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Process Safety Management (PSM) Program

General Company Policy

EMA has operations which may involve hazardous chemicals on site which require protections defined under OSHA's Process Safety Management (PSM) regulation, found at 29 CFR 1910.119 and 1926.64. Therefore, we have implemented this PSM program at each of our project sites where it applies. In this way we promote overall plant and worker safety.

Our PSM enables our facility to prevent the occurrence, and minimize the consequences, of significant releases of toxic substances as well as fires, explosions, and other types of catastrophic accidents. Overall, the PSM prevents accidental fatalities, injuries and illnesses and avoids physical property damage.

The "process" part of the Process Management Program is any activity involving a highly hazardous chemical including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities. Any group of vessels which are interconnected and separate vessels which are located such that a highly hazardous chemical could be involved in a potential release shall be considered a single process.

Our PSM prevents accidents because it focuses on the rules, procedures, and practices which govern individual processes, activities or pieces of equipment. These rules are detailed and improved as necessary. They are also communicated to and accepted by all persons at the facility.

At the same time, our PSM covers not only highly hazardous chemicals, but also those that may be harmless in terms of flammability, explosivity, or toxicity, but, when mixed with another substance, can produce a highly hazardous substance or situation. The accidental mixing of some reactive chemicals can cause explosions or the release of toxic vapors, situations which are clearly a threat to the life and health of workers at the site.

Like all PSM written programs, ours contains the following major elements:

- Purpose statement,
- Employee participation plan,
- Process safety information,
- Process hazard analysis records,
- Operating procedures,
- Training,
- Contracting,
- Process equipment integrity maintenance procedures,
- Nonroutine work,
- Management of change procedures,
- Incident investigation reports,
- Compliance audit reports, and
- Emergency Action Plan

Our Project Manager has overall responsibility for the program. He/She will review and update the

program, as necessary. Copies of the written program may be obtained from our written Safety and Health Program or from our corporate offices.

All employees, or their designated representatives, can obtain further information on this written program or the process management standard from the Project Manager.

If after reading this program, you find that improvements can be made, please contact the Project Manager. We encourage all suggestions because we are committed to the success of our written risk management program. We strive for a comprehensive, integrated prevention system which obtains clear understanding, safe behavior, and involvement in the program from every level of the facility and the public.

Purpose Statement

The purpose of our PSM program is to prevent the occurrence, and minimize the consequences, of significant releases of toxic substances as well as fires, explosions, and other types of catastrophic accidents. Overall, the PSM prevents accidental fatalities, injuries and illnesses and avoids physical property damage.

Employee Participation

Our employees are a significant ally in helping the facility to implement and maintain an effective PSM program for all employees. We strongly encourages employees to participate in:

1. Gathering process Safety information,

2. Conducting and developing the PSM program elements and hazards assessments as well as incident investigation findings,

3. Obtaining access to process hazards analyses and the rest of the PSM program.

Process Safety Information

Accurate and complete written information concerning the process chemicals, process technology, and process equipment is essential to an effective PSM program and to a process hazards analysis. The compiled information is a necessary resource to a variety of users including:

- The team that will perform the process hazards analysis;
- Those developing the training programs and the operating procedures;
- Contractors whose employees will be working with the process;
- Those conducting the pre-startup reviews;
- Local emergency preparedness planners; and
- Insurance and enforcement officials.

The information compiled about chemicals, including process intermediates, is comprehensive enough for accurate assessments of the fire and explosion characteristics, reactivity hazards, the safety and health hazards to workers, and the corrosion and erosion effects on the process equipment and monitoring tools.

The following information is acquired by the Project Manager when our operations fall under the PSM program:

• Hazards of each highly hazardous chemical used in each process. This data must cover: - Toxicity information, - Permissible exposure limits, - Physical data, - Reactivity data, - Corrosivity data, - Thermal and chemical stability data, - Hazardous effects of inadvertent mixing of different materials that could foresee ably occur.

• Technology of processes. This must include: - Block flow diagram or simplified process flow diagram; - Process chemistry; - Maximum intended inventory; - Safe upper and lower limits for such items as temperatures, pressures, flows or compositions; - Evaluation of the consequences of deviations, including those affecting the safety and health of employees; and - Consequences of any deviations in the process, including those affecting the safety and health of employees. Where original technical information no longer exists, you may develop such information along with the process hazard analysis in sufficient detail to support the analysis.

• Equipment involved in processes. This must include: - Materials of construction, - Electrical classification, - Ventilation system design, - Material and energy balances for processes built after 5/26/92, - Piping and instrumental diagrams, - Relief system design and design basis, - Design codes and standards employed, - Safety systems (such as interlocks, detection, and suppression systems.

We ensure equipment which is utilized is designed and constructed in accordance with codes, standards, or practices that are expected in the industry. Examples would include explosion proof equipment, non sparking tools, intrinsically safe instruments, and UL approved apparatus.

Process Hazard Analysis Records

Process hazard analysis must be conducted as soon as possible, but not later than the following schedule for operations that are in place and that fall under the PSM Standard:

- No less than 50% of the initial process hazards analyses must be completed by May 26, 1995;
- No less than 75% of the initial process hazards analyses must be completed by May 26,1996;
- All initial process hazards analyses must be completed by May 26, 1997.

Our process hazard analysis (PHA), sometimes called a process hazard evaluation, is one of the most important elements of the PSM program. Our PHA is an organized and systematic effort to identify and analyze the significance of potential hazards associated with the processing or handling of highly hazardous chemicals. Our PHA provides information which will assist the facility and our employees in making decisions for improving safety and reducing the consequences of unwanted or unplanned releases of hazardous chemicals. Our PHA is directed toward analyzing potential causes and consequences of fires, explosions, releases of toxic or flammable chemicals and major spills of hazardous chemicals. Our PHA focuses on equipment, instrumentation, utilities, human actions (routine and nonroutine), and external factors that might impact the process. These considerations assist in determining the hazards and potential failure points or failure modes in a process.

The team member(s) who perform our process hazard analysis are our Project Manager(s), our employees, and designated representatives of our client which by qualifications are familiar with the appropriate operations to provide valuable input.

Any actual team recommendations, resolutions, and dates of resolutions are included in the PHA.

Operating Procedures

Our operating procedures describe tasks to be performed, data to be recorded, operating conditions to be maintained, samples to be collected, and safety and health precautions to be taken. Our procedures are technically accurate, understandable to employees, and revised periodically to ensure that they reflect current operations. Our up-to-date operating procedures for safely conducting activities involved in each process are attached to this PSM program and/or described here.

Because of the unique nature of our operations, our procedures are tailored to the specific operations and conditions at our clients. These operating procedures shall be developed and in writing and will cover the following: Operating phases including: - Initial startup; - Normal operations; - Temporary operations; - Emergency shutdown, conditions for an emergency shutdown, and assignment of shutdown responsibility; - Emergency operations; - Normal shutdown; and - Startup following a turnaround, or after an emergency shutdown. Operating limits including: - Consequences of deviation; and - Steps required to correct or avoid deviation. Safety and health considerations including: - Properties of, and hazards presented by, the chemicals used in the process; - Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment; - Control measures to be taken if physical contact or airborne exposure occurs; - Quality control for raw materials and control of hazardous chemical inventory levels; and - Any special or unique hazards. Safety systems and their functions. Also, operating procedures are reviewed for the facility which work may be being performed at. These procedures will be reviewed and followed where applicable in addition to performing our own process hazard analysis per our hazard assessment process..

The Project Manager is responsible for reviewing the operating procedures to make sure they are current and accurate, and also reviews operating procedure changes that result from changes in process chemicals, technology, equipment, and the facility. This will include activities such as procedures to ensure piping and other vessels are free of chemicals and other reactive or hazardus materials which may be encountered when performing the scope of our work. The Project Manager is responsible for certifying the operating procedures each year.

We have also attached to the PSM program and/or described here our safe work practices which limit employee and contract employee exposure to covered process areas and which control hazards in situations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. The Project Manager is responsible for performing a pre-startup safety review for new facilities and modified facilities when the modification changes the process safety information.

Training

All of our employees, including maintenance and contractor employees, who are involved with highly hazardous chemicals need 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.

While training in Hazard Communication will help employees to be more knowledgeable about the chemicals they work with as well as familiarize them with reading and understanding MSDS's, additional training will be covered in this PSM program in subjects such as operating procedures and safety work practices, emergency evacuation and response, safety procedures, routine and nonroutine work authorization activities, incident reporting (must notify Project Manager immediately and initiate investigation with in 24 hours) and other areas pertinent to process safety and health.

The Project Manager or designated representative trains employees. He/she trains new employees at the time of their initial and when new hazards are introduced. Records of training are maintained by the Project Manager and forwarded to the corporate office for retention.

All training and retraining records containing the identity of the employee, the date of training, and the means used to verify that they understood their training are attached to this PSM program.

Contracting

Occasionally subcontractors will perform work in and around processes that involve highly hazardous chemicals. Our goal is to hire subcontractors who accomplish the desired job tasks without compromising the safety and health of employees at the facility.

Our facility obtains and periodically evaluates contract employer's safety performance in accordance with EMA Contractor Safety Plan located in our written Safety and Health manual. We also keep the contract employee injury and illness log related to contractor's work.

We inform and train contract employers of the known potential fire, explosion, or toxic release hazards related to the subcontractor's work and processes through safety meetings. At a minimum this includes a thorough review of the MSDS sheets for the chemicals, a review of all applicable safety requirements, review of the PHA, and that hot work is not allowed with out the use of a hot work permit.

We provide an explanation of the emergency action plan to contract employers during our safety meetings and provide a copy of procedures to follow in case of an emergency.

We ensure that the contract employer advises our organization of any unique hazards presented by the subcontract employer's work, or of any hazards found by the contract by establishing a clear line of communication. Safety concerns are addressed as a part of pre work meetings held at the beginning of every shift.

Process Equipment Integrity Maintenance Procedures

Process equipment integrity maintenance procedures are designed to ensure that process equipment receives appropriate, regularly scheduled maintenance. The goal is on-going mechanical integrity rather than "breakdown" maintenance.

The maintenance procedures that preserve the integrity of each piece of equipment and instrumentation are accomplished utilizing a preventative Maintenance Program

Our organization ensures that employees involved in maintaining the on-going integrity of process equipment are trained in the proper procedures required by the PSM Standard.

Our Organization performs inspections and tests on process equipment. These tests are documented and include the following information:

- Date of inspection or test,
- Description of the inspection or test performed,
- Name of person who performed the inspection or test,
- Results of the inspection or test,
- Serial number or other identifier of the equipment that was inspected or tested.

Tests and inspections are performed in accordance with the Preventative Maintenance Program in place at facilities which we may work.

Our facility ensures that new equipment, maintenance materials, spare equipment, and parts meet design and material specifications in order to protect against the use of improper materials.

The Project Manager is responsible for the quality assurance including ensuring that proper materials of construction are used, that fabrication and inspection procedures are proper, and that installation procedures recognize field installation concerns.

Nonroutine Work

Nonroutine work (i.e., lockout/tagout, line breaking, confined space entry, and hot work) are controlled in a consistent manner, communicated to those doing the work as well as operating personnel, and authorized, as necessary, with clear steps.

We provide an explanation hazards of non routine work to contract employers during our safety meetings and provide a copy of procedures to follow in case of an emergency.

We ensure that the contract employer advises our organization of any unique hazards presented by non routine work, or of any hazards found by the contract by establishing a clear line of communication. Safety concerns are addressed as a part of pre work meetings held at the beginning of every shift.

Management of Change Procedures

PSM changes include all modifications to equipment, procedures, raw materials, processing conditions other than "replacement in kind," and temporary changes.

The general procedures to manage any changes (except for replacements in kind) to process chemicals, technology, equipment, procedures and facilities are to conduct a PHA with the following perspectives as a basis for the Process Hazard Analysis: - Technical basis for a proposed change; - Impact of a change on safety and health; - Modifications to operating procedures; - Necessary time period for a change; and - Authorization requirements for a proposed change.

EMA will ensure that our employees involved in operating a process and maintenance AND subcontract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process.

Incident Investigation Reports

Incident investigation is the process of identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. With our incident investigations, we intend to learn from past experiences and thus avoid repeating past mistakes. Incidents that need to be investigated are the types of events which result in or could reasonably have resulted in a catastrophic release. Some of the events could be "near misses," meaning that a serious consequence did not occur, but could have.

The Project Manager is responsible for incident investigations. Employees and subcontractors are notified to immediately report all injuries, illnesses and incidents to the Project Manager. Incident investigations must be initiated within 24 hours to obtain accurate information to assist in the

identification of root causes and contributing factors that causes the incident.

All incident investigation reports (if any) within the last five years are attached to this PSM program and/or described here. The reports indicate at least the following:

- Date of the incident;
- Description of the incident;
- Recommendations resulting from the investigation;
- Date the investigation began; and
- Factors that contributed to the incident.

Our organization promptly addresses and resolves an incident report's findings and recommendations. Any actual incident report findings and recommendations in the last five years are attached to this PSM program and/or described above along with the dates on which resolutions were or will be completed.

EMA ensures that all affected personnel, whose job tasks are relevant to an incident finding (including subcontract employees where applicable), review the report to prevent or reduce the likelihood of reoccurrence.

Trade Secrets

EMA ensures that all employees and subcontractors that are responsible for compiling process safety information, those assisting in the development of the process hazard analysis, those responsible for developing operational procedures, and those involved in incident investigation, emergency planning, and compliance audits are provided with all information needed to conduct such activities without regard to possible trade secret status.

In cases were trade secrets may be disclosed, confidentiality agreements not to disclose such information may be required.

Compliance Audit Reports

At least every three years, The Project Manager completes a compliance audit which evaluates and certifies compliance with the PSM program to verify that procedures and practices developed in the PSM are adequate and are being followed. In this way, our facility is able to focus on areas of continuing concern that surfaced through the audits

Emergency Action Plan

Our Emergency Action Plan addresses what actions our employees are to take when there is an unwanted release of highly hazardous chemicals. Our Emergency Action Plan is located in our written Safety and Health manual.