



Agenda

Ad Hoc Committee on the Industrial Safety Ordinance and the Community Warning System

June 28, 2017
2:00 PM

651 Pine Street, Room 101, Martinez

Supervisor John Gioia, District I
Supervisor Federal Glover, District V

Agenda Items:

Items may be taken out of order based on the business of the day and preference of the Committee

1. Call to Order and Introductions
2. Public comment on any item under the jurisdiction of the Committee and not on this agenda (speakers may be limited to three minutes).

DISCUSSION

3. Response to the Chemical Safety and Hazard Investigation Board Recommendation 2012-03-I-CA-R36
Presenter: Randy Sawyer, Contra Costa Health Services
4. Future Meetings and Topics

☺ The ISO/CWS Ad Hoc Committee will provide reasonable accommodations for persons with disabilities planning to attend Committee meetings. Contact the staff person listed below at least 72 hours before the meeting.

📁 Any disclosable public records related to an open session item on a regular meeting agenda and distributed by the County to a majority of members of the ISO/CWS Ad Hoc Committee less than 96 hours prior to that meeting are available for public inspection at 651 Pine Street, 10th floor, during normal business hours.

✉ Public comment may be submitted via electronic mail on agenda items at least one full work day prior to the published meeting time.

For Additional Information Contact:

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Glossary of Acronyms, Abbreviations, and other Terms (in alphabetical order):

Contra Costa County has a policy of making limited use of acronyms, abbreviations, and industry-specific language in its Board of Supervisors meetings and written materials. Following is a list of commonly used language that may appear in oral presentations and written materials associated with Board meetings:

AB	Assembly Bill	HCD	(State Dept of) Housing & Community Development
ABAG	Association of Bay Area Governments	HHS	Department of Health and Human Services
ACA	Assembly Constitutional Amendment	HIPAA	Health Insurance Portability and Accountability Act
ADA	Americans with Disabilities Act of 1990	HIV	Human Immunodeficiency Syndrome
AFSCME	American Federation of State County and Municipal Employees	HOV	High Occupancy Vehicle
AICP	American Institute of Certified Planners	HR	Human Resources
AIDS	Acquired Immunodeficiency Syndrome	HUD	United States Department of Housing and Urban Development
ALUC	Airport Land Use Commission	Inc.	Incorporated
AOD	Alcohol and Other Drugs	IOC	Internal Operations Committee
BAAQMD	Bay Area Air Quality Management District	ISO	Industrial Safety Ordinance
BART	Bay Area Rapid Transit District	JPA	Joint (exercise of) Powers Authority or Agreement
BCDC	Bay Conservation & Development Commission	Lamorinda	Lafayette-Moraga-Orinda Area
BGO	Better Government Ordinance	LAFCo	Local Agency Formation Commission
BOS	Board of Supervisors	LLC	Limited Liability Company
CALTRANS	California Department of Transportation	LLP	Limited Liability Partnership
CalWIN	California Works Information Network	Local 1	Public Employees Union Local 1
CalWORKS	California Work Opportunity and Responsibility to Kids	LVN	Licensed Vocational Nurse
CAER	Community Awareness Emergency Response	MAC	Municipal Advisory Council
CAO	County Administrative Officer or Office	MBE	Minority Business Enterprise
CCHP	Contra Costa Health Plan	M.D.	Medical Doctor
CCTA	Contra Costa Transportation Authority	M.F.T.	Marriage and Family Therapist
CDBG	Community Development Block Grant	MIS	Management Information System
CEQA	California Environmental Quality Act	MOE	Maintenance of Effort
CIO	Chief Information Officer	MOU	Memorandum of Understanding
COLA	Cost of living adjustment	MTC	Metropolitan Transportation Commission
ConFire	Contra Costa Consolidated Fire District	NACo	National Association of Counties
CPA	Certified Public Accountant	OB-GYN	Obstetrics and Gynecology
CPI	Consumer Price Index	O.D.	Doctor of Optometry
CSA	County Service Area	OES-EOC	Office of Emergency Services-Emergency Operations Center
CSAC	California State Association of Counties	OSHA	Occupational Safety and Health Administration
CTC	California Transportation Commission	Psy.D.	Doctor of Psychology
dba	doing business as	RDA	Redevelopment Agency
EBMUD	East Bay Municipal Utility District	RFI	Request For Information
EIR	Environmental Impact Report	RFP	Request For Proposal
EIS	Environmental Impact Statement	RFQ	Request For Qualifications
EMCC	Emergency Medical Care Committee	RN	Registered Nurse
EMS	Emergency Medical Services	SB	Senate Bill
EPSDT	State Early Periodic Screening, Diagnosis and Treatment Program (Mental Health)	SBE	Small Business Enterprise
et al.	et al (and others)	SWAT	Southwest Area Transportation Committee
FAA	Federal Aviation Administration	TRANSPAC	Transportation Partnership & Cooperation (Central)
FEMA	Federal Emergency Management Agency	TRANSPLAN	Transportation Planning Committee (East County)
F&HS	Family and Human Services Committee	TRE or TTE	Trustee
First 5	First Five Children and Families Commission (Proposition 10)	TWIC	Transportation, Water and Infrastructure Committee
FTE	Full Time Equivalent	VA	Department of Veterans Affairs
FY	Fiscal Year	vs.	versus (against)
GHAD	Geologic Hazard Abatement District	WAN	Wide Area Network
GIS	Geographic Information System	WBE	Women Business Enterprise
		WCCTAC	West Contra Costa Transportation Advisory Committee

Response to the Chemical Safety and Hazard Investigation Board (CSB)
Recommendation 2012-03-I-CA-R36

The CSB issued their final of three reports on their investigation of the August 6, 2012 Chevron Richmond Refinery fire in January 2015. The report included one recommendation to the Board of Supervisors, which is worded as follows:

2012-03-I-CA-R36

Revise the Industrial Safety Ordinance (ISO) regulations for petroleum refineries to require a process safety culture continuous improvement program including a written procedure for periodic process safety culture surveys across the work force.

Require an oversight committee comprised of the regulator, the company, the company's workforce and their representatives, and community representatives.

This oversight committee shall:

- a. Select an expert third party that will administer a periodic process safety culture survey;
- b. Review and comment on the third party expert report developed from the survey;
- c. Oversee the development and effective implementation of action items to effectively address identified process safety culture issues; and
- d. Develop process safety culture indicators to measure major accident prevention performance.

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

The members of the Ad Hoc Committee on the Industrial Safety Ordinance and the Community Warning System met as a joint committee with two representatives from the Richmond City Council to discuss how to address this recommendation in June 2015. The committee requested that the County's Hazardous Materials Programs staff work with the Industrial Safety Ordinance Working Group to develop a product that will respond to the CSB recommendation.

The Working Group met numerous times and their recommendation to address the CSB recommendation is to develop guidance on when a third-party safety evaluation would be performed, how to select an oversight committee, how to select a third-party evaluator, the public interaction, reports to the Board of Supervisors and when the incident occurred in Richmond, the Richmond City Council. The guidance also included how to make the existing Safety Culture Assessment process more transparent by requiring information to be submitted annually and after a safety culture assessment is complete reporting to the Hazardous Materials Commission on the results of the assessment. Note that the safety culture assessment is focused on the safety culture

and where improvements may be made. The safety evaluation includes a safety culture assessment, review of the management systems, and human factors.

Safety Evaluation

A new section was added to the Industrial Safety Ordinance guidance for performing a safety culture evaluation. A copy of Section G: Safety Evaluation is attached to this report. Section G includes guidance on the following:

SECTION G: Safety Evaluation

- G.1 Criteria to Initiate a Third-Party Safety Evaluation
- G.2 Process for Performing a Third-Party Safety Evaluation
 - G.2.1 Oversight Committee Members
 - G.2.2 Oversight Committee Responsibilities
 - G.2.3 Request for Proposal
 - G.2.4 Scope of Work
 - G.2.5 Timeline
 - G.2.6 Third-Party Contractor Selection Criteria
 - G.2.8 Public Interaction
 - G.2.9 Action Plan
- G.3 Follow-Up Action Plan Status
 - G.3.1 Timing
 - G.3.2 Scope of Work
 - G.3.3 Presentation to Oversight Committee
 - G.3.4 Public Interaction

The three third-party Safety Culture Evaluations that have been performed were all similarly and yet different. This guidance took what worked the best in the previous three evaluations.

Safety Culture Assessment

Section F of the ISO guidance is an existing section that discusses what is “safety culture” and how an assessment will be performed. There were two minor changes to this section to stress employee participation in the process, which is shown on pages 4 and 21 of the attached document titled Section F.

Safety Plan

Section E of the ISO guidance outlines the requirements for the facilities’ safety plans. This section also includes what is to be submitted annually to the Hazardous Materials Programs. This information is made public as part of the annual Industrial Safety Ordinance report to the Board of Supervisors. This proposal includes additional information that will be included in the annual submittal on the facilities’ Safety Culture Assessments. The changes to section E requires the facilities to state if a Safety Culture Assessment was performed during the reporting year, what method or methods

were used, and what areas of improvements are being addressed. The guidance also discusses if a mid-cycle evaluation was performed. If neither a Safety Culture Assessment nor a mid-cycle evaluation was performed, the facilities are to discuss if milestones and metrics have been developed, have there been progress made in the identified areas of improvement, and the process that includes employee participation. Section E is included as an attachment with areas of change being highlighted.

The Hazardous Materials Programs staff shared the proposed actions with CSB staff to determine if the actions will address the CSB recommendation. The initial response is that the actions do address the recommendation. They also asked for more oversight of each Safety Culture Assessment. The proposal was changed to include a report of each Safety Culture Assessment to the Hazardous Materials Commission to receive their comments.

Staff is proposing that this proposal be approved by the Ad Hoc Committee and work with the City of Richmond to share how the recommendation will be addressed.

SECTION E: SAFETY PLAN

Stationary Sources are expected to submit a Safety Plan to CCHMP along with the Risk Management Plan (RMP) before a regulated substance is brought onsite at the Stationary Source. CCHMP recognizes that the Safety Plan may be further defined as Safety Programs are refined and implemented. Existing Stationary Sources adding a new covered process(es) must consult with CCHMP to determine when the Safety Plan must be revised. Existing Stationary Sources that significantly change covered process(es) or regulated substances should consult with CCHMP to determine when the Safety Plan should be revised.

Stationary Sources must review and update Sections E.1 through E.6, and Sections E.8 through E.10 of the Safety Plan every three years per Section 450-8.018(e) of County Ordinance Code Chapter 450-8, ¹ In addition, Sections E.6, Accident History, and E.7, Annual Performance Review and Evaluation, of the Safety Plan must be updated annually in accordance with the following schedule:

- Section E.6, Accident History - Stationary Sources must annually submit an accident history report (i.e., an update) to CCHMP per Section 450-8.016(e)(2) of County Ordinance Code Chapter 450-8. Reports shall be due June 30 of every year along with the annual ISO performance report as appropriate.
- Section E.7, Annual Performance Review and Evaluation – CCHMP must prepare an annual report for the Board of Supervisors by October for each fiscal year (i.e., July through June). Stationary Sources will therefore be asked to provide a submission of this information no later than June 30 of each year.

The remainder of this section describes CCHMP's expectations for the content of the Safety Plan. Stationary Sources electing to include information other than that which is requested below must consult with CCHMP. Stationary Sources may elect to develop the Safety Plan as a stand-alone document or as an addendum to the RMP. Stationary Sources should consult with CCHMP regarding an appropriate format for their Safety Plan. If the Safety Plan is included as an addendum to the RMP, it is acceptable to refer to the appropriate sections of the RMP within the Safety Plan where descriptions of the CalARP programs are required.

E.1 DESCRIPTION OF YOUR STATIONARY SOURCE AND THE REGULATED SUBSTANCES HANDLED

Conveying fundamental information regarding your non-exempt covered process(es)² will stimulate dialogue and increase the community's understanding of your operation. This information will also serve as an accompaniment to, or reference for, the remaining sections of the Safety Plan.

CCHMP recommends that you include the following information:

- A simplified process flow diagram of each non-exempt covered process that indicates

- risk management program boundaries;
- A brief description of the Stationary Source and the individual non-exempt covered processes, including the purpose(s);
- A table listing all non-exempt covered processes indicating program applicability for state and federal risk management regulations and Chapter 450-8 of County Ordinance Code, federal and state risk management program level, regulated substance(s)³, and quantities of each CalARP regulated substance; and,
- A brief description of the hazards associated with each CalARP regulated substance identified in the preceding bullet. The Stationary Source may generally describe the hazards associated with flammable mixtures, as appropriate.

E.2 SAFETY PROGRAM MANAGEMENT

Stationary Sources should adhere to the guidance provided in Section 9.3.1 Executive Summary, General Accidental Release Prevention Program and Chemical-Specific Prevention Steps, Program 3 Prevention Program; and Section 9.3.1 Executive Summary, Emergency Response Program of the *Contra Costa County CalARP Program Guidance Document* and Section A of this guidance when describing the following programs in the Safety Plan:

- Process Safety Information
- Operating Procedures
- Employee Participation
- Training
- Mechanical Integrity
- Management of Change
- Pre Start-up Reviews
- Compliance Audits
- Incident Investigation
- Hot Work
- Contractors
- Emergency Response Program
- Safety Program Management
- Line and Equipment Opening
- Lockout/Tagout
- Confined Space Entry

Additionally, the following information regarding Safety Program Management should be included in the Safety Plan.

- A description of the Goals and Objectives for the Safety Program
- A description of how the Stationary Source ensures continuous management commitment, including:
 - A description of how senior Stationary Source staff has established detailed

- Safety Program goals for management with specific objectives and goals, and tracks management involvement in workplace safety meetings, audits, and related activities
- A description of how the senior Stationary Source staff encourages and promotes “safety first” approach
 - ◆ A description of how the Safety Program elements are discussed in management meetings on a periodic basis
 - ◆ A description of how senior Stationary Source staff participates in specific Safety Program initiatives/programs (e.g., safety newsletters, safety slogans, bonuses for safety performance, near miss reporting, etc.)
 - A description of how senior Stationary Source staff is held accountable for their Health and Safety Program record, and how do the rewards and penalties compare to those for production performance
 - A description of how senior Stationary Source staff receives information on incident and incident investigations and inspection/compliance audit reports
 - A description of how senior Stationary Source staff assist in the development of or issue specific types of Safety Program information and guidance
 - A description of how senior Stationary Source staff ensures that there is expertise available in each of the different Safety Program elements
 - A description of how the senior Stationary Source management ensures two-way communication between management and non-management personnel for the Safety Program elements, including what the elements consist of, implementing the Safety program elements, modifying the prevention elements, and the effectiveness of the Safety Program elements. Note: This may have already been addressed in the employee participation section. If so, it does not have to be included in this section.
 - A description of how the Stationary Source ensures the management system for the Safety Program elements are consistent with the Safety Program guidance developed by CCHMP, CCHMP CalARP Guidance Document Chapters 5, 7, and 8, the CalARP Program, Process Safety Management, and Industry Codes, Standards, and Guidelines as defined in 450-8.014(f) of the County Ordinance Code.
 - A description of the roles and responsibilities for the required Safety Program elements
 - A description of how senior Stationary Source staff have been assigned overall responsibility to oversee compliance for the Safety Program
 - A description of how the Stationary Source ensures that the Safety Program elements remain current and effective
 - A description of how senior Stationary Source staff periodically reviews the Safety Program elements for continuing appropriateness, adequacy, and effectiveness
 - A description of the Stationary Source’s process to make changes when necessary to any of the Safety Program elements

E.3 HUMAN FACTORS

E.3.1 PROCESS HAZARD ANALYSIS

The Safety Plan should contain a brief, site-specific overview of the method used to ensure inclusion of human factors in the Process Hazard Analysis process, including but not limited to:

- A description of the approach used to identify active failures or unsafe acts
- A description of the approach used to identify latent conditions that exist at the Stationary Source,
 - Selection process for questions from the Latent Conditions Checklist in Attachment A⁴ of Section B
 - Description of approach if a method other than the Latent Conditions Checklist in Attachment A of Section B is used
- A description of the approach used to consider the effects of latent conditions on the frequency of and consequences associated with the active failure or unsafe act
- A description of the approach used to assess the adequacy of safeguards towards reducing the risk associated with the active failure or unsafe act.
- A description of the approach used to evaluate recommendations made during the explicit latent conditions review, if applicable, during the PHA
- A description of the approach used to include human factors and latent conditions in PHA revalidations
- A description of the approach used to determine whether a procedural PHA should be conducted and the method for conducting the procedural PHA

E.3.2 INCIDENT INVESTIGATION

The Safety Plan should contain a brief, site-specific overview of the methods used to ensure compliance with the requirement to consider human systems as causal factors in incident investigations for two types of incidents: (1) actual Major Chemical Accidents or Releases; or (2) incidents that could reasonably have resulted in a Major Chemical Accident or Release. Since the incident investigation for a Major Chemical Accident or Release must be a root cause analysis, which is covered in Section E.4, and a Major Chemical Accident or Release must be described under Accident History in Section E.6, the discussion in this section regarding actual incidents should be consistent with these sections. For both types of incidents, the overview should include but is not limited to:

- A brief description of what a human system is (See Chapter 5)
- A brief description of causal factors (See Chapter 5)
- A description of the methodology used for considering human systems as causal factors for:
 - Major Chemical Accidents or Releases (this may be a reference to the root cause analysis Section E.4)

- Incidents that could reasonably have resulted in a Major Chemical Accident or Release.
- Describe human systems considered as causal factors for both Major Chemical Accidents or Releases and incidents that could reasonably have resulted in a Major Chemical Accident or Release.
 - Describe or cite the incident
 - ◆ For Major Accidents or Releases (the Stationary Source may reference Accident History Section E.6.)
 - ◆ For incidents that could reasonably have resulted in a Major Chemical Accident or Release, the Stationary Source should describe the incident and potential impacts following the incident description outlined in Section E.6 as appropriate to put the human systems determined to be causal factors in context.
- Discuss the human systems determined to be causal factors. For Major Accidents or Releases, identify whether the human system was a contributing cause or root cause.
- Describe the recommendations for improvements made as a result of the human systems considerations and the implementation of the recommendations.

E.3.3 PROCEDURES

The Safety Plan should contain a brief, site-specific overview of the methods used to ensure inclusion of human factors in operating and maintenance procedures, including but not limited to:

- A description of the approach used to evaluate the current situation (i.e., evaluate existing operating, safe work practices, and maintenance procedures)
- A description of the approach used to determine the activities that require written procedures
- A description of the approach used to develop operating, safe work practices, and maintenance procedures
 - Format selection
 - Participant selection
 - Method used (e.g., task analysis)
- A description of the approach used to maintain the procedures accurate and current
- A description of the approach used to ensure that the effects of procedural errors (i.e., consequences of deviation) are identified and fully understood
- A description of any special considerations taken when writing Emergency Operating Procedures

E.3.4 MANAGEMENT OF ORGANIZATIONAL CHANGE

The Safety Plan should contain a brief, site-specific overview of the method used to review staffing changes in permanent staffing levels/reorganization in operations, maintenance, health and safety, or emergency response, including but not limited to:

- A description of the criteria used by personnel to determine when a Management of Organizational Change MOOC should be initiated
 - A description of how a physical change to the process or a change in procedures could trigger an MOOC
- A description of how the Stationary Source ensures that affected employees and their representatives are consulted as part of the MOOC process
 - Composition of “change team” if a team is used
 - Criteria used to determine that a team approach is necessary
- A description of the method used by the Stationary Source to conduct the MOOC including
 - Defining the existing situation
 - Developing the technical basis for the change
 - Assessing the impact of the change on safety and health, including during emergency situations
- A description of how employees affected by the change are informed of, and trained in, the change prior to the change occurring
- A description of how the Stationary Source ensures that operating, maintenance and emergency response procedures are updated accordingly

E.3.5 EMPLOYEE PARTICIPATION

The Safety Plan should contain a brief, site-specific overview of the method used to ensure that employees and their representatives participate in the development of the written human factors program including but not limited to:

- A description of how employees and their representatives participated in the development of the initial human factors program
 - Any training provided
 - How input was solicited on the initial written program development
 - Method for submitting comments
 - Method for responding to all written comments
- A description of how employees and their representatives participated in the customization of the latent conditions checklist, if applicable
- A description of how employees and their representatives participate in the implementation of the human factors program
 - Any special training provided to employees prior to their involvement in the implementation
 - Evaluation and minimization of latent conditions

- PHA
- Incident investigation
- Operating procedures
- Maintenance procedures
- MOOC
- Periodic review of human factors program

Description of the employee participation in the Safety Culture Assessment pursuant section F.3

E.3.6 TRAINING

The Safety Plan should contain a brief, site-specific overview of the method used to ensure that all employees are trained on the human factors program including but not limited to:

- A description of any basic awareness, overall human factors program, specialized, and refresher training provided
 - Curriculum of the course
 - Duration of the course
 - Instructor qualifications
 - Means used to ensure participants understood training

E.4 ROOT CAUSE ANALYSIS

Section C of this document describes the requirements and gives guidance for implementing a program for conducting Root Cause Analysis (RCA) following a Major Chemical Accident or Release. The Safety Plan should contain a brief, site-specific overview of their implementation of the applicable requirements of the RCA procedure, including:

- Describe the purpose, depth of investigation, and objectives of a root cause analysis. If applicable, make reference to the root cause analyses cited in Section E.6, Accident History, and the implementation of the resulting recommendations.
- Describe your implementation and administrative requirements for the RCA procedure including:
 - Requirements or criteria for initiating a RCA.
 - Requirements for the method or procedure for conducting a RCA (e.g., TapRoot™)
 - Requirements for the make-up of a root cause analysis team
 - RCA team leader and members' qualifications and experience requirements
 - RCA team leader training and team member training requirements
 - RCA team leader responsibilities and team member responsibilities
 - RCA record retention requirements
 - Content requirements of RCA report
 - Requirements for formulation, addressing, resolving, and tracking recommendations

- Requirements for communicating RCA report findings to affected employees (including contract, where appropriate), CCHMP, the public, and other Stationary Sources as applicable. NOTE: Stationary Sources have various outlets available for communicating with the public through CCHMP (e.g., 72-hour reports, 30-day reports, 5-year accident histories) or for communicating with the public directly (e.g., statements to Board of Supervisors, press conferences, presentations to Community Advisory Panels (CAP's)). Depending upon the incident, none, some, or all of these outlets may be applicable.

E.5 PROCESS HAZARD ANALYSIS/ACTION ITEMS

By identifying hazards associated with the design and operation of a covered process, you can manage these hazards to secure the safety of your employees, the community, and the environment. The purpose of performing a process hazard analysis (PHA) is to identify these hazards, determine if existing hazard safeguards are adequate, and where existing safeguards are inadequate, identify recommendations/action items that can be taken to mitigate the hazard. The Safety Plan should contain a brief, site-specific overview of your PHA process, including:

- A description of the approach used for conducting the PHA, including;
 - Applicable external events⁵, including seismic events;
 - Human errors
 - Equipment malfunctions
- The rationale used in selecting the PHA methodology;
- The rationale used to select the team conducting the PHA, including their qualifications;
- A description of the revalidation and updating procedures;
- A description of the method used to document and resolve recommendations/action items identified during the PHA; and
 - Criteria applied to justifiably decline a recommendation
 - Method used to ensure recommendations are incorporated within the prescribed time limits
- A description of the method used to ensure that inherently safer systems were considered in the development and analysis of mitigation items from the PHA's and in the design and review of new processes and facilities
- A description of those recommended action items selected for implementation, but not yet complete, that are expected to reduce the risk (severity or likelihood) of an incident which could have reasonably resulted in an offsite consequence as defined in the CalARP program regulations:
 - Toxic substances – Exceeding values provided in Appendix A to Title 19, Division 2, Chapter 4.5, Subchapter 1 "Table of Toxic Endpoints". NOTE: Stationary Sources should consult with CCHMP on an acceptable endpoint for regulated substances not listed in the "Table of Toxic Endpoints"
 - Flammable substances – Exceeding an overpressure of 1 psi or a radiant heat of

5 kw/m² for 40 seconds.

Stationary Sources are continually conducting PHA's and PHA revalidations. Therefore, the list of selected action items that meet the appropriate criteria for inclusion in the Safety Plan could be continually changing. Stationary Sources do not have to submit updates (other than the 3 year Safety Plan update) of the action items; however, they should be prepared to provide the current list to CCHMP during on-site audits.

- The scheduled completion date for the action item and the reason it was not completed within a year (i.e., a shutdown is required to complete the action item), if appropriate.
- The inherently safer systems considered during the development and analysis of the action item.

The Stationary Source should include the following information regarding the seismic assessment:

- A list of all covered processes for which a seismic assessment was conducted;
- A description of the method the Stationary Source uses to identify general/specific seismic hazards that may affect the Stationary Source (refer to the reference list in Appendix B, Seismic Assessment Guidelines, of the *Contra Costa County CalARP Program Guidance Document*);
- A description of the performance objective(s) used for the review (e.g., primary containment, maintain position, etc.);
- A discussion of the site relative to known active faults as defined by the State Geologist, as well as a discussion of any site-specific seismic hazards considered (e.g., liquefaction, fault rupture, etc.);
- A description of any design practices or standards used by the Stationary Source to minimize the risk resulting from the identified seismic hazards; and
- A description of inspection and maintenance practices to maintain integrity of structural components.

With the exception of Security and Vulnerability Assessments, other studies and analyses related to the PHA (external events such as seismic, , facility siting for a process unit, and other studies such as evaluations for LCC, HF, ISS, etc.), are subject to the same 1-year completion time frame for any action items/recommendations developed as a result of these studies or analyses, unless a turnaround is required. Stationary Sources must send CCHMP a request for extension before PHA actions (including other studies and analysis related to the PHA) become overdue when they cannot be addressed within 1 year and a turnaround is not required.

E.6 ACCIDENT HISTORY

Section 450-8.016(e) of County Ordinance requires facilities to include an accident history in the Safety Plan for all Major Chemical Accidents or Releases from June 1, 1992 through the date of Safety Plan submittal. A Major Chemical Accident or Release is defined as an incident that meets the definition of a Level 3⁶ or Level 2⁷ incident in the community warning system incident level classification system defined in the CCHMP Hazardous Materials Incident Notification Policy, as determined by CCHMP; or results in the release of a regulated substance⁸ 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 clean-up and restoration activities) initially estimated at \$500,000 or more. On-site estimates shall be performed by the Stationary Source. Off-site estimates shall be performed by appropriate agencies and compiled by CCHMP
- Results in a vapor cloud of flammables and/or combustibles that is more than 5000 pounds

The triggering criteria for this accident history is different than the five-year accident history required under the CalARP program regulations and described in Chapter 3 of the *Contra Costa County CalARP Program Guidance Document*.

Stationary Sources must report the following information, where applicable and to the extent known. Subsequent reports (updates) must be provided to CCHMP as part of the annual ISO performance reports, and in the triannual Safety Plan update:

- Date, time and approximate duration of the release
- Chemicals released
- Estimated quantity released in pounds
- Type of release event and its source
- Weather conditions at the time of the release
- On-site impacts
- Known off-site impacts
- Initiating event and contributing factors
- Root cause(s)
- Whether off-site responders were notified
- Operations or process changes that resulted from the investigation of the release

CCHMP also recommends that Stationary Sources develop a brief, narrative description of the following elements, taken from Section 9.3.3 of the *Contra Costa County CalARP Program Guidance Document*:

- Include the name of the unit or operation where the accidental release occurred;

- Include information regarding the types of injuries (e.g., very minor requiring simple first aid, very serious requiring hospitalization) and the equipment or units involved in the property damage;
- Include information regarding the types of offsite injuries and medical treatment provided and whether evacuations and shelter in place were initiated (perhaps through the Community Warning System). The discussion should also include the property that was damaged and a description of any environmental damage that occurred;
- Include a description of the initiating event, rather than simply noting equipment failure, human error, or weather condition. The initiating event may be a combination of these (e.g., piping failure due to installation of pipe with incorrect metallurgy is an equipment failure as a result of a human error).
- Include a description of the root cause(s) and contributing factors;
- Include information regarding how the accidental release was discovered (and by whom) and how the offsite responders and various agencies were first contacted; and,
- Include specific information regarding the changes, including the status of implementation.

E.7 ANNUAL PERFORMANCE REVIEW AND EVALUATION

Section 450-8.030 of County Ordinance requires CCHMP to annually (1) Review its activities to implement Chapter 450-8, Risk Management (2) Evaluate the effectiveness of the Risk Management Chapter in achieving it's purpose and goals pursuant to the following:

- Requiring the conduct of process hazard analyses for Covered Processes handling hazardous materials not covered by the Federal or State Risk Management Programs
- Requiring the review of action items resulting from process hazard analyses and requiring completion of those action items selected by the Stationary Source for implementation within a reasonable time frame
- Requiring the review of accidental release prevention efforts of Stationary Sources and providing for the conduct of investigations and analyses for the determination of the Root Cause(s) for certain incidents
- Providing review, inspection, auditing and safety requirements that are more stringent than those required in existing law and regulations
- Providing for public input into the Safety Plan and Safety Program and public review of any inspection and audit results
- Facilitating cooperation between industry, the County, and the public in the prevention and reduction of incidents at Stationary Sources
- Expanding the application of certain provisions of the Federal and State Risk Management Programs to processes not covered by the Federal or State Risk Management Programs
- Requiring the development and implementation of a written human factors program

- Preventing and reducing the number, frequency, and severity of accidental releases in the County

CCHMP will conduct the annual performance review and evaluation in accordance with the following CCHMP Policy and Procedures: *ISO Annual Performance Review and Evaluation Policy; Conducting the ISO Annual Performance Review and Evaluation; ISO Annual Performance Review and Evaluation Submission*. CCHMP will prepare and submit an annual performance review and evaluation report containing this information for the Board of Supervisors on or before October 31 each year. Stationary Sources shall coordinate with CCHMP on the preparation of the following information:

- Summarize the status of the Stationary Source's Safety Plan and Program (450-8.030(b)(2)(i))
- Summarize Safety Plan update information (i.e., brief explanation for update and corresponding date) (450-8.030(b)(2)(ii))
- List of locations where Safety Plans are available for review, including contact telephone numbers if the Stationary Source will provide individuals with copies of the document (450-8.030(b)(2)(iii))
- Summarize annual accident history reports pursuant to Section 450-8.016(e)(2) of County Ordinance 98-48 (450-8.030(b)(2)(iv))
- 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)(v))
- Summary of the status of implementation of recommendations formulated during audits, inspections, Root Cause Analyses, or Incident Investigations conducted by CCHMP (450-8.030(b)(2)(vi))
- Summary of inherently safer systems implemented by the Stationary Source including but not limited to inventory reduction (i.e., intensification) and substitution (450-8.030(b)(2)(vii))
- 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)(viii))
- Summarize total penalties assessed as a result of enforcement of this Chapter (450-8.030(b)(3))
- Summarize the total fees, service charges, and other assessments collected specifically for the support of the ISO (450-8.030(b)(4))
- Summarize total personnel and personnel years utilized by the jurisdiction to directly implement or administer this Chapter (450-8.030(b)(5))
- Copies of any comments received by the Stationary Source (that may not have been received by CCHMP) regarding the effectiveness of the local program that raise public safety issues (450-8.030(b)(6))
- Summarize the impact of the Chapter in improving industrial safety (450-8.030(b)(7))
- Summarize the emergency response activities conducted at the Stationary Source (e.g., CWS activation) in response to major chemical accidents or releases.

- Was a Safety Culture Assessment performed and the results were reported to the workforce at this stationary source during the reporting year? (If a Safety Culture Assessment was not performed during the reporting year the following questions do not need to be addressed).
 - What method(s) were used in the Safety Culture Assessment?
 - ◆ Written Survey
 - ◆ Interviews
 - ◆ Focus Groups
 - ◆ Observational
 - What areas of improvements are being addressed as the result of the Safety Culture Assessment?
 - Did the action plan developed by the previous Safety Culture Assessment make progress on the identified areas of improvement? Yes or no.
 - If not, has a new action plan been developed to address the identified areas of improvement? Yes or no.
- Was a mid-cycle progress evaluation performed during the reporting year? (If a Safety Culture mid-cycle Progress Evaluation was not performed during the reporting year the following questions do not need to be addressed):
 - Have milestones and metrics been developed to determine that the Safety Culture Assessment actions are being implemented? Yes or no.
 - Did the action plan developed by the previous Safety Culture Assessment make progress on the identified areas of improvement? Yes or no.
 - If not, has a new action plan been developed to address the identified areas of improvement? Yes or no.
 - Describe the process in place that includes employees or their representatives that will determine if the action items effectively changed the expected culture items.
- Performance Indicators reported as defined in Section A.1.2.9 of this guidance

Annual updates must also be submitted to CCHMP by June 30 of each year.

E.8 CERTIFICATION

The owner or operator or senior official with management responsibility for your Stationary Source must sign and date the certification statement in your Safety Plan that reads “The undersigned certifies that, to the best of my knowledge, information, and belief formed after reasonable inquiry, the information submitted is true, accurate, and complete.”

E.9 SECURITY VULNERABILITY ASSESSMENT

The Safety Plan shall include a discussion of the Security and Vulnerability Assessment (SVA) performed and any associated follow-up activities, including:

- Indication if the Stationary Source submitted an SVA or SVA revalidation to the Department of Homeland Security (DHS) either to United States Coast Guard (USCG); or via Chemical Facility Anti Terrorism Standards (CFATS);
- Indication that an SVA has been or will be performed and methodology used;
- Indication of the intent to perform regular SVA revalidations, and description of the frequency and method used to perform a revalidation;
- Indication of what mechanism is in place to track and ensure that recommendations are addressed; and
- Indication of the criteria for rejecting recommendations.

Preparation and submittal of DHS Chemical Security Assessment Tool Top-Screen does not constitute an SVA revalidation.

E.10 SAFETY CULTURE ASSESSMENTS

The Safety Plan shall contain a description of the Safety Culture Assessment program including but not limited to:

- Description of what Safety Culture means to your Stationary Source;
- The purpose and overall objectives of safety culture assessments;
- A discussion of the type of data gathering technique(s) used (written survey, interviews, etc.) and rationale;
- Description of how the Stationary Source ensures that the Safety Culture Assessment is performed as expected and how the results will be evaluated for their site; and
- Plans for future revalidations.

¹ Modifications were made to the Contra Costa County's Industrial Safety Ordinance (ISO) in 2006. Major changes included: requiring Security Vulnerability Assessments; requiring Safety Culture Assessments; requiring changes to maintenance and emergency response staffing to undergo a Management of Organizational Change evaluation; and requiring human factors evaluations of maintenance safe work practice procedures and maintenance procedures for specialized equipment, piping, and instruments. Since the corresponding City of Richmond's Industrial Safety Ordinance has not been amended, Stationary Sources subject to the City of Richmond's ISO are encouraged to comply with the County ISO amendments.

² **Non-Exempt Covered Process** means any process or activity at a Stationary Source (Section 450-8.014(a)) that is not otherwise exempt, per Section 450-8.010(b)

³ **Regulated substance** means (1) any chemical substance which satisfies the provisions of California Health and Safety Code section 25532(g), as amended from time to time, or (2) a substance which satisfies the provisions of Hazard Categories A or B in section 84-63.1016. Mixtures containing less than 1% of a regulated substance shall not be considered in the determination of the presence of a regulated material (Section 450-8.014(i)).

⁴ CCHMP added additional questions for evaluation of latent conditions that may help improve the overall human factors program in 2010. Stationary Sources should review Attachment A to incorporate into their latent conditions checklists.

⁵ Included as part of the PHA is an analysis of external events associated with the process. External events are those occurrences whose causes are outside of the scope of the process, but which may impact the process and, in some cases, may initiate a release of a regulated substance.

⁶ **Level 3:** Offsite impact and categorized by any of the following (see the CCHMP Hazardous Materials Incident Notification Policy for the most accurate definition):

- Off-site impact that may cause eye, skin, nose and/or respiratory irritation to the general population.
- Fire, explosion, heat, or smoke with an off-site impact.
- Example: On a process unit/storage tank where mutual aid is requested to mitigate the event and the fire will last longer than 15 minutes.
- Hazardous material or fire incident where the incident commander or unified command, through consultation with the Contra Costa Health Services Hazardous Material Incident Response Team, requests that sirens should be sounded.

⁷ **Level 2:** Offsite impact with possible health impact and categorized by any of the following (see the CCHMP Hazardous Materials Incident Notification Policy for the most accurate definition):

- Off-site impact where eye, skin, nose and/or respiratory irritation may be possible for individuals with respiratory sensitivities.
- Explosion with noise/pressure wave impact off-site.
- Fire/smoke/plume (other than steam) leaving or expected to leave site.

⁸ **Regulated substance** means (1) any chemical substance which satisfies the provisions of California Health and Safety Code section 25532(g), as amended from time to time, or (2) a substance which satisfies the provisions of Hazard Categories A or B in Section 84-63.1016 in Contra Costa County's Land Use Permits for Development Projects Involving Hazardous Waste or Hazardous Materials, or (2) a substance which satisfies the provisions of Hazard Categories A or B in Section 84-63.1016 in Contra Costa County's Land Use Permits for Development Projects Involving Hazardous Waste or Hazardous Materials zoning ordinance. Mixtures containing less than 1% of a regulated substance shall not be considered in the determination of the presence of a regulated material.

SECTION F: SAFETY CULTURE ASSESSMENTS

Contra Costa County Board of Supervisors approved and adopted the departmental amendment to the County Ordinance Code Chapter 450-8 in June 2006. Section 450-8.016 (h) is a requirement to perform Safety Culture Assessments:

“The Stationary Source shall conduct a Safety Culture Assessment. The assessment shall be based upon a method listed in the Contra Costa County Safety Program Guidance Document or shall be reviewed by the CCHMP to determine substantial equivalency. The initial assessment shall be performed by one year following the revisions to the Industrial Safety Ordinance Guidance Document that addresses the Safety Culture Assessment, and at least once every five years thereafter. The Safety Culture Assessment will be reviewed during the audit and inspection of the Stationary Source. CCHMP may perform its own Safety Culture Assessment after a Major Chemical Accident or Release or the occurrence of any incident that could reasonably have led to a Major Chemical Accident or Release, or based on CCHMP audit results of the Stationary Source.”¹

What is Safety Culture and Why Assess It?

Merriam-Webster defines “culture” as “the set of shared attitudes, values, goals and practices that characterizes an institution or organization”. Safety culture is a measure of the importance that individuals and organizations exhibit towards working safely. It is the summation of attitudes and actions people do at 2 a.m. on a Sunday night when no one is watching. An organization can influence employees to embrace positive shared safety values with consistent policies and practices and by leading through example.

History is filled with tragic life altering and ending events that can be traced back to phrases like, “we’ve been doing it this way for years” or “this way is good enough”. This guidance document was prepared to help Stationary Sources, hereafter referred to as facilities, identify pervasive attitudes or beliefs regarding risk tolerance in the work place. There is a correlation between improving safety culture and decreasing the number and severity of accidents.

Although facilities subject to Contra Costa County’s or the City of Richmond’s Industrial Safety Ordinance already frequently evaluate situations for “hidden” problems or latent conditions, see Section B in this Guidance Document, safety culture is more subtle and even more difficult to assess. A Safety Culture Assessment will enable a facility to understand where they are in terms of risk acceptance. Additional benefits of performing a Safety Culture Assessment include:

- Identify positive as well as negative aspects of the onsite health and safety program
- Assist in identifying opportunities for improving health and safety
- Another tool to improve facility personnel’s awareness and participation in health and safety
- Identify perception gaps between managers, supervisors, and the workforce
- Assist to demonstrate management’s commitment to safety by performing the assessment and visibly addressing the results

Every company has a culture. Sometimes certain aspects of safety culture are more evident (e.g., using the proper PPE) and sometimes it is more of an undercurrent of how things are done (e.g., recommended hearing protection is absent when the 'boss' is not around). There will always be some element of risk in the workplace and in the work that is performed, but being cavalier about safety could lead to major problems beyond serious personal injury. Large facilities may have different cultures across departments, process units, or even between shifts in the same process unit. Finding whether these differences exist is one of the challenges of the assessment. In general, the larger and more broad the population being assessed, the less evident these differences in perception may appear. For example, 10 similar perceptions from one work group may not be noticeable in a facility-wide survey of hundreds; whereas these same 10 perceptions out of a total work group size of 30 would stand out. Depending on the size of the facility, the following work groups should be assessed: management, supervisors, operators, maintenance, engineering, health and safety personnel and resident and applicable transient contractors. To better understand potential differences in behavior and develop improvement strategies, facilities should consider identifying sub-work groups for the assessment between processing areas, shifts, crews, maintenance crafts, or levels of management.

Performing an initial Safety Culture Assessment will give a company a baseline from which they can compare future assessments. Any Safety Culture Assessment represents only a snap shot in time. Since the safety culture of a company will change over time, only by performing multiple assessments can a company discover if the steps that were taken to improve safety are actually improving. If not, the company may need to adjust and focus future improvement topics.

Although Safety Culture Assessments should be viewed as a facility-specific exercise, lessons learned and best practices, if shared, can be very useful to others as well. Some of the available literature on safety culture describes differences between safety culture and safety climate. This guidance draws no distinction between safety culture or safety climate, and will use the term safety culture throughout.

F.1 GOALS AND OBJECTIVES

The primary goal of a Safety Culture Assessment is to assess individual and group values towards safety and risk tolerance. An ultimate goal for each facility should be to assess values towards safety and risk tolerance associated with each work group. One objective of the Safety Culture Assessment is to gauge the commitment and effectiveness of an organization's health and safety management program by evaluating attitudes, perceptions, competencies and patterns of behavior. Once these issues are known, a facility can direct the design, execution, evaluation, and continuous improvement in the work environment to affect changes to safety-related behaviors and attitudes that ultimately minimize accidents.

F.2 DEFINITIONS

Employee(s): An employee is an individual employed by the facility.

Contractor(s): A contractor is an individual who is working at the facility and employed by another company. Contractors may generally be classified into two groups, resident contractors and transient contractors.

Resident Contractor: Resident contractors are workers who work at the facility for 3 months at a time or longer on assignment. Examples include, but are not limited to, daily maintenance contractors, project engineers, operations support personnel and construction personnel.

Transient Contractor: Transient contractors work at the facility for less than 3 months at a time. Most common transient contractors are the individuals working on turnaround maintenance. Other examples include, but are not limited to, short-term daily maintenance contractors, project engineers, operations support personnel and construction personnel. If the same individual returns to work at the facility for more than one turnaround, regardless of the contractor company, the individual should be considered a transient contractor.

Worker: Refers to all facility personnel, in all departments (including employees and contractors).

Work Group: Refers to a division of the workforce into the following general disciplines: employees in management, supervisors, operators, maintenance, engineering, health and safety personnel and resident and applicable transient contractors.

F.3 ASSESSMENT SCOPE

The facility must establish their Safety Culture Assessment process and state what methodology is selected for each work group and the criteria for successful participation. Due to the potential of different subcultures existing within various major workforce disciplines, at a minimum, the work groups assessed should include employees in management, supervisors, operators, maintenance, engineering, health and safety personnel and resident and applicable transient contractors. Facilities may elect to further assess for differences in cultures within the various sub-work groups (e.g., survey by unit or by crew within units, by maintenance craft, etc.), although this is not required.

While 100 percent participation from each work group is difficult to attain, it is expected that whatever assessment method(s) used will include sufficient documentation to demonstrate to the satisfaction of CCHMP the appropriateness of the participation level targeted and achieved. As an ultimate goal, facilities should maximize the participation level from each work group. The work group response rate needs to be representative of the population and is viewed as an indication of whether the workforce believes that participation will result in worthwhile outcomes². For example, survey response rates that fall below 70 percent for a specific work group indicates a subculture needs specific attention for improvement³. Response rate is likely to vary depending on the assessment method used. For example, surveys contained in a magazine may only get a 1 to 2 percent response rate; surveys sent by mail may get between 10 and 50 percent; telephone surveys have obtained 80 percent; personal interviews have obtained

90 percent⁴. Refer to Section F.4 and F.5 for best practices for implementation and assessment methods.

The Safety Culture Assessment must address the components discussed in more detail in Section F.6:

- Management Commitment and Leadership
- Individual Performance and Accountability
- Peer Perception and Accountability
- Safety Program Performance.

The Safety Culture Assessment should include participation by a team of employees and their representatives.

A report must be developed for every Safety Culture Assessment data collection method applied. Report contents are further described in Section F.8.

F.4 BEST PRACTICES FOR IMPLEMENTING THE ASSESSMENT

This section contains information to help plan and conduct the Safety Culture Assessment. Although specific documentation for considering these items is not required, Sections F.4.3 and F.4.5 contain expectations for data collection and requirements for the frequency of assessments.

The following summarizes the four general phases in performing any assessment:

- Plan
- Do
- Analyze and Report
- Revise and Repeat

F.4.1 PSYCHOLOGY OF QUESTION DEVELOPMENT

It is important to note that there are a number of ways in which a question can be worded, asked, or delivered that could unintentionally alter the meaning, and in so doing, the response received. This section highlights several issues or traps to avoid in developing and asking questions. In addition, other sections throughout this guidance document offer tips on reducing bias.

1. **Wording should be open-ended.** Respondents should be able to choose their own terms when answering oral interview questions. For example: “Describe what a good safety culture means to you?” is a better question than “Do you think we have a good safety culture?”
2. **Questions should be as neutral as possible.** Avoid wording that might influence answers, e.g., evocative, judgmental wording. The topic needs to be worded to not

- imply or infer a “correct” answer. For example: “Do you want to improve process safety or maintain our current level of performance?”
3. **Questions should be worded clearly.** This includes knowing any terms particular to the program or the respondents' culture. Don't assume that everyone will understand acronyms.
 4. **Questions should be broad-based.** Use questions that will cover various aspects of safety and the respondents “feeling”.
 5. **Be careful asking "why" questions.** This type of question infers a cause-effect relationship that may not truly exist. These questions may also cause respondents to feel defensive, e.g., that they have to justify their response, which may inhibit their responses to this and future questions.
 6. **Be conscious of body signals.** Body language can greatly alter the meaning of a question asked or the answer supplied. Be aware of non-verbal clues, but don't read too much into them. Seeing someone's arms folded across their chest may or may not mean their guard is up. Ask yourself if their body language matches their words. Investigate when they contradict.
 7. **Minimize questions that may generate socially desirable answers.** Some people may answer a question based on what a socially expected answer should be regardless of how they truly feel or have behaved³. For example, “How often do you drive a vehicle after you have consumed alcohol?”
 8. **Watch your grammar.** Double-check to make sure your questions do not have any typographical errors in them and are properly worded. Some people may take the view that the entire assessment may not be important if nobody took the time to correct the grammar and/or spelling in the questions.
 9. **Eliminate double meanings.** Take extra precautions to make sure that questions do not have multiple meanings or interpretations. Depending on people's knowledge and experiences, they may hear questions differently than intended. Send your questions to different groups of people and ask for feedback.

The Baker Panel Report for the March 2005 British Petroleum incident in Texas City described the Safety Culture Assessment used: “The survey solicited each participant's views on 65 statements or survey items related to process safety culture at the participant's workplace. None of the statements described a culture as being good or bad overall. Instead, the statements were designed to invoke participants' perceptions regarding various aspects of process safety culture in their workplace. The statements were grouped into six categories: process safety reporting, safety values/commitment to process safety, supervisory involvement and support, procedures and equipment, worker professionalism/empowerment, and process safety training.” A copy of the Baker Panel Survey is presented in Attachment E-1.

F.4.2 DELIVERY OF ASSESSMENT

The method of delivery is dependent on the assessment methodology. Regardless of the method used, it is important to introduce the concept of safety culture, the assessment method, stress the importance of anonymity, worker participation all the way to top management and with support reinforced by peers. However, it may be more difficult to make interviews and

observations anonymous. Face-to-face delivery is likely to result in better participation and will demonstrate the importance of the assessment. Depending on the maturity level of the facilities' safety culture, measures to maintain confidentiality may be necessary to get sufficient participation with the assessment.⁵

However, a bias in the interviewing process can be created by the choice of interviewer. For instance, if a facility manager conducts interviews, the person being interviewed may be more likely to provide the answer that he or she thinks the facility manager wants to hear. Similarly, persons who conduct interviews should not include those who could influence or control the interviewee's financial situation. The location of the interview is another important factor, for example conducting the interviews in a supervisor's office may be awkward or uncomfortable to some.

Another point to make about the individual(s) who conduct interviews, performs observations, or who act as moderators in a focus group is the potential to gain significant insights in watching and interacting with people. As the saying goes, only about 10 percent of most conversations are verbal; the other 90 percent is how they say it. The inflections in someone's voice, the manner in how they speak, body position, and gestures can tell volumes beyond the words said or not said. Watch for changes in speech and body language. Sites that use individuals that recognize these subtle signals and know when they may be important will greatly enhance the output of their assessment process.

The manner in which a survey is presented to employees may be important as well. Some employees may prefer their own peers to present a written survey instead of management. Others may feel more comfortable if a third party performs the entire assessment such that their responses are not viewed directly by any of their peers or management. Consideration should also be given to providing a secure location for employees to complete electronic surveys. Conducting surveys in a group setting has been shown to provide better results as compared to providing the survey to the employees to complete on their own time⁶. A group setting can be both positive and negative because some individuals may be intimidated by doing the survey as a group, however with the presence of a proctor(s), obscure questions can be further explained. For example in Baker Panel Report: during the administration period, two-person (or, in the case of Texas City, four-person) teams introduced the survey, addressing steps taken to promote the integrity of the survey and the anonymity of survey respondents and how the survey differed from surveys administered previously by or on behalf of BP; described the Panel's intent in conducting the survey; showed a video; and responded to potential participants' questions or needs relating to the survey.

F.4.3 TIMING OF ASSESSMENT

The timing of the assessment should be carefully considered to ensure that the least biased evaluation is given. Performing an assessment at the end of the shift when the individual wants to go home and may try to rush may cause a bias. Certain other factors that can also skew a Safety Culture Assessment results are time periods in which any of the following are taking place: union contract negotiations, lay-offs, strikes, major organizational changes, bonuses,

performance evaluations and immediately after an incident. In some of these occasions, employees may already be predisposed to negative feelings toward the company and may not be answering the question honestly. Also factors such as performance evaluations and bonuses can cause false positive results, as the employee may not want to compromise rewards for themselves or their team. Periods during the holiday season should also be avoided as much of the workforce could be gone giving less of a population to survey. The best time to perform a Safety Culture Assessment would be during a neutral period. To minimize the potential of these factors affecting the outcome of a Safety Culture Assessment, and to ensure that the process has a finite duration, the data collection period (Section 5) should conclude 60 days after it is started. A data collection period lasting longer than 3 months must be discussed in advance with CCHMP.

F.4.4 CATEGORIZATION/BREAKDOWN OF ASSESSMENT

For a facility with multiple operating areas and work crews, it is important to assess or have the ability to categorize based on potential differences in subculture that may exist in the facility such as within units/zones, from crew to crew, crafts, engineering discipline, etc. The following information should be considered for the purposes of categorization⁷:

- Job level (hourly, foreman, supervisor...)
- Full time employee / part time employee
- Job Function (generic)
- Process area / zone including shift / crew or craft identification
- Years onsite
- Years in refining or chemical industry

F.4.5 FREQUENCY OF ASSESSMENT

Within one year after the issuance of this Safety Culture Assessment guide, an initial Safety Culture Assessment using one or more of the methods outlined needs to be performed. Additional assessments are required at least every five years thereafter. Documentation must be maintained to satisfy requirements as outlined in Section F.8. Facilities that consistently reassess their safety culture will have a better idea on the direction the facility is headed in terms of safety culture, and are in a better position to make further changes or adjustments that may improve their safety culture. As such, facilities should consider performing more frequent and potentially smaller in scale additional Safety Culture Assessments using one or more of the methods identified within this guidance to achieve the desired results. For example, it may be insightful to have pre- and post short (15 questions or less) surveys before and after implementing the selected actions items obtained from the Safety Culture Assessment.

F.4.6 MAINTAINING A SENSE OF VULNERABILITY

When completing the initial and subsequent Safety Culture Assessments, it is important that a sense of vulnerability be maintained by the facility. The mindset of: “that could never happen here”, can make it difficult to identify safety and cultural concerns during the assessment.

While a facility should be proud of their safety culture, they must keep in mind that accidents can always happen. The goal is not to instill fear in the facility but to keep everyone aware that the possibility of an incident can only be reduced and never eliminated.

F.4.7 ADDITIONAL BIASES

Another situation to be aware of is approximately 10 percent of those who respond to assessments, have a tendency to agree with any statement made³. This type of agreement is called acquiescence. To test for the number of people who may complete an assessment in this manner, some assessments include a statement and their opposite. For example, “My direct supervisor consistently promotes safety” and “My direct supervisor does not promote safety”.

The results of a Safety Culture Assessment can also be misleading depending on how the results are reported. For example, reported results that state 67 percent of the operators surveyed agreed they felt safe in their workplace would be misleading if only 2 percent of the operators responded to the assessment. Low response rates could result in other biases as well. For example, since most people do not feel strongly one way or another on any particular topic, a low response rate may allow a few strong opinions to dominate or skew the results.

F.5 ASSESSMENT METHODOLOGY

The purpose of the assessment is to gauge the safety culture of an organization and the effectiveness of Safety Programs in meeting the organization’s stated goals and objectives. Through a committee comprised of CCHMP and industry representatives, the following listed methods have been approved to be used individually or combined to capture a snap shot of the organization’s safety culture. Facilities must submit and receive written approval before using any other assessment methods. In the future, CCHMP may develop additional assessment tools or place conditions on the use of the approved assessment tools.

It should be emphasized that although the methods are described separately, there are similarities between each of them. For example, the order of asking questions, which is described under the interview method, is also a relevant topic for consideration under the written surveys and focus groups methods. Therefore, it is advisable to review all the method guidance presented to assist in developing the best method(s) to use at your site.

Facilities may need to take measures to maintain a certain level of confidentiality to achieve the desired number of participants and responses to the assessment. Although most individuals may feel more comfortable participating in an anonymous survey and provide more honest answers, large efforts to maintain confidentiality may indicate an underlying area for improvement. Nevertheless, assessment results that reveal notable issues may be difficult or nearly impossible to remedy without some minimum knowledge of whether it applies to, for example, line supervision, operations, management, or everyone. Therefore, at a minimum, the work group associated with the individuals who participated within the assessment should be maintained. Additional suggested categorizations for the assessment participants are contained within Section F.4.4.

F.5.1 WRITTEN SURVEY

Written surveys are the most common type of assessment used. There are a number of positive reasons written surveys are so popular. Of the four assessment methods presented, many people believe written surveys are the easiest to create and require the least amount of resources to print, copy and distribute or even just have a web link. A number of available pre-packaged surveys both public and proprietary are available to be used as well, further reducing development time. Those completing the survey do so usually without the need for additional training or the need for additional staffing to oversee survey completion. As such, larger populations can be surveyed much more quickly. Completion of the surveys can be done relatively fast. Results of the surveys are typically quantitative since the number of people answering a question “yes” or “no” can be tabulated. As such, written surveys can generate statistically significant results.

Written surveys are also one of the more difficult types of surveys to do well. Printing or copying errors could make the survey difficult to read and understand. If a question is unclear, there is nobody to ask for clarification. Those surveyed may be asked about topics they are not responsible to know, for instance asking maintenance personnel about the adequacy of operating procedures. There is little assurance that people truly read and contemplate each question before providing an answer. There is no way to tell whether anyone answered the questions truthfully. In addition, some people may complete a survey as suggested by others instead of providing their own opinions. In most cases, the biggest problem with written surveys is just getting people to complete and return them.

Following the suggestions identified within this Safety Assessment Guidance document should assist in minimizing many of the hazards associated with performing written surveys. In addition, computer based surveys can be successfully used to minimize some of the potential problems with printed versions. For example, computerized surveys can be administered by a third-party service; potentially giving some people completing the survey a greater sense of anonymity. They can be designed to make sure no questions are skipped and can ask the person completing the survey to double-check potentially invalid responses. Computer surveys are also useful in organizing the questions, or properly branching to the next set of questions based on relevance to the person’s experience or previous responses.

The written survey method involves use of a questionnaire (survey form) in either electronic or paper form. It is given to employees to answer openly. The survey form consists of questions developed to measure the Safety Culture Assessment components outlined in F.6. Each question should be worded in an objective, non-leading manner (see Section F.4.1 for guidance on question wording). Consideration should also be given in the manner the survey is delivered to the employees (see Section F.4.2 for guidance on assessment delivery). Additional insights can be gleaned by reviewing the remaining sections of this guidance document.

The survey form may be designed to rate agreement with questions on a numerical scale. If the survey has been designed in this manner, it will be possible to utilize the survey as a metric

measurement of improvement in various areas over time. For example, if the same survey is given three years later, improvements may be measured in a given area.

Refer to Attachment E-1 for a copy of the Baker Panel Survey, Attachment E-2 for an example of a written survey from a facility, and Attachment E-3 for a list of example questions.

F.5.2 INTERVIEWS

Interviewing site personnel within individual work groups can be a critical part of a Safety Culture Assessment as long as those being interviewed are sufficiently comfortable and willing and the interviewers are sufficiently practiced in performing interviews. The Human Resource department may be a good neutral group to tap for this activity. Asking the right questions during the interview is important to collecting meaningful information. Since performing interviews is a time consuming and resource intensive task, they are not routinely performed for site-wide assessments unless the total population is relatively small. Compared to written surveys, which are more quantitative in nature, interviews are more qualitative. Interviews may be useful as follow-up to certain respondents to questionnaires, e.g., to further investigate their responses.

Facilities should design interview questions and assessment processes, clearly articulating the goal of the Safety Culture Assessment and how the information to be gathered will be utilized. A recommended interview process should include:

- Choosing a diverse interview panel that includes various years of service, job functions or levels of responsibility
- Conducting personal 1:1 or team interviews
- Asking behavioral-based interview questions

F.5.2.1 PREPARATION FOR INTERVIEW

1. **Choose a setting with little distraction.** Avoid loud lights or noises, ensure the interviewee is comfortable and the setting is confidential.
2. **Explain the purpose of the interview.**
3. **Address terms of confidentiality.** Note any terms of confidentiality. Explain who will have access to their answers and how their answers will be analyzed. If their comments are to be used as quotes, get their written permission to do so which may require informed consent.
4. **Explain the format of the interview.** Explain the type of interview you are conducting and its nature. Encourage them to ask questions.
5. **Indicate how long the interview usually takes.**
6. **Tell them how to get in touch with you later if they want to.**
7. **Ask them if they have any questions** before you both get started with the interview.
8. **Don't count on your memory to recall their answers.** Ask for permission to record the interview or bring along someone to take notes.

F.5.2.2 TYPES OF INTERVIEWS

1. **Standardized, open-ended interview** - open-ended questions are asked to all interviewees (an open-ended question is where respondents are free to choose how to answer the question, i.e., they don't select "yes" or "no" or provide a numeric rating, etc.); this approach facilitates faster interviews that can be more easily analyzed and compared.
2. **General interview guide approach** - the guide approach is intended to ensure that the same general areas of information are collected from each interviewee; this provides focus to the interview, but still allows a degree of freedom and adaptability in getting information from the interviewee.
3. **Closed, fixed-response interview** - where all interviewees are asked the same questions and asked to choose answers from among the same set of alternatives. This format is useful for those not practiced in interviewing.
4. **Informal, conversational interview** - no predetermined questions are asked, in order to remain as open and adaptable as possible to the interviewee's nature and priorities; during the interview, the interviewer "goes with the flow".

F.5.2.3 TYPES OF TOPICS IN QUESTIONS

There are various types of questions that may be asked:

1. **Behaviors** - about what a person has done or is doing
2. **Opinions/values** - about what a person thinks about a topic
3. **Feelings** - note that respondents sometimes respond with "I think ..." so be careful to note that you're looking for feelings
4. **Knowledge** - to get facts about a topic
5. **Sensory** - about what people have seen, touched, heard, tasted or smelled
6. **Background/demographics** - standard background questions, such as age, education, years of experience in that particular position, etc.

Note that the above questions can be asked in terms of past, present or future. Examples of additional questions can be found in Attachment E-3.

F.5.2.4 SEQUENCE OF QUESTIONS

1. **Get the respondents involved in the interview as soon as possible.**
2. **Before asking about controversial matters (such as feelings and conclusions), first ask about some facts.** With this approach, respondents can more easily engage in the interview before warming up to more personal matters.
3. **Intersperse fact-based questions throughout the interview** to avoid long lists of fact-based questions, which tends to leave respondents disengaged.
4. **Ask questions about the present before questions about the past or future.** It's usually easier for them to talk about the present and then work into the past or future.

5. **The last questions might be to allow respondents to provide any other information they prefer to add and their impressions of the interview.**

F.5.2.5 CONDUCTING INTERVIEWS

1. **Occasionally verify the tape recorder (if used) is working.**
2. **Ask one question at a time and allow time for an answer.**
3. **Attempt to remain as neutral as possible.** That is, don't show strong positive or negative emotional reactions to their responses (i.e., "you've heard it all before.")
4. **Be careful about the appearance when note taking.** That is, if you jump to take a note, it may appear as if you're surprised or very pleased about an answer, which may influence answers to future questions.
5. **Provide transition between major topics,** e.g., "We've been talking about (some topic) and now I'd like to move on to (another topic)."
6. **Don't lose control of the interview.** This can occur when respondents stray to another topic, take so long to answer a question that time begins to run out, or even begin asking questions of the interviewer.
7. **Responding to "I don't know" answers.** Sometimes people are hesitant to voice their opinion or may not fully understand the question. Consider responding with something like, "I was just trying to get your opinion; there really is not a right or wrong answer to many of these questions."
8. **Incomplete or too brief answers.** When asking open-ended questions, you want to get a fairly complete answer and sometimes you may need to probe a little. For example, you might say, "That's interesting; could you explain that a little more?"³

F.5.2.6 IMMEDIATELY AFTER INTERVIEW

1. **Make any notes on your written notes,** e.g., to clarify any shorthand, ensure pages are numbered; fill out any notes that don't make sense, etc.
2. **Write down any observations made during the interview.** For example, where did the interview occur and when, was the respondent particularly nervous at any time? Were there any surprises during the interview? Did the tape recorder stop and distract the interview?

F.5.3 OBSERVATION

An observation process is designed to assess the positive work practices that minimize or prevent injury, property damage, or environmental impact to employees, contractors, and our neighbors in the community. The attitudes of managers, supervisors, and other work groups towards safety work processes are an important measure in evaluating the overall effectiveness of the site's safety management system.

The manner in which an observation process is performed at a site could indicate the maturity level of their safety culture. For example, a site that encourages anyone to observe anyone, be it management observing represented employees, or vice versa, or contractors observing

operators or maintenance employees, likely has a more mature safety culture than another facility that only allows peer-to-peer observations.

The basic process to conduct an observation is typically as follows. An observer surveys the safety message and climate by noting signs, slogans, general housekeeping and observations to see if that is consistent with management vision and mission statements. Specific safe behaviors and at-risk behaviors of personnel are observed during their normal activities. Additional insights into the person's safety beliefs could be culled by engaging in conversations with those being observed.

To be used as a Safety Culture Assessment method, CCHMP expects that the observation program used at a site defines: who can observe whom; when and how they should be performed; suggested activities to observe; specific items to watch for; questions to ask; yardstick or criteria to measure against; training program to ensure observer consistency; and documentation to be preserved.

An example of one company's observation process can be found in Attachment E-4.

F.5.4 FOCUS GROUPS

An effective focus group program allows small groups of people to share their opinions, thoughts, feelings, attitudes, and ideas with each other on a certain topic. Focus groups allow people to build on each other's responses and formulize opinions or ideas they might not have come to during private or one-on-one interviews. Some of the primary goals of a focus group are to foster a healthy atmosphere where all participants can freely share their opinions or diverse points of view with no pressure to agree or come to a consensus. These groups also offer a portal or window for others to observe how people interact in a group setting, to gain access to various cultural or social elements, and to stimulate new thoughts or ideas to explore.⁸

Focus groups are useful in evaluating group behavior and performance. Group meetings can be held much quicker than individual interviews. Opinions given can be easier to understand and easier to make sense in a report than statistical summaries. Other advantages of focus groups are to: better understand perceptions and opinions that are held; evaluate existing programs; and assist in the planning and design of new programs.⁷ Out of all of the methods presented in this guidance, focus groups have the best chance at uncovering core values held by groups of people.⁹

There are also some topics that focus groups are not that good at uncovering. For example, they are not useful in assessing individual behavior and performance since comments are influenced by the group's interaction. Focus group discussions can become very lively and touch on a variety of topics in a fast and chaotic manner, and depending on the moderator, make it difficult to control and adequately document. Side topics can consume a lot of time, and individuals who are very vocal could end up dominating the discussions and make others reticent to talk. Since focus groups are made up of very small numbers of people, "you cannot

assume that their views and perceptions represent those of other groups that might have slightly different characteristics”; they are not random samples.⁷

Additional insights and details are identified in the following sections on developing focus groups. In using this method, facilities should design a focus group process that clearly articulates the goals of the Safety Culture Assessment and how the information to be gathered will be utilized. Refer to Attachment E-5 for an example focus group provided by a facility.

F.5.4.1 GROUP DYNAMICS

Many people behave and speak differently in a group setting than during one-on-one interviews. The reasons for this are varied and complex. To help open people up more, focus groups are typically comprised of people who do not know each other. Groups comprised of friends tend to form cliques, support each other’s opinions, and strive to keep up appearances more so than if they were in a group of people they do not know. On the other hand, groups that include people that do not get along with each other may have a tendency of offering contrary opinions more out of habit than expressing true feelings. For focus groups to be useful in assessing safety culture within individual work groups, more responsibility is placed on the moderator to identify these situations and draw out individual opinions that are closer to the truth.

To improve group session communication, everyone needs to feel safe and not pressured in anything they say or how they say it. They need to be told how the comments and session results will be summarized and reviewed. All group participants need to be instructed to respect everyone’s opinion even if they disagree with them and that there are no wrong answers. Participants should be encouraged to offer contrary opinions to what they have heard. For example, at the beginning of the session, the following could be said by the moderator to draw out opinions from those not usually willing to offer divergent views. “If you find yourself having a totally different set of experiences, or a different set of opinions than the rest of the group, I need to hear it, since you will be representing a sizable portion of those people who are not here today that support your view. If you don’t speak up, the results of this session may be seriously misleading, since an important view will not be represented. I hope you will have the fortitude to speak up.”¹⁰ The moderator should offer praise for the first contrary opinion with a comment like, “I knew you all couldn’t be agreeing about this. Thanks for sharing that. Let’s hear more.”¹⁰

F.5.4.2 PLANNING THE SESSIONS

Planning for each focus group will need to be extensive. For example, the following needs to be identified: participants for each focus group, the goals for each session, the number of sessions necessary to assess each work group evaluated under this method, the types of questions to be asked, the location where the sessions will be held, methods to minimize distractions, qualifications and expectations for the moderator, manner in which notes will be kept, etc.

Most literature identifies that the size of a focus group ranges from 6 to 10 participants and one moderator. Groups larger in size can result in people having the tendency of talking collectively as a group instead of relating their own individual opinions. Mini focus groups comprised of only 3 to 4 participants can occasionally be used to delve further into select thoughts, opinions, and beliefs.^{10, 11}

Locations used for focus groups should be relatively free of distractions (e.g., windows, PA system, artwork, interruptions). Similarly, radios, telephones, pagers, Blackberries and the like are turned completely off or not brought into the room. Chairs ideally should be arranged in a circle so everyone can face each other. A number of researchers suggest not having any obstructions (e.g., tables, desks) in between the participants, and go as far as to suggest having the focus group re-arrange the room so that the chairs face each other.

Most focus groups limit the number of questions asked to a small number from 5 to 6. It is difficult to ask a focus group in excess of 10 questions and expect to obtain truthful responses.^{7, 9} Of course this is because it takes time to explore each question when the focus group has a diverse mixture of individuals participating. Facilities should question the validity of the responses obtained if a lot of effort is spent rushing to ask the remaining questions towards the end of a session. In many aspects, less may be more. Facilities should recognize that greater depth can be achieved in understanding the issues raised if multiple focus groups in sequence are used.

Realize that people will be talking about the focus group sessions before they show up for their first session. Consider taking the opportunity to encourage these discussions so that people can bring these peer opinions to the group for further exploration. Also, after the group session is done, anticipate that some people may want to stick around and say things they were not comfortable sharing with the group. Some people may even think about things for a day or so and then want to comment further. Allowing for these possibilities can yield some very valuable information.¹⁰

The focus group program developed will need to identify how the Safety Culture Assessment components outlined in F.6 are evaluated.

F.5.4.3 MODERATING A FOCUS GROUP

The moderator has the responsibility to determine if a question or topic has been sufficiently probed and evaluated. As such, facilities should evaluate the qualifications of each and every moderator they intend to use. CCHMP will review these qualifications during audits.

Several points should be mentioned about moderating. The first point is that there is a lot more to moderating than most people realize. The second point is that it is very difficult to tell how well a moderator is doing just by listening to them. Remember that the moderator should not be the one who is doing the talking; instead, the moderator is there to get the participants to talk to each other. The moderator is there to probe and to guide the

discussions. One of the keys to performing successful focus groups is the ability of the moderator to establish and maintain rapport with the entire group. Without rapport, any results received should be questioned. To as much as practical, the moderator should have minimal stake in the outcome of the discussion to not bias their objectivity during the session and in summarizing the results. The following are examples of some of the responsibilities that are or may be placed on the moderator: ^{7, 8, 9, 10}

- Treat everyone and their comments with respect and expect the same
- Make sure everyone participates equally and not let any one participant dominate
- Be able to use appropriate probes and questioning to improve responses (e.g., “Tell me more about that...”, “So, it sounds like you are saying...”, “I can’t read the groups’ reaction to that. Help me out”, “Boy, that got quite a rise out of everyone. What is everyone reacting to?”)
- Know when to remain silent (e.g., wait at least 5 seconds after someone stops speaking in case someone else was going to comment)
- Know when to encourage discussions going down a desired path

F.6 SAFETY CULTURE ASSESSMENT COMPONENTS

The Safety Culture Assessment must document the Safety Culture Assessment process and a defined goal. The process should state what methodology was selected for each work group and the criteria for successful participation. Furthermore, the assessment must address the following components:

1. Management Commitment and Leadership
2. Individual Performance and Accountability
3. Peer Perception and Accountability
4. Safety Program Performance

The topics listed within the following subsections should be addressed under each of the four components. Suggestions for questions/topics identified for each component are provided for reference and additional suggestions are given in Attachment E-3. Since the assessment is a summary of the beliefs of the personnel surveyed, interviewed or observed, an explanation should be provided for each component to determine if the results are satisfactory or if it is determined to need improvement. The assessment must include a description of planned action including communication to work force.

F.6.1 MANAGEMENT COMMITMENT AND LEADERSHIP

Management commitment and leadership can be assessed in various ways. Typically what comes to mind may be: What is the worker's perception on how effective the various layers of management exhibit, encourage, communicate, and provide commitment and leadership in Process Safety? What is the worker's perception on how open and transparent the various layers of management are to hear process safety issues, and the appropriateness of management's response? What is the worker's perception on whether the various levels of management emphasize and support safety even if it slows or halts productivity? There are a number of areas that can be evaluated to determine this. These include, but are not limited to the following list:

- Stated company mission and vision that indicate safety is a shared value
- Encouragement of safe behavior
- Encouragement of near miss reporting
- Expectations to follow procedures
- Providing safety feedback to workers
- Welcoming safety suggestions
- Allocation of adequate resources to perform work safely
- Recognizing good safety performance
- Identifying goals and objectives for safety performance
- Adherence to goals and objectives for safety performance
- Responsiveness to safety concerns
- Investigations aimed at identifying safety system failures rather than identification of who to blame
- Emphasis on communication of safety issues
- Sets expectations to shutdown unsafe equipment or activities
- Provides support for facility Health and Safety committee work
- Supports preventive maintenance
- Encouragement of training even those that are outside job class
- Embraces continuous improvement
- Visible participation in the safety arena at all levels of management

F.6.2 INDIVIDUAL PERFORMANCE AND ACCOUNTABILITY

Personal performance and accountability can be gauged in many ways. For instance: How well do you embrace safe work practices and follow work directions and policies? Do you feel empowered to shutdown unsafe equipment or activities? Do you feel that there are occasions or reasons to justify not following safety rules or cutting corners on process safety? Would there be any reasons that would prompt you to not report process safety concerns or near misses? There are a number of areas that can be evaluated to determine this. These include, but are not limited to the following list:

- Safe work practices and procedures are followed
- Incidents are reported

- Investigations are aimed at identifying safety system failures rather than identification of blame
- Near misses are reported
- Safety concerns are communicated to supervision and resolutions are shared and are satisfactory
- Equipment in need of repair is reported and repaired
- Procedures are followed
- Unsafe equipment or activities are shutdown and corrected
- Proper PPE utilization
- Trust in coworkers to work safely
- Initiative to mentor new employees
- Embracing the importance of training

F.6.3 PEER PERCEPTION AND ACCOUNTABILITY

Peer Perception and accountability can be measured in many ways. For instance: How well do you believe your coworkers embrace safe work practices and follow work directions and policies? Do you believe your coworkers have different attitudes towards company policy and process safety when they are by themselves versus in the presence of the following groups: supervision, peers, or contractors? What is your perception of the predominant reasons why some peers may not report process safety concerns or near misses? Is there any concern of herd mentality at the work place? Do you believe that everyone is held to the same level of accountability? There are a number of areas that can be evaluated to determine this. These include, but are not limited to the following list:

- Safe work practices are followed
- Incidents observed are reported
- Near misses are reported by those involved or affected
- Safety concerns are communicated
- Cooperation among coworkers to complete jobs safely using formalized procedures
- Recognize the importance of training
- Shift turnover logs are adequately completed
- Proper PPE utilization
- Procedures are followed

F.6.4 SAFETY PROGRAM PERFORMANCE

Safety Program performance includes questions or items that request an evaluation or impression of how successful the various safety programs are at achieving objectives. These questions must address the effectiveness of the facilities prevention programs, and in some cases, the questions may be designed to see if participants are aware of the existence or the basic mechanics of the program. Topics for evaluation should include but are not limited to the following list:

- Worksite Hazard Analysis and Communication
- Preventive Maintenance

- Turnaround Maintenance
- Self Inspection
- Injury Prevention
- Incident Investigation
- Operating Procedures
- Health and Hygiene
- Emergency Preparedness
- Contractor Safety and Management
- Environmental Awareness
- Management Commitment and Leadership
- Performance and Accountability
- Health and Safety Training
- Communication
- Safety Meetings

F.7 CONTINUOUS IMPROVEMENT STRATEGY

F.7.1 EFFECTIVENESS OF ASSESSMENT

The initial assessment will serve as the baseline for future assessments. The results of the initial and subsequent assessments must be summarized in a report to management and the workforce. These documented communications should identify both positive areas and areas that need improvement. The report must state the assessment goal and process including what general criteria are used by the facility to identify an area that needs improvement and rationale for any prioritizations.

After the assessment, the facility along with workforce participation will develop an implementation plan to take steps to act on the findings. Additional notifications should be sent back to the remaining workforce that participated in the assessment to inform them of the steps to be taken. The more rapid and transparent this notification process, accompanied with visible results, the more satisfied the workforce will likely be that management is taking this task seriously.¹ It should be noted that it might take some time to implement action items as a result of this assessment before the workforce notices any significant change or improvement. Facilities are encouraged to consistently refer back to the assessment results during other safety meetings and periodically report the progress on resolving action items. It may be necessary to conduct shorter interim assessments to ensure that the action plan is on track to achieve the defined objectives.

F.7.2 EFFECTIVENESS OF PROGRAM AGAINST STATED GOALS

The facility must establish goals and metrics for the improvement of safety culture at the facility. The specific goals should encompass the state of the group values, attitudes, perceptions, competencies and patterns of behavior at the facility regarding the effectiveness of the health and safety programs and any identified improvements as a result of the assessment.

The improvements must be made into a plan of action designed with metrics to assess its effectiveness in achieving the facility's stated goals.

F.7.3 GUIDANCE DOCUMENT REVIEW

The Safety Culture Guidance document will be amended as needed by CCHMP. A formal review will take place at least once every three years to evaluate its adequacy by CCHMP. The timing of the first review will need to be such to allow CCHMP to inspect a representative number of Safety Culture Assessments completed by the regulated facilities.

F.8 DOCUMENTATION

A report must be developed for every Safety Culture Assessment data collection method applied. The report is to be presented to management and the workforce and should be within 6 months of data collection. Reports that are not completed and communicated within 9 months of data collection must be discussed in advance with CCHMP. With workforce participation, the report is to include an action plan for areas that need improvement. Since the report is a summary of the assessed beliefs of the personnel, interviewed or observed, there should be an explanation provided for each item that is determined to need improvement. It may be necessary to prioritize the list of improvements within the action plan based on the number, complexity, and/or relative level of concern associated with the issues. The implementation of improvements should start within 3 months of the report presentation.

The facility must maintain the following auditable records regarding each Safety Culture Assessment including, examples of assessments (e.g., surveys or interview questions), aggregated assessment results and an executive summary that contains the following (Note, facilities are not required to specifically identify issues to be improved for individual sub-work groups to CCHMP although the improvement plan needs to track progress made):

- Safety Culture Assessment reports
- Stated facility goals and objectives regarding safety culture and related topics
- Documentation of the appropriateness of the participation level targeted and achieved (e.g., ideally this should be by work group and include the total population, sample size, and response rate obtained)
- Assessment methodologies used for each work group and criteria for successful participation
- Criteria used for rejection of any results or findings
- Criteria used for determining if no action(s) will be taken on assessment results or recommendations
- Summary of the assessment components (corresponding to section F.6) with key findings
- Improvement plan with clear list of action items and identifiable milestones
- Rationale for prioritizing action items and justification for the action items to be worked on
- Documentation of communications to work force

- Qualitative and quantitative comparisons in subsequent assessments of whether improvement plans affected observable safety behavior, or culture.
- Documentation of employee participation per section F.3



¹ The citation from the Industrial Safety Ordinance incorrectly referenced the “Contra Costa County CalARP Program Guidance Document” and “Industrial Safety Ordinance Guidance Document” instead of the Contra Costa County Safety Program Guidance Document. Approved methods for performing Safety Culture Assessments will be included in the Contra Costa County Safety Program Guidance Document. In addition, for the purposes of clarification, CCHMP (Contra Costa Hazardous Materials Programs) was used instead of “department” in the citation.

² Summary Guide to Safety Climate Tools, 2001, HSE

³ 70% response rate from the Baker Panel Report issued in 2007: 7,451 out of 10,298 members participated in the safety culture survey done for the 5 BP U.S. Refineries (a 72% response rate). Individual Refinery response rates varied from 65%-76%.

⁴ Research Methods, 7th Edition, 2007, McBurney, D.H and T.L. White

⁵ Whether employees feel comfortable enough to honestly answer a safety culture assessment when not performed anonymously can be an indicator of the maturity level of a company’s safety culture. (Summary Guide to Safety Climate Tools, 2001, HSE)

⁶ From the HSE Process Guidelines Climate Survey Tool: “There are various ways of issuing the questionnaire. One is to issue it to the respondents directly, either at work or to their home with the completed questionnaires returned by mail.... Response rates using this method are typically around 30-40%... Another method, which has proved very successful, is to bring people together in a convenient place. Then issue the questionnaire, allowing them time to complete it. Using this type of approach, very high response rates (typically 70-80% and above) can be achieved.

⁷ These items were identified within the BP Texas City Baker Panel Report in order to break down the survey results in a meaningful way while preserving the anonymity of all respondents.

⁸ Using Focus Groups for Evaluation, University of Arizona, Marczak, M and M. Sewell

⁹ Getting to the Right Psychological Level in Your Focus Groups, Market Navigation, Inc., Silverman, G.

¹⁰ How to Get More Out of Your Focus Groups, Market Navigation, Inc., Silverman, G.

¹¹ How to Get Beneath the Surface in Focus Groups, Market Navigation, Inc., Silverman, G.

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SECTION G: SAFETY EVALUATION

Safety Evaluation – means an evaluation of a facility’s safety culture, management systems and human factors program to determine strengths, weaknesses and gaps. The evaluation will include an action plan to address the findings of the evaluation.

A third-party safety evaluation may be required because of concerns about the safety at a stationary source pursuant G.1. A third-party safety evaluation allows for an independent review of the programs and system at a stationary source that impacts safety, provides more transparency, allows for more community input, and is an effective tool to improve process safety at a stationary source.

The Industrial Safety Ordinance allows the Hazardous Materials Programs to perform a safety culture assessment after an MCAR¹. The Industrial Safety Ordinance also allows for safety inspection, within 30 days after an MCAR occurs². The safety evaluation includes both of these elements. To assist the Hazardous Materials Programs to perform this evaluation, the Hazardous Materials Programs may elect to hire a third-party to perform the evaluation/assessment.

G.1 CRITERIA TO INITIATE A THIRD-PARTY SAFETY EVALUATION

A third-party safety evaluation may be initiated whenever there is a Major Chemical Accident or Release (MCAR) where there is a fatality, serious injuries, major onsite or offsite damage occurred or at least two MCARs where there is a shelter-in-place or evacuation in one year or four MCARs where there is a shelter-in-place or evacuation over a five year period.

G.2 PROCESS FOR PERFORMING A THIRD-PARTY SAFETY EVALUATION

The Hazardous Materials Programs staff will be responsible for hiring and overseeing the work of a third-party contractor. To assist the Hazardous Materials Programs staff, an oversight committee will be formed. The committee will assist the Hazardous Materials Programs staff in developing the scope of work, the request for proposal, selection of the contractor(s), review the final draft of the evaluation report and provide comments on the report.

G.2.1 OVERSIGHT COMMITTEE MEMBERS

The Oversight Committee members will be made up of the following:

- Up to three local community members
- Stationary Source representative
- Stationary Source employee representative
- City of Richmond staff if the stationary source is located in Richmond
- Hazardous Materials Staff (Chair)

If a vacancy occurs on the Oversight Committee a replacement will follow the same method.

G.2.1.1 COMMUNITY MEMBERS

The community members should include a Hazardous Materials Commission representative, an active member of the stationary source's Community Advisory Panel, or other members of the local community.

The Hazardous Materials Programs staff will be responsible for selecting the community members. The Hazardous Materials Programs staff will consult with the County Supervisor that represents the area where the stationary source is located, the City of Richmond if the MCAR occurs in Richmond, the stationary source, and the Hazardous Materials Commission.

G.2.1.2 COMPANY REPRESENTATIVE

Company representative will be selected by the stationary source.

G.2.1.3 EMPLOYEE REPRESENTATIVE

Employee representative, will be selected by the collective bargaining unit representatives for those that have a collective bargaining unit. If the stationary source does not have a Collective Bargaining Agreement, the representative will be an hourly member of the Health and Safety Committee.

G.2.1.4 HAZARDOUS MATERIALS PROGRAMS REPRESENTATIVE

The Chief Environmental Health and Hazardous Materials Officer or the Hazardous Materials Director will select the Hazardous Materials Programs staff representative.

G.2.1.2.5 CITY OF RICHMOND REPRESENTATIVE

A representative from the City of Richmond will be selected by the City Manager or their designee.

G.2.2 OVERSIGHT COMMITTEE RESPONSIBILITIES

The primary responsibility of the Oversight Committee is to assist the Hazardous Materials Programs' staff in assuring that the safety evaluation is open, transparent, and that the end product will make a difference in the process safety of the stationary source that is being evaluated. Specifically the oversight committee will assist the Hazardous Materials Programs in developing a scope of work, selecting the contractor or contractors, receive and comment on periodic updates from the contractor, and review and comment on the final draft of the safety evaluation report.

G.2.3 REQUEST FOR PROPOSAL

The request for proposal will include the scope of work and a timeline to complete each portion of the work.

G.2.4 SCOPE OF WORK

The scope of work may include a safety culture assessment, review of the management systems, and how human factors are applied at the stationary source. The scope of work will include public interaction, the draft and final report makeup, and overseeing the stationary source's development of an action plan to address the recommendations and findings from the report.

G.2.4.1 SAFETY CULTURE ASSESSMENT

Safety culture assessment is to determine the overall process safety culture at the stationary source and should follow the process as laid out pursuant Section F. It may require more than one contractor. This decision may be made after the proposals have been received and reviewed or after the interview of the contractors or two separate requests for proposals may be solicited initially based on the scope of work. The Hazardous Materials Programs' staff will work with the Oversight Committee in making this decision.

G.2.4.2 MANAGEMENT SYSTEMS

How well a stationary source manages process safety makes a difference on the prevention of accidents. Management systems evaluation will include the following:

- A review on how process safety is performed by every level of management at the stationary source,
- How the leadership is involved and engaged in process safety,
- Process safety communications through the different levels of the organizations
- The role of each employee in process safety, and
- The system, including tools used to achieve continuous improvement.

G.2.4.3 HUMAN FACTORS

Human factors as described in the ISO guidance document Section B play a critical role in the prevention of accidents. An overall assessment of how the stationary source addresses human factors in the writing of procedures, the layout of equipment and piping, the interface of the control systems and the operator, alarm management, communication tools, and other possible areas of human and equipment interface.

G.2.4.4 PUBLIC INTERACTION

The public plays a critical role in the overall transparency of the evaluation. The scope of work will state the specific areas of interaction with the Oversight Committee that includes the following:

- Updates to the Oversight Committee,
- At least one public meeting to present the draft of the final report,
- Addressing the public comments by the contractor in the final report,
- Presentation by the contractor of the proposed final report to the County's Board of Supervisors and if the stationary source is located in Richmond to the Richmond City Council for acceptance, and
- Publishing of the final report by the Department.

G.2.4.5 FINAL REPORT

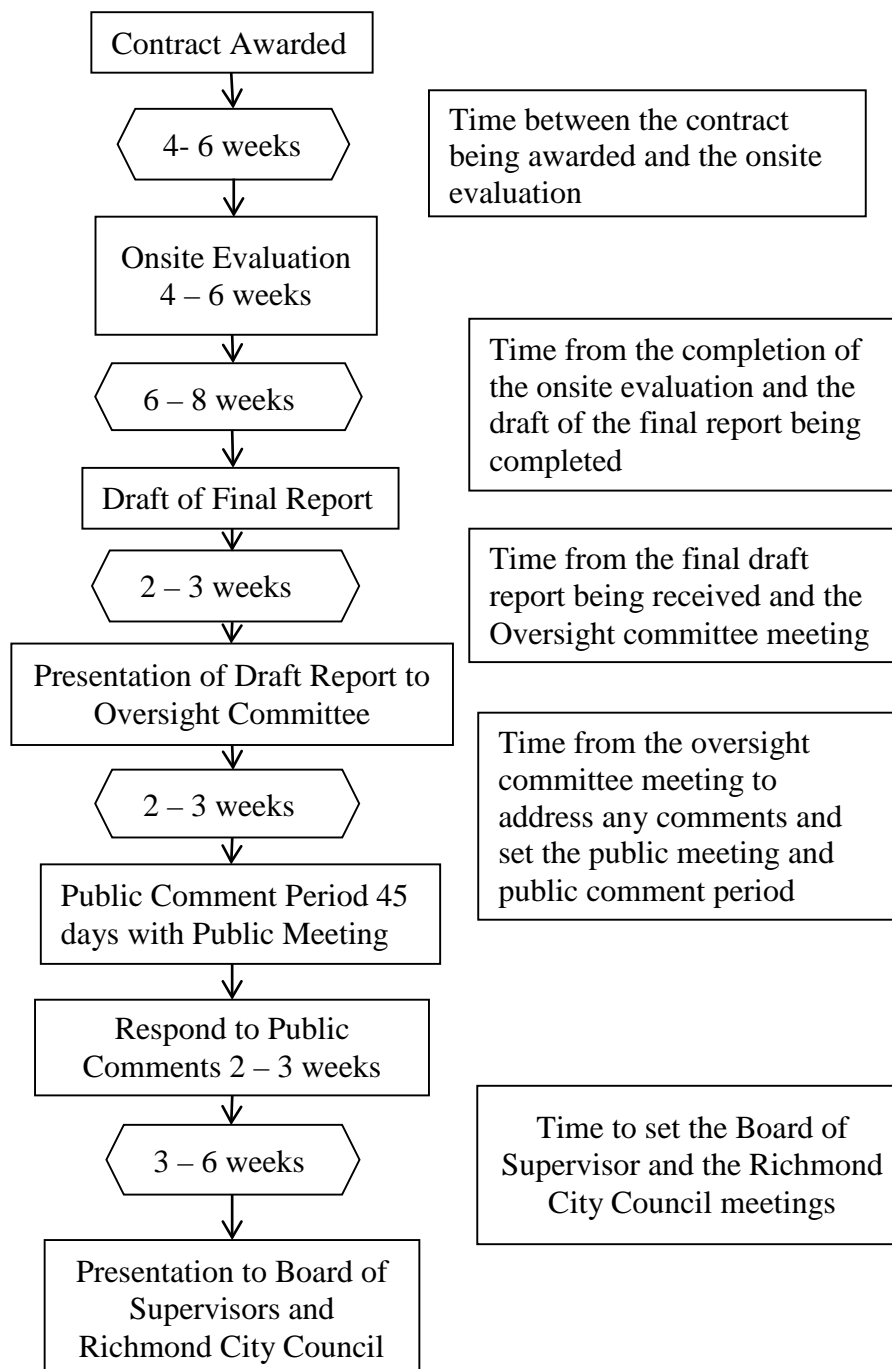
The final report will describe how the evaluation was performed, the findings of the evaluation, and recommendations to address any findings. The final report will also include the comments that were received from the public and the response by the contractor to address these comments.

G.2.4.6 ACTION PLAN

The contractor will work with the stationary source in developing an action plan that will address the findings of the report that will consider the recommendations from the contractor. The action plan will include the actions that will be taken and the schedule to complete these actions.

G.2.5 TIMELINE

The proposal will include a timeline to complete the safety evaluation. Below are the expected steps to complete the project with times for each step.



G.2.6 THIRD-PARTY CONTRACTOR SELECTION CRITERIA

This subsection will discuss the criteria that will be used to send proposals for and selecting the third-party contractor or contractors. When the proposals have been submitted for consideration, the third-party contractor selection will be done by the Hazardous Materials Programs staff working with the Oversight Committee. The Oversight Committee will have the opportunity to review all submitted proposals and request interviews with the top three or four contractors based on their proposals. The Oversight Committee will state their preferred contractor to the Hazardous Materials Programs staff for their final selection.

There are a limited number of contractors who have the expertise to perform and that can competently perform this type of evaluation. The Hazardous Material Staff in developing the list of contractors to send the request for proposal, will research the credentials of each contractor before sending the request for proposal.

Following is the criteria that will be used to assist in selecting the third-party contractor:

G.2.6.1 CONTRACTOR EXPERIENCE

The selection process will consider the experience that the contractor and subcontractor have in process safety and performing safety culture assessments, including the team members performing the evaluation and their experience.

G.2.6.2 PREVIOUS WORK PERFORMED

The selection process will include the contractor's work in leading and participating in Process Hazard Analysis, Safeguard Protection Analysis, Incident Investigation, Compliance Audits, Damage Mechanism Reviews, Hierarchy of Control Analysis, Process Safety Culture Analysis, or any other process safety analysis or reviews.

The selection process will include the consideration of process safety work the contractor has performed that is similar to the work in the proposal.

G.2.6.3 SAFETY CULTURE ANALYSIS EXPERIENCE

Any work the contractor has done in safety culture assessments. If the contractor has not had any experience in this field, how they will make sure this work is done appropriately, including if they will have a subcontractor. If they decide to hire a subcontractor, who that subcontractor will be and their experience in performing process safety culture assessments.

G.2.6.4 EXAMPLES OF PREVIOUS WORK AND THE ABILITY TO PERFORM THE WORK

The proposals that are received should include examples of previous work performed by the contractor and their subcontractor. A summary of the pertinent work performed similar to this proposal. This may include reports, papers, books, and anything else that will give the

Oversight Committee and the Hazardous Materials staff the ability to evaluate the experience and assess competency of the contractor. The contractor will submit a protocol on how they would perform the evaluation.

G.2.6.5 EMPLOYER, EMPLOYEE, AND EMPLOYEE REPRESENTATIVE ROLES

The proposal will include the contractor's expectation of the employer, employees, and the employee representative in assisting in the evaluation.

The protocols will have a section that acknowledge employee's rights to have someone present during third-party or the Hazardous Materials interviews, focus groups or other Safety Evaluation activities involving employees. The protocol will allow for the presence of the stationary source escort that will not interfere with the process.

G.2.6.6 Standard That Will be Used to Perform the Evaluation

The proposal will include the standards that the contractor will use in the evaluation. This may include using American Petroleum Institute recommended practices, OSHA requirements, Center for Chemical Process Safety literature or American Chemistry Council guidance. Standards should be appropriate for the stationary source being evaluated.

G.2.6.7 EVALUATION FOR CONFLICT OF INTEREST

Any work in the previous three years that the contractor has performed for the company where the evaluation is occurring will be a criterion that is evaluated. The proposal will request the type of previous work performed for the company in the previous three years. The specific area that will be considered in the selection process is if the contractor has done any work pertaining to safety and more specifically process safety.

G.2.8 PUBLIC INTERACTION

A public process will provide for transparency of the evaluation and the ability for the public to learn and comment on the work. Outside of working with the Oversight Committee, the contractor will present their work at a public meeting, and presentations to the County's Board of Supervisors and the Richmond City Council if the stationary source is located in Richmond.

G.2.8.1 PUBLIC COMMENT PERIOD – PUBLIC MEETING

A public meeting will be held during the 45-day public comment period. The purpose of the meeting is to present the final draft of the report including the work that was performed, the findings and the recommendations, and the plan moving forward; respond to questions; and receive comments from members of the public. A response to each written comment or question that is received during the public comment period along with the comments and questions will be included in the final report.

G.2.8.2 PRESENTATION TO THE BOARD OF SUPERVISORS - RICHMOND CITY COUNCIL

The County's Board of Supervisors and if the stationary source is located in Richmond, the Richmond City Council will be interested in the outcome of the evaluation and will want to understand the findings. When the final report is complete, including the public comments, the contractor will present the report to the County's Board of Supervisor and if appropriate, the Richmond City Council. The presentation should include the process that the contractor used in performing the evaluation, what the contractor found and the recommendations. The presentations should also include what is being done to move the plan forward. The Board and the City Council will decide to accept or not accept the report.

G.2.9 ACTION PLAN

An action plan needs to be developed by the stationary source and reviewed by the contractor to determine if the action plan addresses the findings. The action plan must include a schedule for completion of the actions including milestones to demonstrate progress on the action plan. If the stationary source decides not to implement a specific recommendation but has an action that will address the finding, the contractor shall review to determine if the stationary source's action does address the finding. If the action does not address the finding, then the contractor will work with the stationary source on an appropriate action to take to address the finding.

Contra Costa Hazardous Materials Programs staff will review the final plan and give any comments that they may have to the contractor and the stationary source. The contractor will work with the Hazardous Materials Programs staff to see if any changes should be made in the action plan based on the comments. If there are changes that are appropriate, the Contra Costa Hazardous Materials Programs staff will set up a meeting with the stationary source and contractor to resolve any outstanding issues.

The final action plan will be amended to the final report.

G.3 FOLLOW-UP Action Plan Status

One of the means to determine if the actions being taken to address the recommendations are having the desired outcomes is to perform a follow-up evaluation. It will take time to implement the action plan and then time to see the effect from the actions being taken. A follow-up evaluation, if deemed necessary by the Hazardous Materials Programs staff, should be scheduled at least a year after the action plan is finalized. An alternative means to determine if the actions being taken are having the desired results can be assessed by the Hazardous Materials Programs staff.

G.3.1 TIMING

The follow-up evaluation should occur no sooner than 12 months after action plan is finalized.

G.3.2 SCOPE OF WORK

The scope of work for the follow-up evaluation will be developed by the Hazardous Materials Programs staff with input from the Oversight Committee and will include the following:

G.3.2.1 ACTION PLAN IMPLEMENTATION

Determine if the action plan is implemented as scheduled including meeting the milestones that were developed.

G.3.2.2 RESULTS EVALUATION

Evaluate the results of the actions being taken to determine if the actions are having the desired results in addressing the findings and concerns that were identified during the initial evaluation.

G.3.2.3 FOLLOW-UP ASSESSMENT REPORT

Write a report on their findings that will include the status of the action plan implementation and if the actions that are being taken are having the desired results. Recommendations may be developed to address shortfalls in the implementation of the action plan. Some actions may take more time to determine if the actions are effective.

G.3.3 PRESENTATION TO OVERSIGHT COMMITTEE

The draft follow-up evaluation report will be presented to the Oversight Committee for their comments.

G.3.4 PUBLIC INTERACTION

The public interactions will follow the same process as stated in Section G.2.5.

¹ Section 450-8.016(h) The department may perform its own safety culture assessment after a major chemical accident or release or the occurrence of any incident that could reasonably have led to a major chemical accident or release, or based on department audit results of the stationary source.

² Section 450-8.018(f) The department may, within thirty days of a major chemical accident or release, initiate a safety inspection to review and audit the stationary source's compliance with the provisions of Section 450- 8.016.