Guidance Manual for

EPA Chemical Safety Audit Team Members

Chemical Emergency Preparedness and Prevention Office

Office of Solid Waste and Emergency Response

U.S. Environmental Protection Agency

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1. Introduction

1.1 Purpose of this Manual

The purpose of this Manual is to provide guidance to the U.S. EPA regional offices in implementing the Chemical Safety Audit (CSA) program, which is an outgrowth of the efforts of the Environmental Protection Agency (EPA) under the Chemical Accident Prevention (CAP) program. This document is intended solely as guidance. It does not represent final agency action nor is it ripe for judicial review. This is not intended, nor can it be relied upon, to create any rights enforceable by any party in litigation with the United States. The Agency may change this guidance at any time without public notice.

This Manual, commonly referred to as the "Blue Book," includes a discussion of the following topics:

- Audit authority under CERCLA;
- Roles and responsibilities of audit team members;
- Audit preparation;
- Conducting the audit;
- Audit protocol and report preparation; and
- Audit follow-up activities.

It is recommended that each audit team member have a copy of this Manual to be used in conjunction with the Training Manuals provided at the Chemical Safety Audit Training Course. This Manual contains recommended actions, as well as mandatory procedures that must be followed to ensure the health and safety of program auditors as well as program integrity. All required/mandatory procedures or activities presented in this Manual are identified with the words "**[Required Activity]**" at the end of the sentence in which they are presented. Unless noted as a required activity, the described procedure is considered a recommendation, and the regional office has discretion in its implementation.

1.2 Program Background and Overview

The Chemical Accident Prevention (CAP) program emerged from concerns raised by the release of methyl isocyanate at Bhopal, India, and of aldicarb oxime at Institute, West Virginia. Awareness of the critical threat to public safety posed by similar incidents led to an emphasis on preparedness and planning for response to chemical accidents. Simultaneous with the development of preparedness activities by EPA was the passage and implementation of the Emergency Planning and Community Right-to-Know Act -- Title III of the Superfund Amendments and Reauthorization Act (SARA) in 1986. Because prevention is the most effective form of preparedness, the CAP program promotes the effort to enhance chemical accident prevention activities. The primary objectives of the CAP program are to identify the causes of accidental releases of hazardous substances and the means to prevent them from occurring, to promote

- Build cooperation among facilities, EPA, and other authorized parties by coordinating joint audits; and

- Establish a database for the assembly and distribution of chemical process safety management information obtained from the facility audits.

The chemical safety audit itself consists of interviews with facility personnel and on-site review of various aspects of facility operations related to the prevention of accidental chemical releases. Specific topics addressed include:

- Awareness of chemical and process hazards;

- Process characteristics;

- Emergency planning and preparedness activities;

- Hazard evaluation and release modelling efforts;

- Release detection and monitoring techniques;

- Training of operators and emergency response personnel;

- Facility and corporate management structure;

- Preventive maintenance and inspection programs; and

- Community notification mechanisms and techniques.

Observations and conclusions from the audits are detailed in a report prepared by the audit team. The report identifies and characterizes the strengths and weaknesses of specific chemical accident prevention program areas to allow the elements of particularly effective programs to be recognized, and to share information on problematic practices. Copies of the report are given to the facility and to its corporate management so that weak and strong program areas may be recognized. The audit reports are intended to contribute to the study of emergency systems begun in the Review of Emergency Systems, and in turn, to produce improvements in the ability of the audited facilities -- and industry in general -- to prevent or mitigate releases of hazardous substances and to share this information with the community and other interested groups. In this fashion, the CSA program serves as a vital component of EPA's Chemical Accident Prevention Program. **Attachment 1** contains the Chemical Safety Audit Program Fact Sheet, which summarizes the audit program background, goals, and scope. It can be used as a separate document to inform interested parties about the audit program.

It should be noted that the CSA program is not a compliance or inspection program. The audits are intended to be non-confrontational and positive, so that information on safety practices, techniques, and technologies can be identified and shared

2. Program Authority under CERCLA

2.1 Purpose of the Statute

The Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) was enacted December 11, 1980, and amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986. CERCLA authorizes the federal government to respond where there is a release or a substantial threat of a release into the environment of any hazardous substance, pollutant, or contaminant that may present danger to the public health or welfare or to the environment. **Attachment 2** contains an overview of major CERCLA provisions related to the CSA program. These include CERCLA sections 104(a), 104(b), 104(e), and 106(a). The statutory text is also included, 42 U.S.C.A. sections 9601, 9604, and 9606.

2.2 Facility Entry and Information Gathering Tools

2.2.1 Statutory Authority

CERCLA sections 104(b) and 104(e), as amended by SARA in 1986, provide authorities for entering a facility and accessing information. While CERCLA provides authority for states to use statutory authorities for entry and information gathering, such authorities may only be accessed pursuant to a contract or cooperative agreement with the federal government. Since no state currently has such an arrangement, states, as well as local governments, must use their own authorities for audit participation. **[Required Activity]**

2.2.2 EPA Policy and Practice

When entering pursuant to CERCLA, EPA auditors must ensure that the facility has experienced a release of a hazardous substance, pollutant, or contaminant, or that there is "reason to believe" that there exists a threat of such a release. The audits are intended to be non-confrontational and positive, cooperative efforts, such that information on safety practices, techniques, and technologies can be identified and shared between EPA and the facility. Consequently, and in conformance with other EPA program policies, audits will be performed under the above authority pursuant to the consent of the facility owner or operator. Consensual entry, however, can be revoked at any time during the audit. When withdrawal of consent takes place, the audit team shall leave the facility, regardless of the fact that the team has the authority to be there. **[Required Activity]** In either situation (i.e., entry refusal prior to audit or during audit), if consent is lacking, an order can be issued to require entry. Section 4.2 of this Manual provides guidance on obtaining entry upon consent and actions to be taken if the facility refuses entry.

- Specific reason why withheld; and

- Name of facility attorney, address, and telephone number.

If a request for information during the course of the audit is refused, the audit should continue unless the absence of the requested document(s) makes it impossible to do so. The Office of Regional Counsel should be consulted of the refusal after the site visit and requested to pursue the matter as necessary.

2.3 Response Actions if a Release or a Threat of a Release Exists

During an audit, the team may observe a release or the potential for a release of a CERCLA hazardous substance from a facility into the environment.

If a release is observed, the team members must take the following actions: **[Required Activity]**

- Follow facility emergency evacuation procedures to safety; and

- Regroup; the Team Leader must notify the Regional Emergency Response Section to inform the on-duty On-Scene Coordinator (OSC) of events occurring at the facility. This action is not intended to serve as the facility's notification under any statute or regulation.

If the threat of a release is observed, the Team Leader must take the following actions: **[Required Activity]**

- Regroup, if necessary with the entire audit team at the facility management office;

- Inform the facility owner/operator of the observed situation; and

- If the facility owner/operator fails to take appropriate actions to mitigate the potential threat of release, the Team Leader must notify the Regional Emergency Response Section to apprise the OSC of events occurring at the facility.

In both of the above situations, notification to the Regional Emergency Response Section must be made regardless of whether the Team Leader or members of the audit team are OSCs. The communication with the region will determine the scope of the response action to be taken to mitigate the release or threat of release.

At this point, the audit must not continue until the release or threat of release has been mitigated, as determined by the OSC. The OSC and/or Remedial Project Manager (RPM) shall have the authority vested in them by the National Contingency Plan, 40

During the conduct of a chemical safety audit that is not coupled with an enforcement inspection as presented above, program violations may be observed. These violations should be referred to the respective program office or federal agency/department for determination of what actions are to be taken following the audit.

2.5 Relationship Between CERCLA and SARA Title III

The CSA program is being conducted under CERCLA authority. While the idea of the CSA program originated from the activities undertaken to prepare the section 305(b) study mandated by Congress under SARA Title III (see the introduction to this Manual), and from similar audits conducted following catastrophic releases, there is no statutory link between the CSA program and the SARA Title III program.

The CERCLA and SARA Title III programs, however, have similar release notification provisions. A release or spill of a chemical above a certain threshold amount (the chemical's designated "reportable quantity" or "RQ") will often require two separate notifications: if the chemical is a CERCLA "hazardous substance," the National Response Center (NRC) must be notified under CERCLA section 103(a), and, if the chemical is a CERCLA hazardous substance and/or an "extremely hazardous substance" (EHS) under SARA Title III, the emergency coordinator of the local emergency planning committee(s) (LEPC) and the state emergency response commission(s) (SERC) likely to be affected by the release must be notified under SARA Title III section 304(a). CERCLA hazardous substances are listed at 40 CFR Part 302; EHSs under SARA Title III are listed at 40 CFR Part 355.

Although the two lists overlap considerably, they are not identical; approximately 138 EHSs are also CERCLA hazardous substances. It should be noted that all EHSs are proposed to be designated as CERCLA hazardous substances. In situations where the release is above the RQ of a chemical that is listed both as an EHS under SARA Title III and as a hazardous substance under CERCLA, notifications under both authorities must be given by the facility; this is because each notification is a separate requirement, and the contents and recipients of the notifications differ.

In addition, similar goals are shared by both the CSA program and the SARA Title III program. These include the following:

- Increased level of preparedness for responding to accidental releases of chemicals both at a facility and in a community;
- Increased awareness and understanding of chemical hazards; and
- Increased levels of safety practices related to producing, treating, handling, disposing, and transporting of hazardous substances at a facility.

3. Role of Audit Team Members

3.1 Audit Team Composition

An EPA audit team consists primarily of EPA employees, and other designated representatives, including contractors and the American Association of Retired Persons (AARP) enrollees. The participation of other federal, state, and local government personnel, particularly SERC and LEPC representatives, is encouraged, but they should be made aware that they will be entering and accessing information from a facility under their own authorities. Section 3.3 of this Manual further discusses the participation of non-EPA audit team personnel.

The audit team can vary in size, depending upon the level of detail of the audit (e.g., number of chemicals and/or processes under investigation; national significance). At a minimum, however, there must be two technical experts on a team for collection and verification of technical findings and observations. **[Required Activity]**

The following list represents suggested roles, responsibilities, associated disciplinary backgrounds, and other parameters for composing a team. This list is provided as guidance and in no way is a required format for forming an audit team. In many cases, your team composition may require you to combine or divide roles.

Team Leader

- Must be EPA employee; **[Required Activity]**
- Coordinates audit logistics, makes team assignments, coordinates initial liaison with facility personnel, and coordinates preparation and distribution of final site visit report; and
- Provides any needed follow-up information.

Deputy Team Leader

- Must be EPA employee or designated representative; **[Required Activity]**
- Provides logistical support, as directed by Team Leader; and
- Assumes other responsibilities delegated by Team Leader.

Chemical Process Hazards Reviewer

- Must be EPA employee or designated representative;
- Responsible for collection and verification of process-related information;

- Industrial hygiene,
- Geology, and
- Environmental and emergency management and planning.

Personnel with the appropriate expertise can be found in the following regional program offices: media (e.g., air, water, radiation); RCRA; TSCA; Superfund (e.g., emergency preparedness and response, removal, health, and safety); and Research and Development.

In selecting team members, the skill base of the team must accommodate the need for coverage of the major audit elements:

- Process and safety system technologies;
- Operating procedures;
- Training programs;
- Emergency planning activities; and
- Management activities.

Specific tasks should be assigned to each team member. Each member should know his/her respective role in all facets of the facility audit. Certain members may be assigned the lead on one or more facets of the audit, and the other team members, because of their individual skills and experiences, should be prepared to contribute to the completion of that facet of the audit.

In summary, an EPA audit team can consist of EPA employees, EPA contractors (e.g., Technical Assistance Team), AARP enrollees, and representatives from federal, state, and local governments. Two basic restrictions apply to the "team;" one, the Team Leader must be an EPA employee, and two, the Chemical Process Hazards Reviewer must be an EPA employee or designated representative (i.e., EPA employee, contractor, or AARP enrollee). **[Required Activity]** This last restriction is required to ensure continuity in communicating the audit scope and intent.

The following provides an overview of the anticipated roles and responsibilities for EPA employees, contractors/TAT personnel, and AARP enrollees:

- EPA employees coordinate audit program and lead the audit team.

- Contractors/TAT personnel provide technical support as defined by EPA.

- AARP enrollees:

  -- Provide support role in audits;

  -- Apply professional expertise and experience in chemical engineering or other technical or industrial fields for reviewing process safety technologies at facilities;

- Training in occupational health and safety procedures under EPA Order 1440.2. Attending a 24-hour or 40-hour health and safety course that is approved and sponsored by EPA and conducted by EPA or its contracted agents fulfills the requirement of this Order; **[Required Activity]** and

- EPA Chemical Safety Audit Training Course. (Course attendance *flexibility is discussed below.)*

In addition to the listed training, annual medical monitoring is required. **[Required Activity]**

In some audits, a specialized technical expert (i.e., contractor or other EPA program personnel) who normally does not participate in CSA program activities will assist in conducting the audit. Under these circumstances, it will be difficult for such an individual to have taken the EPA CSA course. Consequently, the requirement for the CSA course is flexible depending upon the situation. The health and safety training requirements and medical monitoring, however, are not flexible. **[Required Activity]** This requirement should not pose any problems, since it would be rare for a technically qualified contractor or EPA employee not to have had this training.

Suggested topics for additional, but not required, training include:

- Handling of confidential business information;

- Interviewing techniques;

- Hazard evaluation techniques;

- Chemical processing techniques;

- Negotiating techniques; and

- Technical writing.

3.3 Non-EPA Personnel Participation on Audit Team

Non-EPA team members may include representatives of other federal agencies and departments, states/SERCs, local officials/LEPCs, and any other group not previously identified as an EPA team member. The regions are encouraged to invite participation by non-EPA personnel in audits, but entry into the facility must be authorized pursuant to authorities other than CERCLA. Participation of non-EPA personnel must be in a support role as defined by the Team Leader. In addition, non-EPA personnel cannot serve in the capacity of Team Leader or Chemical Process Hazards Reviewer. **[Required Activity]**

3.4.3 Technical Assistance Team Contractors

The Federal Employees Liability Reform and Tort Compensation Act of 1988 only covers TAT contractors when responding to a CERCLA hazardous substance release or performing a clean-up/removal related to such release. Audit activities for TAT contractors are not covered under this Act, since the contractor is not specifically handling hazardous substances, pollutants, or contaminants. TAT contractors must investigate liability coverage with their respective employer.

3.4.4 Federal, State/SERC, and Local/LEPC Government Personnel

All non-EPA personnel will be entering a facility under their own authorities and would require their own liability coverage.

3.5 Conflict of Interest

Conflict of interest refers to any person (i.e., EPA employee, contractor, AARP enrollee, non-EPA personnel) who has a financial interest associated with the facility being audited, has been previously employed with the facility, or a facility subsidiary, and/or has been a consultant for the facility. Persons with conflict of interest should not participate in any activities, either on-site or off-site, associated with the facility audit. **[Required Activity]** In addition, such persons must identify themselves to the Team Leader and excuse themselves from the audit of that facility. **[Required Activity]**

4. Preparing for the Audit

4.1 Facility Selection

At present, there are no established procedures for selecting a facility for an audit. Each region has flexibility in identifying facilities. A variety of options useful to identifying a facility are discussed below. Although there is substantial flexibility in facility selection, there are two important requirements:

- A release of a CERCLA hazardous substance, pollutant, or contaminant must have occurred, or there must be "reason to believe" that a threat of such a release exists at the facility; **[Required Activity]** and

- The Office of Regional Counsel and the SERC of the state where the audited facility is located must be consulted to identify any legal actions currently being pursued or anticipated. **[Required Activity]** It is advised that regional media programs also be consulted.

The following list provides a variety of options to consider when selecting a facility. Information sources to be used in evaluating these options include federal, state, and local release notification reports and follow-up reports, OSC reports, Regional Response Centers, ARIP, ERNS, and other sources (see **Attachment 4** and chart in section 4.3).

- Previous release history of the facility;

- SERC and/or LEPC referral;

- Proximity to sensitive population(s);

- Public sensitivity;

- Opportunity for sharing new technology;

- Population density; and

- Concentration of industry in the area.

In addition, the region may wish to select facilities for a chemical safety audit as part of a larger regional initiative, such as an evaluation of facilities using a specific chemical or located near a particularly sensitive environment. For example, during fiscal year 1992 a number of facilities that produce and use hydrogen fluoride were examined by audit teams nationally, while Region 5 conducted all of its audits in coordination with its Great Lakes Basin pollution prevention initiative.

4.3 Facility Background Information

Preliminary preparation is an important factor in conducting an organized audit. The team may find it useful to collect the facility background information several weeks in advance of the audit. This will require contact with the facility and state and local officials to arrange delivery of these materials. The audit team can then review this information and become more familiar with the facility prior to the audit. Using this technique, the team will be able to prepare a detailed list of topics and questions to help organize their activities during the facility visit. The following list is a sampling of the types and sources of information that will assist a team in preparing for the audit:

Type of Information	Sources of Information
Release History	OSC reports; ARIP questionnaires; ERNS; SARA Title III sections 304 and 305(b) reports; state release files
Regulatory History	Local, state, and federal air, water, and waste permits; SARA Title III sections 302, 304, 311, 312, and 313 submissions
Hazardous Chemicals (Hazards, Amounts, and Locations)	SARA Title III sections 311 and 312 submissions; OSHA hazard communication and process safety management standard documents; hazards analysis; NIOSH Pocket Guide to Chemical Hazards
Chemical Processes	Industry standards and processing techniques from trade and professional groups (e.g., AIChE, ASSE, and the Chlorine Institute); process flow diagrams and piping and instrumentation diagrams
Community Involvement	CAER; LEPC; and SERC

The "Audit Protocol/Report Preparation Guidance" as presented in section 6.0 of this Manual provides further detail on the types of information that may be requested from the facility prior to conducting the audit. **Attachment 4** contains further information on these listed sources.

4.4 Preparing for the Site Visit

Prior to conducting the on-site audit, a pre-visit meeting should be conducted with the entire audit team, including any non-EPA personnel who will be visiting the facility. This meeting should be held as close to the date of the site visit as possible to keep the important points being emphasized fresh in everyone's mind. By this time, the audit team should already be operating as a unit; all team members should be familiar with the audit protocol, the information previously collected by the team should have been

5. Conducting the Audit

The on-site chemical safety audit will consist of the following four phases:

- Entry;
- Opening Meeting;
- On-site Activities; and
- Exit Briefing.

5.1 Entry

The audit team should arrive at the facility during normal working hours at a time and date pre-determined with the facility. At the facility entrance office, the facility may provide a blank sign-in sheet, log, or visitor register. It is acceptable for the audit team members to sign it. EPA employees and authorized representatives, however, must not sign any type of "waiver" or "visitor release" which would relieve the facility of responsibility for injury, or which would limit the rights of the Agency to use the data obtained from the facility. **[Required Activity]** When such a waiver or release is presented, the Team Leader should politely explain that such a document cannot be signed, and a blank sign-in sheet should be requested. If the team is refused entry because they do not sign such a release, the Team Leader must report all pertinent facts to the ORC, and leave the facility if the matter cannot be resolved. **[Required Activity]** All events surrounding the refused entry must be fully documented including the name of the person(s) refusing entry. **[Required Activity]** Procedures described in section 4.2 of this Manual concerning refusal of entry must then be followed. **[Required Activity]**

5.2 Opening Meeting

The entire audit team will meet with the plant manager and his/her key staff, and will likely discuss the entire audit. The staff of the plant manager could include superintendents of safety and operations, a lawyer, and corporate representation. The team should be very clear about its purpose and should be prepared to discuss the audit starting with an explanation of the CSA program, facility selection, the audit purpose and scope, the background research performed, the specific objectives for the site visit, and the report that will be written.

During the meeting, the audit team should outline its specific on-site agenda and the cooperation needed to accomplish that agenda. In addition, the meeting provides a good opportunity for the facility to provide the audit team with an overview of its

6. Audit Protocol/Report Preparation Guidance

6.1 Purpose and Structure

This protocol/report preparation guidance (see **Exhibits 1 and 2**) provides a detailed topic outline to direct the scope and content of the audit and a structure for preparation of the audit report. The protocol and report format have been integrated to accomplish the following goals:

- Provide detailed guidance on the types of information that should be reviewed during the audit and discussed in the report;
- Ensure continuity in report preparation; and
- Provide an organized and detailed report format for easy access to specific lessons learned on chemical process safety management practices.

Because of the scope of the audit or the resources and expertise of the audit team, it may not need, or be able, to address all areas of the protocol. However, all areas of the protocol should be addressed in the audit report (e.g., state that the audit team did not review the facility's hazard evaluation and modeling capabilities).

By providing this Manual to facility personnel prior to conducting the audit, the facility will also have a more thorough understanding of the audit scope and intent. The facility can prepare for the audit by assembling information and identifying personnel with the required expertise to assist the audit team.

This guidance is structured to address each of the major elements of chemical process safety management at the facility being audited. These include:

- Facility Background Information;
- Chemical Hazards;
- Process Hazard Information;
- Chemical Accident Prevention;
- Accidental Release/Incident Investigation;
- Facility Emergency Preparedness and Planning Activities;
- Community Emergency Planning and Response Activities; and
- Public Alert and Notification Procedures.

Preceding each of these sections in the annotated protocol/report guidance (**Exhibit 2**) is a brief overview of the purpose of this section with respect to the audit scope.

Exhibit 2

Annotated Protocol/Report Preparation Guidance

STANDARD DISCLAIMER (see **Attachment 7**)

1.0 INTRODUCTION

- Purpose and scope of the audit program (**Attachment 8** contains standard language to describe the purpose and scope of the program); and
- Paragraphs identifying facility name and location and why audited

2.0 SUMMARY OF FINDINGS/CONCLUSIONS

- Briefly summarize audit findings (both positive and negative)

3.0 BACKGROUND

3.1 GENERAL FACILITY AND AUDIT INFORMATION

- Facility name, location, principal activities;
- Dates audit conducted; and
- Listing of team members and their affiliation, areas of responsibility, and expertise.

3.2 PURPOSE OF THE AUDIT AND FACILITY SELECTION PROCESS

- Briefly explain why facility was selected. Audit could be conducted for a number of reasons such as:
  - To follow up on an accidental release or series of releases (include description of triggering incident);
  - To focus on particular technologies, processes, operations, or chemicals;
  - Regional or headquarters initiatives;
  - At request of state and/or local officials; or
  - At facility invitation.

4.1.5 Regional Demographics

- Economy, population, industrial and growth patterns

4.1.6 Identification of Vulnerable Zones

5.0 CHEMICAL HAZARDS

This section serves to not only focus briefly on the hazards associated with particular substances, but to provide pertinent facts on the facility's understanding of what are the chemical hazards for each substance.

5.1 OVERVIEW OF HAZARDS FOR CHEMICAL(S) BEING AUDITED

- Brief description of hazards; and
- Reference detailed information in appendix (i.e., MSDS, etc.) -- do not rewrite MSDS information.

5.2 FACILITY MANAGEMENT OF CHEMICAL HAZARD DATA

- What the facility recognizes as the hazards associated with the chemical(s);
- Documentation available on hazards associated with chemical(s) (e.g., MSDS, corrosion rates, reactivity data, etc.);
- Availability of such data to employees (e.g., OSHA Hazard Communication Standard training);
- Mechanism for reviewing and updating information;
- Mechanism for documenting suspected acute and chronic toxic effects (e.g., medical and industrial hygiene personnel); and
- On-site availability of emergency medical care.

6.0 PROCESS INFORMATION FOR HAZARDOUS CHEMICALS

A review of facility operations associated with the processing of the chemical(s) being examined can reveal facility practices and techniques for handling process hazards, as well as reveal facility understanding of the process hazards. (Within each subsection, the report should address every chemical and process examined during the audit for which observations, conclusions, and/or recommendations were noted.)

- Consequences of deviation: what happens to chemicals spilled, leaked, vented, etc.

6.2.2 General Description of Process Equipment

- Capacity and design conditions;
- Construction material;
- Flow rates;
- Parameters monitored, controlled, and recorded (at equipment or in control room);
- Production or use rates for chemical; and
- Comparison of design limits and operating parameters.

Note: **Attachment 9** contains further guidance on reviewing process operations.

6.2.3 Back-ups and Redundancy

- List systems with back-ups or automatic shutdowns;
- Description of back-ups and how and why used;
- Availability of back-up power systems;
- Method of detecting inoperative control equipment and availability of back-ups; and
- For facility with scrubbers or flares, their capacity for handling accidental releases.

6.2.4 Process Parameter Monitoring

- Description of process parameters for operations and processes and why used;
- Performance history at facility;
- Monitoring and recording procedures; and
- Procedures for addressing unsafe parameter levels.

6.2.5 Environmental Monitoring

- Description of system(s) used to monitor hazardous chemical levels within work areas and in the surrounding environment (e.g., types, location, etc.);
- Connection to alarm and communication systems; and
- Performance history at facility.

7.2 PROCESS OPERATION AND MAINTENANCE

7.2.1 Standard Operating Procedures

- SOP manuals available (e.g., operating procedures manual, supervisory operating manual, safety manual, accident and fire prevention manual);
- How procedures/manuals reviewed and approved;
- Listing of personnel roles and responsibilities;
- Applicability of manuals to tasks conducted during normal and emergency situations;
- Other process guides: operating logs, shift turnover procedures, overtime procedures, call out procedures during emergencies, reporting procedures for unusual circumstances or process deviations;
- Experimental operating conditions for process changes, and management of change; and
- Startup, shutdown, and routine operation checklists.

Note: **Attachment 10** contains a summary of the types of documentation and other materials that the audit team may want to review for more information on facility SOPs.

7.2.2 Training Practices

- Types of training available for operations and maintenance personnel;
- Methods and frequency of training;
- Who performs training and qualifications;
- Frequency and procedures for revising training;
- Refresher courses and retraining;
- Upset simulations and drills;
- Use of process simulators;
- Job duty qualifications/prerequisites;
- Types and frequency of job qualification evaluations (e.g., performance reviews, tests);
- Employee turnover rate; and
- Master qualification list.

7.2.3 Equipment Maintenance Procedures

- Work order systems;
- Maintenance and testing scheduling;
- Preventive and predictive maintenance;
- Equipment history records;
- System for spare parts control;
- Level of training;

7.3.2 Modeling

- Uses and types of models for tracking releases into air, surface water, and groundwater;
- Processes, chemicals, and operations to which models have been applied;
- Goals of modeling activities (e.g. support for emergency planning and emergency response);
- Assumptions built in to the models (both by user and developer) and facility perceptions of strengths and limitations (e.g. dense gas releases, terrain effects, single-phase versus multi-phase modeling capability);
- Parameters covered by surface and groundwater models (e.g. degradation, photolysis, volatization, geochemical processes, local hydrology, adsorption, desorption);
- Validate model against experimental measurements; and
- Use during incidents and the results (e.g., improvements in emergency response or planning).

7.4 Release Prevention Systems

- Facility activities related to preventing a release

  -- Description of type(s) of systems in place;
  -- Why used;
  -- Performance history at facility;
  -- Testing and inspections; and
  -- Modifications performed.

Examples of activities to prevent chemical releases:

- Improvements in process and equipment design;
- Reduction of inventories;
- Changes in siting of particular equipment;
- Increased training and safety reviews;
- Improved process controls;
- Installation of interlocks; and
- Failsafe design.

7.5 MITIGATION SYSTEMS

- Description of type(s) of system(s) in place;

- Why used;

9.0 FACILITY EMERGENCY PREPAREDNESS AND PLANNING ACTIVITIES

Emergency activities in preparing for and responding to accidental releases illustrate facility knowledge, dedication, and practices for mitigating incidents.

9.1 Facility Emergency Response Plan

- Type and coverage of facility response plans (e.g., OSHA emergency action plan, SPCC plan, corporate plan);
- Update schedule and procedures (i.e., how often revised and by whom); and
- Key procedural areas covered (e.g., release notification, evacuation, response and mitigation activities).

9.2 Emergency Response Exercises and Simulations

- Types, frequency, and groups involved; and
- Uses of findings.

9.3 Fire, Evacuation, and Rescue Corridors

- Procedures for conducting evacuations;
- Condition and accessibility of fire and rescue corridors; and
- Detail and location of facility and community maps (Maps should be referenced in appendix.).

9.4 Emergency Equipment Provisions

- Types;
- Locations;
- Inspection and maintenance policies, including testing; and
- Sources of equipment (off-site versus on-site).

9.5 Emergency Response Chain of Authority

- Chain of command (e.g., designation of control during an emergency); and

- Outreach activities, scholarship programs, open houses, joint training, education, etc.

10.2 Local/Community Emergency Response Planning

- Community plan status;
- Coordination between facility and community in plan preparation and exercise;
- Coordination with hospitals and emergency medical services on treatment of chemical exposure victims;
- Coordination with community response structures and procedures; and
- Mutual aid efforts and facility involvement in non-facility-related community responses.

11.0 PUBLIC ALERT AND NOTIFICATION PROCEDURES

Public alert and notification procedures identify unique procedures and facility commitment to safety for the community.

11.1 Procedures for Public Notification of Releases

- Alarm systems (e.g. sirens, air horns, whistles);
- Communication networks (e.g., radio, television, phone); and
- Back-up systems.

11.2 Schedule for Testing Procedures

- Frequency of tests; and
- Number and type of individuals notified.

11.3 History of Notification Procedures and Evaluation

- Type of incident;
- Timeliness of public notification; and

- Sample facility memoranda, guidelines, SOPs, policy statements;
- Correspondence between the facility and the regional office; and
- Graphics such as photographs, maps, charts.

All materials should be labeled with the:

- Name of the facility;
- Date of the audit; and
- Other necessary identifying information.

have one common element of presentation style -- information is factual, relevant, complete, objective, and clear. The entire report, including the *Conclusions* and *Recommendations* sections, should be presented in a factual manner and refrain from judgments of adequacy or inadequacy.

The *Conclusions* section should highlight facility safety practices observed during the audit, identifying unique facility practices that should be shared as well as areas for improvement. This summary should reflect the facility's understanding of, and commitment to, chemical process safety management, and should refrain from judgments of adequacy or inadequacy. As an example of how to present conclusions, consider the following pair of statements:

> **Incorrect.** "The facility has adequate procedures to investigate and respond to the cause(s) of accidental chemical releases."
>
> **Correct.** "The facility prepares follow-up reports for accidental releases of hazardous chemicals that occur both on- and off-site. The report addresses the cause of the incident, recommended actions to prevent the release from reoccurring, and a schedule and list of responsible individuals for implementing these actions." [If the facility uses a form for this practice, it could be referenced in an appendix.]

The first statement does not provide any information on the facility's follow-up procedures; in addition, a judgement is made on the procedures, which may or may not be valid. The latter illustrates procedures that the facility takes following an accidental release of hazardous chemicals both on- and off-site. Its style of presentation is factual and provides clear information on what the facility does without commenting on the adequacy or inadequacy of the procedures.

The *Recommendations* section should provide clearly stated suggestions and include the factual basis for each recommendation. The recommendations should be both practically and technologically feasible for the audited facility -- they are neither mandatory nor required, and are simply being presented for consideration by the audit team to the facility to enhance its chemical process safety management. As an example of how to present recommendations, consider the following pair of statements:

> **Incorrect.** "The facility should implement a preventive maintenance program."
>
> **Correct.** "The facility should evaluate the appropriateness of its use of the periodic maintenance system for maintaining pressure relief valves. This evaluation could include, among other aspects, a review of alternative schemes, such as preventive maintenance and predictive maintenance."

The first statement does not provide any information on the facility's existing maintenance program and it does not specify the particular application for the recommended preventive maintenance. The latter clearly describes the current status of

6.3 Review and Finalization Procedures

In preparing the final audit report, there are two considerations to keep in mind:

- Access of draft report information through the Freedom of Information Act (FOIA); and
- Report inclusion of facility confidential information.

6.3.1 Access of Draft Information

In order to ensure that draft report information is not available to the public through FOIA prior to report finalization, the EPA regional office can designate an EPA official (e.g., Section, Division, or Branch Chief) to approve the report as "final." This procedure is not mandatory, but highly recommended, since this process is cited under the Deliberate Process Privilege Section, exemption 5 of FOIA [5 USC 552(b)5].

Additional actions can be taken to prevent draft information from being accessible under FOIA. For example, all draft materials can be stamped "DRAFT." Draft materials can include the following citation at the bottom of each page or on a cover sheet:

"Pre-decisional Document, Not Disclosable Under FOIA"
" - Do Not Cite or Quote - "

Please note that these actions do not have legislative or regulatory authority, as compared to the finalization process described above.

6.3.2 Facility Confidential Information

Another suggested activity during the report finalization process is submission of the draft report to the facility to identify any confidential information. The facility should be contacted to establish a deadline (e.g., two weeks) to avoid lengthy delays. Any information identified as confidential should be treated as such. Comments on the report that are provided by the facility can, but do not have to be taken into consideration as the report is finalized.

6.4 Report Distribution

When the audit report is final, standard distribution by the Regional Chemical Emergency Preparedness and Prevention (CEPP) Coordinator is required to the following groups and organizations: **[Required Activity]**

- SERC and LEPC in which the facility is located;

visit, and organizing the collected information during report writing. The specific information that should be included in the CSA report profile is described in the annotated profile in **Attachment 12.** A hardcopy and an electronic version of the profile should accompany the audit report when it is submitted to EPA headquarters to facilitate entering the profile information into the database.