



InvestigatePro

ICAM Investigation Toolkit

The complete resource for conducting
thorough, effective incident
investigations using the ICAM
methodology

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Contents

How to use this toolkit: This toolkit provides everything you need to conduct a thorough ICAM investigation. Use the worksheets during your investigation, and refer to the guides and checklists to ensure you don't miss critical steps.

01	Quick Start Guide	3
02	Investigation Process Overview	4
03	Initial Response Checklist	5
04	Evidence Collection Guide	6
05	Witness Interview Guide	8
06	Timeline Worksheet	10
07	PEEPO Analysis Worksheets	11
08	Organizational Factors Reference	17
09	Corrective Action Planner	19
10	Investigation Report Template	21

Quick Start Guide

What is ICAM? The Incident Cause Analysis Method (ICAM) is a systematic investigation methodology that identifies not just immediate causes, but the deeper organizational factors that allowed an incident to occur.

The ICAM Investigation Process

- 1 Initial Response**
Secure the scene, ensure safety, preserve evidence, and begin preliminary fact-finding. Notify relevant parties.
- 2 Data Gathering**
Interview witnesses, collect physical evidence, review documents, examine equipment, and build a timeline.
- 3 Analysis**
Use PEEPO to identify contributing factors (People, Environment, Equipment, Procedures, Organization). Validate with evidence.
- 4 Findings & Recommendations**
Document root causes with evidence. Develop corrective actions using the hierarchy of controls.
- 5 Follow-up**
Track corrective action completion, verify effectiveness, and share learnings.

The PEEPO Framework



PEEPO ensures you examine all potential contributing factors systematically, rather than focusing only on the obvious or convenient.

 **Key Principle**

ICAM focuses on **systems, not blame**. The goal is to identify organizational factors that can be fixed — not to find someone to punish. "Human error" is almost never a root cause.

Investigation Process Overview

Stage	Key Activities	Outputs
1. Initial Response <i>0-24 hours</i>	<ul style="list-style-type: none">• Ensure scene is safe and secure• Provide first aid/emergency response• Preserve evidence (don't disturb scene)• Take photos/videos immediately• Make required notifications• Identify witnesses	<ul style="list-style-type: none">• Scene secured• Initial photos/evidence• Witness list• Notifications complete• Initial incident summary
2. Data Gathering <i>Days 1-5</i>	<ul style="list-style-type: none">• Interview witnesses (cognitive technique)• Collect physical evidence• Review documents (procedures, training records, maintenance logs)• Examine equipment• Survey environment• Build timeline	<ul style="list-style-type: none">• Interview notes/transcripts• Evidence log• Document copies• Equipment inspection reports• Site survey notes• Event timeline
3. Analysis <i>Days 3-10</i>	<ul style="list-style-type: none">• Identify what happened (event sequence)• Identify absent/failed defenses• Apply PEEPO framework• Identify organizational factors• Validate findings with evidence• Determine root causes	<ul style="list-style-type: none">• PEEPO analysis worksheets• Organizational factors analysis• Root cause statements• Evidence mapping

Stage	Key Activities	Outputs
4. Findings <i>Days 7-14</i>	<ul style="list-style-type: none"> • Document findings with evidence • Develop corrective actions • Apply hierarchy of controls • Assign ownership and due dates • Write investigation report • Review with stakeholders 	<ul style="list-style-type: none"> • Corrective action plan • Draft investigation report • Stakeholder feedback • Final approved report
5. Follow-up <i>Ongoing</i>	<ul style="list-style-type: none"> • Track CA completion • Verify effectiveness • Share learnings • Update systems/procedures • Close investigation 	<ul style="list-style-type: none"> • CA completion records • Effectiveness verification • Safety alerts/lessons learned • Updated documentation

Timeline Guidance

These timeframes are guidelines for a moderate-complexity investigation. Serious incidents may require more time. The key is to be thorough but timely — don't let investigations drag on for months, but don't rush to close them either.



Initial Response Checklist

Complete these actions in the first 24 hours after an incident. Time-sensitive items are marked with ⚡.

INCIDENT DATE/TIME

LOCATION

INVESTIGATOR NAME

Immediate Safety (First 30 minutes) ⚡

Scene is safe and secured from unauthorized access

All injured persons have received appropriate medical attention

Emergency services notified if required

Area isolated/barricaded if hazards remain

Witnesses identified and asked to remain available

Evidence Preservation (First 2 hours) ⚡

Photos taken from multiple angles (wide, medium, close-up)

Video recorded if beneficial

Physical evidence marked and protected

Equipment isolated (DO NOT clean, repair, or move)

Samples collected if applicable (spills, materials, etc.)

Environmental conditions documented (weather, lighting, noise)

CCTV/security footage secured and preserved

Notifications (First 4 hours)

Supervisor/manager notified

Safety department notified

Senior management notified (per escalation criteria)

Regulatory authority notified (if required)

Insurance/legal notified (if required)

Family/next of kin notified (if injury)

Union/employee representative notified (if applicable)

Documentation (First 24 hours)

Initial incident report completed

Witness list compiled with contact details

Evidence log started

Preliminary timeline drafted

Relevant documents identified for collection

Investigation team assigned

Evidence Collection Guide

Golden Rule: Every finding in your investigation must be supported by evidence. If you can't point to specific data that supports a conclusion, it's speculation — not investigation.

Types of Evidence

Type	Examples	Collection Tips
Physical	Equipment, tools, materials, PPE, samples, debris	Photograph in place before moving. Label and preserve. Document chain of custody.
Documentary	Procedures, training records, maintenance logs, permits, risk assessments	Get originals or certified copies. Note version/revision dates. Check for recent changes.
Testimonial	Witness statements, interviews	Interview as soon as possible. Use cognitive interview techniques. Record or take detailed notes.
Digital	CCTV, access logs, data recorders, emails, photos	Preserve immediately — digital data can be overwritten. Get IT assistance if needed.
Environmental	Weather data, lighting levels, noise measurements, air quality	Document conditions at time of incident. Re-measure if conditions may have changed.

Evidence Log

#	Description	Type	Location Found	Date/Time	Collected By	Storage
1						
2						
3						
4						
5						
6						
7						
8						

Photography Checklist

Good photographs are critical evidence. Follow this sequence:

Overall scene — Wide shots from multiple angles showing the entire area

Relationship shots — Medium shots showing how elements relate to each other

Close-up details — Specific items, damage, marks, labels

Equipment involved — Multiple angles, controls, displays, guards

Environmental factors — Lighting, floor conditions, signage, layout

Evidence markers — Items with scale reference (ruler, coin, person)

Any injuries — With person's consent, for medical and investigation records



Photography Tips

- Include a reference for scale in close-ups
- Ensure adequate lighting — use flash if needed
- Don't stage or move items before photographing
- Record date/time stamps on all images
- Back up photos immediately to prevent loss

Document Collection Checklist

Work procedure/SOP for the task being performed

Risk assessment/JSA/SWMS for the activity

Permit to work (if applicable)

Training records for involved personnel

Competency/certification records

Equipment maintenance records

Inspection/pre-use check records

Manufacturer's instructions/manual

Previous incident reports (similar incidents)

Audit reports for the area/activity

Shift handover records

Work schedules/rosters

Email communications related to the work

Meeting minutes where relevant decisions were made

 **Document Preservation**

Electronic documents can change. When collecting digital evidence, note the access date/time, take screenshots, or request certified copies. Check revision history to see recent changes.

Witness Interview Guide

Cognitive Interview Technique: The goal is to help witnesses recall what they actually observed — not what they think happened or what they've heard from others. Create a supportive environment and let them tell their story.

Before the Interview

Review what you already know about the incident

Identify what information you need from this witness

Choose a quiet, private location

Allow enough time (typically 30-60 minutes)

Prepare your note-taking method (written notes, recording device)

Decide if anyone else should be present (support person, union rep)

Interview Structure

1. Introduction (5 minutes)

- Thank them for their time and cooperation
- Explain the purpose: to understand what happened, not assign blame
- Explain confidentiality and how information will be used
- Ask permission to take notes or record

- Encourage them to say "I don't know" if they don't know

2. Free Recall (15-20 minutes)

- **Ask:** "Please tell me everything you remember about what happened, from the beginning."
- Let them speak without interruption
- Take notes but maintain eye contact
- Use encouraging nods and "go on" prompts
- Don't ask questions yet — just listen

3. Clarification Questions (15-20 minutes)

- Ask open-ended questions to fill gaps: "You mentioned X. Can you tell me more about that?"
- Avoid leading questions that suggest an answer
- Ask about specific details: times, locations, sequence
- Ask what they saw, heard, smelled, felt
- Ask about the period before the incident (context)

4. Closing (5 minutes)

- Ask: "Is there anything else you think is important that I haven't asked about?"
- Summarize key points and confirm accuracy
- Ask if they can suggest other witnesses
- Explain next steps and thank them again
- Provide contact information for follow-up questions

Useful Interview Questions

About the Incident

- Where were you when it happened?
- What were you doing at the time?
- What did you see/hear?
- What happened next?
- How did you react?
- Who else was there?

About the Context

- What was happening in the lead-up?
- Was this a normal day/shift?
- Was anything unusual?
- Were there any time pressures?
- How was the weather/lighting/conditions?


About the Task/Work

- Was this task routine or unusual?
- What procedure was being followed?
- Had there been any problems with this task before?
- Were the right tools/equipment available?
- Were there any concerns before starting?

About Contributing Factors

- In your opinion, why did this happen?
- Were there any warning signs?
- Has anything similar happened before?
- What could have prevented this?
- What would you do differently?

Questions to Avoid

 **Avoid (Leading)**

"The guard was off, wasn't it?"

 **Instead Ask (Open)**

"What do you remember about the machine guards?"

✗ Avoid (Leading)

✓ Instead Ask (Open)

"He wasn't wearing his PPE, right?"

"What PPE was being worn?"

"Why didn't you stop him?"

"What happened next?"

"Don't you think he should have known better?"

"What training had been provided for this task?"

"Was he rushing because of the deadline?"

"How would you describe the pace of work?"

⚠ Common Interview Pitfalls

- **Interrupting:** Let witnesses complete their thoughts
- **Showing judgment:** Keep reactions neutral
- **Asking compound questions:** One question at a time
- **Filling silences:** Pause and let them think
- **Confirming their account with others present:** Interview separately first

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Timeline Tips

- Include events from hours or days before if relevant (fatigue, decisions, changes)
- Mark the incident itself clearly
- Continue through emergency response and initial actions
- Note where times are uncertain with "~" or "approx"
- Cross-reference multiple sources to validate times

PEEPO Analysis Worksheets

Complete each section systematically. For each contributing factor identified, note the supporting evidence. Remember: factors in People, Environment, Equipment, and Procedures often point to deeper Organizational factors.

P People — Human Factors

Consider: Physical condition (fatigue, illness, impairment) • Mental state (stress, distraction, complacency) • Knowledge and competence • Training and experience • Communication • Personal factors • Fitness for duty

Guiding Questions

- What was the physical condition of involved persons? (fatigue, illness, fitness)
- What was their mental state? (stress, distraction, rushing)
- Were they trained and competent for this task?
- How experienced were they with this work?
- Were there communication issues or misunderstandings?
- Were any personal factors affecting their performance?

CONTRIBUTING FACTORS IDENTIFIED

SUPPORTING EVIDENCE

⚠ Important Note on "Human Error"

People factors explain *how* an incident occurred but rarely *why* it was possible. If you identify "failed to follow procedure" or similar, ask: Why didn't they follow it? Was it practical? Were they trained? Was there pressure? Always dig deeper to find the organizational factors that set people up to fail.

E Environment — Physical Conditions

Consider: Weather and lighting • Noise and temperature • Housekeeping and layout • Ground conditions • Time of day/shift • Remote or isolated work • Congestion and access

Guiding Questions

- What were the weather conditions? (rain, wind, heat, cold)
- Was lighting adequate for the task?
- Was noise a factor in communication or awareness?
- What was the state of housekeeping? (clear paths, organized)
- Were there space constraints or access issues?
- What was the time of day/shift? (fatigue-related times)
- Was the work in a remote or isolated location?
- Were floor/ground conditions a factor?

CONTRIBUTING FACTORS IDENTIFIED

SUPPORTING EVIDENCE

E Equipment — Tools & Technology

Consider: Equipment design and suitability • Maintenance condition • Availability of correct tools • Guards and safety devices • PPE adequacy • Alarms and warnings • Ergonomics

Guiding Questions

- Was the equipment suitable for the task?
- What was its maintenance condition?
- Were all guards and safety devices in place and functional?
- Were correct tools available and used?
- Was PPE adequate, available, and in good condition?
- Did any equipment or tools fail or malfunction?
- Were warnings or alarms working?

CONTRIBUTING FACTORS IDENTIFIED

SUPPORTING EVIDENCE

P Procedures — The Documented Way

Consider: Procedure existence and availability • Accuracy and completeness
• Clarity and practicality • Currency (up to date?) • Compliance and enforcement • Normalized deviation

Guiding Questions

- Did a procedure exist for this task?
- Was it readily accessible to workers?
- Was it accurate and up to date?
- Was it practical to follow as written?
- Was it clear and easy to understand?
- Was the procedure actually followed?
- If not followed, why not? (impractical, unknown, pressure)
- Were deviations normalized or routine?

CONTRIBUTING FACTORS IDENTIFIED

SUPPORTING EVIDENCE

Procedure Reality Check

If workers routinely deviate from procedures, the problem is the procedure or the system — not the workers. Ask: Is the procedure

achievable within the time/resources available? Does it reflect how experts actually do the work safely? Has anyone ever raised concerns about it?

Procedure Comparison

What the Procedure Says	What Actually Happened

O Organization — Management Systems & Culture

This is where true root causes are found. Organizational factors are the decisions, systems, and cultural elements that created conditions for the incident. Don't stop until you've examined this category thoroughly.

For each area below, consider whether it contributed to the incident:

Management Systems

Risk Assessment: Was the hazard identified? Were controls adequate?

Change Management: Were recent changes properly assessed and communicated?

Permit Systems: Were required permits in place and followed?

Contractor Management: Were third parties properly selected, inducted, supervised?

Audit/Assurance: Had audits identified this risk? Were findings addressed?

Resources

Staffing: Were adequate numbers of competent people available?

Budget: Were safety requirements properly resourced?

Time: Were schedules realistic and achievable safely?

Equipment: Were proper tools/equipment available when needed?

Training & Competency

Training System: Was training effective and current?

Competency Verification: Was competency actually assessed?

Supervision: Was supervision appropriate for experience level?

Refresher Training: Were skills maintained over time?

Organization — Continued

Culture & Leadership

Safety Priority: Is safety genuinely valued or just talked about?

Reporting Culture: Do workers feel safe reporting concerns?

Leadership Accountability: Are leaders accountable for safety?

Learning Culture: Does the organization genuinely learn from incidents?

Just Culture: Is there trust that honest errors won't be punished?

Communication

Information Flow: Did relevant people get relevant information?

Shift Handover: Was critical information transferred between shifts?

Safety Alerts: Are lessons from incidents shared effectively?

Feedback Mechanisms: Can workers raise concerns that get addressed?

Competing Priorities

Production vs Safety: Was there pressure to prioritize output over safety?

Cost Pressure: Were safety measures compromised to save money?

Schedule Pressure: Were shortcuts encouraged to meet deadlines?

Conflicting Goals: Were there conflicting management messages?

ORGANIZATIONAL FACTORS IDENTIFIED

SUPPORTING EVIDENCE

⚠ The Critical Question

For every People, Environment, Equipment, or Procedure factor you identified, ask: "**What organizational decision or system allowed this condition to exist?**" That's where you'll find the root causes that, when addressed, actually prevent recurrence.



PEEPO Analysis Summary

Summarize the key contributing factors identified in each category:

Category	Contributing Factors	Links to Organization?
People		
Environment		
Equipment		
Procedures		
Organization		—

Root Cause Statements

Based on your PEEPO analysis, write clear root cause statements. A good root cause statement describes a systemic factor that, if corrected, would prevent recurrence.

ROOT CAUSE 1

ROOT CAUSE 2

ROOT CAUSE 3

 **Root Cause Quality Check**

For each root cause, ask: "If we fix this, will it prevent similar incidents?" If the answer is no or uncertain, dig deeper. Also ask: "Is this something we can actually control and change?" Root causes should be actionable.

Organizational Factors Reference

This reference categorizes the types of organizational factors commonly found in incident investigations. Use it to prompt deeper analysis when identifying root causes.

Factor Category	Description & Examples
Hardware	<p>Decisions about equipment procurement, maintenance programs, capital investment, equipment standards, and replacement schedules.</p> <p><i>Example: Aging equipment not replaced due to budget constraints</i></p>
Training	<p>Effectiveness of training programs, competency assessment systems, skill development, refresher training, and new employee induction.</p> <p><i>Example: Training focused on compliance, not practical skills</i></p>
Organization / Management Systems	<p>Risk assessment processes, management of change, permit systems, contractor oversight, audit systems, and incident investigation quality.</p> <p><i>Example: Change management not applied to "minor" changes</i></p>
Communication	<p>Information flow, shift handovers, safety alerts, toolbox talks, reporting systems, and feedback mechanisms.</p> <p><i>Example: Critical information lost during shift handover</i></p>
Incompatible Goals	<p>Conflicts between production pressure and safety, between different management priorities, between stated values and actual decisions.</p> <p><i>Example: "Safety first" messaging contradicted by schedule pressure</i></p>

Factor Category	Description & Examples
Organizational Culture	Leadership commitment, psychological safety, reporting culture, just culture, accountability, and learning orientation. <i>Example: Fear of blame prevents open discussion of near-misses</i>
Risk Management	How risks are identified, assessed, controlled, monitored, and communicated. Quality of risk registers and bow-tie analysis. <i>Example: Risk assessment identified hazard but controls were inadequate</i>
Management of Change	How changes to people, processes, equipment, and organization are identified, assessed, and managed. <i>Example: Procedure changed without updating training</i>
Design	Engineering decisions that affect inherent safety. Application of hierarchy of controls during design. Human factors in design. <i>Example: Control panel layout created confusion during emergency</i>
Maintenance Management	Planning, scheduling, and execution of maintenance. Preventive vs. reactive maintenance balance. Spare parts management. <i>Example: Preventive maintenance deferred to meet production targets</i>
Contractor Management	Selection, pre-qualification, induction, supervision, and integration of contractors and third parties. <i>Example: Contractor not inducted on site-specific hazards</i>

Tracing to Organizational Factors

For each immediate factor you identify, trace back to organizational factors using this approach:

If You Found...	Ask About These Organizational Factors...
Worker didn't follow procedure	Was the procedure practical? Was there time to follow it? Was there pressure to shortcut? Was deviation normalized? Was it enforced? Was the worker trained?
Worker was fatigued	What are the rostering practices? Was overtime excessive? Are fatigue risks managed? Are there fitness-for-duty policies?
Equipment guard was removed	Why was it removed? Is there a system to ensure guards are replaced? Is removal for maintenance managed? Is there pressure to work without guards?
Maintenance was overdue	Is the maintenance schedule resourced? Is preventive maintenance deferred for production? Who decides maintenance priorities?
Hazard wasn't identified	How effective is the risk assessment process? Are frontline workers involved? Is there time allowed for risk assessment? Are assessments reviewed and updated?
Training was inadequate	How is training designed and delivered? Is competency verified? Are refreshers provided? Is there time and budget for training?
Communication failed	What are the handover processes? How is critical information shared? Are there language barriers? Is there time for proper handover?

If You Found...

Ask About These Organizational Factors...

Supervision was lacking

What is the span of control? Are supervisors trained? Do they have time for safety? What are their competing priorities?



The "5 Whys" Technique

For any contributing factor, ask "why?" repeatedly until you reach organizational factors. Example:

Why did the worker not wear hearing protection? → It wasn't available nearby

Why wasn't it available? → The dispenser was empty

Why was the dispenser empty? → No one had restocked it

Why was restocking not done? → No one is assigned that responsibility

Why is no one assigned? → *Organizational gap in PPE management system*

Corrective Action Planner

The Hierarchy of Controls: Always start at the top. Controls higher on the hierarchy are more effective because they don't rely on human behavior.

#	Control Type	Description	Examples	Effectiveness
1	Elimination	Remove the hazard completely	Eliminate the task, remove the substance, redesign the process	Highest
2	Substitution	Replace with something less hazardous	Use safer chemical, quieter equipment, automated process	High
3	Engineering	Physically isolate people from hazard	Guards, barriers, ventilation, interlocks, alarms	Medium-High
4	Administrative	Change how people work	Procedures, training, signage, job rotation, supervision	Medium-Low
5	PPE	Protect the individual	Safety glasses, gloves, hearing	Lowest

#	Control Type	Description	Examples	Effectiveness
			protection, harnesses	

Corrective Action Worksheet

For each root cause, develop corrective actions. Always consider controls higher on the hierarchy first.

#	Root Cause Addressed	Corrective Action	Control Level	Responsible	Due Date
1					
2					
3					
4					
5					

Corrective Action Quality Checklist

Before finalizing corrective actions, verify each one against these criteria:

Addresses root cause: Does it fix the underlying problem, not just the symptom?

Specific and measurable: Is it clear what needs to be done and how you'll know it's complete?

Assigned ownership: Is there a single person accountable for completion?

Realistic due date: Is the timeline achievable given complexity and resources?

Appropriately controlled: Is it as high on the hierarchy of controls as practical?

Sustainable: Will it remain effective over time without constant attention?

Doesn't create new risks: Have you considered unintended consequences?

Can be verified: How will you know if it's working?

Weak Corrective Actions to Avoid

These common "corrective actions" rarely work:

- **"Retrain all workers"** — Unless the original training was the problem
- **"Remind workers to be more careful"** — Not actionable or measurable
- **"Update the procedure"** — Unless the procedure was actually wrong

- **"Add more warning signs"** — Signs don't stop incidents
- **"Increase supervision"** — Vague and unsustainable
- **"Discipline the worker"** — Doesn't fix the system

Verification Plan

How will you verify that corrective actions are effective? Complete after implementation.

CA #	How Will Effectiveness Be Verified?	Verification Date	Verified By	Result	Further Action?
1					
2					
3					
4					
5					



Investigation Report Template

Use this template to structure your final investigation report. A good report is clear, evidence-based, and focused on prevention.

Report Cover Page

REPORT TITLE

REPORT NUMBER

INCIDENT DATE

REPORT DATE

LOCATION

LEAD INVESTIGATOR

INCIDENT CLASSIFICATION

e.g., Lost Time Injury, Recordable Injury, Near Miss, Property Damage, Environmental

Executive Summary

Brief overview for senior leadership (one page max). Include: what happened, key findings, and critical recommendations.

SUMMARY

Incident Description

Objective description of what happened. Include: date, time, location, persons involved, and sequence of events.

DESCRIPTION



Investigation Methodology

Describe the investigation process: team members, methodology used (ICAM), evidence collected, witnesses interviewed.

INVESTIGATION TEAM

EVIDENCE COLLECTED

WITNESSES INTERVIEWED

Analysis

Present your PEEPO analysis findings. For each contributing factor, cite the supporting evidence.

CONTRIBUTING FACTORS (SUMMARIZE PEEPO FINDINGS)

Root Causes

State the root causes clearly. These should be organizational factors that, if addressed, will prevent recurrence.

ROOT CAUSE STATEMENTS

Recommendations

List corrective actions with ownership and due dates. Reference the hierarchy of controls level for each.

CORRECTIVE ACTIONS



InvestigatePro

Ready to Upgrade Your Investigations?

InvestigatePro combines ICAM methodology with AI-powered analysis in a platform built specifically for incident investigation. Guided workflows, smart prompts, and automatic trend detection.

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