy 20
Simplify	E-142A Shell Replaced with Internal Thermal Spray Coating / Tube Bundle Upgraded from Carbon Steel to Duplex
Simplify	V-471 Piping Metallurgy upgraded
Simplify	V1102 Permanently removed the lower Drexelbrok probe
Simplify	4 Crude Recovery - Process Piping Systems & Equipment Material Upgraded
Simplify	Metallurgy upgraded on C-1100 Tray 37 active areas and Tray 46 decks
Simplify	YDIB V-471 Degasser - removed the instrumentation from the bridle and replaced with a field gauge glass only.
Simplify	Removed Hammer Blind from the 6" H2 Plant emergency bfw line at the plot limit
Simplify	P-311/P-361 BFW operator blind removed
Simplify	Removed 3/4" drain line off the gauge glasses on C-1650 and installed bull plugs
Simplify	R-340 Outlet Piping upgraded from C-1/2Mo to 1-1/4Cr-1/2Mo
Simplify	E-2101 / E-2102 Look boxes piping upgraded to Alloy 20
Simplify	V-314, Removed Threaded Piping and replaced with welded piping per pipe class
Simplify	20 Plant cold DEA line – Removed operator blind and unneeded bleeder
Simplify	2013 H2 A Train / A Train Feed Gas Piping Replacement - Piping is a mixture of CS and Chrome. The piping was replaced with only Chrome piping to remove the bimetallic welds.
Simplify	RLOP / E-1402A / Upgraded Tube Metallurgy from CS to 70/30 CuNi
Simplify	Removed the mesh sleeve from K1103 Y strainer
Simplify	2SRU - VR-001 Upgraded F-2270 Nat Gas Supply Globe to new pipe class and removed operator blind
Simplify	Replaced the Mist Oil system on P-590A to Packed Grease.
Simplify	R-2800 Sight Port Removed and replaced with butt patch

Annual Performance Review and Evaluation Submittal June 30, 2013

*Attach additional pages as necessary

1. Name and address of Stationary Source:

General Chemical West, 525 Castro Street, Richmond, California 94801

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

Brian Seekins, 510-232-7193

3. Summarize the status of the Stationary Source's Safety Plan and Program (42-01 §6.43.160(b)(1)): No changes.

4. Summarize Safety Plan updates (i.e., brief explanation of update and corresponding date) (42-01 §6.43.160(b)(2)): No changes.

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 (42-01 §6.43.160(b)(2)): CCHMP Office at 4585 Pacheco Boulevard, Suite 100, Martinez; the Richmond Public Library (library closest to the stationary source).

6. Provide any additions to the annual accident history reports (i.e. updates) submitted pursuant to §6.43.090(e)(2) of City Ordinance 42-01 (§6.43.160(b)(3) (i.e., provide information identified in §6.43.090(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)): No major chemical accidents or releases.

7. Summary of each Root Cause Analysis §6.43.090(c) including the status of the analysis and the status of implementation of recommendations formulated during the analysis §6.43.160(b)(4): N/A—No major chemical accidents or releases.

8. Summary of the status of implementation of recommendations formulated during audits, inspections, Root Cause Analyses, or Incident Investigations conducted by the Department §6.43.160(b)(5): The most recent audit remains open. About 3% of the items are completed.

9. Summary of inherently safer systems implemented by the source including but not limited to inventory reduction (i.e., intensification) and substitution §6.43.160(b)(6): ISS analysis will be scheduled during the next plant PHA. Plant modifications since the last audit have all been like in kind as the equipment wears out.

10. Summarize the enforcement actions (including Notice of Deficiencies, Audit Reports, and any actions turned over to the City Attorney's Office) taken with the Stationary Source pursuant to City Ordinance 42-01 §6.43.160(b)(7): There were no enforcement actions during this period.

- 11. Summarize total penalties assessed as a result of enforcement of this Chapter §6.43.160(c):**
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 §6.43.160(d):** The total CalARP Program fees for the nine facilities subject to the Industrial Safety Ordinance was \$473,204. The total Industrial Safety Ordinance program fees for these nine facilities was—\$439,460. (NOTE: These fees include those for the County and City of Richmond ISO facilities.)
- 13. Summarize total personnel and personnel years utilized by the jurisdiction to directly implement or administer this Chapter §6.43.160(e):** 6044 hours were used to audit/inspect and issue reports on the Risk Management Chapter of the Industrial Safety Ordinance. (NOTE: These hours include those for the County and City of Richmond ISO facilities.)
- 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§6.43.160(f):** We have not received any comments.
- 15. Summarize how this Chapter improves industrial safety at your stationary source §6.43.160(g):** This chapter helps minimize risk and potential exposure to employees, the community and the environment.
- 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.**
Due to a PHA evaluation, we've upgraded our Alky feed pumps to mag-drive pumps, resulting in having no seals to potentially leak. We have also upgraded our PLC control on the CP acid plant to computer control DCS system, improving control of the plant process, making the system inherently safer.
- 17. Summarize the emergency response activities conducted at the source (e.g., CWS or TEN activation) in response to major chemical accidents or releases:** N/A—no major chemical accidents or releases.

ISO REPORT

INDUSTRIAL SAFETY ORDINANCE

Hazardous Materials

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