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COURSE BROCHURE

Major Incident Case Studies and Barrier Failure Lessons Training Course

8 – 12 February 2027
New York

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Ref: 1402_52451 **Date:** 8 – 12 February 2027 **Location:** New York **Fees:** 9500 GBP

Major Incident Case Studies and Barrier Failure Lessons is a 1-week training course for operations, maintenance and HSE leaders turning industrial disaster lessons into stronger site defences, producing a Site Barrier Lessons Register. Ageing plant, leaner crews and rising public scrutiny make every missed warning sign costly. Jupiter Prime Training presents Major Incident Case Studies and Barrier Failure Lessons.

Why Major Incident Case Studies and Barrier Failure Lessons Matter Now

Three pressures shape this subject. Ageing equipment is running past its original design life, so degraded safeguards hide inside routine operations. Retiring technicians take the stories of past explosions and releases with them. Insurers and communities ask how a site learns from events elsewhere. An organisation that studies disasters well finds weak defences before they fail; one that does not repeats failures already documented. The course draws on the bow-tie model, the Swiss cheese model of layered defences, and the asset management system described in ISO 55001 Asset Management – Management Systems.

Who Gains Most from Major Incident Case Studies and Barrier Failure Lessons

- Leaders accountable for safe operation of hazardous process units and shift handover
- Leaders who set inspection, testing and repair priorities for safety-critical equipment
- Leaders running incident investigation and lesson sharing
- Leaders who approve plant modifications, bypasses and temporary repairs
- Leaders coordinating turnaround contractors

A site leadership group that sends its operations, maintenance and HSE heads together gains most, because barrier weaknesses sit between their functions.

Major Incident Case Studies and Barrier Failure Lessons Capabilities

Participants read accident reports as evidence of which safeguards eroded and who could have noticed.

- Trace a historic disaster from latent conditions to final trigger — investigation leads and site managers
- Map preventive and mitigating barriers on a bow-tie diagram — operations and HSE heads
- Assess the health of safety-critical elements against performance standards — maintenance planners
- Weigh the risk of deferred repairs, overrides and temporary fixes — plant managers approving deviations
- Design early-warning indicators that reveal barrier decay — leadership teams and boards

- Communicate external incident lessons to frontline crews — supervisors and shift teams

Key Major Incident Case Studies and Barrier Failure Lessons Terms

- Barrier — a physical or human safeguard that stops a hazard escalating or limits its consequences.
- Bow-tie diagram — a model linking threats, a top event and consequences, with barriers on each pathway.
- Latent condition — a hidden weakness from earlier design, maintenance or organisational decisions that lies dormant until triggered.
- Safety-critical element — equipment or a system whose failure could cause or fail to limit a major accident.
- Normalisation of deviance — gradual acceptance of abnormal conditions because nothing bad has happened yet.
- Leading indicator — a measure of barrier condition taken before an event, such as overdue tests of trip systems.

Major Incident Case Studies and Barrier Failure Lessons Day by Day

Day 1: How Disasters Unfold

- Swiss Cheese Model — Why Single Safeguards Are Never Enough
- Refinery Explosion Case Review — Warning Signs Missed Before Ignition
- Offshore Blowout Case Review — Pressure Test Misreading and Well Control
- Latent Conditions Timeline — Linking Old Decisions to the Final Trigger
- Common Failure Patterns Across Sectors — Where Site Exposure Begins

Day 2: Mapping Defences with Bow-Tie Models

- Bow-Tie Construction — Threats, Top Events and Consequence Pathways
- Preventive Versus Mitigating Barriers — Choosing Where to Invest First
- Barrier Ownership Matrix — Assigning Accountability Across Functions
- Escalation Factors and Their Controls — Protecting the Protections
- Chemical Plant Release Case — Rebuilding the Missing Barriers

Day 3: Maintenance as a Line of Defence

- Safety-Critical Element Register — Linking Equipment to Hazard Pathways
- Performance Standards for Trips and Relief Valves — Pass or Fail Criteria
- Deferred Maintenance Risk Review — Approving or Refusing Postponement
- Override and Bypass Control — Limits on Temporary Defeats
- Pipeline Rupture Case — Corrosion Monitoring Gaps and Their Cost

Day 4: Organisational Drift and Early Warnings

- Normalisation of Deviance — Spotting Accepted Abnormal Conditions
- Management of Change Failures — Lessons from Modification Accidents
- Leading and Lagging Indicator Design — Measuring Barrier Health
- Contractor and Turnaround Interfaces — Handover Weak Points
- Power Station Fire Case — Cost Pressure and Eroded Safeguards

Day 5: Practising the Site Barrier Lessons Register

- Applying Case Lessons to a Site Bow-Tie — Gap Identification
- Safety-Critical Element Health Scoring — Ranking Weak Barriers
- Indicator Dashboard Draft — Board and Shift Reporting Lines
- Crew Briefing Pack From External Incidents — Frontline Learning Format
- Completing the Site Barrier Lessons Register — Owners, Actions and Review Points

Applying Major Incident Case Studies and Barrier Failure Lessons After the Course

- Lead a bow-tie session on the highest-hazard unit and record every degraded, bypassed or overdue barrier.
- Run a crew briefing comparing one historic disaster with a live site condition and agree the corrective owner.

Major Incident Case Studies and Barrier Failure Lessons Questions FAQ

What are major incident case studies and barrier failure lessons, and why do they matter now?

They are structured reviews of industrial disasters showing which safeguards failed and why. They matter now because ageing plant and staff turnover make it easy to repeat failures others have already paid for.

Which roles gain most from major incident case studies and barrier failure lessons?

Operations, maintenance and HSE leaders gain most. You decide which safeguards are tested, deferred or bypassed, so you can stop the drift that precedes disasters.

How do major incident case studies and barrier failure lessons differ from a root cause analysis course?

The focus is learning from other organisations' disasters and protecting barriers, not running one investigation. A root cause course teaches investigation technique; here you compare many events and turn their lessons into defences and indicators.

What do you bring back from major incident case studies and barrier failure lessons?

You bring back a register of the barriers at your site that echo historic failures, with owners and actions. You also bring a bow-tie method and a crew briefing format.

Major Incident Case Studies and Barrier Failure Lessons: The Way Forward

The Site Barrier Lessons Register shows leaders which defences resemble those that failed elsewhere. Its first use is deciding which deferred repair or bypass to close first. Operations, maintenance and HSE heads share it monthly. After the first cycle, revisit whether its indicators truly warned of barrier decay or only recorded it.