Model Safety Program

DATE: ____________


REGULATORY STATUTE: OSHA - 29 CFR 1910.119

RESPONSIBILITY: The company Safety Officer is ________________. He/she is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The Safety Officer is the sole person authorized to amend these instructions and is authorized to halt any operation of the company where there is danger of serious personal injury. This policy includes respiratory hazards.
Contents of the (YOUR COMPANY) Process Safety Program

1. Written Program.
2. General.
3. Facility Planning Requirements.
4. Employee Involvement.
6. Incident Investigation.
7. Process Safety Information.
11. Employee Training.
12. Use of Contractors.
13. Pre-Startup Safety Review.
14. Mechanical Integrity.
17. Managing Change.
1. **Written program.** (YOUR COMPANY) will review and evaluate this standard practice instruction on an annual basis, or when facility operational changes occur that require revision. Effective implementation of this program requires support from all levels of management within this company. This written program will be communicated to all personnel that are affected by it. It encompasses the total workplace, regardless of number of workers employed or the number of work shifts. It is designed to establish clear goals, and objectives.

2. **General.** Process safety management is the proactive identification, evaluation and mitigation or prevention of chemical releases that could occur as a result of failures in process, procedures or equipment. The major objective of process safety management of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations which could expose our employees and or community to serious hazards.

   2.1 This program will use a systematic approach to evaluating the whole process. Each process will be evaluated as a separate entity. The various lines of defense that have been incorporated into the design and operation of the process to prevent or mitigate the release of hazardous chemicals will be evaluated and strengthened where required to assure their effectiveness at each level. The following elements will be used in the evaluation process.

   2.1.1 Process design.

   2.1.2 Process technology.

   2.1.3 Operational and maintenance activities/procedures.

   2.1.4 Nonroutine tasks, activities and procedures.

   2.1.5 Emergency preparedness plans and procedures.

   2.1.6 Training programs.

   2.1.7 Other elements which impact the process.

3. **Facility planning requirements.** Proper planning for emergencies is necessary to minimize employee injury and property damage. The effectiveness of response during emergencies depends on the amount of planning and training performed. Management must show its support of plant safety programs and the importance of emergency planning. If management is not interested in employee protection and minimizing property loss, little can be done to promote a safe workplace. It is therefore management's responsibility within this company to see that this program is instituted and that it is frequently reviewed and updated. The input and support of all employees must be obtained to ensure an effective program. The emergency response plans required by this company will be developed locally and will be comprehensive enough to deal with all known types of emergencies.
4. **Employee Involvement in Process Safety Management.** Section 304 of the Clean Air Act Amendments states that employers are to consult with their employees and their representatives regarding the employers efforts in the development and implementation of the process safety management program. Section 304 also requires us to train and educate our employees and to inform affected employees of the findings from incident investigations conducted under the process safety management program. It is our company policy that not only will we consult with our employees regarding efforts to develop and implement process safety management programs, but that we will, where ever possible, integrally involve our employees in the entire process. This is essential because employees of this company comprise the best determination of process safety procedures, and solutions to process safety problems peculiar to our business. This will be accomplished through a "Process Safety Committee." This committee will be responsible for developing process safety policy and procedures.

5. **Process Safety Committee.**

5.1 Composition. The company process safety committee will be comprised of members of management/supervision and hourly personnel. The make up of the committee will consist of the following:

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<tr>
<th>Title</th>
<th>Member</th>
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<tbody>
<tr>
<td>Chairman</td>
<td>President/General Manager</td>
</tr>
<tr>
<td>Vice Chairman Plant/Facility Manager</td>
<td>Plant/Facility Engineer</td>
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<tr>
<td>Director</td>
<td>Plant/Facility Engineer</td>
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<tr>
<td>Information Officer</td>
<td>Personnel Director</td>
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<tr>
<td>Quality Assurance</td>
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<tr>
<td>Member</td>
<td>Process Engineer</td>
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<td>Member</td>
<td>Process Engineer</td>
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<tr>
<td>Members</td>
<td>Process Engineer</td>
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<tr>
<td>Safety Officer</td>
<td>Safety Officer</td>
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<tr>
<td>Company Healthcare Provider</td>
<td>Company Healthcare Provider</td>
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<tr>
<td>Supervisory personnel</td>
<td>Supervisory personnel</td>
</tr>
<tr>
<td>Hourly &quot;lead&quot; personnel</td>
<td>Hourly &quot;lead&quot; personnel</td>
</tr>
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</table>
5.2 Principal Responsibilities. The principal responsibilities of the company process safety committee will be as follows:

5.2.1 Assemble on a __________ basis to conduct process safety meetings.

5.2.2 Conduct and oversee departmental process safety evaluations, inspections, and reviews.

5.2.3 Review accident, injury, and near-miss reports to determine process safety deficiencies and discuss corrective actions.

5.2.4 Direct and monitor departmental training and safety meetings.

5.2.5 Discuss and report on unfinished business from previous meetings.

5.2.6 Discuss new business.

5.2.7 Maintain appropriate records of activities.

5.2.8 The _______________ will make notations of the meeting. He/she will track open process safety items to conclusion. He/she will also act as chairman in the absence of the designated chairman or vice chairman.

5.3 Charter. Charter for the (YOUR COMPANY) Process Safety Committee. This committee will be responsible for developing process safety policy and procedure. The committee will encourage process safety awareness among all employees. It will be established to evaluate, and monitor the process safety performance of evaluated hazardous processes operated by this company, perform the necessary process safety evaluations, and inspections, and aid the _______________ in administering the company process safety program.

- To reduce injuries and save lives by prevention of unwanted releases of hazardous process chemicals.

- To constantly be aware of process conditions in all work areas that can produce injuries.

- To aid the company in complying with all laws pertaining to process safety.
- To place the personal safety and health of each employee of this company, and the general public located in the vicinity of this facility in a position of primary importance.

- To aid in the prevention of occupationally-induced injuries and illnesses.

- To the greatest degree possible, aid management in providing all mechanical and physical facilities required for personal safety and health in keeping with the highest standards.

- To maintain a process safety program conforming to the best management practices of organizations of this type.

- To establish a program that instills the proper attitudes toward process safety not only on the part of supervisors and employees, but also between each employee and his or her co-workers.

- To ultimately achieve a process safety program maintained in the best interest of all concerned.

6. **Investigation of incidents and near misses.** Incident investigation will be directed by ______________. The investigation will be initiated as promptly as possible, but no more than 48 hours following the incident. The investigation will focus on the process of identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. Routine process safety investigations will be conducted on all company processes designated by the process safety committee. The investigation will be conducted to discover process conditions and work practices that could be determined to lead to toxic releases, accidents and industrial illnesses.

   *DECISION POINT* Below is a suggested format for an investigation team.

6.1 Process safety incident investigation team (PSIIT) composition. The team director will select additional personnel as required to serve on the PSIIT based on the specific process being reviewed. The core PSIIT will be comprised of the following core team members:

<table>
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<tr>
<th>Title</th>
<th>Member</th>
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<tbody>
<tr>
<td>Director</td>
<td>Plant/Facility Engineer</td>
</tr>
<tr>
<td>Member</td>
<td>Process Engineer</td>
</tr>
<tr>
<td>Member</td>
<td>Department Manager</td>
</tr>
<tr>
<td>Member</td>
<td>Safety Officer</td>
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<tr>
<td>Member</td>
<td>Company Health Care Provider</td>
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<td>Member</td>
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<td>Member</td>
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6.2 Intervals. ______________ will coordinate dates and times with all assigned inspection team members. The team will conduct inspections on a ______________ basis or when conditions or near misses occur which warrant an unscheduled investigation.

*DECISION POINT  Suggested classification system.

6.3 Hazard/Deficiency priority classification system. Hazards/Deficiencies will be rated according to the following rating system. Where it is unclear where a hazard/deficiency should be rated, the next higher priority classification will be assumed.

6.3.1 Priority 1. The most serious type of unsafe process safety condition or unsafe work practice that could cause a toxic release resulting in loss of life, or permanent disability, or extensive loss of structure, equipment, or material.

6.3.2 Priority 2. An unsafe process safety condition or work practice that could cause a toxic release resulting in serious injury, industrial illness, or disruptive property damage.

6.3.3 Priority 3. An unsafe process safety condition or work practice that might cause a recordable injury or industrial illness or nondisruptive property damage.

6.3.4 Priority 4. Minor condition, a housekeeping item or unsafe work practice infraction with little likelihood of injury or illness other than perhaps a first-aid case.

6.4 Investigation procedures. The following elements will be checked during investigations. Investigations will be conducted on individual processes. The investigation can and will where required serve as a compliance audit. The format for the investigation will be established in advance. The format, staffing, scheduling and verification methods will all be established prior to conducting the investigation. The following will be used as the basis for the development of inspection criteria.

6.4.1 Sequence of events. The sequence of actions of the (YOUR COMPANY) incident investigation/compliance audit program will be as follows:

- Begin the planning stage of the specific investigation
- Select the investigation staff
- Review requirements of 29 CFR 1910.119
- Review existing inspection checklists
- Conduct the investigation
- Evaluate the results
- Assign action items to individuals
- Determine estimated completion dates
- Develop a corrective action plan
- Hold an investigation review meeting
- Perform follow-up actions as required
- Document the entire process
*DECISION POINT  Since processes can vary in great degree it is impossible to provide you with a list of detailed elements you need to inspect during inspections. From the below list you can develop more detailed individual checklists for each element and the criteria to be used for it's inspection. OSHA can provide you with additional information and aid in the development of inspection criteria.

6.4.2 Program elements. The format will be designed to provide the lead investigator with a procedure or checklist which details the requirements of each section of the process safety standard.

<table>
<thead>
<tr>
<th>Element</th>
<th>Criteria</th>
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</table>
| Employee Participation      | - Written plan
                                - Involvement in planning                                               |
| Process Safety Information  | - Hazard dissemination
                                - Process technology
                                - Process equipment                                                    |
| Process Hazard Analysis     | - Percent complete                                                      |
| Hazardous Materials         | - Types used in the process.                                            |
                                - Reporting requirements (release)                                     |
| Emergency Management        | - Notification procedures
                                - Written procedures content
                                - Emergency containment procedures
                                - Outside resources involvement
                                - Spill containment procedures
                                - Personal Protective Equipment
                                - Drill frequency                                                       |
| Training Program            | - Initial training conducted
                                - Refresher training conducted
                                - Adequacy of content
                                - Frequency of training
                                - Effectiveness of training
                                - Documentation
                                - Interviews results
                                - Written procedures content
                                - Proper personnel trained
                                - Frequency of training
                                - Interview results
                                - Test results                                                            |
6.5 Final report. ________________ will develop a final report detailing the results of the inspection. The following items will be accomplished:

6.5.1 Action items. The report will indicate who is responsible for accomplishing action items generated during the investigation.

6.5.2 Estimated completion dates (ECD). Estimated completion dates will be assigned to each action item.
6.5.3 Follow-up actions. An investigation review meeting will be held before the estimated completion dates arrive to ensure action item completion is progressing smoothly. The meeting will also discuss if the ECDs are still realistic.

6.5.4 ________________ will develop a statistical analysis of deficiencies noted to determine jobs/areas/processes that have a high incidence of release potential. These areas will be emphasized during future inspections and meetings.

6.5.5 Documentation. After all action items have been completed and closed the investigation will be closed. The final report will be distributed and the original copy maintained in the ______________ office/department.

6.5.6 Distribution (key staff) The report will be distributed immediately to personnel responsible for correcting deficiencies noted during the inspection. These personnel will use the hazard classification system to prioritize deficiency correction.

6.5.7 Distribution (all others). The report will be distributed to all supervisors and key management personnel. Supervisors will brief the results to all employees under their control. Any employee requesting to be placed on the distribution list will be accommodated.

7. Process Safety Information.

7.1 Uses. (YOUR COMPANY) will maintain complete and accurate written documentation concerning process chemicals, process technology, and process equipment. The compiled information will used for the following:

7.1.1 To perform the process hazards analysis

7.1.2 Develop training programs

7.1.3 Develop operating procedures

7.1.4 Aid contractors whose employees will be working with the process

7.1.5 Conduct pre-startup reviews

7.1.6 Aid local emergency preparedness planners, insurance, and enforcement officials

7.1.7 Employee awareness

7.1.8 ______________________________

7.1.9 ______________________________
7.2 Information to be maintained. The information to be compiled about the chemicals, including process intermediates, needs to be comprehensive enough for an accurate assessment of the hazards involved. The following information as a minimum will be maintained:

7.2.1 Fire and explosion characteristics

7.2.2 Reactivity hazards

7.2.3 Safety and health hazards to workers

7.2.4 Corrosion and erosion effects on the process equipment and monitoring tools.

7.2.5 Current material safety data sheets (MSDS)

7.2.6 Process chemistry information including runaway reaction and over-pressure hazards if applicable.

7.2.7 Established criteria for maximum inventory levels for process chemicals, and limits beyond which would be considered upset conditions; and a qualitative estimate of the consequences or results of deviation that could occur if operating beyond the established process limits.

7.2.8 __________________________

7.2.9 __________________________

7.3 Use of diagrams. Diagrams will be used where possible to show process flow information.

7.3.1 Block flow diagrams (BFD). A block flow diagrams will be used to show the major process equipment and interconnecting process flow lines and show flow rates, stream composition, temperatures, and pressures when necessary for clarity. The block flow diagram is considered a simplified flow diagram.

7.3.2 Process flow diagrams (PFD). Process flow diagrams are considered to be more complex and will be constructed where necessary to show all main flow streams including valves to enhance the understanding of the process, as well as pressures and temperatures on all feed and product lines within all major vessels, in and out of headers and heat exchangers, and points of pressure and temperature control. The process flow diagram is considered a detailed flow diagram.

7.3.2.1 Types of information used on PFDs.
- Materials of construction information
- Pump capacities and pressure heads
- Compressor horsepower and vessel design pressures
- Process temperatures
- Major components of control loops are usually shown
- Key utilities

Note: For each process, Piping and instrument diagrams (P&IDs) will be reviewed to determine if they are a more appropriate type of diagram to show some of the above details and to display the information for the piping designer and engineering staff. The P&IDs are to be used to describe the relationships between equipment and instrumentation as well as other relevant information that will enhance clarity. Computer software programs which do P&IDs or other diagrams useful to the information package, may be used to help meet this requirement.

7.4 Documentation of sources. The information pertaining to process equipment design will be documented, such as, the codes and standards relied on to establish good engineering practice.

7.4.1 Older equipment/process. For existing equipment designed and constructed many years ago in accordance with the codes and standards available at that time and no longer in general use today, this employer will document which codes and standards were used and that the design and construction along with the testing, inspection and operation are still suitable for the intended use. Where the process technology requires a design which departs from the applicable codes and standards, this employer will document that the design and construction is suitable for the intended purpose.

8. Facility/Department Evaluation. An evaluation of our facility(s) will be conducted to identify, designate, and prioritize processes which have the potential for release of hazardous chemicals during a systems or operational failure.

8.1 Existing processes. A process hazard analysis (PHA) will be conducted for existing processes. Existing processes where possible, will be designated and managed as a complete and separate process.

8.2 Future processes. For new processes, a process hazard analysis will be conducted. The PHA will be used to improve the design and construction of the process from a reliability and quality point of view. The safe operation of the new process will be enhanced by making use of the PHA recommendations before final installations are completed.

8.3 Process listing. The following processes have been designated and evaluated.

<table>
<thead>
<tr>
<th>Designated Process Listing</th>
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<tr>
<td>Process Title</td>
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9. Process Hazard Analysis (PHA). A PHA will be conducted in an organized and systematic effort to identify and analyze the significance of potential hazards associated with the processing or handling of highly hazardous chemicals. Information obtained from a PHA will assist in making decisions for improving safety and reducing the consequences of unwanted or unplanned releases of hazardous chemicals.

9.1 Responsibility. The company representative responsible for process hazard analysis is __________________________. He/she is solely responsible for all facets of the analysis and has full authority to make necessary decisions to ensure success of the program. He/she is the sole person authorized to amend these instructions and is authorized to halt any process operation of this company where there is danger of chemical release or serious personal injury.

9.2 Any PHA conducted by this company will be directed toward determining the hazards and potential failure points or failure modes in a designated process by analyzing the following:

9.2.1 Potential causes and consequences of:

- Fires
- Explosions
- Releases of toxic or flammable chemicals
- Major spills of hazardous chemicals

9.2.2 The PHA will focus on:

- Equipment
- Instrumentation
- Utilities
- Human actions (routine and nonroutine)
- External factors that might impact the process

9.3 Selection of a PHA methodology or technique will be influenced by many factors including:

9.3.1 The amount of existing knowledge about the process.
9.3.2 Is it a process that has been operated for a long period of time with little or no innovation and extensive experience has been generated with its use?

9.3.3 Is it a new process or one which has been changed frequently by the inclusion of innovative features?

9.3.4 The size and complexity of the process.

9.3.5 The application of a PHA to a process may involve the use of different methodologies for various parts of the process. For example, a process involving a series of unit operations of varying sizes, complexities, and ages may use different methodologies and team members for each operation. Then the conclusions can be integrated into one final study and evaluation.

9.3.6 Priority system. The below listing designates the priority for which PHAs will be conducted by this company. A preliminary or gross hazard analysis will be performed to prioritize the processes that are determined to be subject to coverage by the process safety management standard.

9.3.6.1 Priority considerations. The prioritization process will consider the following in prioritizing the potential severity of a chemical release:

- Priority will first be given to those processes with the potential of adversely affecting the largest number of employees and/or people in our community.

- The operating history of the process such as the frequency of past chemical releases.

- The age of the process and any other relevant factors.

9.3.7 Designated process priority listing. The above listed factors will be used to establish a ranking order. Either a weighing factor system or a systematic ranking method will be used. The preliminary hazard analysis will be used in determining which process should be of the highest priority and thereby obtaining the greatest improvement in safety for our company.

**Designated Process Priority Listing**

<table>
<thead>
<tr>
<th>Priority</th>
<th>Process Title</th>
<th>Date Designated</th>
<th>Date Evaluated</th>
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<tr>
<td>1._____</td>
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9.4 PHA methodology considerations.

9.4.1 Checklist methodology will be used for processes that are very stable and where no little changes occur over extended periods. The checklist method however, may miss the most recent changes and consequently the changes would not be evaluated.

9.4.2 Assumptions made by the team. The PHA is dependent on good judgment and the assumptions made during the study need to be documented and understood by the team and reviewer and kept for a future PHA.

9.4.3 The team director will ensure that all team members understand the methodology that is going to be used.

9.4.4 Team size. The team director will make the initial size determination of the team. A PHA team can vary in size from two people to a larger number of people with varied operational and technical backgrounds. Some team members may only need to be a part of the team for a limited time. The team director will make him/her self fully knowledgeable in the proper implementation of the PHA methodology that is to be used and should be impartial as possible in the evaluation.

9.4.5 Team members will provide the team with expertise in areas such as:

- Process technology
- Process design
- Process Operating procedures and practices
- How the work is actually performed
- Alarms
- Emergency procedures
- Instrumentation
- Maintenance procedures
- Routine and nonroutine tasks, including:
  -- How the tasks are authorized
- Procurement of parts and supplies
- Safety and health
- Other relevant subjects as the need dictates.

10. **Process Operating Procedures and Practices.** Operating procedures for designated processes will be reviewed by the Process Hazard Analysis team, engineering staff, and operating personnel to ensure that they are accurate and provide practical instructions on how to actually carry out job duties safely.

10.1 Content.
10.1.1 Operating procedures will include specific instructions or details on what steps are to be taken or followed in carrying out the stated procedures.

10.1.2 Operating instructions for each procedure will include the applicable safety precautions, and appropriate information on safety implications, to include (where required):

- Pressure limits
- Temperature ranges
- Flow rates
- Procedures to follow when an upset condition occurs
- Pertinent alarms and instruments
- Start-up or shut-down procedures
- Distinctions between startup and normal operations
- Other subjects as required

10.1.3 Computerized process control systems. These operating instructions need to describe the logic of the software as well as the relationship between the equipment and the control system; otherwise, it may not be apparent to the operator.

10.1.4 Operating procedures and instructions are important for training operating personnel. The operating procedures are often viewed as the standard operating practices (SOPs) for operations. Control room personnel and operating staff, in general, need to have a full understanding of operating procedures.

10.1.5 Bilingual procedures and instructions. If workers are not fluent in English then procedures and instructions need to be prepared in a second language understood by the workers.

10.1.6 Changes in the procedures and processes. Operating procedures need to be changed when there is a change in the process as a result of the management of change procedures. Supervisors will ensure that the consequences of operating procedure changes are fully evaluated and the information conveyed to the personnel.

10.1.6.1 Timing. All management-of-change actions must be coordinated and integrated with current operating procedures and operating personnel must be oriented to the changes in procedures before the change is made. When the process is shut down in order to make a change, then the operating procedures must be updated before startup of the process.

10.1.7 Emergency and upset conditions. Supervisors will ensure that procedural instructions and training in how to handle upset conditions are accomplished, as well as what operating personnel are to do in emergencies.

10.1.8 Communication between operating personnel and workers performing work within the process area, such as nonroutine tasks, also must be maintained. The hazards of the tasks will be conveyed to operating personnel in accordance with established procedures and
to those performing the actual tasks. When the work is completed, operating personnel will be informed to provide closure on the job.

11. **Employee Training.** All employees, including maintenance and contractor employees, involved with highly hazardous chemicals will be provided training to fully understand the safety and health hazards of the chemicals and processes they work with, for the protection of themselves, their fellow employees, and the citizens of nearby communities. Training requirements will be clearly defined. The affected employees to be trained and what subjects are to be covered in their training will be delineated and the course of instruction will be developed based on these requirements. Goals and objectives will be clearly defined. The learning goals or objectives will be written in clear measurable terms before the training begins. These goals and objectives will be tailored to each of the specific training modules or segments. Training plans will describe the important actions and conditions under which the employee will demonstrate competence or knowledge as well as what is acceptable performance. Hands-on-training will be conducted where ever possible.

11.1 Initial training. Training shall be conducted prior to job assignment. This employer shall provide training to ensure that employees understand the safety and health hazards of chemicals and processes they work with. The training shall include, as a minimum the following:

11.1.1 Training will be determined from the individual process. All employees associated with a given process will be given training concerning the hazards associated with that process.

11.1.2 Hazard communication training, will help employees to be more knowledgeable about the chemicals they work with as well as familiarize them with reading and understanding MSDS. Contractors and visitors who work closely with designated processes will have their HazCom training verified before being allowed access.

11.1.3 Process specific training. Process supervisors will coordinate additional training requirements with the safety officer in subjects such as operating procedures and safety work practices, emergency evacuation and response, safety procedures, routine and nonroutine work authorization activities, and other areas pertinent to process safety and health not covered under the HazCom program.

11.1.4 Written procedures/checklists required for use.

11.1.5 Recognition of applicable hazards associated with the operation or work to be completed.

11.1.6 All other employees whose work operations are or may be in an area that may be affected by the process, shall be instructed to an awareness level concerning hazards associated with the process.
11.1.7 Preventative maintenance training. Appropriate training will be provided to maintenance personnel to ensure that they understand the preventive maintenance program procedures, safe practices, and the proper use and application of special equipment or unique tools that may be required.

11.1.8 Certification. This employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

11.2 Refresher training. Careful consideration will be given to assure that employees including maintenance and contract employees are receiving current and updated training. The training content shall be identical to initial training and include any changes in the process or scope of work. Refresher training will be conducted on a(n) ________________ basis or when the following conditions are met, whichever event occurs sooner.

11.2.1 Retraining shall be provided for all authorized and affected employees whenever (and prior to) there being a change in their job assignments, a change in the process, operating procedures, or when a known hazard is added to the work environment.

11.2.2 Additional retraining shall also be conducted whenever a periodic inspection or audit reveals, or whenever this employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge operating or safety practices.

11.2.3 The retraining shall reestablish employee proficiency and introduce new or revised methods and procedures, as necessary. For example, if changes are made to a process, impacted employees must be trained in the changes and understand the effects of the changes on their job tasks (e.g., any new operating procedures pertinent to their tasks).

11.3 Certification. This employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

11.4 Process trainers. The following employees or position titles will receive training and as required, serve as process trainers. Company qualified trainers will consist of the following:

**PROCESS TRAINERS**

<table>
<thead>
<tr>
<th>Title</th>
<th>Member</th>
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<tbody>
<tr>
<td>Process Trainer</td>
<td>Process Engineer</td>
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<tr>
<td>Process Trainer</td>
<td>Department Manager</td>
</tr>
<tr>
<td>Process Trainer</td>
<td>Safety Officer</td>
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<tr>
<td>Process Trainer</td>
<td>First Line Supervisors</td>
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<td>Process Trainer</td>
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</table>
11.5 Training plans. Training plans will be reviewed on a(n) __________ basis to ensure the training is current and to periodically ensure that the necessary skills, knowledge, and routines are being properly understood and implemented by trained employees.

12. Use of Contractors. Whenever contractors are used to perform work in and around processes that involve highly hazardous chemicals, they will need to be provided with site specific training so that they can accomplish the desired job tasks without compromising the safety and health of employees at this facility. For contractors, whose safety performance on the job is not known, this employer will obtain information on injury and illness rates, and experience, and will obtain contractor references. Additionally, this employer will assure that the contractor has the appropriate job skills, knowledge and certifications. Contractor work methods and experiences may be evaluated for certain processes.

12.1 Site injury and illness log. If deemed necessary, a site injury and illness log for contractors will be maintained to track and maintain current knowledge of work activities involving contract employees working on or adjacent to covered processes. Injury and illness logs of both the employer's employees and contract employees allow this employer to have full knowledge of process injury and illness experience. This log will also contain information which will be of use to those auditing process safety management compliance and those involved in incident investigations.

12.2 Contract employees must perform their work safely. Considering that contractors often perform very specialized and potentially hazardous tasks such as confined space entry activities and nonroutine repair activities it is quite important that their activities be controlled while they are working on or near a covered process.

12.3 Permitting system. A permit system or work authorization system for these activities may be instituted if deem necessary. The use of a work authorization system keeps an employer informed of contract employee activities, and as a benefit the employer will have better coordination and more management control over the work being performed in the process area. A well run and well maintained process where employee safety is fully recognized will benefit all of those who work in the facility whether they be contract employees or employees of the owner.

13. Pre-Startup safety review.

13.1 For new processes, A PHA will be conducted to improve the design and construction of the process from a reliability and quality point of view. The safe operation of the new process will be enhanced by making use of the PHA recommendations before final installations are completed. P&IDs are to be completed along with having the operating procedures in place and the operating staff trained to run the process before startup. The initial startup procedures and normal operating procedures will be fully evaluated as part of the pre-
startup review to assure a safe transfer into the normal operating mode for meeting the process parameters.

13.2 For existing processes that have been shutdown for turnaround, or modification, etc., a PHA will be conducted to assure that any changes other than "replacement in kind" made to the process during shutdown go through the management-of-change procedures.

13.2.1 Impact requirements. P&IDs will need to be updated as necessary, as well as operating procedures and instructions. If the changes made to the process during shutdown are significant and impact the training program, then operating personnel as well as employees engaged in routine and nonroutine work in the process area may need some refresher or additional training in light of the changes.

13.2.2 Incident investigations/audits. Any incident investigation recommendations, compliance audits or PHA recommendations need to be reviewed as well to see what impacts they may have on the process before beginning the startup.

14. Mechanical Integrity. Maintenance programs and schedules will be reviewed to see if there are areas where "breakdown" maintenance is used rather than an on-going mechanical integrity program. Equipment used to process, store, or handle highly hazardous chemicals needs to be designed, constructed, installed and maintained to minimize the risk of releases of such chemicals.

14.1 Elements of a mechanical integrity program include:

14.1.1 Identification and categorization of equipment and instrumentation.

14.1.2 Inspections and tests.

14.1.3 Testing and inspection frequencies.

14.1.4 Development of maintenance procedures.

14.1.5 Training of maintenance personnel.

14.1.6 Establishment of criteria for acceptable test results, documentation of test and inspection results, and documentation of manufacturer recommendations as to meantime to failure for equipment and instrumentation.

14.2 Preventing a release. The first safety priority for our processes will be to ensure that the process is operated and maintained as designed, and to keep the chemicals contained.

14.3 Controlling a release. The second safety priority will be to control release of chemicals through engineering controls such as; venting to scrubbers, flares, or to surge or overflow tanks which are designed to receive such chemicals, etc. Also included are; fixed fire protection systems, water spray, or deluge systems, monitor guns, dikes, designed drainage
systems, and other systems which would control or mitigate hazardous chemicals once an unwanted release occurs.

14.4 Process equipment and instrumentation. A list of process equipment and instrumentation for inclusion in the program will be developed. This list will include pressure vessels, storage tanks, process piping, relief and vent systems, fire protection system components, emergency shutdown systems and alarms and interlocks and pumps.

14.4.1 Prioritization. For the categorization of instrumentation and the listed equipment this equipment will be prioritized to denote which pieces of equipment require closer scrutiny than others.

14.4.2 Meantime between failure (MTBF). Meantime between failure of various instrumentation and equipment parts will be determined from the manufacturer’s data, company records or the experience with the parts, which will then influence the inspection and testing frequency and associated procedures. Also, applicable codes and standards such as the National Board Inspection Code, or those from the American Society for Testing and Material, American Petroleum Institute, National Fire Protection Association, American National Standards Institute, American Society of Mechanical Engineers, and other groups, will be used to provide information to help establish an effective testing and inspection frequency, as well as appropriate methodologies.

14.5 Preventative maintenance training. Appropriate training will be provided to maintenance personnel to ensure that they understand the preventive maintenance program procedures, safe practices, and the proper use and application of special equipment or unique tools that may be required. This training will be part of the overall training program called for in 29 CFR 1910.119.

15. Quality assurance. A quality assurance system will be used to ensure that the proper materials of construction are used, that fabrication and inspection procedures are proper, and that installation procedures recognize field installation concerns. The quality assurance program is an essential part of the mechanical integrity program and will help to maintain the first and secondary lines of defense that have been designed into the process to prevent unwanted chemical releases or those which control or mitigate a release.

15.1 Drawings. All "As built" drawings, together with certifications of coded vessels and other equipment, and materials of construction will be reviewed for verification. All pertinent drawings will be retained with other quality assurance documentation.

15.2 Installation. Equipment installation jobs will be properly inspected in the field for use of proper materials and procedures and to assure that qualified workers are used to do the job. The use of appropriate gaskets, packing, bolts, valves, lubricants and welding rods will be verified. Also, procedures for installation of safety devices will be verified, such as the torque on the bolts on ruptured disc installations, uniform torque on flange bolts, proper installation of pump seals, etc.
15.3 Equipment supplier audits. If the quality of parts is in question, an audit of the respective supplier will be conducted to ensure purchases of equipment are suitable for the intended service or purpose. Any changes in equipment that may become necessary will go through the management-of-change procedures.

16. Non-routine Work Authorizations. Non-routine work conducted in process areas will be controlled by the supervisor of the area in a consistent manner. The known hazards involving the work that is to be accomplished will be communicated to those doing the work, but also to those operating personnel whose actions could affect the safety of the process.

*DECISION POINT  Suggestion. We recommend that you adopt a work authorization permitting system to control nonroutine work. The following is a suggested system.

16.1 A work authorization notice or permit will contain a procedure that describes the steps the maintenance supervisor, contractor representative, or other person needs to follow to obtain the necessary clearance to get the job started. The following requirements will be addressed:

16.1.1 Pre-start coordination. The work authorization procedures will reference and coordinate, as applicable, lockout/tagout procedures, line breaking procedures, confined space entry procedures and hot work authorizations.

16.1.2 Non-routine work authorization permit. A standardized permit will be developed and used by this company. The permit will detail the requirements to authorize non-routine work at specific job locations.

16.1.3 Job-closure coordination. The permitting procedure will also provide clear steps to follow once the job is completed in order to provide closure for those that need to know the job is now completed and equipment and operations can be returned to normal.

16.2 Non-routine work authorization permitting system. The (title) will maintain work authorization permits. All requests to perform non-routine work will be requested through (title). (title) will coordinate the authorization permit with the concerned parties and approve the work authorization.

16.2.1 Before the work is authorized, (title) will document the completion of the following measures:

16.2.1.2 Specify acceptable work conditions (see permit).

16.2.1.3 If required isolate the work area.

16.2.1.4 Purging, inerting, flushing, or ventilating the work area as necessary to eliminate or control atmospheric hazards (see confined space instructions).
16.2.1.5 Provide pedestrian, vehicle, or other barriers as necessary to protect workers from external hazards.

16.2.1.6 Verify that conditions in the work area are acceptable for the duration of the authorized work period.

16.2.1.7 Ensure supervisors affected by the non-routine work are notified and coordinated with.

16.2.1.8 Ensure all affected workers and workers that may affect the non-routing work are notified of the task to be accomplished.

16.2.1.9 Ensure that the __________ shall signs the work authorization to authorize the work to begin.

16.2.1.10 The completed permit shall be made available at the time of the work begins all authorized workers and their supervisors, by posting it at the work site or by any other equally effective means, so that the workers can confirm that pre-start preparations and authorizations have been completed.

16.2.1.11 The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.

16.2.1.12 The supervisor shall terminate the work authorization and cancel the permit when:

- The operations covered by the permit are completed.

- A condition that is not allowed under the permit arises in or near the permitable work area.


16.3 Cancelled permit retention. This employer shall retain each canceled permit for at least 1 year to facilitate the review of the process safety program. Any problems encountered during the work authorization period shall be noted on the pertinent permit so that appropriate revisions to the process safety program can be made.

17. Managing Change. Change, for the purposes of this standard practice instruction include; all modifications to equipment, procedures, raw materials and processing conditions other than "replacement-in-kind". These changes will to be properly managed by identifying and reviewing them prior to implementation of the change. The operator must have the flexibility to maintain
safe operation within the established parameters, any operation outside of these parameters requires review and approval by a written management-of-change procedure.

17.1 Management-of-change covers changes in process technology and changes to equipment and instrumentation. These changes may be the result of changes in production rates, raw materials usage, experimentation, equipment availability, new equipment, new product development, change in catalyst and changes in operating conditions to improve yield or quality.

17.2 (YOUR COMPANY) will establish means and methods to detect both technical and mechanical changes.

17.2.1 Temporary change. Time limits for temporary changes will be established and monitored since, without control, these changes may tend to become permanent. Temporary changes are subject to the management-of-change provisions. In addition, the management-of-change procedures are used to insure that the equipment and procedures are returned to their original or designed conditions at the end of the temporary change. Proper documentation and review of these changes is invaluable in ensuring that the safety and health considerations are being incorporated into the operating procedures and the process.

17.2.1.1 Management-of-change authorization permit. A standardized permit will be developed and used by this company. The permit will detail the requirements to authorize management-of-change actions. The permit will include as a minimum the following items/actions:

- Description and the purpose of the change
- Technical basis for the change
- Safety and health considerations
- Changes required to operating procedures
- Maintenance procedures
- Inspection and testing change requirements
- Piping and instrument diagrams (P&IDs) changes
- Electrical classification changes
- Training and communications changes
- Pre-startup inspection requirements
- Duration if a temporary change
- Approvals and authorization

17.2.1.2 Management-of-change authorization checklist. Where the impact of the change is minor and well understood, a check list reviewed by ______________ with proper communication to all employees concerned will be sufficient.

17.2.1.3 Complex or significant design changes. For a more complex or significant design change, a process hazard audit with approvals by operations, maintenance, and the safety officer will be conducted and used. Changes in documents such as P&IDs, raw
materials, operating procedures, mechanical integrity programs, electrical classifications, etc., will be noted so that these revisions can be made permanent when the drawings and procedure manuals are updated. Copies of process changes will be kept in ____________________ (an accessible location) to ensure that design changes are available to operating personnel as well as to PHA team members when a PHA is being done or one is being updated.


*DECISION POINT You will need to decide:

- If you want employees to handle and contain small or minor incidental releases.

- If you wish to mobilize the available resources at your facility and have them brought to bear on a more significant release.

- If you want to evacuate the danger area and promptly escape to a preplanned safe zone area, and allow the local community emergency response organizations to handle the release.

- Or if you want to use some combination of these actions.

18.1 Emergency action plan. (YOUR COMPANY) will develop and implement an emergency action plan which will facilitate the prompt evacuation of employees due to an unwanted release of a highly hazardous chemical.

18.1.1 Alarm system. This employer will have a plan that will be activated by an alarm system to alert employees when to evacuate and will ensure that, employees who are physically impaired, will have the necessary support and assistance to get them to the safe zone. The intent of these actions will be to alert and move employees to a safe zone quickly. Delaying alarms or confusing alarms will be avoided.

18.1.2 Evacuation/relocation. Unwanted incidental releases of highly hazardous chemicals in the process area will be addressed in the emergency action plan and detail the actions employees are to take. If the decision to evacuate the area, is made then the emergency action plan will be activated. For any outdoor process where wind direction is important for selecting the safe route to a refuge area, a wind sock or pennant will be placed at the highest point that can be seen throughout the process area. Employees can then move in the direction of cross wind to upwind to gain safe access to the refuge area by knowing the wind direction.

18.1.3 Preplanning for releases. Preplanning for releases that are more serious than incidental releases will be addressed in the emergency action plan. When a serious release of a highly hazardous chemical occurs, this employer through preplanning will have determined in advance what actions employees are to take. The evacuation of the immediate release area and other areas as necessary will be accomplished under the emergency action plan. Cooperation and coordination between our company and local community emergency preparedness managers will
be pursued to aid in complying with the Environmental Protection Agency's Risk Management Plan criteria.

**COMPLIWARE NOTE:** An effective way for medium to large facilities to enhance coordination and communication during emergencies for on-site operations and with local community organizations is for employers to establish and equip an emergency control center. The emergency control center would be situated in a safe zone area so that it could be occupied throughout the duration of an emergency. The center would serve as the major communication link between the on-scene incident commander and plant or corporate management as well as with the local community officials. The communication equipment in the emergency control center should include a network to receive and transmit information by telephone, radio or other means. It is important to have a backup communication network in case of power or communication failures. The center should also be equipped with the plant layout and community maps, utility drawings including fire, water, emergency lighting, appropriate reference materials such as a government agency notification list, company personnel phone lists, SARA Title III reports and material safety data sheets, emergency plans and procedures manual, a listing with the location of emergency response equipment, mutual aid information, and access to meteorological or weather condition data and any dispersion modeling data.

**Sources of Further Information**


10. "Recommended Guidelines for Contractor Safety and Health," Texas Chemical Council; Texas Chemical Council, 1402 Nueces Street, Austin, TX 78701-1534.


