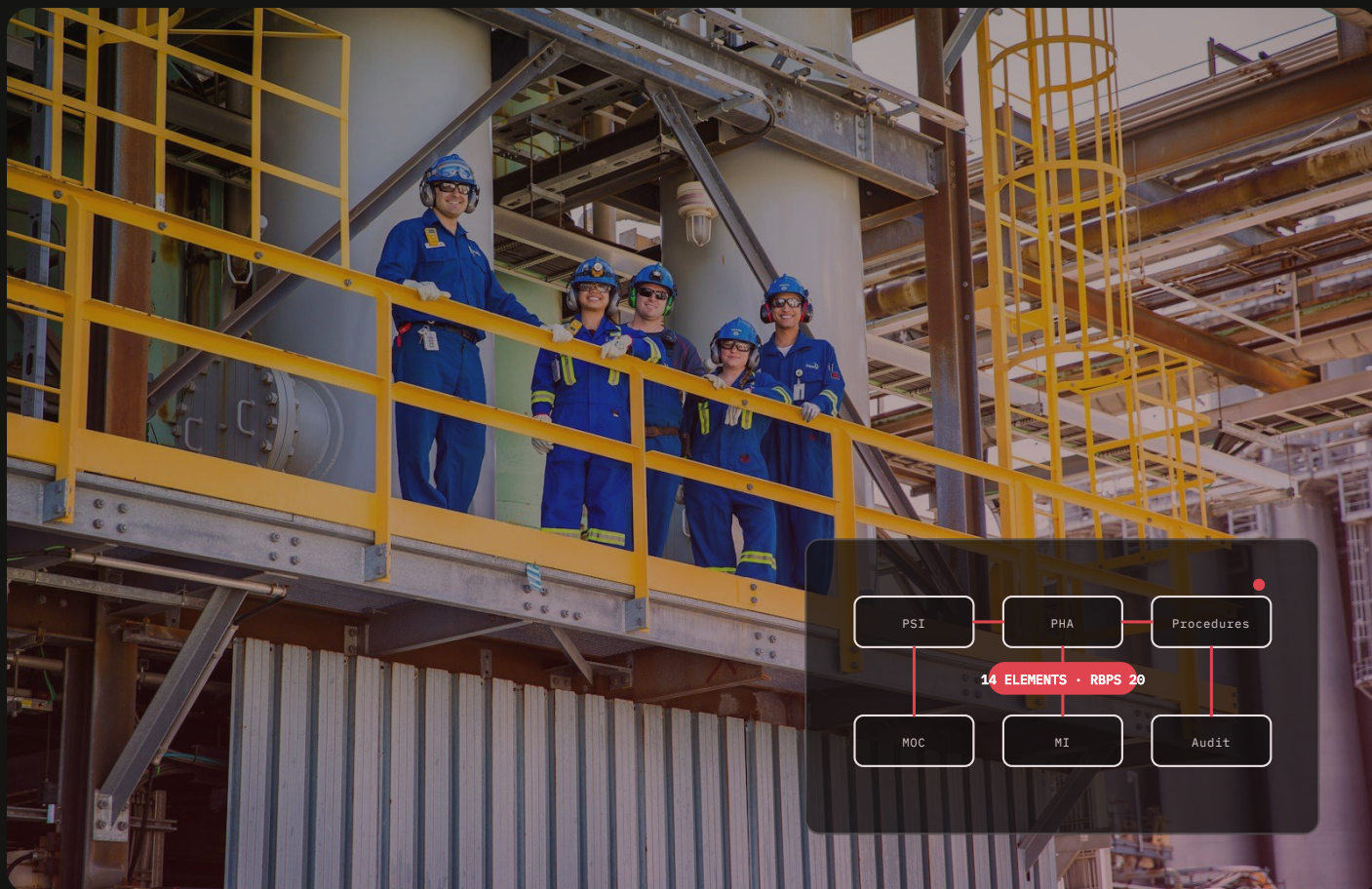




TRAINING CATALOGUE · CATEGORY D

Process Safety Management

The elements of OSHA PSM and CCPS Risk Based Process Safety: MOC, mechanical integrity, procedures and operational discipline, handover, audits, indicators, investigation and leadership.

12 **13.5**
COURSES TRAINING DAYS

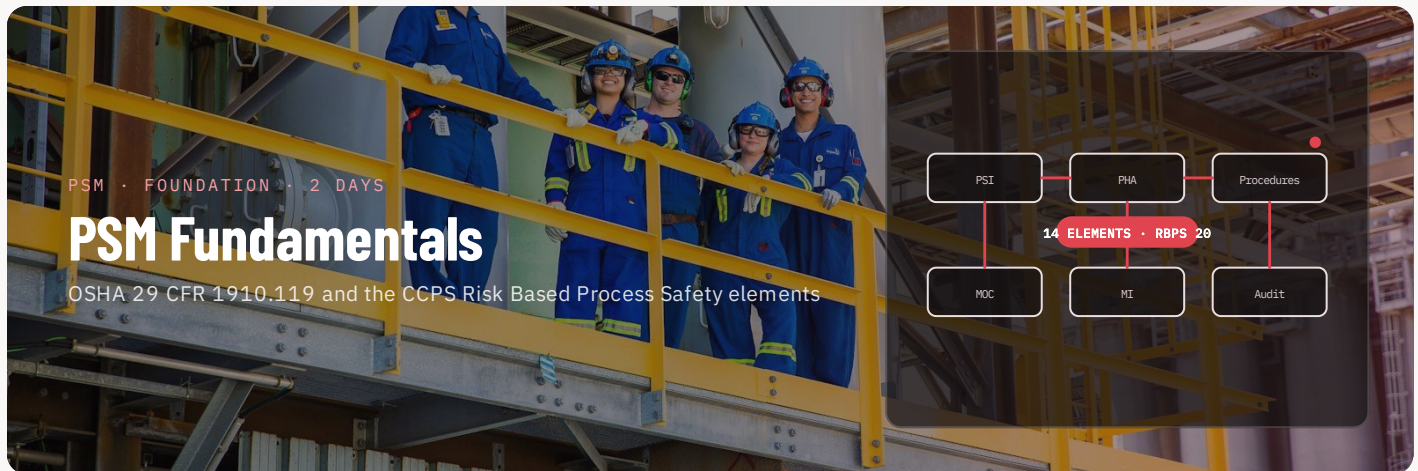
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Qatar

Category D • Process Safety Management

CODE	COURSE	DURATION	LEVEL	PRIMARY AUDIENCE
D • Process Safety Management				
TR-D01	PSM Fundamentals OSHA 29 CFR 1910.119 and the CCPS Risk Based Process Safety elements	2 days	Foundation	PSM element owners
TR-D02	Management of Change (MOC) and Pre-Start-up Safety Review Recognising change, assessing it properly and confirming readiness before hydrocarbons are introduced	1 day	Foundation	MOC originators
TR-D03	Mechanical Integrity and Safety-Critical Equipment Building an MI programme around the equipment that keeps hazards contained	1 day	Intermediate	Inspection
TR-D04	Process Safety Information and Safe Operating Limits What the plant must know about its chemicals, technology and equipment, and how safe limits are set and kept	½ day	Foundation	Process engineers
TR-D05	Operating Procedures and Operational Discipline / Conduct of Operations Writing procedures people will follow and building the discipline to follow them	1 day	Foundation	Operations supervisors
TR-D06	Shift Handover and Electronic Logbook Practice Passing on what matters between shifts, on paper and in CeraShift	½ day	Foundation	Panel and field operators
TR-D07	Process Safety Auditing— OSHA PSM / RBPS / Seveso Planning, conducting and reporting a process safety audit that finds what matters	2 days	Advanced	Internal and corporate auditors
TR-D08	Process Safety Performance Indicators (API RP 754) Selecting, defining and using leading and lagging indicators that drive action	1 day	Intermediate	HSE and process safety managers
TR-D09	Incident Investigation and Root Cause Analysis Evidence, causal analysis and recommendations that address the management system, not the person	2 days	Intermediate	Incident investigation team leaders and members
TR-D10	Process Safety Leadership for Managers What site and business leaders must know, ask and do to prevent a major accident	½ day	Foundation	Site managers
TR-D11	Human Factors and Safety-Critical Task Analysis Identifying the tasks where human error leads to a major accident and designing them so error is less likely	1 day	Intermediate	Process safety
TR-D12	Emergency Response Planning and Drill Design Building a response plan on credible scenarios and testing it with drills that find weaknesses	1 day	Intermediate	Emergency response coordinators


DURATION
 2 days

LEVEL
 Foundation

FORMAT
 On-site classroom · virtual instructor-led

LANGUAGE
 English

MAX. PARTICIPANTS
 16

14 + 20

OSHA and RBPS elements

1

gap-assessment workshop

30+

audit-ready record types

Overview

Process safety management is how a plant keeps its hazards under control every day, not just on the day of the HAZOP. This course explains each of the 14 OSHA PSM elements and the 20 CCPS RBPS elements, what 'good' looks like in practice, how the elements connect, and where programmes typically decay between audits.

Learning outcomes

- Explain the intent and requirements of every PSM element
- Recognise the documents and records an auditor will ask for
- Connect PHA, MOC, PSI, mechanical integrity and training into one system
- Use leading and lagging indicators (API RP 754) to monitor the programme
- Identify common gaps and prioritise corrective actions
- Describe the roles of element owners, operations and leadership

Who should attend

PSM element owners, engineers, supervisors and HSE staff new to a formal PSM programme; managers accountable for compliance

Course outline

DAY 1

Why PSM exists: major accident lessons · OSHA 1910.119 and Seveso context · process safety information and safe limits · PHA · operating procedures and conduct of operations · training · contractors

DAY 2

Mechanical integrity and SCE · MOC and PSSR · hot work and permits · incident investigation · emergency planning · compliance audits · RBPS elements beyond OSHA · metrics with CeraPulse · gap-assessment workshop

Standards referenced

OSHA 29 CFR 1910.119 · CCPS Risk Based Process Safety
 API RP 754 · Seveso III Directive · EI PSM Framework

Tools & exercises

Gap-assessment exercise using the CeraPulse audit module

What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES
 None

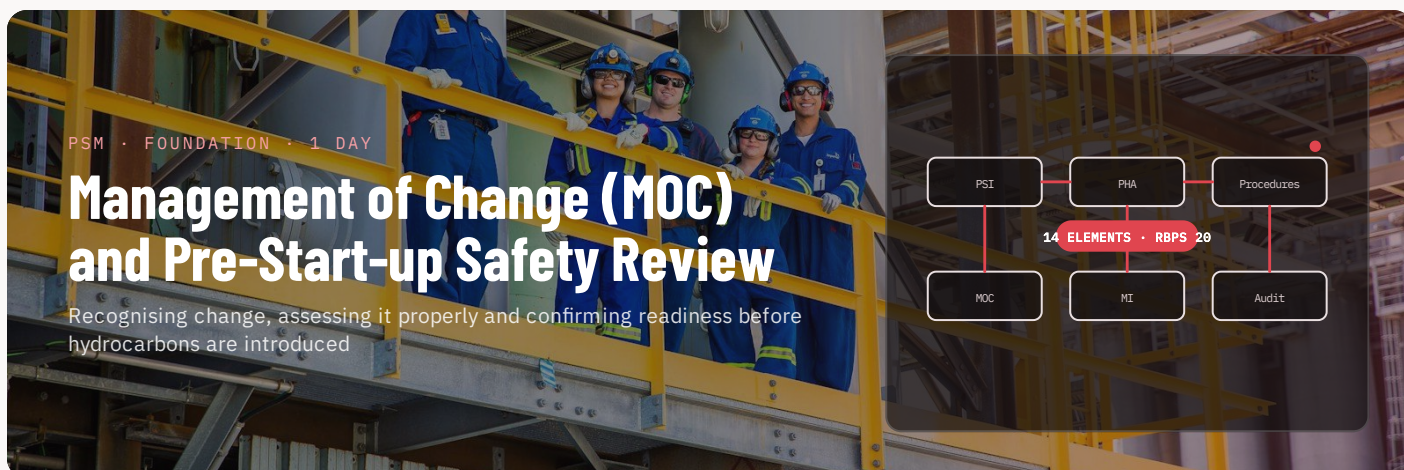
CERTIFICATION
 Certificate of completion

INSTRUCTORS
 Practising engineers — TÜV HAZOP Leader, CCPS and IEC 61511 Functional Safety certified — with 200+ years of cumulative plant experience.

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DURATION
1 day

LEVEL
Foundation

FORMAT
On-site classroom · virtual instructor-led

LANGUAGE
English

MAX. PARTICIPANTS
16

12

MOC cases judged: change or not?

1

PSSR walkdown checklist

2

workflow templates to take home

◆ Overview

Most major accidents involve a change that somebody did not think was a change. The course covers what counts as change (equipment, chemicals, procedures, organisation, temporary and emergency changes), how to scope the review so it is proportionate, and how the PSSR confirms that the change was built as designed, procedures and training were updated, and PHA actions were closed. Participants judge twelve real cases and run a tabletop PSSR on a modification package.

◆ Learning outcomes

- Distinguish replacement-in-kind from change, including organisational and procedural change
- Scope a technical review proportionate to the hazard: checklist, What-If or full HAZOP
- Manage temporary changes with expiry dates and restoration checks
- Update PSI, procedures, training and PHA records as part of closure
- Run a PSSR: field walkdown, punch-list categories and authorisation to start up
- Audit an MOC system with metrics such as overdue temporary changes and closure quality

◆ Who should attend

MOC originators, reviewers and approvers; operations, maintenance and project engineers; PSSR team members and PSM coordinators

◆ Course outline

MORNING

Change-related incidents (Flixborough and others) · OSHA 1910.119(l) and RBPS requirements · what is a change: twelve cases · MOC workflow and roles · risk-based review depth · temporary and emergency changes

AFTERNOON

Organisational change management · closure: PSI, procedures, training · PSSR per 1910.119(i): walkdown, punch list, authorisation · tabletop PSSR on a modification package · MOC metrics and audit questions

◆ Standards referenced

OSHA 29 CFR 1910.119(l) and (i)

CCPS Guidelines for the Management of Change for Process Safety

CCPS Risk Based Process Safety

EI Guidance on Organisational Change

Seveso III Directive

◆ Tools & exercises

Workflow and PSSR templates provided; exercises on participants' own MOC procedure

◆ What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES
None

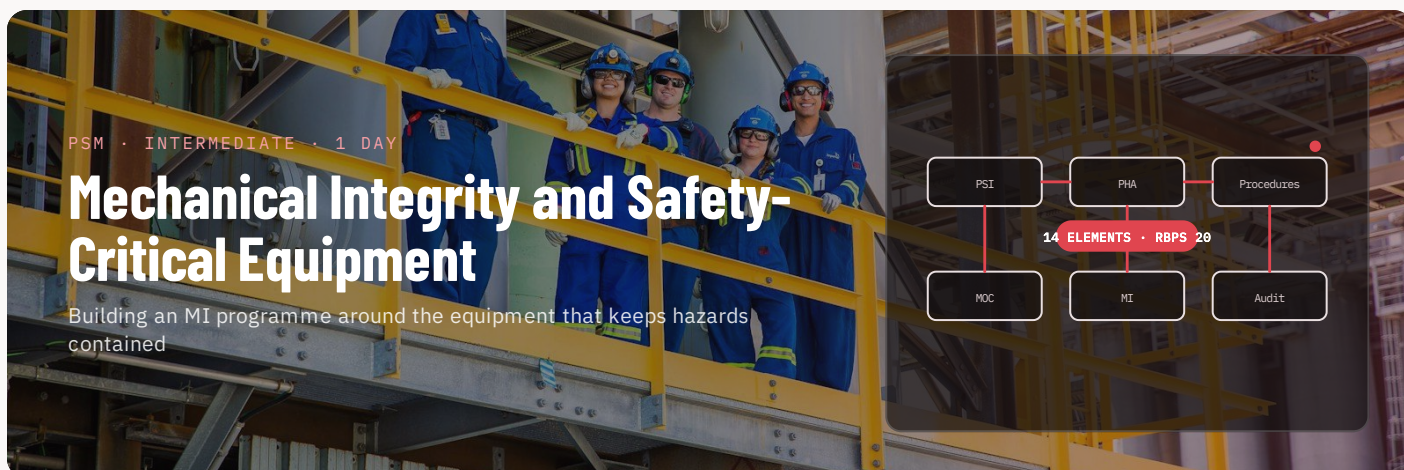
CERTIFICATION
Certificate of completion

INSTRUCTORS
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PSM · INTERMEDIATE · 1 DAY

Mechanical Integrity and Safety-Critical Equipment

Building an MI programme around the equipment that keeps hazards contained



DURATION
1 day

LEVEL
Intermediate

FORMAT
On-site classroom · virtual instructor-led

LANGUAGE
English

MAX. PARTICIPANTS
16

1

SCE identification exercise on a unit

5

equipment classes covered

1

performance-standard template

Overview

Mechanical integrity is the PSM element with the most records and the least clarity about which ones matter. The course explains how to identify safety-critical equipment from the PHA and bow-ties, write performance standards for it, set inspection and test intervals using API 510/570/580 and IEC 61511, and manage deficiencies and deferrals so that a known defect never becomes an accepted condition. Participants identify the SCE on a unit and write a performance standard for one item.

Learning outcomes

- Identify safety-critical equipment and link each item to the hazard it controls
- Write performance standards: functionality, availability, reliability, survivability
- Set inspection intervals for pressure vessels, piping, tanks, relief devices and SIF using RBI and proof-test logic
- Manage deficiencies, temporary repairs and deferrals with the right approval level
- Assure quality of new and repaired equipment: materials, procedures, positive material identification
- Use MI KPIs: overdue inspections, backlog, failures on test, integrity operating windows

Who should attend

Inspection, maintenance and reliability engineers; PSM coordinators owning the MI element; operations engineers responsible for safeguards on their unit

Course outline

MORNING

MI incidents and what auditors find · OSHA 1910.119(j) and RBPS asset integrity · SCE identification from PHA and bow-ties · performance standards · pressure vessel and piping inspection (API 510/570) · RBI concepts (API 580/581)

AFTERNOON

Relief devices, tanks and rotating equipment · SIF proof testing and IEC 61511 · integrity operating windows (API 584) · deficiency management and deferrals · QA/QC of new equipment · MI metrics · SCE exercise on a unit

Standards referenced

OSHA 29 CFR 1910.119(j) API 510 / 570 / 653 API 580 / 581
API 584 API 576 IEC 61511

Tools & exercises

Performance-standard and deferral templates provided; exercises on participants' own equipment lists

What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES

Plant engineering or inspection experience

CERTIFICATION

Certificate of completion

INSTRUCTORS

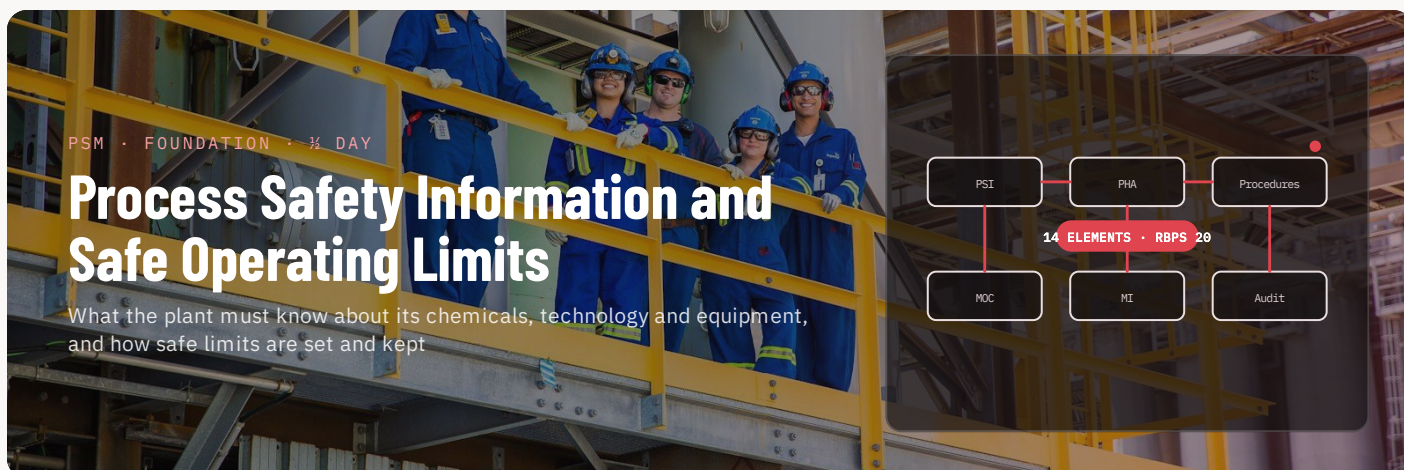
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PSM · FOUNDATION · ½ DAY

Process Safety Information and Safe Operating Limits

What the plant must know about its chemicals, technology and equipment, and how safe limits are set and kept



DURATION

½ day

LEVEL

Foundation

FORMAT

On-site classroom · virtual instructor-led

LANGUAGE

English

MAX. PARTICIPANTS

16

1

PSI gap check on a live unit

3

limit types: design, safe operating, alarm

1

safe-limits table template

Overview

Every other PSM element depends on process safety information being complete, current and findable. This half-day course sets out the three PSI groups of OSHA 1910.119(d): chemical hazards, process technology and equipment design, then concentrates on the part that operators use daily, the safe operating limits table: how design limits, safe upper and lower limits, alarm settings and consequence-of-deviation statements are derived and kept consistent with the PHA, alarm database and procedures.

Learning outcomes

- List the PSI required for chemicals, technology and equipment and know where it lives on their site
- Derive safe operating limits from design limits with documented margins
- Write consequence-of-deviation statements that operators can act on
- Keep P&IDs, relief design basis and materials data controlled under MOC
- Check that PSI, alarm settings, procedures and PHA agree with each other
- Prepare PSI for an audit or PHA revalidation

Who should attend

Process engineers, technical authorities, PSM coordinators and document controllers; operations supervisors responsible for safe operating limits

Course outline

SESSION 1

PSI-related incidents · OSHA 1910.119(d) and RBPS process knowledge management · chemical hazard data and SDS limits · process technology: block flow, chemistry, inventories, safe upper and lower limits · equipment: codes, materials, relief design basis, P&ID control

SESSION 2

Setting safe operating limits: design limit, safe limit, alarm, normal envelope · consequence of deviation and integrity operating windows · consistency with PHA and alarm database · document control and MOC hooks · PSI gap check on a unit

Standards referenced

OSHA 29 CFR 1910.119(d) · CCPS Risk Based Process Safety
API 584 · ISA-18.2 · Seveso III Directive

Tools & exercises

Safe-limits table and PSI index templates provided; exercise on participants' own unit data

What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES

None

CERTIFICATION

Certificate of completion

INSTRUCTORS

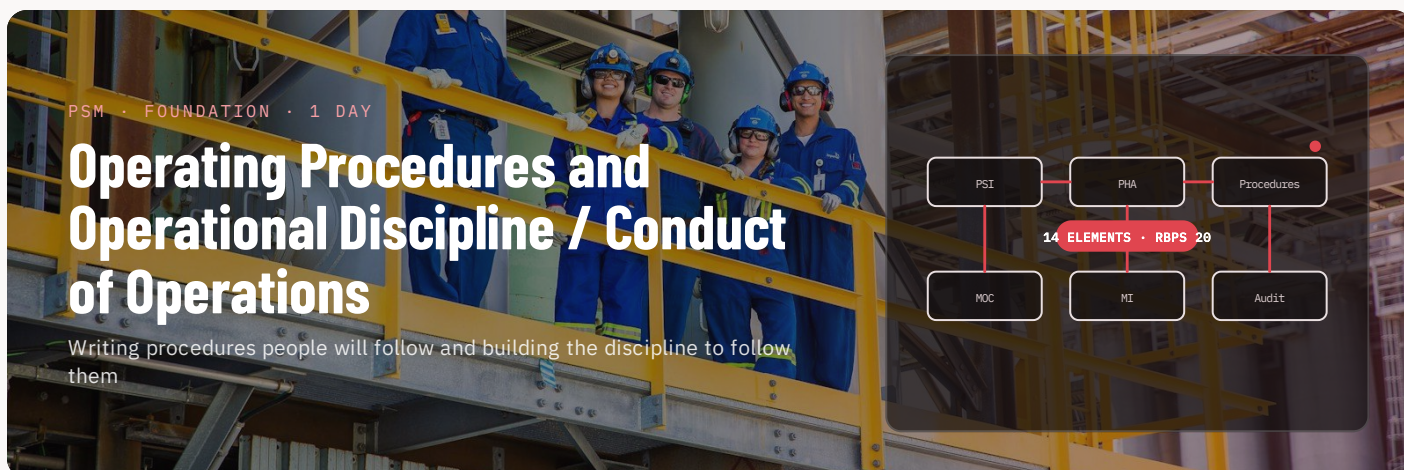
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PSM · FOUNDATION · 1 DAY

Operating Procedures and Operational Discipline / Conduct of Operations

Writing procedures people will follow and building the discipline to follow them

14 ELEMENTS · RBPS 20

PSI PHA Procedures

MOC MI Audit

DURATION
 1 day

LEVEL
 Foundation

FORMAT
 On-site classroom · virtual instructor-led

LANGUAGE
 English

MAX. PARTICIPANTS
 16

2

procedures rewritten in the workshop

1

procedure-quality checklist

6

conduct-of-operations practices

Overview

A procedure that is technically correct but unusable at three in the morning is a hazard. The course covers what 1910.119(f) requires for start-up, normal, temporary, emergency and shutdown operations, how to write steps with the right level of detail, warnings and verification points, and how to keep procedures current through annual certification and MOC. The second half addresses conduct of operations: the practices that turn a written procedure into what actually happens on shift.

Learning outcomes

- Structure a procedure set covering every operating phase required by 1910.119(f)
- Write steps with clear action, expected response, limits and hold points
- Build in critical-step verification and sign-off without making the document unusable
- Manage temporary procedures, deviations and annual certification
- Apply conduct-of-operations practices: shift routines, log-keeping, bypass control, housekeeping
- Measure procedure adherence and use findings to improve the documents, not just the people

Who should attend

Operations supervisors, procedure writers, training coordinators and unit engineers; managers accountable for operational discipline

Course outline

MORNING

Procedure-related incidents · OSHA 1910.119(f) and RBPS operating procedures · procedure hierarchy and formats · writing style, level of detail, warnings and cautions · critical steps and verification · procedure-quality checklist

AFTERNOON

Annual certification and MOC of procedures · temporary procedures and deviations · conduct of operations and operational discipline (CCPS) · shift routines, bypass and override control · rewriting two participants' procedures · adherence measurement

Standards referenced

OSHA 29 CFR 1910.119(f)

CCPS Conduct of Operations and Operational Discipline

CCPS Guidelines for Writing Effective Operating and Maintenance Procedures

EI Human Factors Briefing Note 4 (Procedures)

CCPS Risk Based Process Safety

Tools & exercises

Procedure templates and quality checklist provided; workshop on participants' own procedures

What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

INSTRUCTORS

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PREREQUISITES
 None

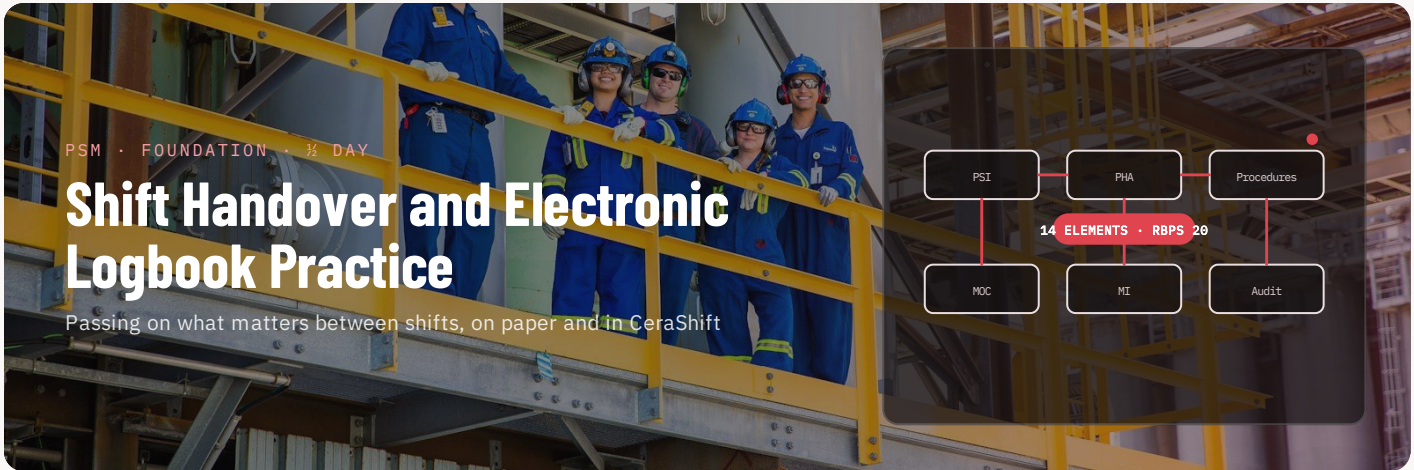
CERTIFICATION
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DURATION
½ day

LEVEL
Foundation

FORMAT
On-site classroom · virtual instructor-led

LANGUAGE
English

MAX. PARTICIPANTS
16

2

handover role-plays

1

handover-quality checklist

CeraShift

hands-on e-logbook

◆ Overview

Piper Alpha turned on a permit that did not survive the shift change. This half-day course covers what a good handover contains, how to structure the logbook so that abnormal conditions, overrides, open permits and incomplete work stand out, and the human factors that make handovers fail: time pressure, interruptions and assumed knowledge. Participants practise two handovers and then repeat them in CeraShift, using its structured logbook, open-item tracking and DCS capture.

◆ Learning outcomes

- State what a handover must always cover: plant status, abnormal conditions, overrides, permits, work in progress
- Keep a logbook that separates routine entries from safety-relevant ones
- Conduct a face-to-face handover with two-way confirmation and no interruptions
- Use the electronic logbook to carry open items across shifts until closed
- Recognise the handover failure modes in incidents and on their own site
- Apply a handover-quality checklist for supervisory checks

◆ Who should attend

Panel and field operators, shift supervisors and maintenance leads; superintendents who set the standard for handover

◆ Course outline

SESSION 1

Handover incidents (Piper Alpha, Buncefield) · EI and HSE guidance on shift handover · content of a good handover · logbook structure and language · human factors: interruptions, fatigue, assumed knowledge · role-play 1 with feedback

SESSION 2

CeraShift: structured log entries, open items, overrides and permits · DCS and historian capture in the log · rounds data and PM tasks in the handover · role-play 2 in CeraShift · supervisory review and handover-quality checklist

◆ Standards referenced

EI Guidance on Safety Critical Communications

HSE Human Factors: Safe Shift Handover

EI Human Factors Briefing Note 1 (Communication)

CCPS Conduct of Operations OSHA 29 CFR 1910.119(f)

◆ Tools & exercises

Hands-on handover and logbook exercises in CeraShift

◆ What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES

None

CERTIFICATION

Certificate of completion; competency record for the training matrix

INSTRUCTORS

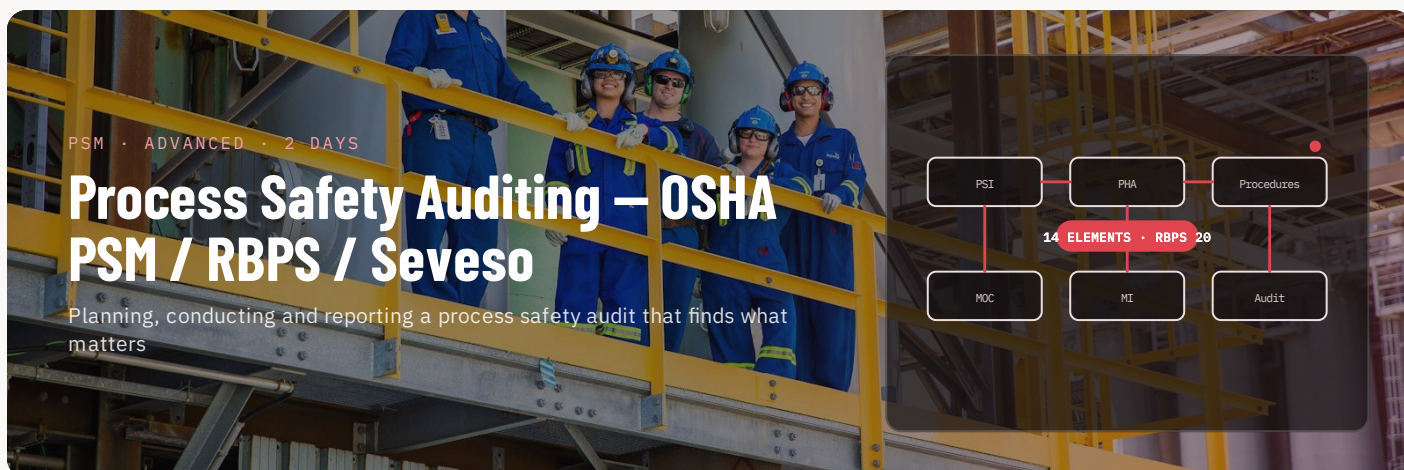
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DURATION
2 days

LEVEL
Advanced

FORMAT
On-site classroom · virtual instructor-led

LANGUAGE
English

MAX. PARTICIPANTS
16

3

frameworks: OSHA PSM · RBPS · Seveso

1

mock audit on a plant

20+

protocol questions per element

◆ Overview

An audit that only confirms the paperwork exists misses the programmes that are decaying in the field. This course covers the three frameworks most sites in the region are measured against, how to build a protocol that tests implementation rather than existence, how to sample records, interview and walk the plant, and how to write findings that lead to correction. Day 2 is a mock audit of three elements on a case plant, from opening meeting to report.

◆ Learning outcomes

- Plan an audit: scope, team, protocol, sampling strategy and schedule
- Distinguish existence, implementation and effectiveness for each element
- Interview, review records and verify in the field without leading the answers
- Write findings with the requirement, evidence, gap and risk clearly separated
- Grade findings and agree corrective actions and closure evidence
- Track audit status and recurring findings as a leading indicator in CeraPulse

◆ Who should attend

Internal and corporate auditors, PSM coordinators, HSE managers and element owners preparing for or conducting compliance audits

◆ Course outline

DAY 1

Audit-related incidents and regulatory expectations · OSHA 1910.119(o) triennial audits · CCPS RBPS auditing element · Seveso III safety management system and inspection · protocol design and element questions · sampling, interviewing and field verification · finding quality

DAY 2

Mock audit: opening meeting · PHA and MOC element audit · mechanical integrity element audit · training and procedures element audit · reporting and closing meeting · corrective action tracking and audit metrics in CeraPulse

◆ Standards referenced

OSHA 29 CFR 1910.119(o)

CCPS Guidelines for Auditing Process Safety Management Systems

CCPS Risk Based Process Safety · Seveso III Directive

API RP 754

◆ Tools & exercises

Audit protocol and findings tracked in the CeraPulse audit module

◆ What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES

PSM Fundamentals (TR-D01) or two years of PSM-related experience

CERTIFICATION

Certificate of completion with mock-audit assessment

INSTRUCTORS

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DURATION
1 day

LEVEL
Intermediate

FORMAT
On-site classroom · virtual instructor-led

LANGUAGE
English

MAX. PARTICIPANTS
16

4
API RP 754 tiers

1
indicator set built for your site

CeraPulse
hands-on dashboards

◆ Overview

A dashboard of lagging indicators tells management about last year's accidents. The course explains the four API RP 754 tiers, the classification rules for Tier 1 and 2 events, and how to select Tier 3 and 4 leading indicators that measure the health of barriers and management systems. Participants build an indicator set for their own site, define each indicator so it is counted the same way every month, and configure it in CeraPulse.

◆ Learning outcomes

- Classify loss-of-containment events correctly as Tier 1, Tier 2 or neither using the API RP 754 thresholds
- Select Tier 3 indicators tied to barriers: demands on safety systems, SOL excursions, inspections overdue
- Select Tier 4 indicators tied to management systems: action closure, PHA and MOC quality, training
- Write an indicator definition: numerator, denominator, source, owner, frequency
- Present indicators so that trends and targets lead to decisions, not just reporting
- Use the Safety Performance Index to compare units and sites fairly

◆ Who should attend

HSE and process safety managers, PSM coordinators, data owners and site leadership who review process safety performance

◆ Course outline

MORNING

Why metrics failed at Texas City and Buncefield · API RP 754 structure and tiers · Tier 1 and 2 classification rules and worked examples · Tier 3 barrier indicators · Tier 4 management-system indicators · CCPS and IOGP guidance

AFTERNOON

Indicator definition and data quality · targets, normalisation and Safety Performance Index · building the site indicator set · dashboards and reviews in CeraPulse · reporting to leadership and the board · common pitfalls

◆ Standards referenced

API RP 754 · CCPS Process Safety Leading and Lagging Metrics
IOGP Report 456 · HSE HSG254 · CCPS Risk Based Process Safety

◆ Tools & exercises

Indicator definitions and dashboards built in CeraPulse

◆ What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES
None

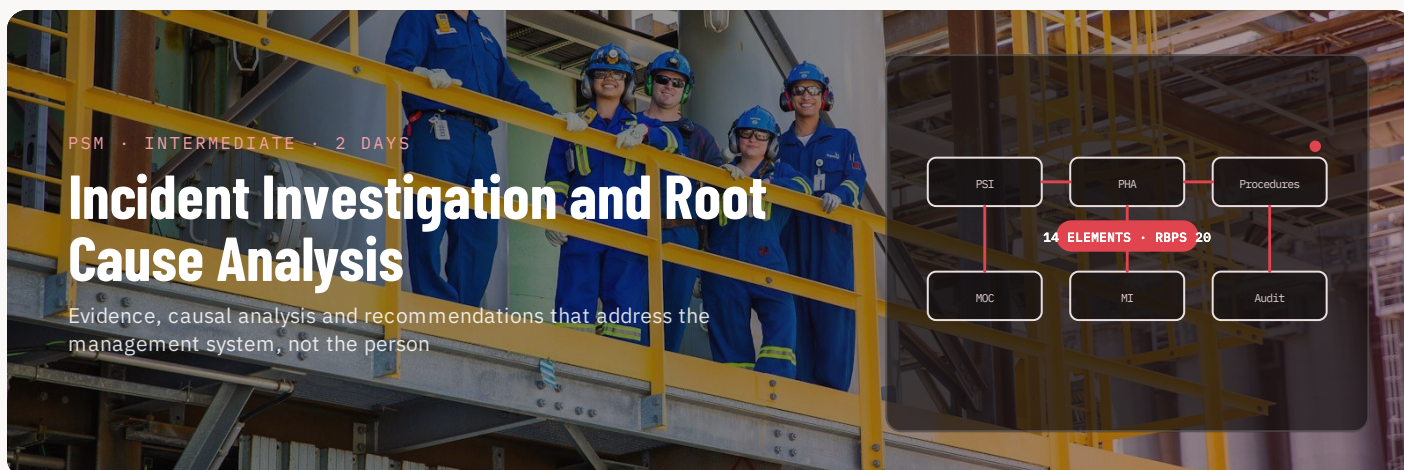
CERTIFICATION
Certificate of completion

INSTRUCTORS
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DURATION
 2 days

LEVEL
 Intermediate

FORMAT
 On-site classroom · virtual instructor-led

LANGUAGE
 English

MAX. PARTICIPANTS
 16

2

full investigations run in class

4

RCA methods practised

CauseIQ

hands-on from evidence to report

◆ Overview

Most investigations stop at the operator error and never reach the reason the error was possible. The course covers the full investigation cycle: initial response and evidence preservation, timeline construction, causal analysis with 5-Whys, fault tree and barrier analysis, then recommendations that are specific, verifiable and aimed at the management system. Two complete investigations are run in class, one on paper and one in CauseIQ, with reports written and critiqued.

◆ Learning outcomes

- Meet the 1910.119(m) requirements: 48-hour start, team composition, report content, action tracking
- Secure and document physical, electronic and human evidence, including historian and logbook data
- Build a timeline that separates fact from inference
- Apply 5-Whys, fault tree and barrier analysis and know the limits of each
- Identify root causes in management systems and link them to PSM elements
- Write recommendations and reports that survive review and lead to change

◆ Who should attend

Incident investigation team leaders and members; HSE, operations and maintenance engineers; PSM coordinators owning the investigation element

◆ Course outline

DAY 1

Investigation-related lessons: CSB case studies · OSHA 1910.119(m) and near-miss reporting · initial response and evidence preservation · interviewing witnesses · historian and DCS data recovery · timeline construction · investigation 1 on paper

DAY 2

Causal analysis: 5-Whys, fault tree, barrier and bow-tie analysis · human factors in causation · root causes in management systems · recommendation quality and hierarchy of controls · report writing · investigation 2 in CauseIQ with PHA linkage · sharing lessons

◆ Standards referenced

OSHA 29 CFR 1910.119(m)

CCPS Guidelines for Investigating Process Safety Incidents

CCPS Risk Based Process Safety

EI Human Factors Briefing Note 13 (Incident Investigation)

API RP 754

◆ Tools & exercises

Timeline, causal analysis and reporting performed in CauseIQ

◆ What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES

None; prior incident investigation participation helpful

CERTIFICATION

Certificate of completion; qualifies participants as investigation team members on the training matrix

INSTRUCTORS

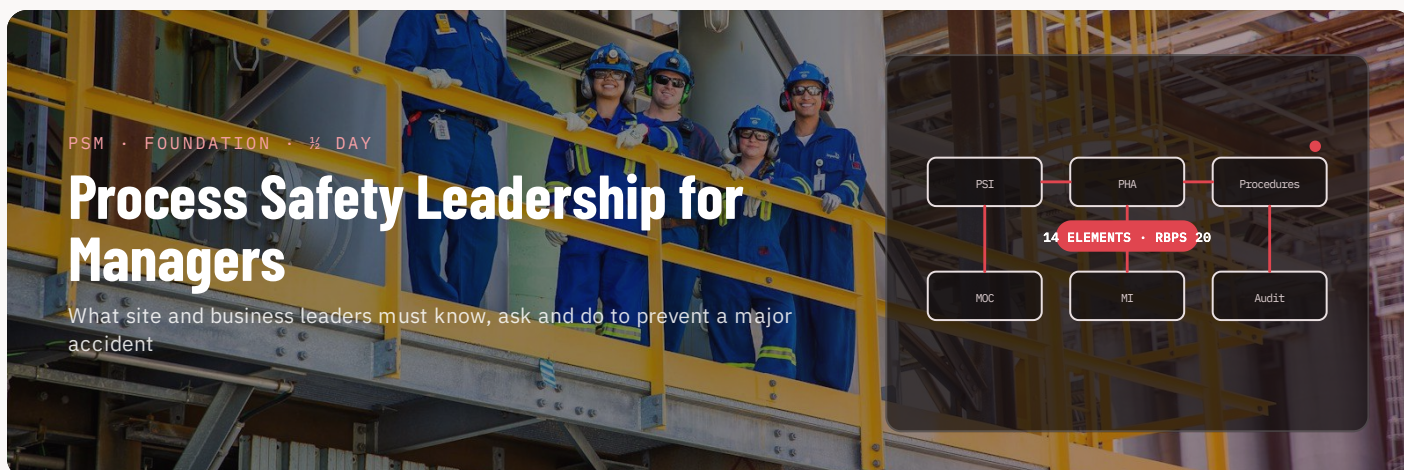
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Book this course or build a custom curriculum

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Cerasus Technologies QFZ LLC · Ras BuFontas Free Zone · Doha, Qatar



PSM · FOUNDATION · ½ DAY

Process Safety Leadership for Managers

What site and business leaders must know, ask and do to prevent a major accident



DURATION
½ day

LEVEL
Foundation

FORMAT
On-site classroom · virtual instructor-led

LANGUAGE
English

MAX. PARTICIPANTS
16

½ day

built for a leadership calendar

3

board-level case studies

1

personal commitment list

Overview

After Texas City the Baker Panel found that leadership had measured the wrong things and asked the wrong questions. This half-day session gives leaders a working understanding of major-accident hazards, the barriers that control them and the management system that keeps the barriers working, then focuses on their own role: the questions to ask on a site visit, the indicators to review, the signals of a decaying programme and the decisions on budget, staffing and production that shift risk.

Learning outcomes

- Explain the site's major-accident hazards and the barriers that control them in their own words
- Read process safety indicators and ask the questions that test barrier health
- Recognise the warning signs identified by the Baker Panel and CSB: normalised deviation, backlog, overrides, production pressure
- Set the tone: visible commitment, resourcing, response to bad news
- Make production, cost and staffing decisions with process safety risk explicit
- Leave with a personal list of actions and questions for the next quarter

Who should attend

Site managers, department heads, business-unit leaders and board members with accountability for process safety; new managers moving into hazardous-plant roles

Course outline

SESSION 1

Texas City, Buncefield and Deepwater Horizon: what leadership did and did not do · major-accident hazards and barriers · the PSM system in one page · leading indicators and what they really say · the leadership questions

SESSION 2

Warning signs of a decaying programme · culture: reporting, response to bad news, challenge · resourcing and competency decisions · site walk and conversation practice · personal commitments and follow-up

Standards referenced

CCPS Risk Based Process Safety (Process Safety Culture, Leadership)

OGP Report 452 Process Safety: Recommended Practice on Key Performance Indicators

EI Process Safety Management Framework API RP 754

Seveso III Directive

Tools & exercises

Case material and indicator examples presented; no software required

What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES
None

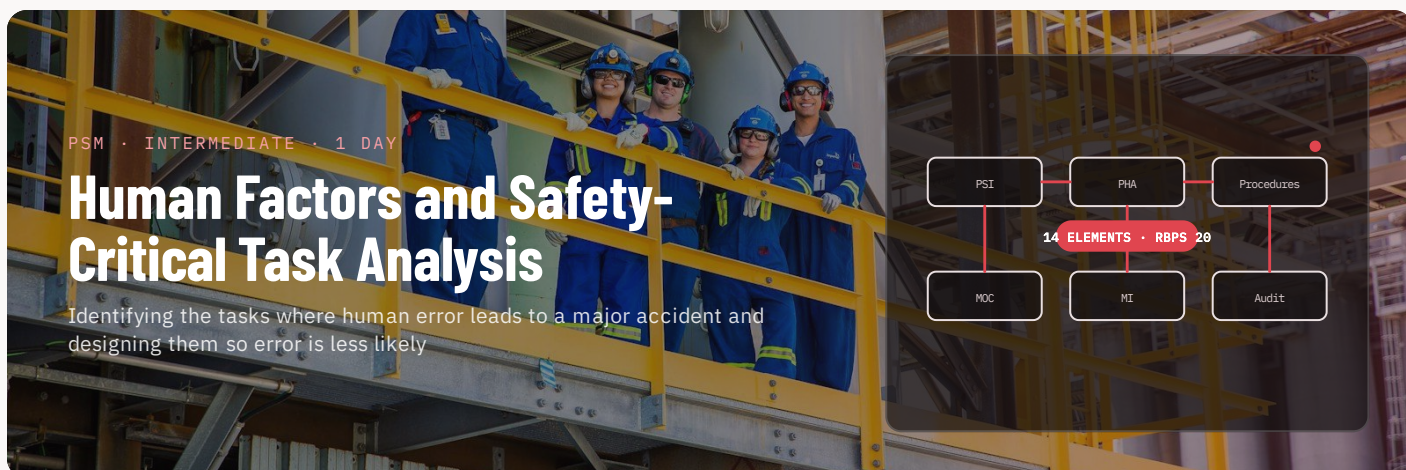
CERTIFICATION
Certificate of attendance

INSTRUCTORS
Practising engineers — TÜV HAZOP Leader, CCPSC and IEC 61511 Functional Safety certified — with 200+ years of cumulative plant experience.

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DURATION
 1 day

LEVEL
 Intermediate

FORMAT
 On-site classroom · virtual instructor-led

LANGUAGE
 English

MAX. PARTICIPANTS
 16

2

safety-critical tasks analysed in class

8

performance-influencing factors assessed

1

SCTA template

◆ Overview

Operators are blamed in most incident reports and designed out of most safeguards; both approaches miss the point. The course explains how human performance depends on the task, the equipment and the organisation, then teaches safety-critical task analysis as practised under UK COMAH and Seveso: screening tasks by consequence, breaking them down hierarchically, identifying credible errors and assessing performance-influencing factors. Participants analyse two tasks from their own plant and specify the improvements to procedures, interfaces and staffing.

◆ Learning outcomes

- Explain human error types (slips, lapses, mistakes, violations) and what each responds to
- Screen and rank safety-critical tasks from the PHA and bow-ties
- Perform hierarchical task analysis on a start-up, isolation or loading task
- Identify credible errors and assess performance-influencing factors
- Specify controls in the right order: design, interface, procedure, competence, supervision
- Use the analysis to support procedures, training, staffing and alarm and HMI design

◆ Who should attend

Process safety, HSE and operations engineers; procedure writers; human factors focal points; engineers preparing COMAH or Seveso safety reports

◆ Course outline

MORNING

Human factors in major accidents · error types and the Swiss-cheese view · EI and HSE human factors topics · safety-critical task screening · hierarchical task analysis · task 1 from participants' plant

AFTERNOON

Error identification and performance-influencing factors · human error probability data and LOPA human IPLs · controls: interface, procedures, competence, staffing, fatigue · task 2 and report-out · linking SCTA to procedures, training matrix and HMI design

◆ Standards referenced

EI Human Factors Briefing Notes

HSE HSG48 Reducing Error and Influencing Behaviour

EI Guidance on Human Factors Safety Critical Task Analysis

CCPS Guidelines for Preventing Human Error in Process Safety

ISA-101

◆ Tools & exercises

SCTA and PIF templates provided; exercises on participants' own tasks and procedures

◆ What's included

- ✓ Course manual and slide pack
- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
- ✓ Exercise and case-study pack
- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES

Plant operations, engineering or HSE experience

CERTIFICATION

Certificate of completion

INSTRUCTORS

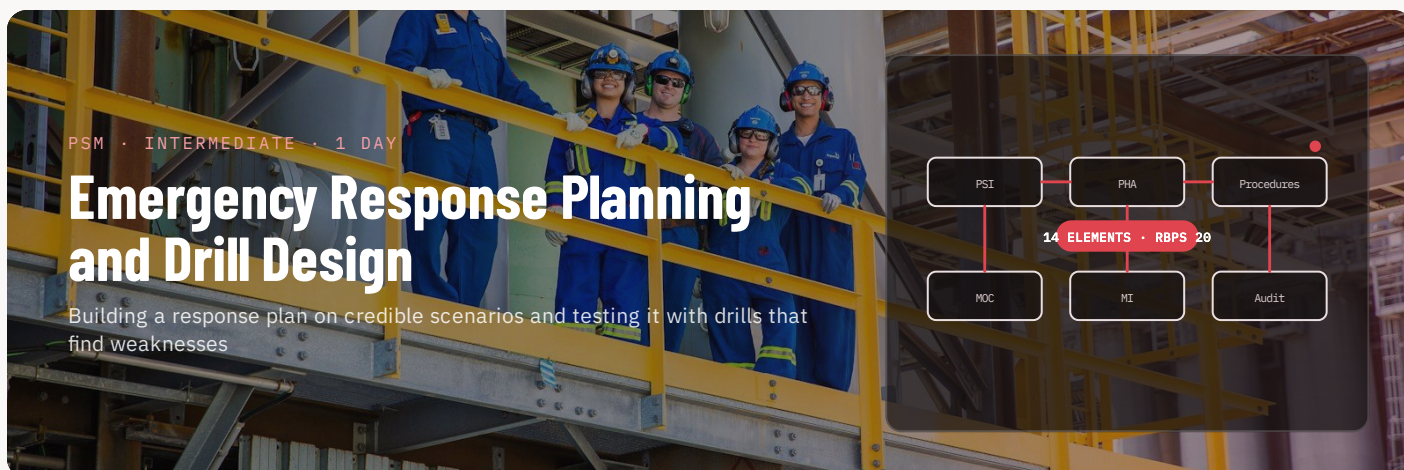
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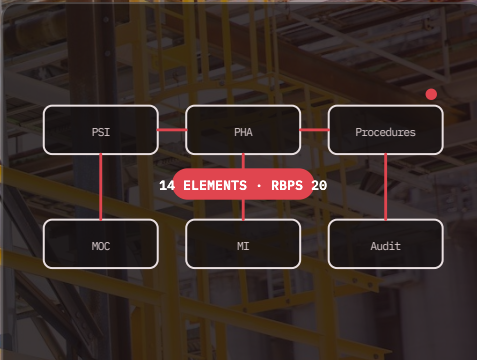
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PSM · INTERMEDIATE · 1 DAY

Emergency Response Planning and Drill Design

Building a response plan on credible scenarios and testing it with drills that find weaknesses


DURATION
 1 day

LEVEL
 Intermediate

FORMAT
 On-site classroom · virtual instructor-led

LANGUAGE
 English

MAX. PARTICIPANTS
 16

1

tabletop drill run and debriefed

4

scenario families: toxic · fire · explosion · spill

1

drill-design template

Overview

An emergency plan that has never been exercised against a realistic scenario is a document, not a capability. The course connects the plan to the PHA and consequence analysis, so that toxic, fire, explosion and spill scenarios drive muster, shelter-in-place and evacuation decisions; covers the organisation, communication and mutual aid required by 1910.119(n), 1910.38 and Seveso; and then teaches how to design drills with objectives, injects and evaluators. Participants run a tabletop drill on a case plant and debrief it.

Learning outcomes

- Derive planning scenarios from PHA and consequence contours, including escalation
- Structure the plan: organisation, roles, command post, communications, external agencies
- Set muster, shelter-in-place and evacuation decision rules from dispersion and fire results
- Meet the requirements of 1910.119(n), 1910.38, 1910.120 and the Seveso internal emergency plan
- Design a drill: objectives, scenario script, injects, evaluators and safety controls
- Debrief and convert drill findings into plan, training and equipment actions

Who should attend

Emergency response coordinators, HSE and process safety engineers, incident commanders and shift supervisors; contributors to the site emergency plan and Seveso internal emergency plan

Course outline

MORNING

Response lessons from Bhopal and Toulouse · regulatory framework: 1910.119(n), 1910.38, 1910.120, Seveso III · scenario selection from PHA and consequence analysis · organisation and incident command · alarms, muster, shelter-in-place and evacuation logic · communications and mutual aid

AFTERNOON

Plan document structure and maintenance · drill types and progression: tabletop, functional, full-scale · drill design: objectives, script, injects, evaluators · tabletop drill on a case plant · debrief and corrective action tracking · annual programme

Standards referenced

OSHA 29 CFR 1910.119(n) OSHA 29 CFR 1910.38 and 1910.120

NFPA 1600 Seveso III Directive

CCPS Guidelines for Technical Planning for On-Site Emergencies

Tools & exercises

Scenario contours from CeraImpact used as drill inputs; drill-design templates provided

What's included

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- ✓ Software access for the course
- ✓ Post-course Q&A with the instructor
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- ✓ Competency quiz and certificate
- ✓ Templates used in the exercises

PREREQUISITES
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