ISO 14001 IMPLEMENTATION HUB

Volume 1 • Guide 4 of 6

Training, Competence, and Awareness

Building the Environmental Knowledge and Culture That Makes the EMS Work in Daily Practice

EMS Implementation Roadmap • ISO 14001:2015

EMS Competence Matrix • Environmental Awareness Training • Regulatory Competence Requirements • Contractor Environmental Management • Training Effectiveness • Cascade Training Program

How to Use This Guide

This is Guide 1.4 in Volume 1 of the ISO 14001 Implementation Hub. It covers the training, competence, and awareness requirements of ISO 14001:2015 — the human capability layer that determines whether the EMS functions in daily practice or only on paper. Procedures can be written, aspects can be registered, and objectives can be set, but if the people who execute the operational controls and collect the compliance evidence do not understand what they are doing and why, the EMS exists only in the document library.

This guide covers three distinct but interconnected requirements: competence (Clause 7.2) — the specific knowledge, skills, and qualifications that roles affecting environmental performance must possess and that must be verified; awareness (Clause 7.3) — the environmental understanding that all personnel working under the organization's control must have about the EMS, their environmental impacts, and the consequences of non-compliance; and the training program that closes competence gaps and builds awareness across the workforce. The Cascade Industrial Coatings training program — developed for a 185-person surface finishing operation with a complex regulatory environment — is used throughout as the primary worked example.

Competence, Awareness, and Training: Three Distinct Requirements

ISO 14001:2015 Clauses 7.2 and 7.3 establish three distinct human capability requirements that are often collapsed into a single "training" concept but which represent meaningfully different standards with different evidentiary requirements:

Requirement	What It Demands and How It Is Demonstrated
Competence (Clause 7.2)	The ability to perform specific environmental tasks correctly and consistently — not merely to have received training about those tasks. Competence is demonstrated through a combination of education, training, and experience. It must be verified, not assumed. Evidence: specific assessment of whether the person can perform the required task, not just attendance at a training event. Applies to: persons doing work under the organization's control that affects environmental performance — including employees, contractors, and temporary workers in relevant roles.
Awareness (Clause 7.3)	The contextual understanding that allows all workers to connect their daily activities to the EMS and to make environmental quality decisions in ambiguous situations. Awareness is broader than competence — it encompasses why the EMS exists and what the organization is trying to achieve, not only what the individual's specific tasks require. Evidence: worker interviews demonstrating understanding of the environmental policy, significant aspects relevant to their work, and the consequences of non-compliance. Applies to: all persons working under the organization's control — much broader than the competence requirement.
Training (Clause 7.2 and implied throughout)	The mechanism for developing competence and building awareness — but only one mechanism. ISO 14001:2015 explicitly allows competence to be achieved through education, training, or experience. Training attendance is not competence; it is evidence that the competence development process was undertaken. The effectiveness of training must be evaluated to determine whether competence was actually achieved.

Standard Requirement

ISO 14001:2015, Clause 7.2: "The organization shall: a) determine the necessary competence of person(s) doing work under its control that affects its environmental performance and its ability to fulfil its compliance obligations; b) ensure that these persons are competent on the basis of appropriate education, training or experience; c) determine training needs associated with its environmental aspects and its environmental management system; d) where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken. The organization shall retain appropriate documented information as evidence of competence."

Clause 7.3: "Persons doing work under the organization's control shall be aware of: a) the environmental policy; b) the significant environmental aspects and related actual or potential environmental impacts associated with their work; c) their contribution to the effectiveness of the environmental management system, including the benefits of improved environmental performance; d) the implications of not conforming

> with the environmental management system requirements, including not fulfilling the organization's compliance obligations."

Step 1: Identifying Roles That Affect Environmental Performance

The competence requirement (Clause 7.2) applies to persons whose work affects the organization's environmental performance and its ability to fulfil compliance obligations. The first step in building the EMS competence matrix is determining which roles meet this threshold — and the answer is broader than most organizations initially expect.

The test for inclusion is not whether the role is primarily environmental in nature — it is whether the work performed in that role can affect environmental outcomes. Applying this test systematically across Cascade's organization reveals three tiers of EMS-affecting roles:

Role Tier	Inclusion Criterion	Cascade Examples
Tier 1 — Direct Environmental Managers	Roles whose primary responsibility is environmental management, compliance, or EMS administration	EHS Manager (Marcus Webb) — primary EMS role; direct responsibility for all significant aspects, compliance evaluation, audit, and management review preparation
Tier 2 — Operational Environmental Roles	Roles that directly operate, control, or maintain processes associated with significant environmental aspects	Spray coating operators (manage VOC-generating processes; responsible for pre-operation inspection and daily log completion); Pre-treatment technicians (operate chemical baths; manage wastewater quality); Maintenance technicians (perform chemical bath change-outs; manage waste streams during maintenance; first responders to equipment failures with environmental implications)
Tier 3 — Supporting Environmental Roles	Roles whose decisions or actions influence environmental performance without directly managing environmental processes	Production supervisors (scheduling decisions that affect permit compliance rates; authority to stop operations if environmental concern arises); Purchasing agents (procurement decisions affecting chemical substitution opportunities and supplier environmental profile); Quality engineers (process change decisions that may affect emission rates or waste generation); Warehouse staff (hazardous material receiving, storage, and inventory management)

⚠ Common Pitfall

The two most common scope errors in EMS competence determination: First, limiting the competence requirement to the EHS Manager and a handful of designated environmental roles. The standard applies to anyone whose work affects environmental performance — which in a surface finishing operation includes every coating operator, every maintenance technician, and every supervisor managing operations that generate regulated emissions or waste. Second, excluding contractors. ISO 14001:2015 explicitly includes persons working "under the organization's control" — which includes contractors performing work at the facility. A painting contractor working in the facility, a waste disposal contractor collecting hazardous waste, and a maintenance contractor performing work on wastewater treatment equipment are all within the competence requirement scope. Cascade uses three categories of contractors who must receive environmental awareness at minimum and specific competence verification for those performing EMS-affecting tasks.

The EMS Competence Matrix

The competence matrix is the primary tool for satisfying Clause 7.2 systematically. It maps every EMS-affecting role to its specific competence requirements, the basis for demonstrating that competence (education, training, or experience), and the current competence status of the person(s) in each role. It is also the document that drives the training program — by identifying gaps between required and current competence.

Competence Requirement Categories for Environmental Roles

Environmental competence requirements fall into five categories that together define what an EMS-affecting role must be able to do:

Competence Category	What It Covers and Why It Matters
EMS System Knowledge	Understanding of the EMS structure, the environmental policy, the significant aspects relevant to the role, and how the role connects to EMS objectives. This is the awareness component embedded at role-specific depth — not just knowing the policy exists, but being able to explain how one's specific work connects to the significant aspects it influences.
Regulatory and Permit Compliance	Understanding of the specific regulatory requirements that apply to the activities performed in the role — not general environmental law awareness, but knowledge of the specific permit conditions, emission limits, discharge standards, or waste management requirements that govern the specific operations the role manages. For spray coating operators: PSCAA permit VOC content limits and the approved materials list. For pre-treatment technicians: State Waste Discharge Permit pH and metals limits and monitoring requirements.
Process-Specific Environmental Controls	The technical ability to operate environmental controls correctly — filter inspection and replacement, monitoring equipment operation and reading, emission calculation procedures, wastewater sampling technique, hazardous waste labelling and storage requirements. This is often the most technically demanding competence category and the one where assessment of actual performance (not just knowledge) is most important.
Emergency Response	Specific knowledge of what to do in foreseeable emergency scenarios associated with the role's work — chemical spill response (immediate containment actions, notification requirements), equipment failure response (when to stop operations, what to report), and evacuation and personal protection in environmental emergency situations. This competence must be verified through drills, not only through knowledge testing.
Incident Reporting and Escalation	The knowledge of when and how to report environmental concerns, near-misses, and incidents — including internal EMS reporting mechanisms (corrective action initiation, supervisor notification) and any regulatory reporting obligations that the role carries (some permit conditions require the operator to notify the EHS Manager when a parameter exceeds a threshold, triggering the EHS Manager's own reporting obligation).

Cascade EMS Competence Matrix — Extract

The following table shows five representative roles from Cascade's competence matrix. The full matrix covers 12 distinct roles across 18 competence requirements. Competence status: C = Competent (verified); T = In Training (actively developing competence with defined target date); G = Gap (required but not yet addressed — must have action plan).

Competence Requirement	EHS Manager	Coating Operator	Pre-treat Tech.	Maintenance Tech.	Production Supvr.
EMS structure and environmental policy	C — Lead developer of EMS; deep knowledge verified by design	C — Awareness training completed Month 9; assessment passed	C — Awareness training completed Month 9; assessment passed	C — Awareness training Month 9	C — Awareness training Month 9; role-specific session
Significant aspects relevant to role	C — Author of aspects register; deep technical knowledge	C — Spray booth pre-training completed; assessed on CA-A-001 knowledge	C — Pre-treatment process training; assessed on CA-A-002	C — Maintenance aspects training completed	C — Supervisor briefing on aspects for managed operations
PSCAA permit VOC limits and approved materials list	C — Permit holder; comprehensive regulatory knowledge	C — Specific permit condition training; assessed via written test (score 88%)	Not Required	Not Required	C — Supervisor awareness of permit-critical requirements
State Waste Discharge Permit pH and metals limits	C — Permit holder; comprehensive regulatory knowledge	Not Required	C — Pre-treatment permit training; assessed via written test (score 85%)	T — Training scheduled Month 12 (maintenance role added to pre-treat team)	Not Required
Spray booth pre-operation inspection and daily log completion	C — Procedure author; operational knowledge	C — OJT with Lead Technician; supervisor observation sign-off Month 10	Not Required	Not Required	Not Required
RCRA hazardous waste labelling and storage requirements	C — CHMM certification; deep RCRA knowledge	C — RCRA training; assessed	C — RCRA training; assessed	C — RCRA training; assessed	C — RCRA supervisor training; assessed

Competence Requirement	EHS Manager	Coating Operator	Pre-treat Tech.	Maintenance Tech.	Production Supvr.
Chemical spill emergency response (immediate containment)	C — SPCC Plan author; ICS awareness training	C — Emergency drill participation (Month 11); spill kit location verified	C — Emergency drill participation Month 11	C — Emergency drill; first-responder designation	C — Emergency drill; supervisor coordination role
Environmental incident identification and internal reporting	C — CAPA system owner; internal reporting procedure author	C — Incident reporting awareness training; awareness verified by supervisor	C — Incident reporting training; verified	C — Incident reporting training; verified	C — Supervisor reporting obligations training; verified
GHG emissions data collection for customer reporting	C — Customer requirements owner; GHG calculation methodology	Not Required	Not Required	Not Required	Not Required
EMS internal auditor competence	C — CHMM; EMS Lead Auditor course completed	Not Required	Not Required	Not Required	T — 2-day internal auditor training scheduled Month 11 (Production Supervisor designated as second auditor)

Regulatory Competence Requirements — What Environmental Law Demands

ISO 14001:2015 is not the only source of environmental competence requirements for industrial manufacturers. Environmental permits and regulations frequently specify competence requirements independently of the EMS — and these regulatory requirements are compliance obligations that the EMS must incorporate, not optional enhancements. The compliance obligations register (Clause 6.1.3) is the source document for identifying these regulatory competence requirements.

Regulatory Program	Competence Requirements Imposed
RCRA Hazardous Waste (all generator categories)	Personnel who manage hazardous waste must be trained to handle wastes safely and respond to emergency situations — required by 40 CFR 262.17(a)(7) for Large Quantity Generators. Training must be completed within 6 months of beginning work with hazardous waste, with annual refreshers. Training records must include the type of training, method, dates, and outcomes. Records must be retained for 3 years.
SPCC Plan (facilities with above-threshold oil storage)	The SPCC Plan must designate a "qualified individual" who has been trained in the SPCC Plan contents and oil spill response. Personnel likely to discover a spill must know the immediate notification and containment requirements. Annual drill participation is required.
PSCAA/State Air Quality Permits (emission-generating facilities)	While the PSCAA Air Quality Permit does not specify an operator certification requirement, permit conditions impose specific operational and monitoring requirements that staff must be trained to execute correctly. Operators who record daily emission monitoring data are effectively performing a regulatory function — errors in those records are a permit violation.
NPDES/NPDES-equivalent Permits (stormwater and wastewater)	Stormwater Pollution Prevention Plans (SWPPP) typically require that all personnel with responsibilities under the SWPPP are trained in those responsibilities. Some state-level permits (including Washington's Industrial Stormwater General Permit) specify that training must be completed annually.
Emergency Planning and Community Right-to-Know (EPCRA / SARA Title III)	Facilities subject to EPCRA Local Emergency Planning Committee (LEPC) reporting obligations must ensure that personnel coordinate with local emergency responders for annual emergency exercises. This creates a competence requirement for the EHS Manager and emergency response team members in community emergency communication.

Integration with the Compliance Obligations Register

Regulatory competence requirements must be entered in the compliance obligations register (Clause 6.1.3) as specific compliance obligations, not only identified in the competence matrix. This integration means: the competence matrix shows who must have what training; the compliance obligations register shows that the training obligation derives from a specific regulatory requirement; and the compliance evaluation (Clause 9.1.2) evaluates whether the regulatory training obligations are being met as systematically as other permit conditions.

The most commonly missed integration: RCRA training requirements. Organizations that maintain an approved supplier list and conduct internal audits often handle training as an internal EMS matter without recognizing that RCRA imposes specific training content, timing, and record-retention obligations that are compliance requirements — not just EMS good practices. Failure to conduct required RCRA training or retain RCRA training records is a regulatory violation independently of any EMS nonconformance.

Awareness Training Design — Reaching the Full Workforce

The Clause 7.3 awareness requirement applies to all persons working under the organization's control — a scope that is significantly broader than the Clause 7.2 competence requirement. In a manufacturing environment, this includes every production worker, administrative staff member, and typically contractors and temporary workers performing work at the facility. The awareness training program must be designed to be deliverable at this scale while remaining specific enough to be meaningful.

The Four Awareness Elements — In Depth

ISO 14001:2015 Clause 7.3 specifies four elements that all persons must be aware of. Each has a distinct character and demands a different approach to verification:

(a) The Environmental Policy

Workers must be able to describe the environmental policy's commitments in their own words — not recite it verbatim, but explain what the organization is committed to in environmental management. The test for policy awareness is whether an employee can connect the policy to something real in their work. For a coating operator at Cascade: "Our policy commits us to reducing VOC emissions — that's why I complete the daily emission log accurately and use only approved coating materials."

The most common awareness training failure for the policy: showing workers the policy document, reading it to them, and testing whether they can recite its commitments. This creates recall, not awareness. Awareness requires connection — between the policy language and the work the employee does every day.

(b) Significant Environmental Aspects and Impacts Relevant to Their Work

Workers must be aware of the significant environmental aspects associated with their specific work area and activities — and the environmental impacts those aspects can cause. This is not a requirement for workers to understand the entire aspects register; it is a requirement that each worker understands the environmental significance of what they personally do.

A coating operator at Cascade must know: the spray booth operations create VOC emissions that are regulated because they contribute to air quality degradation in the region; the amount of VOC emissions depends on what coating materials are used and how much; improper disposal of coating waste creates soil and groundwater contamination risk. They do not need to know the significance scores of all 31 aspects in the register.

(c) Their Contribution to EMS Effectiveness

This element connects individual behavior to organizational outcomes — the most motivationally significant element of environmental awareness. Employees who understand that their specific actions directly affect the organization's environmental performance and compliance status behave differently from employees who experience the EMS as an administrative requirement imposed by the quality or EHS department.

The most powerful approach to this element is role-specific: rather than telling all employees generally that they contribute to the EMS, tell each role specifically and concretely how their daily actions affect environmental performance. For spray coating operators at Cascade: "When you accurately complete the daily emission log, you give us the data we need to know whether we are approaching our PSCAA permit limit. When you use an

unapproved coating material, even once, we may create a permit violation that requires emergency response and regulatory reporting. Your accuracy on this form is a direct regulatory compliance action, not a paperwork exercise."

(d) Implications of Not Conforming with EMS Requirements

Workers must understand the consequences of non-compliance — for the organization, for the environment, and for themselves. This element is not a threat mechanism; it is an honest explanation of what is at stake. In a regulated industrial environment, the consequences of EMS non-compliance can include regulatory enforcement (fines, permit revocation), community and reputational impact, customer relationship damage, and in the case of serious incidents, personal liability for workers who knowingly violated environmental requirements.

The regulatory dimension of this element is particularly important in environmental management and has no real equivalent in ISO 9001: workers in regulated facilities have personal exposure to regulatory action in some circumstances. Awareness of this exposure — and of the EMS controls that protect the organization and individuals from that exposure — is a meaningful motivational element for environmental compliance.

Awareness Training Delivery Design

The awareness training program must reach the full workforce while being time-efficient (competing with production demands) and specific enough to produce genuine understanding rather than compliance attendance. Cascade's three-tier awareness training architecture:

Training Tier	Audience and Content	Format and Duration
Tier 1 — All Personnel EMS Awareness	All Cascade employees and regular contractors. Content: What is the EMS and why does Cascade have it; the Environmental Policy and its four commitments; what ISO 14001:2015 certification means for customers and the business; high-level overview of significant aspects (what our operations impact and why it matters); overview of the EMS and how employees participate; what to do if you observe an environmental concern or incident.	45-minute interactive session in groups of 15 to 20. Delivered by Marcus Webb with real examples from Cascade's operations. Quiz with 5 questions to verify key awareness elements. Sessions scheduled across all shifts to reach full workforce.
Tier 2 — Role-Specific Environmental Awareness	Production operators, pre-treatment technicians, maintenance staff, and warehouse staff. Content: Specific significant aspects for their work area and the environmental impacts those aspects cause; their specific EMS responsibilities (log completion, inspection requirements, waste segregation duties); what permit limits and thresholds apply to	60 to 90-minute session specific to each functional area. Delivered by EHS Manager with Line Supervisor present. Practical demonstration of specific environmental controls (log completion, filter inspection, waste container labelling). Competency assessment — written questions plus supervisor-observed practice.

Training Tier	Audience and Content	Format and Duration
	their activities; specific incident recognition and reporting for their area; environmental emergency response for scenarios relevant to their work.	
Tier 3 — Environmental Leadership Awareness	Production supervisors, purchasing, engineering, and management. Content: EMS governance structure and leadership responsibilities; management review participation and preparation; authority to stop operations for environmental concern; change management — how to notify the EHS Manager when operational or process changes may affect environmental aspects; customer environmental requirements and how they connect to the EMS.	30-minute targeted session for management and supervisor group. Discussion-based rather than instructional. Focus on decision-making authority and escalation responsibilities.

Sustaining Awareness Beyond Initial Training

Initial EMS awareness training satisfies the communication requirement for implementation but does not sustain awareness through the certification period and beyond. Environmental awareness erodes over time — particularly in operations where the daily work pressure is production throughput rather than environmental management. Sustaining awareness requires embedding environmental information in the daily operational environment:

- Visual management: post key environmental information at the point of work — the approved coating materials list in spray booths, the hazardous waste accumulation area requirements on the satellite accumulation container labels, the wastewater permit limits in the pre-treatment area. Make the information available without requiring the worker to go find it.
- Supervisor reinforcement: integrate brief environmental topics into daily shift briefings — "today's priority: we're at 80% of our monthly VOC calculation; ensure all material selections are from the approved list and log entries are complete." Supervisors who reference environmental information in operational briefings signal that environmental performance is a real operational priority.
- Annual refresher training: a 20 to 30-minute annual refresher reinforces the key awareness elements, introduces any changes to aspects, objectives, or procedures, and provides a verification opportunity for the annual EMS training record.
- New employee and new role induction: every new employee completes Tier 1 awareness training before performing any environmental-affecting task. Role changes that move an employee into a Tier 2 or Tier 3 role trigger role-specific training before the new duties begin.

Contractor Environmental Management

Contractors and temporary workers performing work at the facility are within the Clause 7.2 and 7.3 scope — they work "under the organization's control" even though they are not employees. This is one of the most consistently under-implemented aspects of the EMS training and awareness requirements, and one that registrar auditors specifically target during facility walkthroughs.

Effective contractor environmental management has three components:

Component 1: Contractor Environmental Pre-qualification

Before a contractor begins work at the facility, the organization should evaluate the contractor's environmental management approach — particularly for contractors who will perform work that could affect significant environmental aspects. Pre-qualification does not require ISO 14001 certification of the contractor; it requires assurance that the contractor has adequate environmental awareness and controls for the work they will perform.

Pre-qualification elements for environmental risk should be calibrated to the contractor's work scope:

- Low environmental risk contractors (office work, delivery drivers, facility security): environmental awareness at site induction level — emergency exits, spill kit locations, environmental incident reporting contacts
- Moderate environmental risk contractors (facility maintenance, equipment repair, grounds maintenance): site-specific environmental awareness training covering significant aspects relevant to their work area; specific procedures for activities with environmental risk (waste disposal during maintenance, chemical use)
- High environmental risk contractors (chemical treatment, waste disposal, demolition, soil or groundwater remediation): pre-qualification review of contractor's environmental management program; demonstration of relevant regulatory compliance (contractor's own permits or certifications where required); site-specific procedure review and sign-off before beginning work; dedicated EHS Manager or designee oversight during high-risk activities

Component 2: Site Environmental Induction

All contractors must receive a site environmental induction before performing any work. The induction content must be calibrated to the contractor's scope but must at minimum cover:

- The organization's environmental policy (in summary — contractors must know that environmental management is a priority at this facility)
- The significant environmental aspects associated with the work area the contractor will work in
- Waste management requirements at the facility — specifically, what the contractor may and may not dispose of in what containers and through what waste streams
- Chemical storage and handling requirements applicable to any chemicals the contractor brings to the facility
- Environmental emergency notification — who to call, what to do in the immediate aftermath of a spill or release
- Environmental incident reporting — how and to whom to report any environmental concern, near-miss, or incident

Component 3: Ongoing Contractor Environmental Oversight

Site induction is not sufficient for long-term contractors performing ongoing work. Organizations must have a process for monitoring contractor environmental performance during work — not assuming that a one-time induction produces sustained compliance. Monitoring approaches:

- Periodic walkthrough of contractor work areas to verify environmental controls are in place and being followed
- Review of contractor waste manifests and disposal records where the contractor is managing waste generated at the facility
- Communication channel for the EHS Manager to be notified when contractor work is occurring in high-risk areas
- Post-work environmental check — for construction or maintenance contractors, verifying that the work area has been cleaned up, waste has been properly removed, and no environmental damage or contamination has occurred

Cascade Case Study

Cascade Contractor Environmental Management Program: Marcus Webb identified three categories of contractors who regularly work at the Cascade Tacoma facility: (1) Waste disposal contractors (hazardous waste transporter and treatment, storage and disposal facility — TSDF): high environmental risk. Cascade pre-qualifies all waste transporters and TSDFs annually, verifying current EPA ID, state transporter license, TSDF permits, and insurance. The waste disposal contractor receives a full facility environmental briefing from Marcus before any waste collection. Each waste collection is documented with a RCRA manifest. (2) Equipment maintenance contractors (coating equipment repair, spray booth maintenance, wastewater treatment system maintenance): moderate to high risk depending on activity. Marcus conducts a pre-work briefing for each maintenance contractor engagement addressing the specific environmental risks of that day's work (chemical exposure during booth cleaning, proper disposal of spent materials, reporting requirements if maintenance reveals a spill or release). Maintenance contractor is never left unsupervised during wastewater system work. (3) Facility service contractors (cleaning service, landscaping, security): low environmental risk. A 10-minute site environmental induction covers emergency contacts, prohibited disposal practices (no chemicals or waste down drains), and the location of spill kits. The induction is documented with a contractor sign-off record filed in the EMS document library. Cascade's first surveillance audit noted the contractor environmental management program as a positive observation.

Training Effectiveness Evaluation

ISO 14001:2015 Clause 7.2(c) requires the organization to evaluate the effectiveness of training actions taken to acquire competence. This requirement is frequently satisfied on paper with a post-training quiz but not genuinely engaged with as a quality assurance mechanism. Effective training evaluation asks not "did the training happen?" but "did the training produce the required competence?"

The Kirkpatrick Four-Level Framework Applied to EMS Training

The Kirkpatrick model — originally developed for corporate training evaluation — provides a useful framework for calibrating EMS training effectiveness evaluation to the significance of the competence being developed:

Level	What It Evaluates	How to Measure	Cascade Application
Level 1 — Reaction	Did participants find the training relevant and engaging?	Post-training feedback form; verbal debrief; participant satisfaction questions	Used after Tier 1 all-staff awareness sessions to calibrate session quality. Not sufficient as effectiveness evidence on its own.
Level 2 — Learning	Did participants acquire the intended knowledge and skills?	Written knowledge test; skills demonstration; practical assessment with defined pass criteria	Used after all Tier 2 role-specific training. Written tests for permit knowledge. Supervisor-observed practice for operational skills (booth inspection, log completion, waste labelling). Pass score defined in training procedure.
Level 3 — Behavior	Are participants applying what they learned in their daily work?	Supervisor observation; process audit; monitoring record quality review; incident trend analysis	Used for ongoing competence assurance. Supervisor signs off that each trained operator is observed applying the trained skills correctly in production. Monthly EMS log quality review identifies whether correct completion practices are being sustained.
Level 4 — Results	Did the training contribute to improved environmental outcomes?	Environmental performance trends; compliance evaluation results; incident rates; objective achievement	Evaluated at management review. Connection between training investment and environmental

Level	What It Evaluates	How to Measure	Cascade Application
			performance outcomes (improved VOC calculation accuracy, reduced permit exceedances, improved hazardous waste documentation completion rates).

Training Effectiveness Records — What Must Be Retained

Clause 7.2(d) requires the organization to retain documented information as evidence of competence. The training record must demonstrate competence, not merely attendance. For each training event, the record should capture:

- Training event identification: title, date, duration, and topic covered
- Trainer identification: name, role, and basis of trainer competence (for EMS training, the trainer must themselves be competent in the topic being trained)
- Attendee information: names and roles of each participant
- Content coverage: a summary sufficient to demonstrate that the training covered the intended competence requirements — not a full curriculum, but enough to show the scope
- Assessment results: for competence training (not awareness-only), the assessment method used and the result for each participant — pass/fail with score, or competence/not yet competent for observed performance assessments
- Competence confirmation: for operational competence, a supervisor or assessor sign-off confirming that the individual has demonstrated the required competence in practice
- Competence matrix update: reference to the update made to the competence matrix reflecting the trained competence — completing the evidence chain from training record to current competence status

Gap Closure and Re-Training Triggers

The competence matrix identifies gaps. The training program closes them. But competence gaps also arise through events that require a response outside the planned training cycle:

- Procedure changes: when an EMS procedure is revised, all personnel whose work is governed by that procedure must be trained on the changes before the new revision takes effect. The training must be documented, and the gap between the prior procedure version and the current version must be specifically addressed — not a repeat of initial training but a focused update training.
- Permit amendments: when an environmental permit is amended with new or changed conditions, personnel whose activities are governed by the changed conditions must receive specific training on the new requirements. A PSCAA permit amendment that changes the VOC content limit requires training for coating operators on the new limit before it takes effect.
- Incident-triggered retraining: when an environmental incident or near-miss reveals a competence gap — an operator who did not recognize a spill condition as requiring immediate notification, a technician who applied the wrong disposal procedure — retraining is an appropriate corrective action. The CAPA record should reference the retraining action and verify its effectiveness.

- Role changes: when an employee moves to a new role with different or additional environmental responsibilities, competence for the new role requirements must be verified before the employee begins performing those tasks independently.

Emergency Preparedness Training — A Special Case

ISO 14001:2015 Clause 8.2 requires the organization to prepare for and respond to potential environmental emergency situations and accidents. The emergency preparedness training requirement is distinct from general EMS competence training in one critical respect: knowledge alone is not sufficient — emergency response competence must be demonstrated through practice. A worker who knows the spill response procedure in theory but has never executed it under simulated conditions may not perform correctly under the stress and time pressure of an actual emergency.

Standard Requirement

ISO 14001:2015, Clause 8.2: "The organization shall establish, implement and maintain the process(es) needed to prepare for and respond to potential emergency situations identified in 6.1.1. The organization shall: a) prepare to respond by planning actions to prevent or mitigate adverse environmental impacts from emergency situations; b) respond to actual emergency situations; c) take action to prevent or mitigate the consequences of emergency situations, appropriate to the magnitude of the emergency and the potential environmental impact; d) periodically test the planned response actions, where practicable; e) periodically review and update the processes and planned response actions, in particular, after the occurrence of emergency situations or tests; f) provide relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties, including persons working under its control."

Emergency Response Training Components

Emergency Response Training Element	Cascade Implementation
Emergency scenario identification: which scenarios require trained response?	Seven foreseeable emergency scenarios identified in Cascade's Emergency Preparedness and Response Plan (MPC-EMS-PRO-012): chemical spill inside facility; stormwater contamination from outdoor chemical area spill; wastewater pre-treatment system failure; fire in coating booth; HVAC failure causing solvent vapor accumulation; natural gas supply interruption (oven safety shutdown); power failure affecting emission controls (booth exhaust fans). Each has a specific response procedure.
Who must receive emergency response training?	All personnel at the facility receive awareness-level training covering: how to recognize an emergency; immediate personal safety actions; how to notify the emergency response team. Designated emergency responders (EHS Manager, three trained floor wardens, maintenance lead) receive full response training including equipment use, notification tree, and regulatory reporting obligations.
Drill program: testing planned response actions	Cascade's drill program: (1) Annual full-scale chemical spill drill — simulated spill in chemical storage area; full emergency response team activation; spill kit deployment; simulated regulatory notification (phone tree without actual regulatory call); post-drill debrief with documented findings. (2) Semi-annual fire and emergency evacuation drill — all personnel; evacuation route verification; headcount procedure; re-entry control. (3) Annual tabletop exercise for EHS Manager and supervisors — walking through wastewater pre-treatment failure scenario and stormwater

Emergency Response Training Element	Cascade Implementation
	spill scenario; evaluating response decision tree; identifying any gaps in procedures or equipment. All drills documented with date, participants, scenario, outcomes, and any corrective actions identified.
Post-emergency review and procedure update	After each drill and after any actual emergency event: documented debrief capturing what went well, what failed, and what the procedure should say differently. Emergency Preparedness and Response Plan (MPC-EMS-PRO-012) update review — if the drill or incident revealed a procedure gap, the plan is updated before the next training or drill event. Any significant gaps open a corrective action record (MPC-EMS-CAR series).
External emergency coordination training	Annual notification to Tacoma Fire Department and LEPC of Cascade's SPCC Plan and emergency contact information. Participation in LEPC annual exercise when local exercise schedule includes industrial hazardous materials scenario. Contact information for PSCAA, Ecology, and EPA Emergency Response maintained on the emergency notification tree posted in facility.

Cascade EMS Training Program — Implementation Summary

The following table summarizes the complete Cascade EMS training program as implemented during Phase 3 (Months 9 to 11) of the EMS implementation. This program achieved full coverage of the Clause 7.2 and 7.3 requirements with 147 training completions across 185 employees and 12 regular contractor personnel.

Training Module	Duration	Target Audience	Assessment	Schedule
EMS Awareness — All Personnel (Tier 1)	45 min	185 employees + 12 regular contractors	Written quiz — 5 questions; pass required	Months 9-10: 12 sessions across all shifts
Coating Operations — Environmental Controls (Tier 2)	90 min	34 coating operators and lead technicians	Written test (permit knowledge) + observed booth inspection + log completion assessment	Month 10: 4 sessions
Pre-Treatment Operations — Environmental Controls (Tier 2)	90 min	18 pre-treatment technicians	Written test + observed sampling procedure + observed log completion	Month 10: 3 sessions
Maintenance Environmental Awareness (Tier 2)	60 min	22 maintenance and facilities technicians	Written test + observed waste handling	Month 10: 2 sessions
RCRA Hazardous Waste — All Generators (Tier 2)	60 min	74 employees who generate or contact hazardous waste streams	Written test — RCRA content; 80% pass required	Month 9: 5 sessions across departments
Supervisor Environmental Responsibilities (Tier 3)	30 min	14 production supervisors and department managers	Discussion-based verification; supervisor sign-off	Month 9: 1 session
Purchasing and Engineering — Environmental Criteria (Tier 3)	30 min	6 purchasing and engineering staff	Discussion-based; review of purchasing environmental criteria procedure	Month 10: 1 session

Training Module	Duration	Target Audience	Assessment	Schedule
EMS Internal Auditor Training (Specialized)	16 hrs. (2 days external)	2 designated auditors	External provider assessment; certificate awarded	Month 10: External public course
Emergency Response — All Personnel	30 min (combined with Tier 2)	All personnel	Emergency drill participation	Month 11: Incorporated into full-scale drill
Emergency Response — First Responders	4 hrs. (tabletop exercise)	EHS Manager + 4 floor wardens + maintenance lead	Exercise participation and debrief completion	Month 11: Tabletop exercise
Contractor Site Environmental Induction	10 min (low-risk) / 30 min (moderate-risk)	12 regular contractors	Sign-off on induction record	Ongoing — new contractors upon first site visit

Quick Reference: Training, Competence, and Awareness

Competence and Awareness Checklist

	Checklist Item
☐	All roles that affect environmental performance and compliance obligation fulfilment are identified in the competence matrix — including contractors, temporary workers, and support roles (purchasing, engineering)
☐	Specific competence requirements defined for each role — not generic "environmental awareness" but specific knowledge and skills needed for that role's environmental responsibilities
☐	Current competence status assessed for every person in every EMS-affecting role — C (Competent), T (In Training), or G (Gap with action plan)
☐	Gap closure plans exist for every Gap designation — with training method, target date, and defined pass criteria
☐	Regulatory training obligations (RCRA, SPCC, SWPPP) identified in the compliance obligations register and tracked as compliance requirements, not only as EMS training items
☐	All personnel (including contractors) have completed EMS awareness training covering all four Clause 7.3 elements
☐	Role-specific awareness training connects each employee's specific work to the significant aspects it affects — not generic corporate environmental awareness
☐	Training effectiveness evaluated beyond attendance — written assessments or observed performance for competence training; awareness verified through supervisor observation and spot interviews
☐	Emergency response training includes drill participation — knowledge alone is not sufficient; response procedures must be practiced under simulated conditions
☐	New employee and role-change induction procedures ensure training precedes EMS-affecting task performance
☐	Annual refresher training planned and scheduled — maintaining awareness through the certification cycle, not only at EMS launch
☐	Training records retained sufficient to demonstrate competence — not only attendance; assessment results and supervisor sign-offs included

Most Common Training and Awareness Audit Findings

Finding Area	Clause	Typical Finding Statement
Contractor competence not addressed	7.2	Three contractors were observed performing work in the chemical pre-treatment area during the facility walkthrough. Records verification confirmed that none of the three had received EMS environmental induction training or site-specific

Finding Area	Clause	Typical Finding Statement
		environmental briefing before beginning work. The organization's competence program addresses employees only and does not extend to persons working under its control who are not employees.
Attendance mistaken for competence	7.2	Training records for coating operators show attendance at the spray booth environmental controls training (Month 10). Records contain no assessment results, no observed performance evaluation, and no supervisor sign-off on competence demonstration. Attendance at training is documented; competence resulting from training has not been evaluated or documented.
Awareness not verified	7.3	Random interview of three production workers during facility walkthrough: one worker was unable to identify any significant environmental aspect associated with their work; one could not describe the environmental policy content; one was unaware that environmental incidents should be reported to the EHS Manager. Training records confirm that all three attended the all-personnel EMS awareness session. The training content was not retained or is not being applied.
No emergency drill records	8.2	The Emergency Preparedness and Response Plan (MPC-EMS-PRO-012) states that an annual full-facility chemical spill drill will be conducted. No drill has been conducted in the 14 months since the plan was implemented and certified. The organization has a documented emergency response program but no evidence that it has been tested through the required drill program.
RCRA training obligation gap	7.2 / 9.1.2	Two new employees hired in the past four months have been performing hazardous waste management tasks including satellite accumulation container management. Neither has received RCRA hazardous waste training as required by 40 CFR 262.17(a)(7), which requires training within six months of beginning hazardous waste management duties. This represents a regulatory compliance gap in addition to an EMS competence gap.
Role change without training update	7.2	One production operator was moved to the pre-treatment area seven months ago. The competence matrix has not been updated to reflect the new role requirements, and no pre-treatment-specific environmental training has been delivered. The operator is managing chemical baths that are regulated under the State Waste Discharge Permit without verified competence in the specific permit requirements for that operation.

Next in Volume 1: Guide 1.5 — Environmental Internal Audit Program. Building and operating the EMS internal audit program: audit program planning and scheduling, auditor training and qualification, conducting the

environmental audit (compliance evidence evaluation, aspects register verification, operational control effectiveness), writing EMS findings, and managing corrective actions through the improvement cycle.