



400 Series: Process Safety

Process Safety Management Applicability

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Global Environmental, Health and Safety
Indorama Ventures

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1. Purpose

This standard establishes Indorama Ventures requirements to ensure each site has the appropriate Process Safety Management (PSM) system in place that includes the identification of process hazards which may result from a process release, the practices to design and maintain a safe site by taking such steps as are necessary to prevent releases, and the systems to minimize the consequences of accidental releases which do occur.

This standard defines the PSM Applicability evaluation criteria to be used to determine if a site is a PSM Covered or Non-PSM Covered Indorama Ventures site. It establishes the minimum requirements necessary for implementing an integrated Process Safety Management program that is relative to the site's potential High, Medium, or Low Process Safety Risk and that is compliant with the requirements of the IVL corporate standards covering the required elements of PSM.

This standard does not replace or exclude applicability to any governing regulatory agency requirements, and each site shall adhere to the requirements of this standard or local regulation based on whichever is more stringent.

2. Scope

This standard applies to all Indorama Ventures owned/operated sites. This standard does not apply to joint ventures (JVs) in which Indorama Ventures is a minority owner, nor to third-party warehouses and tollers, unless specifically requested by the related Segment EHS Leader.

This standard must be implemented by each site. Until implementation of this standard is complete, each site must at a minimum be in compliance with the local applicable regulations.

3. Responsibilities

Following is an overview of key responsibilities for this standard. Additional responsibilities, as applicable, are included in Section 4, Requirements.

3.1. Corporate EHS

- 3.1.1. Provide ongoing technical assistance related to this standard.
- 3.1.2. Periodically audit sites to determine compliance with this standard.
- 3.1.3. Review, update and communicate to all Indorama Ventures sites any updates or changes to this standard and associated documents and tools.
- 3.1.4. Periodically review this standard to ensure its continuing adequacy and suitability to Indorama Ventures' operations.
- 3.1.5. Ensure this standard is consistently implemented from site-to-site within Indorama Ventures.
- 3.1.6. Communicate, as applicable, any lessons learned as a result of best practices identified or any non-compliances associated with implementation of this standard.

3.2. Site Head or Designee

- 3.2.1. Ensure implementation of and compliance with this standard including that it is adhered to and a site-specific program is developed so all employees receive the proper training, resources, and communications.
- 3.2.2. Assist with the implementation of the site-specific program; in particular:
 - Be thoroughly familiar with the requirements of this standard and the required PSM applicability evaluation.

- Provide support, resources and training needed to carry out the requirements of this standard and the site-specific program.
- Ensure required records are maintained on file.
- Ensure compliance with site-specific program by employees and contractors (as applicable).

3.3. Segment EHS

- 3.3.1. Ensure that any site or local standard or procedure related to the same topic follows the corporate requirements at minimum.
- 3.3.2. Support the sites on any technical point related to the standard, including implementation.
- 3.3.3. Periodically evaluate sites' level of compliance with this standard

3.4. Program Owner

- 3.4.1. Be thoroughly familiar with the requirements of this standard and local regulatory requirements.
- 3.4.2. Develop and implement a site-specific program that meets the requirements of this standard and any local/regional regulatory requirements.
- 3.4.3. Periodically review and monitor for compliance with the requirements of this standard, and per local regulatory requirements, at least every five (5) years.
- 3.4.4. Develop an action plan to correct any non-conformance with local regulatory or Indorama Ventures requirements.

3.5. Employees and Contractors

- 3.5.1.** All personnel must understand and follow the requirements of the site-specific policy including:
 - Being aware of and trained on, as applicable, the legal, regulatory and other requirements.
 - Immediately reporting any situations that may cause or have a potential to cause a non-compliance.
 - Completing any assigned regulatory tasks or actions (e.g., training).

3.6. In addition to the roles and responsibilities detailed above, the site-specific policy and associated procedures must define and document the roles and responsibilities for all personnel who play a role in implementing the site-specific policy, for example, as applicable:

- Site Leadership Team
- Human Resources (HR)
- Legal
- EHS Personnel
- Medical Staff (or third-party licensed healthcare provider)
- Other applicable functions, as staffed at individual site level

4. Requirements

The site shall evaluate process systems for PSM applicability as follows:

4.1. Step 1 – Determine PSM applicability requirements.

- 4.1.1. All IVL sites are to perform a PSM Applicability assessment to determine if they are a PSM Covered Site or a Non-PSM Covered Site, based on the site's local regulatory requirements. Examples of these regulations include, but are not limited to:
- The OSHA 1910.119 Process Safety Management of Highly Hazardous Chemicals standard for the United States
 - The Seveso III Directive for parts of Europe
 - The HSE Control of Major Accident Hazards (COMAH) standard for the United Kingdom
 - The AQ/T 3034 Guidelines for Process Safety Management of Chemical Corporations for China
 - The Manufacture, Storage, and Import of Hazardous Chemical Rules (MSIHC) rules for India
 - The Mexican Official Norm NOM-028-STPS-2012 System for the Management of Labor – Process Safety and Critical Equipment Handling Hazardous Substances for Mexico
- 4.1.2. For IVL site locations in which there is no local regulation established to determine PSM Applicability, these IVL sites will perform the PSM Applicability assessment based on the requirements of OSHA 1910.119.
- 4.1.3. If the PSM applicability assessment determines any processes at the site are applicable to local regulatory PSM requirements or meet OSHA PSM applicability criteria in the case of no local regulatory requirements, the site is considered PSM-Covered. If no processes meet any of these requirements, the site is considered Non-PSM Covered.

4.2. Step 2 - Determine if process systems within the site have a potential for adverse process safety events, as described below.

- 4.2.1. Does the site produce, process, handle or store any substances, including inert gases, which may as a result of a release potentially result in an event with Severity Category A through F due the substance's toxicity, reactivity, flammability, volatility, corrosivity, temperature, pressure, or other process conditions? Refer to the following:
- IVL EHS-208 Risk Management Standard and Matrix for the defined Severity Categories,
 - Attachment A for the PSM Applicability Decision Workflow, and
 - Attachment B for some examples of High Hazard Process Systems (HHPS) for consideration.
- 4.2.2. If "Yes", the site will designate these process systems as High Hazard Process Systems (HHPS) to be included in a formal PSM program. Proceed to Step 3.

4.3. Step 3 - Site designation of High, Medium, and Low Process Safety Risk.

- 4.3.1. Process systems determined to be PSM applicable based on this standard (as defined in Step 1 above) are considered High Process Safety Risk sites.
- 4.3.2. Process systems not applicable to any PSM regulatory requirements as defined in Step 1 above and determined to have one or more HHPS as defined in Step 2 above are considered Medium Process Safety Risk sites.
- 4.3.3. All other process systems are considered Low Process Safety Risk sites.

4.3.4. All High, Medium and Low Process Safety Risk sites shall implement the PSM requirements listed in Table 1 in Section 4.5.

- 4.4. Documentation of the PSM Applicability results, which show the site as a PSM Covered Site or a Non-PSM Covered Site and the designation as High, Medium, or Low Process Safety Risk, shall be developed at the site level. This documentation shall indicate the PSM Applicability status and the basis for the status. It should include calculations of inventories, flow diagrams, plot plans, and any other relevant information gathered to determine the PSM Applicability status. Where applicable, per Steps 2 and 3 above, the sites shall document the identified High Hazard Process Systems (HHPS) to be included in the PSM program. Some processes within PSM Covered sites may not meet the requirements as defined in Steps 1 and 2; however, documentation must show processes that do not meet the requirements are not interconnected to a PSM Covered process system. If interconnected, the process must be considered part of the PSM Covered process system.
- 4.5. Table 1 includes the set of key EHS standards that address the required elements of a PSM program. The intent of Table 1 is to show IVL's compliance requirements for these standards for IVL PSM Covered and Non-PSM Covered sites, with respect to the site's High, Medium, and Low Process Safety Risk. Any additional EHS corporate standards not listed below are to be followed as stated in the Scope section of each standard.

Table 1 does not replace or exclude applicability to any governing regulatory agency requirements, and each site shall adhere to the requirements of the applicable IVL standard or local regulation, based on whichever is more stringent.

Table 1
Relevant Process Safety Standard Number, Section, Title, and Requirements

PSM Covered or Non-PSM Covered Site?		PSM Covered	Non-PSM Covered With HHPS	Non-PSM Covered Without HHPS
High Hazard Process System Present?		N/A	Yes	No
IVL Site Process Safety Risk Hazard Ranking		High	Medium	Low
Relevant Process Safety Standards				
Standard Number	Leadership and Management of IVL EHS			
IVL EHS-101	EHS Roles & Responsibilities	Mandatory	Mandatory	Mandatory
IVL EHS-102	Agency Inspections and Investigations (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-103	Selection and Management of Contractors	Mandatory	Mandatory	Mandatory
IVL EHS-104	Organizational Change Management	Mandatory	Mandatory	Mandatory
IVL EHS-105	Notification of Incidents	Mandatory	Mandatory	Mandatory
IVL EHS-106	Incident Investigation	Mandatory	Mandatory	Mandatory
IVL EHS-107	Management of Recommendations / Actions	Mandatory	Mandatory	Mandatory
IVL EHS-108	Improvement Plans (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-109	EHS Metrics & Reporting	Mandatory	Mandatory	Mandatory
IVL EHS-110	Corporate Audit Program	Mandatory	Mandatory	Mandatory
IVL EHS-112	EHS Regulatory Compliance	Mandatory	Mandatory	Mandatory
IVL EHS-113	EHS Training & Competency (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-114	EHS Standard Variance Request	Mandatory	Mandatory	Mandatory
IVL EHS-115	Insurance Recommendation Challenge	Mandatory	Mandatory	Mandatory
Risk and Emergency Management				
IVL EHS-203	Corporate and Business Crisis Management	Mandatory	Mandatory	Mandatory
IVL EHS-204	Management of Change (MOC)	Mandatory	Mandatory	Mandatory
IVL EHS-208	Risk Management Standard & Matrix	Mandatory	Mandatory	Mandatory
IVL EHS-210	Fire Risk Assessments (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-211	Facility Security & Visitor Control (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-212	Travel Health, Safety and Security (to be issued at a future date)	Mandatory	Mandatory	Mandatory
Safe Systems of Work				
IVL EHS-302	Hot Work	Mandatory	Mandatory	Mandatory
Process Safety				
IVL EHS-402	Process Safety Information	Mandatory	Mandatory	Mandatory
IVL EHS-403	Process Hazard Identification and Analysis	Mandatory	Mandatory HHPS	Recommended
IVL EHS-405	EHS Criticality Assessment	Mandatory	Mandatory HHPS	Recommended
IVL EHS-406	IPL/SIL Assessment Methodology	Mandatory	Mandatory HHPS	Recommended
IVL EHS-407	Facility Siting	Mandatory	Mandatory	Recommended
IVL EHS-408	Area Classification and Management (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-409	Safety Instrumented Functions (Plant Trips) (to be issued at a future date)	Mandatory	Mandatory HHPS	Recommended
IVL EHS-410	Pressure Relief System Design (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-412	Operating Procedures (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-413	Pre-Start-Up Safety Review	Mandatory	Mandatory	Mandatory
IVL EHS-414	Alarm Management (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-415	Mechanical Integrity (to be issued at a future date)	Mandatory	Mandatory	Mandatory
IVL EHS-417	IVL Process Safety Management Applicability	Mandatory	Mandatory	Mandatory
General Topics Covered Within the Standards				
Multiple*	Employee Participation	Mandatory	Mandatory	Mandatory
Within EHS-417	Trade Secrets	Mandatory	Mandatory	Mandatory

* Employee Participation requirements are covered in multiple IVL EHS Standards

Mandatory: Standard is Required to be followed as written throughout the site.

Mandatory HHPS: Standard is Required to be followed as written when associated with a High Hazard Process System. It is recommended as a best practice for non-HHPS areas.

Recommended: Suggested as a best practice for the site when applicable.

4.6. Sections 4.6.1 thru 4.6.6 are written to provide clarification to Table 1.

4.6.1. IVL EHS-204 Management of Change:

All sites shall ensure the MOC system will address any new process chemicals, increase in current inventory, or new process hazards identified for modified processes and new designs / projects. When new chemicals or a change in inventory are identified the sites shall update their PSM Applicability assessment.

4.6.2. IVL EHS-403 Process Hazard Analysis (PHA):

Required to be implemented as written for all identified High Hazard Process Systems (HHPS).

All sites shall establish a system to ensure that any new process chemicals, increase in current inventory, or process hazards are identified and analyzed for modified processes and new designs / projects. When new chemicals or a change in inventory are identified the sites shall update their PSM Applicability assessment and associated PHA.

4.6.3. IVL EHS-405 EHS Criticality Assessment:

Required to be implemented as written when assessing a High Hazard Process System.

4.6.4. IVL EHS-406 Independent Protection Layer Assessment:

Required to be implemented as written when assessing a High Hazard Process System.

4.6.5. IVL EHS-409 Safety Instrumented Functions (Plant Trips) (to be issued at a future date):

Required to be implemented as written when evaluating a High Hazard Process System.

4.6.6. Trade Secrets

All sites shall take the necessary steps to protect trade secret information from competitors, however, sites shall make any information necessary available to those persons responsible for compiling the critical process safety information, assisting in the development of the process hazard analysis, developing the operating procedures, being involved in incident investigations and emergency planning and response, and when executing compliance audits without regard to possible trade secret status of such information.

5. Training

Training requirements must be defined in the site-specific program. At a minimum, all training must be documented with the training date, the names of personnel trained, the names of the trainer(s), the content of the training (or reference to content) and other site-specific/business segment requirements, when applicable.

5.1. Initial

Training on the requirements of this standard must be provided to Indorama Ventures personnel based on their relevant responsibilities and shall be provided in the local language. At a minimum, personnel and/or management with direct responsibilities for this standard must be trained prior to conducting activities associated with it.

5.2. Refresher

Refresher training shall be provided if changes to this standard are made, or at least once every three (3) years.

6. Recordkeeping

Records associated with PSM Applicability determinations must be controlled and retained in accordance with regulatory or site business segment record retention requirements, whichever is more stringent. Examples of records to be maintained, include but may not be limited to calculations of inventories, flow diagrams, plot plans, and any other relevant information gathered to determine the PSM Applicability status and level of Process Safety Risk.

7. References

- 7.1. IVL EHS-103, Selection and Management of Contractors
- 7.2. IVL EHS-104, Organizational Change Management
- 7.3. IVL EHS-106, Incident Investigations
- 7.4. IVL EHS-107, Management of Recommendations / Actions
- 7.5. IVL EHS-109, EHS Metrics and Reporting
- 7.6. IVL EHS-204, Management of Change
- 7.7. IVL EHS-208, Risk Management Standard and Matrix
- 7.8. IVL EHS-210, Fire Risk Assessments, Attachment B
- 7.9. IVL EHS-402, Process Safety Information
- 7.10. IVL EHS-403, Process Hazard Analysis
- 7.11. IVL EHS-412, Operating Procedures
- 7.12. IVL EHS-413, Pre-Start-Up Safety Review
- 7.13. IVL EHS-415, Mechanical Integrity
- 7.14. OSHA 1910.119 Appendix A, List of Highly Hazardous Chemicals, Toxics and Reactives

8. Terms and Definitions

See IVL EHS Glossary

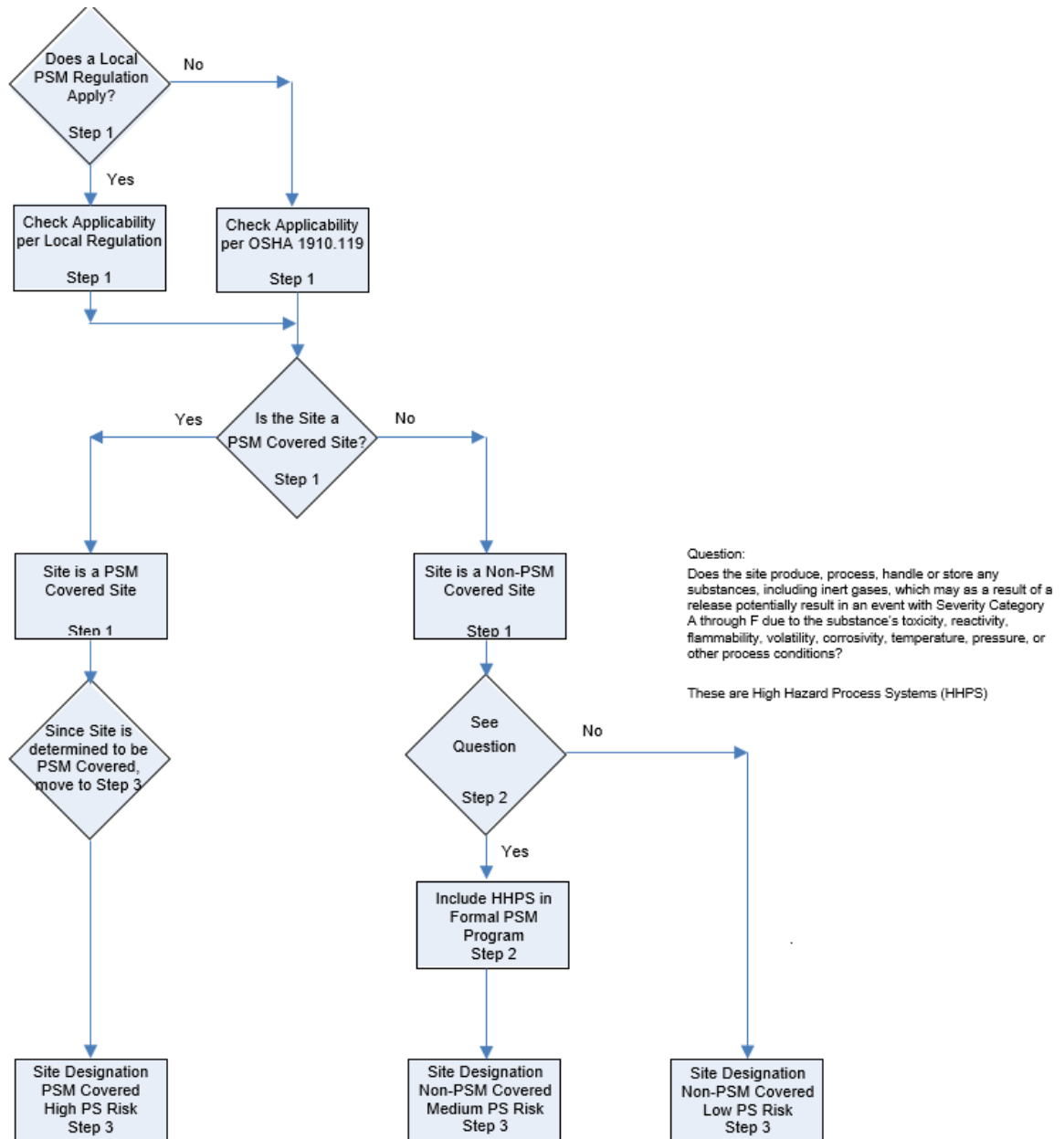
9. Revision History

Version	Date	Summary of Update	Owner	Approver	Next Review Date
Original	18 April 2022	Initial Release	Chad Wyble, Global Process Safety Program Director	Todd Hogue, VP, Global Head of EH&S	18 April 2025
1.0	09 August 2024	Updated implementation timeframe (Section 2) and Responsibilities (Section 3); made minor editorial updates.	Chad Wyble, Global Process Safety Program Director	Todd Hogue, VP, Global Head of EH&S	09 August 2029

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Attachment A: PSM Applicability Decision Workflow



Attachment B: Potential High Hazard Process Systems for Consideration

- Boiler systems
- Heat Transfer Fluid systems
- Thermal Oxidizers
- Venting systems
- Reactors
- Hot polymer systems
- Extruders
- Hot pack systems
- Areas of combustible dust
- Caustic systems
- Distillation columns
- Etc.