ASSESSMENT REPORT
PROCESS SAFETY MANAGEMENT
OF
HIGHLY HAZARDOUS CHEMICALS
29 CFR 1910.119

FOR

PEDRICKTOWN PVC PLANT
PEDRICKTOWN, NEW JERSEY

Auditor
THOMAS M. JONES
NOVEMBER 14 through 18, 1994

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PROCESS SAFETY MANAGEMENT ASSESSMENT

PEDRICKTOWN PVC PLANT

NOVEMBER 14 THROUGH 18, 1994

The purpose of this review was to meet the audit requirements for OSHA 29 CFR 1910.119(o), to identify opportunities for improvement and to recognize exceptional systems that have been implemented to address process safety management of highly hazardous chemicals.

An assessment of the implementation status for each element of the process safety management standard is included in this report. The assessment criteria will correspond to the following classification:

Stage I:	No Action
Stage II:	Evaluating Plant Practices Against System Requirements
Stage III:	Developing Plan To Implement System Requirements
Stage IV:	Implementing Action Plans
Stage V:	System In Place
Stage VI:	Improvement Reviewed and Reaffirmed This Year

Additionally, a narrative summary of each Process Safety Management Element is included to provide rationale for the status of implementation. The GEON Company and the Pedricktown, New Jersey PVC Plant were extremely cooperative during this assessment process.

PROCESS SAFETY MANAGEMENT

FACILITY: *GEON Pedricktown PVC Plant*

REVIEW DATE: *November 14 - 18, 1994*

REVIEWER: *T. Michael Jones*

PSM ELEMENT	IMPLEMENTATION STATUS					
	I	II	III	IV	V	VI
APPLICATION				X		
EMPLOYEE PARTICIPATION				X		
PROCESS SAFETY INFORMATION				X		
PROCESS HAZARD ANALYSIS				X		
OPERATING PROCEDURES				X		
TRAINING					X	
CONTRACTORS					X	
PRE START-UP SAFETY REVIEW					X	
MECHANICAL INTEGRITY				X		
HOT WORK PERMIT					X	
MANAGEMENT OF CHANGE					X	
INCIDENT INVESTIGATION						X
EMERGENCY PLANNING/RESPONSE						X
COMPLIANCE AUDIT				X		
TRADE SECRET			X			
	NA	EVAL	DEV	IMP	IN PLC	REAFFIR

"Safety - A Continuous Improvement Process"

PROCESS SAFETY MANAGEMENT ASSESSMENT SUMMARY

APPLICATION: 1910.119(a)

A document outlining the rationale for including a facility in the PSM program is often not provided. It is recommended that the Pedricktown Plant develop a written "site plan" explaining how the plant manages process safety. Much of the necessary data exist which should become part of the document such as, what areas are included, what areas are excluded and the reasons why. In addition, the plan should include or reference all documentation associated with the process safety management standard. The following guidelines are common to each element and are recommended for inclusion in the site plan.

1. Written description of how each element is managed at the Pedricktown Plant.

2. Identify the individual or position responsible for managing a particular element.

3. Include or reference (provide information about physical location) all related procedures, policies, schedules, PFD's, P&ID's, etc. that relate to each element. Use flow charts if appropriate.

This effort can be enhanced by graphically illustrating clear delineation of the PSM areas from other areas of the Pedricktown site. *(Opportunity No. A9401)*

EMPLOYEE PARTICIPATION: 1910.119(c)

The intent of this paragraph is to assure employers afford their employees an opportunity to become involved in the process safety management activities at an elemental level. Through employee interviews, conducted during the assessment, it was evident that the Pedricktown employees are involved and generally knowledgeable concerning the PSM standard. There are ample opportunities for all employees to become involved in the day-to-day operation of the plant. It is suggested that the plant expand their existing employee participation policy (SP-2) to include an overview or purpose statement explaining why key employee involvement committees exist and how employees are involved. Documentation of all employee participation, recommendations, responsibility, actions taken with time line for completion, and closure status will enhance the employee participation activity. *(Opportunity No. EP9402)*

PROCESS SAFETY INFORMATION: 1910.119(d)

Complete and accurate information relating to the process is essential for an effective process safety management program and for conducting process hazard analyses. Written safety information on process chemicals, process technology, and the process equipment involved must become part of the information data base. Some of this information is available but not complete nor well organized in some areas.

There are four basic PSM areas within the Pedricktown Plant:

1. Dispersion polymerization
2. Tank farm
3. Suspension polymerization and related ammonia cooling system
4. Ammonia chillers

Each of these four PSM areas must individually meet each requirement of 1910.119(d) Process Safety Information.

It is suggested that an index system be provided in each of these four areas identifying where and how this process safety information can be found including the person/position responsible for maintaining the data. *(Opportunity Nos. PSI9403, PSI9404)*

PROCESS HAZARD ANALYSIS: 1910.119(e)

Employers are required, with employee participation, to develop a thorough, orderly, systematic approach for identifying, evaluating and controlling processes involving highly hazardous chemicals. The plant methodology to address this part of the PSM standard is to utilize Primatech's hazard and operability software. Primatech personnel performed the initial hazard evaluation of the Pedricktown facility to determine the priority for completing PHA's accorded to the GEON Company's schedule. The schedule is being followed and does meet the time requirements of OSHA's PSM standard. The plant's HAZOP process is thought to be thorough and covers in sufficient detail all elements necessary for a process hazard review. It is recommended the PHA (HAZOP) review recognize the following two concerns and include documentation in the HAZOP file.

1. Facility siting - consider and if of concern it should be noted. If of no concern simply recognize and document as part of the PHA file.

2. Human factors - consider and document the same as facility siting.

The plant should provide a common system by which all PHA recommendations are tracked to resolution including documentation that the PHA findings have been resolved in a timely manner and that all PHA findings have been communicated to impacted plant people. *(Opportunity Nos. PHA9405, PHA9406)*

OPERATING PROCEDURES: 1910.119(f)

The requirements of this section are for the employer to provide clear instructions for safely conducting activities involved in the covered processes consistent with the process safety information for the Pedricktown Plant. The standard requires that operating procedures be reviewed as often as necessary to assure that they reflect current operating practice. This activity is being verified by the Safety Manager.

The plant is presently converting it's operating procedures to the W.P.S. system. Plant employees are involved (verified through plant interviews) in this conversion process including the final draft. There was some variation respective to the levels of participation involving operating technicians in different areas of the plant, although not thought to be of significant concern.

The plant has good safety procedures in place to control hazards during operations such as lockout/tagout, confined space entry, opening process equipment or piping and control of traffic into the facility by non GEON employees. There was some discussion concerning where best to include consequences of deviation and steps required to avoid or correct deviations. As the operating procedures are being converted to the W.P.S. system, the issue of consequences of deviation will need to be addressed and included as part of the procedure document which can be used for reference. *(Opportunity No. OP9407)*

TRAINING: 1910.119(g)

Training will increase an employee's awareness and help them understand the nature and causes of problems arising from process operations. The training effort at the Pedricktown Plant is to be commended. Effective training programs such as in place at the Pedricktown facility can significantly reduce the number and severity of incidents arising from process operations and can be instrumental in preventing small problems from becoming or leading to catastrophic events.

There is an enormous amount of training to be achieved and documented in the industry today. The "Trim" data collection system is being managed very effectively by the plant trainers to accomplish this task. There is only one area of this section which has not been completely addressed and that is to consult with employees to determine the appropriate frequency for refresher training and document this activity. *(Opportunity No. T9408)*

CONTRACTORS: 1910.119(h)

The intent of this section is to require employers who use contractors to perform work in and around processes involving highly hazardous chemicals to establish a screening method for selecting contractors who will accomplish the task without compromising the safety of the Pedricktown facility. Potential contractors should be reminded that, as an employer, they have specific responsibilities under the 1910.119 standard and must assure that their employees are trained on performing the job safely, hazards relating to the job, and understand the provisions of the owner's emergency response plan. The plant's contractor orientation video was viewed and judged to be suitable for safety orientation of contractors. Contractor safety questionnaires and post job evaluations are only being achieved on a periodic basis. It is recommended that contractors (other than Ogden) performing work in a PSM area be evaluated on an annual basis or upon completion of a job. *(Opportunity No. C9409)*

PRE START-UP REVIEW: 1910.119(i)

New processes and modified processes which necessitate a change to the plant's process safety information data base dictate review considerations before highly hazardous chemicals are introduced into the process. These requirements include a pre start-up review to confirm that:

1. Construction and equipment is according to design and specifications.

2. Safety, operating, maintenance and emergency procedures are in place and adequate.

3. A PHA has been performed, recommendations have been resolved or implemented.

4. Management of change and training of each employee involved in the process has been completed.

Pre start-up reviews at the Pedricktown Plant are being achieved as part of the plant's management of change procedure. This section of the PSM standard is thought to be in place and working well. Capital projects or major work orders which are within a PSM area frequently generate a list of action items during the final walkthrough prior to commissioning or start-up. This list including resolution of findings should become part of the project file as evidence of pre-startup review activities. *(Opportunity No. PSSR9410)*

MECHANICAL INTEGRITY: 1910.119(j)

This section establishes requirements to assure that equipment used to process, store, or handle highly hazardous chemicals is designed, constructed, and maintained to minimize the risk of a chemical release. The elements of a mechanical integrity program include 1) identification and categorization of equipment and instrumentation, 2) development of critical maintenance procedures, 3) training for process maintenance activities, 4) inspection, 5) testing, 6) correction of identified deficiencies in equipment that are outside acceptable limits defined by the Pedricktown Plant's process safety information and a quality control program.

The Pedricktown Plant has a written mechanical integrity program (SA-17) and records and documentation indicate this procedure has been implemented. Persons involved in maintaining the ongoing integrity of affected processes have been trained in an overview of the plant PSM processes, their hazards and the associated safety and equipment maintenance procedures.

Testing, inspection and documentation needs to be expanded to include piping systems and components in all covered processes not currently being addressed. Presently only the ammonia system piping and components are being tested and/or inspected. *(Opportunity No. MI9411)*

HOT WORK PERMIT: 1910.119(k)

Employers must control, in a consistent manner, non-routine work in process areas covered by the standard. Specifically, this paragraph is concerned about permitting hot work operations associated with welding and cutting in highly hazardous chemical process areas. Minimum requirements to comply with this section include meeting OSHA's 1910.252(a) standard.

Pedricktown's Plant safety procedure (SA-1) addresses all the requirements of the PSM standard. The hot work policy is very thorough, being closely followed. Through interviews with plant employees and one contractor, the hot work procedure is thought to be understood. There are no recommendations necessary for this PSM element.

MANAGEMENT OF CHANGE: 1910.119(l)

Careful consideration of all modifications to equipment, procedures, raw materials and process conditions other than "replacement in kind" must be controlled by identifying and reviewing prior to implementing a change. The plant's policy is more stringent than PSM requirements in that there are specific items which have to be "exact" duplicates for replacements. The plant's M.O.C. policy is very thorough and addresses all areas of the PSM standard. However, inconsistent application of the plant's Management of Change procedure was observed.

Example: There were two incidents were the M.O.C. policy as written may not have been used correctly.

1. Suspension area - a revised procedure for uniform pressure testing of process vessels in the area was noted in the M.O.C. log book. The log entry was made to communicate the change however, documentation that the change had proper approval could not be found.

2. Dispersion area - a new procedure had been written, operating technicians had been trained however, no change authorization had been recorded.

These observations do not appear to be a compliance issue with the PSM standard, but may indicate a procedural issue. It is recommended that a review of the system required to comply with the plant's M.O.C. procedure be made to assure that the desired results are being achieved. *(Opportunity No. MOC9412)*

Incident Investigation: 1910.119(m)

Every incident that occurs in a PSM area which could have resulted in a catastrophic event must be investigated. The plant's culture is to report and investigate any incident with potential. The preparation of narrative reports to document the investigation activities and determine root causes through management involvement is handled very well at the Pedricktown Plant. This information if it occurs in a PSM area must be available and used when conducting plant HAZOP's. This information should include spills, releases, fire, near misses involving both GEON or contract employees. Data collected from other GEON facilities, competitors, etc. are useful data resources. This element is being utilized as intended by the PSM standard and there are no recommendations.

Emergency Planning and Response: 1910.119(n)

This section requires employers to address what action employees are to take when there is an accidental release of highly hazardous chemicals. The plant has a very good emergency response plan with good in-plant response capabilities and adequate external response resources. The plant drills weekly and semi-annually with outside agencies.

Minor revisions to the emergency response plan are required. There has been key personnel and telephone number changes which require changing. *(Opportunity No. EPR9413)*

Compliance Audit: 1910.119(o)

Employers are required to self evaluate the effectiveness of their PSM program to identify improvement opportunities and take appropriate corrective action to resolve items needing attention. Minimum requirements include:

1. Audit at least every three years.
2. Maintain at least the last two audit reports.
3. Track to completion the audit findings and document the closure action.

TRADE SECRETS: 1910.119(p)

The employer is required to provide all information necessary to comply with personnel developing sections (d) process safety information, (e) PHA's, (f) operation procedures, (n) emergency planning and response, and (o) compliance audits without regard to possible trade secrets.

The GEON Company and the Pedricktown PVC facility have provided all information requested to conduct the 1910.119 Process Safety Management Audit.

It is recommended that secrecy agreement be utilized for specific contractors that have access to sensitive process information or who work in restricted areas of the plant. *(Opportunity No. TS9414)*

T. Michael Jones, CSP

Date

PSM AUDIT

IMPROVEMENT OPPORTUNITIES
PEDRICKTOWN PVC PLANT

1994

ELEMENT	IO#	DESCRIPTION	RESPONSIBILITY	TARGET DATE
Application 1910.119(a)	A9401	Provide a site plan which explains how the plant manages the PSM program. Graphically identify the PSM areas within the facility.		
Employee Participation 1910.119(c)	EP9402	Expand SP-2 Employees Participation policy to explain why employee involvement committees exist and document actions taken to closure.		
Process Safety Information 1910.119(d)	PSI9403	Each identified PSM area must develop all data required by this section.		
	PSI9404	Provide an index system for this information.		
Process Hazard Analysis 1910.119(e)	PHA9405	Document that facility siting and human factors are considered when PHA's are completed.		
	PHA9406	Establish a tracking system to address PHA findings.		
Operating Procedures 1910.119(f)	OP9407	Allow for consequences of deviation as W.P.S. converts operating policies and procedures.		
Training 1910.119(g)	T9408	Verify and document frequency of refresher training has been reviewed with appropriate employees and that they have had input into the training frequency.		
Contractors 1910.119(h)	C9409	Conduct post job evaluation on contractors required to perform work in a PSM area. This should be achieved on an annual basis or upon job completion.		
Pre Start-Up Safety Review 1910.119(i)	PSSR9410	Pre-startup punch list generated by walkthrough reviews prior to commissioning are to become part of project file.		
Mechanical Integrity 1910.119(j)	MI9411	Testing, inspection and documentation is required on piping systems and components in all covered processes.		

ELEMENT	IO#	DESCRIPTION	RESPONSIBILITY	TARGET DATE
Management of Change 1910.119(l)	MOC9412	Review the plant's M.O.C. policy from an administration standpoint to assure desired results are being achieved.		
Emergency Planning and Response 1910.119(n)	EPR9413	Revise emergency response plan to reflect correct personnel and telephone numbers of key personnel.		
Trade Secrets 1910.119(p)	TS9414	Consider secrecy agreement for contractors who work in sensitive areas of the plant.		

AUDITOR QUALIFICATIONS

T. MICHAEL JONES:

Mike Jones has worked in the petrochemical industry with The BFGoodrich Chemical Company, Diamond Shamrock Chemicals, Cain Chemical and Occidental Chemical Corporation for 29 years. He was the Corporate Manager - Facility Safety and Industrial Hygiene for OxyChem until he elected early retirement in September, 1993, to form the company of T.Michael Jones & Associates. Mike is a Certified Safety Professional with extensive experience in plant operations, maintenance, engineering design/construction, safety, industrial hygiene, emergency management, and process safety management. Product manufacturing experience includes synthetic rubber, PVC resin, vinyl chloride monomer, olefins and aromatics, ethylene dichloride, caustic soda, chlorine, and ethylene oxides/derivatives. He holds a B.S. Degree in Industrial Arts and Chemistry from Stephen F. Austin University and a M.S. Degree in Engineering Management from Louisiana State University Baton Rouge.